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ANALYSIS OF THE MEDICATION ADMINISTRATION PROGRAM (MAP) AND CURRENT PRACTICES IN COMMUNITY SETTINGS

FINAL REPORT

Submitted to:

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DRUG CONTROL PROGRAM (DCP)
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EXECUTIVE SUMMARY

In February 2022, the Massachusetts Drug Control Program and the Bureau of Health Professions Licensure contracted with Eastern Research Group, Inc. (ERG) of Lexington to research the issues surrounding medication administration by unlicensed assistive personnel (UAPs) to clients of community residences and other associated programs in Massachusetts that are registered with the Massachusetts Medication Administration Program (MAP). ERG was also asked to recommend actions or changes to MAP policies and procedures that, based on our research, we believe necessary to alleviate the key issues confronting MAP. This report presents ERG's research findings and the recommendations that emerged from them.

ES.1 REVIEW OF MEDICATION ADMINISTRATION LAWS, REGULATIONS, AND POLICIES IN OTHER STATES

ERG researched the legal basis for medication administration by UAPs in every other state to determine if there were any exemplary programs in place whose experience with UAP medication administration could be beneficially adapted to MAP. ERG reviewed current literature on medication administration, consulted relevant state statutes, and conducted interviews with officials in other states to determine how UAPs are trained and how their use is regulated outside Massachusetts. ERG found that states vary in the titles, duties, governing bodies, and training requirements for UAPs administering medication. Across states, trained UAPs may administer medications at assisted living residences, nursing homes, and community residential care facilities. (In Massachusetts, MAP staff can only administer meds in community residences and day programs.) Other key findings from our state-by-state research appear below, by topic area.

Duration of training. Training and testing requirements also vary widely; some states require that candidates have a certified nursing aide (CNA) certificate just to be eligible to enroll in a medication aide or med technician training course. Some states require only that the UAP be trained on the job by a registered nurse (RN) or licensed practical nurse (LPN) before administering meds in a community residence. As a result, training can range from 6 hours in Florida to 120 hours or more in several states where a candidate must first become a certified nurse's aide. A few states define MAP-type medication administration as "assisting with medication self-administration." Responsibilities may be largely the same as those of MAP-certified personnel, but the expansive definition of self-administration means that UAPs in settings similar to MAP-registered sites in Massachusetts need only be trained on the job by a registered nurse, who records and attests that the UAPs have gotten adequate training to perform their assigned duties.

Labor shortages and comparative pay rates. ERG found that there is a shortage of UAP labor in every state. In the eight states from which we obtained estimates of the UAP labor shortage, the mean estimated job vacancy rate was 30.8 percent. To compare wages for UAPs across states, we scaled a state's average wage (either estimated by interviewees or obtained from online sources) to Massachusetts-equivalent dollars by using an adjustment factor

calculated from cost-of-living data. Massachusetts ranked 31st in adjusted hourly wage out of 34 states for which we had data.

Adoption of electronic medication administration record (eMAR) systems in other states. ERG interviewed administrators of service providers, eMAR vendor personnel, and state officials in Delaware, Maryland, Pennsylvania, Indiana, and Iowa to hear their experiences with switching from paper-based records of medication administration to dedicated software systems. Demonstrations of software and positive reports from service providers in other states regarding time savings and reduction of medication errors were impressive. Many of the issues about MAP procedures raised by our Massachusetts interviewees could potentially be resolved by widespread eMAR implementation in Massachusetts residential programs.

ES.2 STAKEHOLDER PERSPECTIVES ON THE MASSACHUSETTS MEDICATION ADMINISTRATION PROGRAM

Before we embarked on site visits to community residences governed by the four agencies that oversee MAP-registered facilities, we interviewed several DPH officers and experienced MAP personnel, including interviews with two RNs, the heads of the four Agencies registering programs using MAP-certified care workers—the Department of Developmental Services (DDS); the Department of Mental Health (DMH); Department of Children and Families (DCF); and the Massachusetts Rehabilitation Commission (MRC). We also interviewed leadership of several trade organizations that represent the interests of the service providers and the clients that they serve (Association for Behavioral Healthcare; Association of Developmental Disabilities Providers; The Children’s League). Our interviewees then began visiting program sites, meeting with MAP-certified direct care staff, program managers, MAP site coordinators, nurses, service provider administrators, caseworkers, MAP trainers, and a group of Medical Officers. From March through August of 2022, ERG interview teams visited 29 community residences in different regions of the Commonwealth and licensed under one or more of the four agencies, DDS, DMH, DCF, and MRC. We visited a total of 23 sites personally and the rest via MS Teams or Zoom. The key issues that our interviewees raised most often are briefly described in the paragraphs below.

In June 2022, we also sent a 23-question survey to the email addresses of all currently certified MAP personnel. We received responses from 2,779 people out of the 18,300 delivered emails we sent. Although this was a census and not a sample, we cannot be sure that the people who responded comprise a representative sample of the entire population of MAP-certified staff, because there are no data on this population as a whole. Nevertheless, with this caveat, the results of the survey and some of the comments by respondents are informative and tend to support the qualitative data we received during our site interviews.

Med pass procedure issues and eMAR systems. “Med pass” is the common term for the administration of all scheduled medications to all clients at a specific hour or time of day. The major problems raised by our site interviewees about MAP medication administration procedures were: (1) the repetitive comparison of the health care provider (HCP) order, pharmacy label, and their transcription onto each client’s monthly medication administration

record sheet (med sheet) for each dose of medication takes too much time and is widely ignored; (2) MAP's insistence that the slightest variation between the doctor's order, the pharmacy label, and the med sheet transcription calls for pausing the med pass and contacting a MAP consultant is disruptive. eMAR systems typically establish electronic communication between pharmacy and residential program that eliminates the need for this repetitive and time consuming matching by MAP staff. eMAR systems can also be augmented to accommodate bar code matching and multi-packing of medication, so that all doses of a client's meds scheduled to be taken at the same med pass are in one package and can be administered much more quickly.

Medication administration procedure takes too long. The time required to administer a single dose of medication was frequently mentioned as problematic by interviewees. The main reason given was the requirement for three 2-way checks of the HCP order, the prescription label, and the med sheet transcription for each dose, and having to interrupt med administration to resolve differences, which are often minute, between HCP order, pharmacy label, and med sheet transcription.

Relations with physicians, medical facilities, and pharmacies are often strained due to program personnel asking that orders and Rx labels be rewritten to be MAP compliant, and requests for physician signatures on HCP orders and facility discharge orders. MAP procedures and rules regarding medication administration and the standards required of the documentation from physicians (i.e., the HCP orders) and pharmacies (drug labels) cause many MAP staff and other program staff to circle back to these professionals to ask them to rewrite these items to be MAP compliant. For instance, under MAP, HCP orders cannot contain any abbreviations, which physicians normally use all the time when writing orders or prescriptions. Dosages of ointments or creams must be specified as (for instance) "a pea-size amount" and not "a small amount." Drugs prescribed to be taken PRN (i.e., as needed) must be prescribed for a specific reason, e.g., "for toothache," and not a general reason, e.g., "for pain." If a doctor or other HCP phones in a new or changed order to a residence, the doctor must sign and send the order back to the residence within 72 hours or the medication administration must stop. Doctors can become irritable when contacted about such minutia. Over-the-counter (OTC) drugs require a doctor's order, a prescription, and a pharmacy label, which can annoy some physicians and pharmacists. Some pharmacists dislike being asked to replace a drug's label due to, for instance, a small typo that has no effect on the label's meaning or comprehension. Many interviewees reported that asking physicians and pharmacists to correct "errors" such as these, which are only errors in the MAP context, took up many hours per week.

MAP training and testing. MAP training and certificate testing were often the first issues raised by our site interviewees. There are three certification tests: Knowledge, Transcription, and Med Administration. Many program supervisors complained that competent direct care workers had a hard time passing due to cultural differences, test anxiety, and perceived unfairness of some of the questions. Many perceived that the test questions were intentionally "tricky." Among direct care workers certified since the pandemic began that responded to our survey, only 33.2 percent passed the three tests on their first try. Since the

pandemic began, passing rates for the MAP test have declined, even from the relatively low levels of 5 years ago.

One of our team members took the online practice tests and agreed with the complaints, except that ambiguities found in some of the test questions were surely not intentional. Nevertheless, the items on the multiple choice knowledge test need to be edited, guided by principles of Plain English, and examined from the point of view of a person with English as a second language (ESL) for ambiguities and potential sources of confusion. The transcription test should be eliminated for two reasons: (1) most MAP care workers need to transcribe a doctor's order very rarely, and when they do, it will be checked by an experienced supervisor; (2) the test is now computer-based and bears little resemblance to actual paper-based transcription procedures.

Many of the MAP staff hired since the pandemic began are people with ESL, and many are originally from nations in Africa or the Caribbean. Although a working knowledge of English is required to be MAP-certified, taking a multiple choice test in a second language means there is a greater chance of encountering an unfamiliar word or idiom that has little or nothing to do with the knowledge being tested. A couple of our recommendations are attempts toward a more level playing field for candidates with ESL.

Shortages of MAP staff, hiring difficulties, and wage competition from other sectors.

With two or three notable exceptions, people at all the program sites we visited expressed concern, if not alarm, at how short they were on MAP-certified direct care staff (though they were short staffed in most other job categories as well). Interviewees mainly ascribed this to their too-low entry-level wage rates. Very competitive wages at food service franchises and retail big box stores made taking on the responsibilities of working in a group home less appealing, despite the intrinsic satisfactions of being in a position to help people. Interviewees also said some prospective new hires turned away due to the mandatory MAP training and testing. We also heard many supervisors say that turnover was bad, most people hired over the past two years (since June 2020) leave within a year or two. Aside from the two relatively small programs that said they had enough staff, interviewees' estimates of their shortage of MAP staff ranged from 25 percent to 50 percent.

ES.3 RECOMMENDATIONS

ERG was asked to recommend actions that would address issues that are apparently hindering MAP's mission. Our recommendations are summarized below. Some address details of MAP policy or procedure; others are more general and set strategic goals for DPH, the four agencies, and the service providers. We believe that acting on all of them will be necessary to extract MAP from its pandemic-fueled crisis. These recommendations are based on our research, the substantial feedback about MAP that we received from over 120 people working at the 29 residential sites we visited, and numerous interviews with community service professionals in Massachusetts and other states. There are 30 recommendations, and they fall into six categories.

Establish an Interagency MAP-related Data Center

R1.1 Comprehensive MAP-related data are not readily accessible outside of each individual Agency's own data collection efforts. Because MAP is a program operating across four Agencies, strategic planning requires datasets that span all four agencies. An Interagency MAP Data Center to which the EOHHS agencies regularly submit MAP-related data (e.g., number of site closures and openings, number of clients served, client demographics, number of staff with active MAP-certifications, number and type of medications administered per patient, number of medication occurrence reports and hotline calls received, etc.) is needed.

Allow and Promote Use of Electronic Medication Administration Record (eMAR) System

R2.1 Change MAP policy to allow programs to implement electronic medication administration record (eMAR) systems without a waiver. Electronic medication administration software platforms link the pharmacy to the residential program. When the pharmacy fills a prescription per the HCP order, all the relevant information populates an electronic med sheet accessed at the program's med station. Many of the issues that have complicated med administration under MAP's paper-based system are eliminated by eMARs, which also adds additional error prevention features, such as photographs of the client and of the drug being given.

R2.2 Promote eMAR adoption by selecting, through the appropriate process, a single eMARs system that the Commonwealth will make available free of charge or at minimal cost to all service providers and pharmacies.

R2.3 Promote eMAR adoption by establishing an outreach program to service providers that explains the net benefits of the eMAR system and the steps and staff training necessary to implement it.

R2.4 Change policy to allow pharmacies to multi-pack medications into a small, bar-coded container/closure, so MAP staff need only scan the bar code and administer all meds to a client without delay.

Medication Administration

R3.1 Agencies and DPH should encourage self-administration of medication by providing guidelines and flexibilities that promote the practice, which is considered therapeutic and would also lighten the med pass burden if practiced more widely by qualifying clients.

R3.2 Allow an onsite nurse, pharmacist, or supervisor to resolve inconsequential discrepancies between the HCP order, label, and med sheet transcription to avoid requesting unneeded new HCP orders or pharmacy labels.

R3.3 Reach out to programs that have applied for recent flexibilities offered by DPH, specifically those that allow MAP-certified personnel to administer insulin, rescue inhalers, and

epinephrine via auto injectors, and to pre-pack medications to be administered later by non-MAP personnel. DPH and the Agencies should assess the benefits experienced by participating programs, as well as the risks and whether any harm has come to clients due to the waivers.

R3.4 Simplify HCP orders and reduce emphasis on HCP signatures.

R3.5 Allow MAP staff to administer prescribed medications based on medical facility discharge orders.

R3.6 Broaden allowances for MAP staff to take HCP orders over the phone and eliminate the need for follow-up signatures from the health care provider.

R3.7 MAP staff are required, before administering each dose of medication, to make three 2-way checks: (1) matching the HCP order with the Rx label; (2) matching the Rx label with the med sheet transcription; and (3) matching the Rx label with the med sheet transcription again. We recommend replacing these three 2-way checks with one 2-way check matching the Rx label and med sheet transcription.

Over-the-counter (OTC) Exempt Products Tier

R4.1 Expand the tier of OTC medications that are exempt from requiring a prescription or HCP order. Currently, all OTCs except insect repellent, sunscreen, and personal hygiene products are treated as prescription medications under MAP. The added complications of getting HCP orders, prescriptions, and pharmacy labels for commonly used OTCs too often inhibit clients' access to helpful medications.

R4.2 Reach out to service providers and other stakeholders to publicize and educate them as to which additional items do not need a prescription.

R4.3 Allow service providers to obtain standing orders from prescribers for non-exempt OTC medications, during clients' routine annual physical exams.

MAP Certification Training and Testing.

R5.1 Inspect MAP curriculum for examples and procedures not specified by MAP policy, particularly the insistence on exact matches between the HCP order, pharmacy label, and the transcription on the med sheet. Eliminate two of the three comparisons of the HCP order, pharmacy label, and the med sheet transcription now called for by the curriculum.

R5.2 Establish a dedicated MAP training/testing FAQ web page where MAP candidates and trainers may ask questions of knowledgeable Agency personnel.

R5.3 Agencies (and DPH) should look for ways to encourage in-person MAP training by service providers that still rely primarily on the online training.

R5.4 Eliminate the ability of the testing contractor to prevent a candidate from taking the test due to small discrepancies between their identification and the information on the contractor’s registration form. Allow the onsite proctor to vouch for the candidate’s identity.

R5.5 Eliminate the transcription test as a requirement for MAP certification but keep transcription instruction as part of the training.

R5.6 Modify the current zero tolerance standard for the medication administration (Med Pass) test to apply only to the correct performance of the five “rights,” i.e., right person, right drug, right time, right dose, and right route. Have the med pass test recorded and evaluated by the onsite proctor instead of the remotely located contractor.

R5.7 Increase the time allowed for the Med Pass test from 15 minutes to 25 minutes.

R5.8 Increase the time allowed for the Knowledge test from 75 minutes to 100 minutes. Edit the Knowledge test questions to be consistent with principles of plain English writing and eliminate ambiguities.

R5.9 To minimize test inequities and advance the diversity, equity, and inclusion goals of the Commonwealth enunciated in Governor Baker’s Executive Order 592 (Baker, 2020), allow MAP candidates with English as a second language (ESL) to bring and consult dictionaries that translate from English to their first language (online or hard copy) during the Knowledge test.

R5.10 For the 30-question multiple choice Knowledge pretest—a required practice test that is part of the training—draw at least half the questions from the pool of hundreds of potential Knowledge certification test questions. This will help ensure that the pretest is a useful preparation for the actual certification test.

R5.11 Make the Knowledge test an open book test by allowing candidates to bring and consult the curriculum textbook *Responsibilities in Action* during the test, as well as their notes and other training materials. Research comparing open book testing to closed book testing has had mixed results, but there is experimental evidence showing little or no advantage to closed book testing when retention of tested material over time was measured.

MAP Staffing and MAP as a Career-Building Entry-Level Position

R6.1 Adopt policies—such as using the 75th percentile of BLS wage data instead of the 50th to calculate remuneration paid to contracted service providers for direct care labor—that would bring the entry-level wage to at least \$20 per hour. This would bring Massachusetts more in line with the (cost-of-living-adjusted) hourly rates earned by MAP-equivalent employees in other states. At present, the \$16.79 remuneration rate is about \$4.00 below the mean adjusted hourly rate across the 34 states for which we have data.

R6.2 Develop a course and externship program on direct care for students enrolled in Career/Vocational Technical Education (VTE) Medical Assisting Programs, including a unit dedicated to medication administration.

R6.3 Offer grant funding to support MAP-certified staff in pursuing additional training or education in health care or community services.

R6.4 Consider how MAP certification could provide partial credit toward the requirements of other health care/medical certification or licensure programs.

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ABBREVIATIONS

ABH	Association for Behavioral Healthcare
ADDP	Association of Developmental Disabilities Providers
ALF	Assisted living facility
ARNP	Advanced registered nurse practitioner
BON	Board of Nursing
CNA	Certified nursing assistant
CMA	Certified medication aide
D&S	D&S Diversified Technologies LLP
DCF	Department of Children and Families
DCP	Drug Control Program
DDNA	Developmental Disabilities Nurses Association
DDS	Department of Developmental Services
DMH	Department of Mental Health
DPH	Department of Public Health
eMAR	Electronic medication administration record
EOHHS	Executive Office of Health and Human Services
ESL	English as a second language
HCP	Health care provider
HMO	Hotline medication occurrence
LNA	Licensed nursing assistant
LPN	Licensed practical nurse
MAP	Medication administration program
MAR	Medication administration record
MNA	Medication nursing aide
MNHPC	Minnesota Network of Hospice and Palliative Care
MOR	Medication occurrence report
MRC	Massachusetts Rehabilitation Commission
NCSBN	National Council of State Boards of Nursing
OTC	Over the counter
PRN Medication	“Pro re nata” medication, a medication given on an as needed basis
RN	Registered nurse
SNF	Skilled nursing facility
TMA	Trained medication assistant
UAP	Unlicensed assistive personnel

1 INTRODUCTION

The Medication Administration Program (MAP) overseen by the Drug Control Program (DCP) of the Department of Public Health (DPH) allows specially trained, unlicensed direct care staff to administer or assist in the administration of medications to individuals in community residences, short-term respite programs, or day programs that are licensed, funded, or operated by Executive Office of Health and Human Services (EOHHS) agencies, including the Department of Developmental Services (DDS), the Department of Mental Health (DMH), the Department of Children and Families (DCF), and the Massachusetts Rehabilitation Commission (MRC). Through training and certification, MAP enables unlicensed direct care staff to administer most medications to these individuals as a normal part of their daily routines.

Even though MAP evolved over time in response to changes in medical and pharmacy practice and populations served by these programs, further changes might be needed given the feedback from service providers and their associations. Moreover, direct observations by MAP administrators at the four EOHHS agencies and by DPH point to the need for a comprehensive evaluation of MAP policies and an exploration of alternative practices to reduce the inefficiencies of medication administration in these programs without compromising safety and security.

This study provides a comprehensive analysis of medication administration under MAP with the aim of developing feasible recommendations to improve efficiency without compromising the safety of individuals served by the program. We used a tiered approach for the analysis. The first step involved researching the medication administration laws, regulations, and policies in group living environments in other states to identify best practices that may be suitable for adoption in Massachusetts. The second step involved collecting qualitative information on the Massachusetts program via interviews, focus groups, site visits, and surveys on a range of topics including, but not limited to:

- Key impediments to recruitment, training and certification, and retention of MAP-certified staff.
- Prevalence of electronic system use.
- Barriers to adopting electronic systems for medication administration.
- Concerns of newly certified MAP staff.
- Practices or situations that may compromise medication safety and potential mitigation options, by care setting.
- Factors that may contribute to under-reporting of medication occurrences and potential strategies for overcoming reporting barriers.

Section 2 of this report describes our findings from our review of medication administration laws, regulations, and policies of other states. Section 3 presents stakeholders'

perspectives on the Massachusetts Medication Administration Program (MAP) gleaned through qualitative interviews with representatives of Massachusetts state agencies, industry associations, service providers, as well as with MAP-certified staff, health care providers, and pharmacists. Section 4 includes a list of recommendations based on our research findings.

2 REVIEW OF MEDICATION ADMINISTRATION LAWS, REGULATIONS, AND POLICIES IN OTHER STATES

2.1 Methodology

In the U.S., many states have regulations in place that allow unlicensed assistive personnel (UAP) to administer medications in community-based care settings such as residential, short-term respite, or day programs for adults and/or youth. We used a qualitative approach to examine current state regulations and policies pertaining to medication administration by UAPs. This involved compiling information from publicly available sources, including state websites, published literature, and reports prepared by the National Council of State Boards of Nursing (NCSBN) and the Developmental Disabilities Nurses Association (DDNA). We also interviewed state agency and service provider staff in several states. The information we collected (see Appendix A) included:

- Authorizing regulations for medication services including medication administration versus assistance with self-administration of medications, program specifics (e.g., settings in which UAPs are allowed to administer medications, types of medications, reporting and transcription requirements) and role of registered nurses (RNs) and/or licensed practical nurses (LPNs) (e.g., delegation, consultation).
- Approaches adopted to streamline medication administration, such as use of electronic medication administration records (eMARs) and pre-packaged multi-dose medications.
- Practice of medication administration.
- Common issues encountered by UAPs when administering medications.
- Training and certification requirements for UAPs.
- UAP demographics and any reported shortages.
- Medication error reporting.

While the primary focus of this research is on medication administration in community-based care settings such as residential, short-term respite, and day programs for adults and youth, we also captured select information applicable to such settings as assisted living facilities (ALFs), nursing homes, schools, and others, as appropriate. For most states, publicly available information on topics of interest was limited, which required contacting state agency and/or service provider personnel to fill data gaps. However, we were unable to identify and/or reach

applicable staff in every state for interviews. Thus, the breadth of information compiled varies from state to state.

2.2 Results

2.2.1 Authorizing Regulations

Similar to findings of earlier studies (Carder & O’Keeffe, 2016; Vogelsmeier, 2011; Budden, 2011a; Budden, 2011b), we found that, except for Mississippi, every U.S. state and Washington D.C. allow UAPs to administer medications in certain settings. States vary, however, in their requirements for UAP eligibility, training, certification, testing, and continuing education (see Section 2.2.5). Some states require UAPs who administer medication to be certified nursing assistants (CNAs); some require work experience in long-term care, and others do not have any preliminary medical training or work experience requirements (Vogelsmeier, 2011). Of the 49 states and Washington D.C. that allow UAPs to administer medications, 32 (63 percent) do not have a CNA requirement for UAP applicants; 13 (26 percent) do require that UAPs have CNA status to administer medication. The eligibility requirements for UAP applicants in the remaining 5 (10 percent) states are unclear (Table 1).

Table 1. Certified Nursing Assistant (CNA) Requirements for Unlicensed Assistive Personnel (UAPs), by State

Having a CNA is a prerequisite for a UAP for medication administration purposes	Having a CNA is not required for a UAP for medication administration purposes	Requirements are unclear or unknown
AR, AZ, GA, ID, MN, NJ, NV, OK, OR, UT, WA, WI, WY	AK, AL, CA, CO, CT, DC, DE, FL, IA, IL, IN, KS, KY, LA, MA, MD, ME, MT, NC, ND, NH, MN, NY, OH, PA, RI, SD, TN, TX [a], VA, VT, WV	HI, MI, MO, NE, SC

[a] Texas does not require individuals be CNAs to earn a medication aide certification, but most facilities require individuals to be CNAs.

States use different terms, such as healthcare aide, direct care worker, personal care aide, medication aide, resident assistant, and medication technician, to describe UAPs who administer medications in different care settings. Further, some states have multiple UAP tiers with varying eligibility requirements. For example, Montana’s medication aide II certificate requires a CNA, while their medication aide I certificate does not. Table 2 below presents the different job titles assigned to UAPs across different states. The job titles listed in the table correspond to the title with the lowest level of prerequisites for those states with multiple tiers for UAPs. For example, we listed “Medication Aide I,” which does not require a UAP to be a CNA, for Montana in Table 2.

The most common (37 states) job title for UAPs across states is “Medication Aide,” counting slight variations such as “Qualified Medication Aide” or “Registered Medication Aide.” In eight states (Alaska, California, Delaware, Florida, Illinois, New Hampshire, Pennsylvania, and Rhode Island), UAPs have such job titles as direct care or direct support worker that do not communicate the person’s medication administration status. The remaining states vary in their

terminology of job and certificate titles for UAPs who can administer medications or assist with self-administration.

Table 2. Job Titles for Unlicensed Assistive Personnel (UAP), by State

Job Title	State(s) [a]	
Medication (Residential) Assistant/Aide/Attendant/Technician Certified/Qualified/Registered/Trained	AL, AR, CO, CT, DC, GA, IA, ID, IN, KS, LA, MD, ME, MN, MO, NJ, NM, OK, OR, SC, TN, TX, UT, VA, WY	
Direct Service/Care/Support Worker	AK, CA, DE, FL, IL, NH, PA, RI	
Medication Aide/Assistant/Technician	AZ, KY, MI, MT, NC, ND, NE, NV, OH, SD, WA, WI	
Other	School Aide	HI
	MAP Staff	MA
	Advanced Home Health Aide	NY
	Medication Nursing Assistant	VT
	Assisting with Self Administration	WV

[a] Excludes Mississippi, which does not allow UAPs to administer medications in any care setting.

Medication administration by UAPs is under the purview of different entities across states. Among the 22 states for which we have information, we found that UAPs are governed by various state departments such as the Department of Health, Department of Mental Health, the Department of Health and Human Services (12 states; 55 percent), state boards of nursing (BON) (eight states; 36 percent), and pharmacy boards (two states; 9 percent).¹ While we did not find definitive information on the regulating entities for the remaining 27 states with UAP medication administration programs, they are likely to be state health departments or state boards of nursing (Budden, 2011a). We also were unable to determine whether a state had laws or policies regarding UAP liability in case of medication administration errors. Medication errors are likely to be investigated when detected and corrective actions are taken to prevent future occurrences in most states. Depending on investigation findings, the UAP involved could have their certification revoked, barred from holding a job in the medical and educational fields, and/or face criminal charges.

Table 3. Types of Entities that Oversee/Audit Medication Administration by Unlicensed Assistive Personnel (UAP) Programs, by State

Governing Entity	State(s)
Various State Departments	AK, CA, ME, NV, PA, AL, FL, MA , NE, RI, WA, TX, WI, IA [a]
Board of Nursing	DE, LA, NM, TN, VA, VT, WY, MT
Pharmacy Board	IA [a], NJ [b]
Unknown	AR, AZ, CO, CT, DC, GA, HI, ID, IL, IN, KS, KY, MD, MI, MN, MO, NC, ND, NH, NY, OH, OK, OR, SC, SD, UT, WV

[a] Pharmacists audit medication storage every three months, but the state may conduct additional auditing.

[b] Pharmacies audit the assisted living facilities for which they provide medications

¹ Budden (2011a) reports that regulatory oversight of UAP medication administration programs is provided by state Boards of Nursing (43 percent; n = 20), some other state department (e.g., the Department of Health) (46 percent; n = 21) and some combination of state boards of nursing and some other state department or agency (11 percent; n = 5).

Medication Administration versus Assisting with Self-administration

State policies governing medication administration describe two types of medication services. The first involves assistance with self-administration of medications whereby “...a staff member assists an individual who understands how to take his/her medications but needs assistance because of a physical impairment” (Carder & O’Keeffe, 2016). In most states, assisting with self-administration typically involves activities such as assistance with opening pill bottles, verbal reminders for medication times, and offering liquids for oral medications (Mitty, 2009). The second type of medication service is medication administration. According to Mitty (2009), the main difference between the two types of medication services is that medication administration includes “...removing the correct dosage from a medication container and handing it to [an individual] or putting it in his/her mouth, or the direct application of a medication dose (e.g., topical, injectable) to [an individual].” There is, however, variation among states as to how these two medication services are defined. In some states assistance with self-administration could include tasks that other states may consider as medication administration (Carder & O’Keeffe, 2016).²

Though most states do not explicitly state which model of medication administration they follow, the majority of them operate under guidelines that are aligned with Mitty’s (2009) definition of direct administration. Rhode Island, Florida, Alaska, West Virginia, North Carolina, California, and Arkansas all have either partial or complete assisting with self-administration models of medication administration. UAP responsibilities appear to be similar among these states and among those with medication administration. In Florida for example, a UAP may get a medication for a resident, open the container, place the medication in an individual’s hand, and assist them in lifting it to their mouth, all of which are considered assisting with self-administration. Similarly, Alaska allows UAPs to assist residents by holding their hand over a patient’s hand in order to administer medications and depress syringes but does not consider this medication administration.

One key difference we found between medication administration and assisting with self-administration is that assisting with self-administration typically requires an individual to demonstrate a need for assistance and requires documented consent from the individual or their guardian. These requirements can serve to: (1) encourage individuals to participate in their medication process, by giving them authority to consent to accepting assistance; and (2) potentially mitigate a provider’s liability in the event of a medication error. For most states, we found this to be the main difference between medication administration and assisting with self-administration, as the two are similar in practice.

Program Specifics

There are two types of community care models across U.S. states: social and medical. The social model applies primarily to sites that provide social activities, supervision, and limited

² These state-to-state definitional variations may be attributable to the differences in states’ Nurse Practices Act (Carder & O’Keeffe, 2016).

personal care to their residents. In contrast, medical model community care settings provide extensive personal care, medical monitoring, and rehabilitative services (Carder & O’Keeffe, 2016). Typically, medical model-based community care settings are staffed by both CNAs and UAPs, whereas the social model-based ones primarily employ UAPs.

The most common care settings in which UAPs administer or assist with the self-administration of medications is ALFs (21 states), followed by nursing homes (14 states) (Table 4). These numbers may be higher if we account for how states define these facilities. For instance, 10 states allow UAPs to administer medications in “Residential Care Facilities,” which can include a variety of facility types (NIA, 2017). This extends to other reported settings, such as “Group Homes” and “Adult Care Settings” as well.

Table 4. Types of Facilities at which Unlicensed Assistive Personnel (UAP) may Administer Medications, by State

Facility Type	States
Assisted Living Facilities (ALFs)	AK, AL, DE, FL, GA, MN, MO, MT, ND, NE, NJ, OK, OR, RI, TN, TX, UT, VA, VT, WI, WV
Intermediate Care Facilities	CA, MA, NE, TX, UT, WV
Nursing Homes	AR, ME, MN, NE, NH, OH, OK, SD, TN, TX, UT, WA, WI, WY
Residential Care Facilities	IA, IL, KY, MA, ME, MO, NH, OH, OK, OR, PA
Group Homes	AK, AL, AZ, DE, MA, FL, LA, OK
Skilled Nursing Facilities (SNFs)	AZ, CO, MO, NC, ND
In-home	KY, LA, NY, TX, WV
Adult Care Settings	KS, MA, NC, OK, OR, PA, VT, WV
Schools	HI, IA, KY, MA, MI, NH, PA, VT
Other/Indeterminate Settings	CT, DC, ID, IN, MD, NC, NM, NV, SC, TX, WI

Several states use vague or broad terms to characterize the care settings in which UAPs can administer medications. Connecticut, Washington D.C., and South Carolina specifically limit UAPs to work in programs funded by certain government agencies, and New Mexico allows UAPs to work in “various healthcare settings,” excluding acute care. These differences in reporting make it difficult to ascertain the exact number of states that allow UAPs to administer medications in specific settings, but general trends are discernible from state reporting.

Regardless of the type of care setting where a UAP practices, the types of medications UAPs can administer are similar across states. With few exceptions, most states do not allow UAPs to administer intravenous, intramuscular, or subcutaneous injectables, although some states have exempted insulin from this rule. For example, Maine, Oklahoma, Georgia, New Jersey, New Mexico, Pennsylvania, South Carolina, South Dakota, and Virginia allow for insulin administration by UAPs under some circumstances. Moreover, in most states, UAPs are allowed to administer medications prescribed to be taken on an as needed basis, (i.e., PRN medications). However, supervision or prior authorization are often required for PRN medications.

Documenting medication administration in a medication administration record (MAR), paper or electronic, at the time of administration is a standard requirement across all states,

except Colorado, which requires only that the time of administration be recorded. Some states require UAPs to monitor the effects of the medications they administer and report any adverse reactions. States vary on whether they require UAPs to learn how to transcribe orders. We found nine states that do not allow UAPs to transcribe HCP-ordered medications onto the MAR or accept phone orders (Table 5), 7 that do, and 34 for which we were unable to obtain information. Some states, like Nebraska and Wisconsin, allow transcription, but do not formally include it in their UAP curriculum. For these states, training in transcription skills appears to depend on the provider.

Table 5. Transcription Skill Requirements for Unlicensed Assistive Personnel (UAP), by State

Transcription Skill Requirement Status	State
UAPs May Transcribe HCP Orders	ME, NE, CA, PA, WI, NM, MA
UAPs May Not Transcribe HCP Orders	MT, WV, UT, SD, OK, NV, TX, MD, TN
Unknown	AK, AL, AR, AZ, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MI, MN, MO, NC, ND, NH, NJ, NY, OH, OR, RI, SC, VA, VT, WA, WY

Almost all states for which we have data require a registered nurse (RN) to be available to a UAP for real-time consultation. The only two exceptions are Florida, which does not require an on-call nurse, and Wisconsin, which only has this requirement in ALFs. Even in these two states, however, staff we interviewed noted that it would be rare for a UAP to not have access to an RN for questions.

Nurse Delegation

The medication administration program in Massachusetts operates under a direct authorization model. Under this model, a UAP is allowed “...to administer an individual’s prescribed medications under the direct orders of the individual’s [HCPs]. The individual establishes and maintains a one-on-one relationship with his/her [HCPs]. The [HCP] has the responsibility for ongoing assessment, development of an active treatment plan, and for periodic evaluation of that plan...[and UAPs] are responsible for following the [HCP’s] instructions.” (Massachusetts Department of Public Health Drug Control Program, 2022). The Nurse Practice Act of Massachusetts does not allow a nurse to delegate medication administration duties to a UAP, except in schools. Several states, however, require nurse delegation for a UAP to be able to administer medications.

Thirty-nine states and the District of Columbia either allow or require nurse delegation for UAPs to administer medications. Eight states do not allow nurse delegation, and the remaining three states were unclear (Table 6). In a nurse delegation model, a nurse delegates medication administration to UAPs who they know to be trained and competent to perform the delegated task under the nurse’s supervision. “Delegation involves ‘the transfer of responsibility for the performance of a task from one individual to another while retaining accountability for the outcome. Example: the RN, in delegating a task to an assistive individual, transfers the responsibility for the performance of the task but retains professional accountability for the overall care’ (ANA, 2010a, p. 64).” (American Nurses Association, 2013)

Table 6. Nurse Delegation Allowances for Unlicensed Assistive Personnel (UAP) to Administer Medications

Nurse Delegation Requirements for UAPs to Administer Medications	State
Nurse Delegation Allowed	AK, AL, AZ, CA, CO, CT, DC, FL, GA, HI, ID, IL, IN, KS, KY, LA, MD, MI, MN, NC, ND, NH, NJ, NV, NY, OH, OK, OR, RI, SC, SD, TN, TX, UT, VT, WA, WI, WV, WY
Nurse Delegation not Allowed	AR, CA, DE, IA [a], MA [a], ME, NE, NM, PA
Unknown	MO, MT, VA

[a] Nurse delegation is allowed in school settings

Under nurse delegation, the delegating nurse assesses a patient's needs, and determines if it is appropriate to delegate medication administration to a UAP. Additionally, a delegating nurse must determine the baseline status of a resident and develop protocols for the UAP if the resident's status deviates from their baseline. States have different requirements for RN supervision of UAPs to whom nursing tasks are delegated. For instance, RNs in New Jersey must review delegated responsibilities every week, whereas Maryland requires RNs to make onsite supervisory visits at least every 45 days.

Some states allow nurse delegation only in a specific setting; Iowa, for example, only allows nurse delegation in schools. States may also allow certain practices under nurse delegation, such as Kentucky, where UAPs may only administer PRNs if their administration has been delegated to them.

2.2.2 Approaches Adopted to Streamline Medication Administration

As part of our research, we asked state agency representatives if they have adopted eMARs or other electronic systems to streamline medication administration. All representatives that we spoke to responded that eMARs were in use in some capacity, but the support of electronic systems varied by state. Maryland and New Jersey have mandated the use of eMARs in settings where medication aides work, and both reported that they have reduced the time needed for medication administration. Maryland also reported that most medication errors are due to incorrect documentation, and not due to errors in medication administration. Given our small sample size, the actual number of states with mandated eMARs may be much higher than two. The software company Therap has contracts with 27 states (Therap, 2022). It is unclear to what extent these contracts mandate or encourage eMAR usage, but their presence implies wide implementation of electronic systems. Our research indicates that eMAR use in Wisconsin, Tennessee, Vermont, Louisiana, and California may be dependent on the size of a program, with smaller programs being less likely to have adopted eMARs. Vermont and Louisiana specifically reported that smaller programs may not be able to afford eMARs and may be able to tolerate the reporting time required by paper MARs. Overall, eMARs are apparently used widely across the United States.

Additionally, interviewees told us that eMARs have led to more efficient med passes and fewer medication errors. In New Jersey, the state agency representative we interviewed reported that UAPs were one of the populations hit hardest by staffing shortages, leaving

nurses to administer medications, which added significantly to the nurses' already heavy workloads. The adoption of eMARs has made passing meds more efficient and helped to alleviate the staffing crisis. In their systems, UAPs receive the HCP orders via the eMAR system, which is populated by the pharmacist, HCP, or an RN/LPN, and medications are color-coded to identify when they are to be given, reducing the chances for medication errors. Pennsylvania indicated that wide adoption of eMARs received initial pushback from nurses but has been successful in decreasing medication errors.

The websites of eMAR systems corroborate the benefits that have been reported by state personnel. Chartmeds eMAR estimates that efficiency increases from the adoption of their module would increase bottom line profitability by roughly \$50,000 as compared to a paper MAR system (assuming a base profitability of \$250,000). Other eMAR system vendors claim that their systems reduce medication errors by 33 percent and med pass time by 45 percent (6N eMAR), reduce med pass time by 52 percent (Catalyst eMAR), save 5 hours per resident per month (Extended Care Pro eMAR), or have other nonspecific time saving claims. Many of these systems have direct communication between caregivers, pharmacists, HCPs, and sometimes even families, which increase communication and help keep everyone informed of changes to prescriptions in real time, decreasing the time spent on the phone between HCPs, pharmacists, and service providers.

Some states have adopted the use of pre-packaged, multi-dose unit medications as a way to increase efficiency of med passes. Representatives that we spoke to in Pennsylvania, Iowa, Indiana, and Maine reported either implementation of pre-packed multi-dose units or being in the process of evaluating these systems. Pennsylvania considered the adoption of a multi-dose medication system but found that it introduced additional risks given the frequently changing medication needs of their patients. Similarly, a provider in Iowa trialed multi-dose packaging, but found it to be expensive and unsuitable for patients with frequently changing medications. Maine and Indiana have started using pre-packaged multi-dose unit medications with assumedly more success, as their adoption seems to be more widespread. In Indiana, only certain types of drugs may be included in pre-packaged multi-dose units, and in Maine, adoption is at the provider's discretion, which may allow them to take into account the variability in medications across populations, which inhibited the Pennsylvania and Iowa service providers we interviewed from adopting multi-packs.

2.2.3 Practice of Medication Administration

States mostly reported that the amount of time a med pass takes is site-dependent. Among the service provider staff members and supervisors we interviewed, interviewees in only six states—Maine, California, Colorado, New Jersey, New Mexico, and Louisiana—were able to estimate the average amount of time it takes to complete med passes by a UAP as a percent of the UAP's total shift time (Table 7).

In most states, UAPs work as direct care providers in addition to practicing medication administration. As a result, the amount of time an individual spends on a med pass depends on how providers and their programs employ their UAPs. Some states, such as Ohio and

Tennessee, have rules stipulating that UAPs may only fulfill med pass duties when they are in that role, and may not work in other capacities during a med pass. Other states have specific shifts for passing meds, to keep UAPs focused and reduce the likelihood of medication errors.

Table 7. Average Time Spent by Unlicensed Assistive Personnel (UAP) on Medication Administration as Percent of Shift Time, by State

State	Average Time Spent Administering Medications as Percent of UAP's Shift Time
CA	12%
CO	80-100%
LA	20%
ME	10-15%
NJ	63%-75%
NM	60-75%
PA	6%

In states where eMARs are integrated into medication administration, orders are uploaded either from the pharmacy or the HCP's office to the electronic system for the UAP. In states with nurse delegation, the delegating nurse is usually responsible for clarifying and reviewing orders, whether from an eMAR, or a paper MAR. Many states do not allow UAPs to take verbal orders, meaning that they need either paper orders, or a nurse to take and transcribe an order for them. Our interviewees in Wisconsin, Pennsylvania, Maryland, Maine, Louisiana, and Alaska, all indicated that the UAPs get their orders from the pharmacy, after the pharmacy has received a prescription from a physician.

2.2.4 Common Issues Encountered by UAPs during Medication Administration

We obtained responses on common issues and complaints by UAPs in nine states and grouped them into four common complaint themes: procedural, overwork/staffing, pay, and training (Table 8). The most common complaint type had to do with the procedure relating to med passes and acquiring medications on time. Alabama, Alaska, and New Jersey reported that their UAPs have trouble following their states' procedures. Personnel in Alabama and New Jersey noted receiving medications on time for UAPs to administer is a common problem. Alaska, Maine, Pennsylvania, and Wisconsin all reported problems related to UAP training and licensing. In Wisconsin, UAPs need to log 100 hours every year for med passes to renew their license, which is problematic for those in administrative roles, or those who do not perform med passes every day. A state representative in Maine stated that the testing and certification program is antiquated and needs to be updated, and a representative from Pennsylvania pointed out that training is disruptive to UAPs fulfilling their jobs as care workers. Common sentiments were echoed in our Massachusetts interviews.

Table 8. Common Complaints of Unlicensed Assistive Personnel (UAP) by State

Complaint Type	State
Procedural	AK, AL, CO, LA, MA, NJ, CA
Overwork/Staffing	CO, MA, ME
Pay	MA, WI
Training	MA, ME, PA, WI

In addition to the qualitative information collected via interviews, we also compiled data on median hourly wage rates across states for UAPs since pay rates have been repeatedly raised as a topic of concern, especially in the context of labor shortages (see section below). We reviewed open job advertisements for direct care support staff and white papers prepared by state organizations and associations and elicited pay ranges for these types of positions from service provider staff interviewed. To adjust for geographical cost of living, we used data from Missouri Economic Research and Information Center that reports composite cost of living indices for every US state and District of Columbia (Missouri Economic Research and Information Center, 2021).

Table 9 reports the estimated hourly pay rates for UAPs across 33 US states in Massachusetts-equivalent dollar terms. The average hourly pay rate for UAP-equivalent positions in 33 states. Wage data were taken from interviews, salary.com, and Indeed.com, and we adjusted those data with a cost of living adjustment factor that put wages into “Massachusetts dollars.” The average wage from these states in Massachusetts dollars is \$21.37. The average starting wage for UAPs at MAP-registered sites is \$16.37 with a range of \$15.00 to \$20.00 per hour.

Table 9. Hourly Wage by State in Massachusetts Equivalent Dollars

State	Median Hourly Pay Rate (Massachusetts-equivalent \$)
AK	\$18.06
AL	\$21.50
AZ	\$24.58
CO	\$15.36
FL	\$20.19
IA	\$19.79
KY	\$20.30
LA	\$21.77
MD	\$13.98
MA	\$15.00 to \$20.00
ME	\$17.61
MN	\$25.57
MO	\$23.05-\$25.93
MT	\$20.20
NC	\$20.03
ND	\$23.22
NE	\$22.23 [a] to \$21.80 [b]
NH	\$19.65
NJ	\$19.92 to \$23.44
NM	\$27.01
NV	\$18.02
NY	\$15.51
OH	\$24.65
OK	\$23.71
PA	\$19.76
SC	\$22.14
SD	\$23.70
TN	\$21.81

State	Median Hourly Pay Rate (Massachusetts-equivalent \$)
TX	\$24.36
UT	\$20.48
VA	\$25.17
VT	\$17.31
WA	\$25.89
WI	\$25.21
Average	\$21.37

[a] Rate is for LNAs.

[b] Rate is for CMAs.

2.2.5 Training and Certification

Eligibility Criteria for UAPs

In Massachusetts, criteria for employment in an entry-level UAP position in MAP-registered community-care settings are often determined by the employer. Most recently and partly due to the reported shortages of direct care staff, these eligibility requirements do not go beyond the basic requirements of the Commonwealth, i.e., the applicant must be 18 years old, be a high school or GED graduate, pass a background check, be fully vaccinated, and speak, read, and write English to a level of fluency acceptable to the employer. Another condition of employment for the UAP is to become MAP-certified within three to six months of commencing work. In the prevailing staffing shortage, just one of the programs interviewed for this study reported dismissing UAPs simply for failing to become MAP-certified, and one other provider's representative reported that their company had recently hired a UAP that had lost their previous job for not getting their MAP certification).

Our state-by-state research revealed that the basic criteria for entry-level UAP positions in other states were not more stringent than those in Massachusetts, with slight variations. For example, some states allow employment of 17 year-old high school graduates, others insist on fingerprinting new hires, and/or proof of legal residency.

Training Requirements

In Massachusetts, the required MAP training for a UAP, at a minimum, comprises 16 hours of instruction in the MAP curriculum by a state-certified MAP trainer. To boost their chances of passing the three-part MAP exam, some candidates also get tutored informally by MAP-certified coworkers, attend supplemental MAP instruction sessions offered by their trainers, watch explanatory videos produced by DPH, and study the curriculum on their own time.

As described in Section 2.2.5, in several other states, the number of hours of training required for UAPs before they can administer medications in community-care settings is two to six times longer than under the Massachusetts MAP. This is because those states require a UAP to be a CNA before they can qualify to train for becoming a "certified medication aide" (CMA). Thus, the CMA designation is not directly comparable to MAP-certified staff status in

Massachusetts. Providers of MAP-registered programs in Massachusetts are having difficulty recruiting entry-level UAP candidates with even minimal qualifications and then getting them through the MAP training and certification process. Thus, it is improbable that providers of similar programs in many other states would be hiring CNAs/CMAs into entry-level positions, nor hiring untrained UAPs and then reimbursing them (and their instructors) for hundreds of hours of training to obtain their CNA/CMA certifications—all to perform similar duties that MAP-certified UAPs handle after 16 hours of instruction in Massachusetts. Thus, we considered such programs, which require some sort of preliminary medical training, not to be directly comparable to the one in Massachusetts. Rather, when evaluating training requirements for UAPs in other states, we primarily focused on those programs that did not have such prerequisites.

Most states permit RNs to delegate various elements of their professional responsibilities to others, normally with the understanding that the RN will ensure the competence of the delegatee (as legislators often refer to them) and oversee and monitor the delegated tasks (see Section 2.2.1). This model allows RNs to spend less time on routine or simple tasks and more time on professionally demanding work that calls upon their extensive training and expertise. In states where this model prevails—Massachusetts not among them—it seems natural that nurses in general and their state BONs would want to be hands-on regarding the professional training and certification of the people to whom RNs are entrusting their patients' care and, arguably, their own professional standing. This has resulted in standards of training for CNAs and CMAs that are appropriate for hospitals, nursing homes, and other care settings that provide intensive medical treatment. Such training standards,³ however, may seem burdensome to require of UAPs (and their employers) in settings where the population served is smaller and more stable, where most medications are taken orally, prescriptions are less frequently changed or initiated (as in many DDS residences), or where clients generally receive fewer medications per person (as in DCF residences).

Over the past 20 years, training of UAPs has drawn the focus of nurses' groups such as the Developmental Disability Nurses Association (DDNA) and the National Council of State Boards of Nursing (NCSBN). NCSBN's model curriculum, which is designed to lead to "medication assistant-certified" status, was issued in 2007 (National Council of State Boards of Nursing, 2007). NCSBN recommended that active CNA status be a prerequisite for training as an MA-C candidate. They stated that their curriculum should take about 100 hours of instruction to complete, including about 40 hours of clinical training at a program (under supervision). Although NCSBN (2007) stated that their "...comprehensive document can be adopted in full, or it can be adapted to meet the individual needs of jurisdictions," they also suggested that their recommendations were appropriate for "states where MA-Cs are among the various [UAPs]

³ CNA training in Massachusetts is provided at some colleges and by some long-term care facilities. The training at Middlesex Community College, for example, requires about 100 hours of classroom, skills lab, and clinical instruction, followed by an exam given by the Red Cross. The course, not including two textbooks, costs about \$1,700 (Middlesex Community College, 2022).

who assist in providing nursing-related functions to clients in many health care settings and other settings as well.”

Legislation and administrative rules in numerous states either incorporated many of NCSBN’s recommendations or empowered their state boards of nursing to do so. Explication of the details of how training requirements— as they apply to UAPs administering medication in MAP-equivalent settings—evolved to their current status in each of 50 states is beyond the scope of this report. But, as mentioned, we did drill down to discern the currently required level of training to perform MAP-related duties in MAP-equivalent settings.

Table 10 aggregates states into ranges of training hours required for UAPs to administer and/or assist with self-administration of medications. The table also notes whether active CNA status is a prerequisite to begin training for medication administration.

Table 10. Training Requirements for Unlicensed Assistive Personnel (UAP) for Medication Administration and/or Assisting with Self-Administration in MAP-equivalent Community-care Settings, by State

Minimum Hours of Training Required to Administer or Assist with Self-administration of Medications at MAP-equivalent Settings [a]	CNA Required?	States
Not specified	No	IA, IN, NH, PA, TX, VT
	Yes	OR
6 hours – 16 hours	No	AK, AL, CA, CO, DE, FL, IL, LA, MA, MO, NE, NV, OH, OK, SC
	Yes	WI
20 hours – 48 hours	No	CT, CA, DC, MD, NC, RI, SD, TN, VA
	Yes	GA, MN, NJ
60 hours – 120 hours	No	KS, ME, NM
	Yes	AR, AZ, ID, KY, WA
Training suspended	N/A	WY
Not determined	N/A	HI, MI, MS, ND, NY, UT

N/A = Not applicable

[a] “MAP-equivalent sites” excludes hospitals, nursing homes, and other locations providing intensive medical intervention. It includes community residences for people with physical disabilities, brain injuries, or mental health issues, as well as residences for traumatized children that cannot live at home.

Training hours not specified. Seven states did not prescribe minimum training hours for group home staff to administer or assist with self-administration of medications. New

Hampshire⁴ and Vermont⁵ indicate that staff must be trained to competency by the delegating nurse, who must maintain records of such training. Pennsylvania also calls for task-specific training and for the employee to make four successful medication administrations (aka med passes) under supervision before being certified. For residences with fewer than 16 beds, Iowa does not specify hours of training to become a “medication manager,” nor do they require the UAP to be a CNA before training. However, for sites with 16 residents or more, UAPs must become CMAs to administer medications, which requires CNA status to begin training (Iowa Department of Inspections and Appeals, 2016). A training course in Iowa for would-be medication managers offers 12 hours of classroom work and 4 hours of clinical training to prepare for the medication manager test. (Eastern Iowa Community College, 2022).

In Indiana, UAPs must take Core A and B trainings—covering general UAP duties and medication administration, respectively— before being tested and certified for medication administration. In Oregon, although the state’s Administrative Rules are extremely detailed regarding medication administration procedures, they are silent on specific requirements for staff training for medication administration (Oregon Secretary of State, 2019).

Six hours to 16 hours of training. The medication training required or recommended by these states is comparable to the time commitment required by the MAP curriculum. The exceptions are Alaska and Florida, where state governments exercise little oversight over medication administration training. In Florida, Medication Tech courses are as brief as six hours, with two-hour annual refresher classes. A Florida vendor, Elite Medical Academy, also offers CNA courses—online or in person—that just take 32 hours (Elite Medical Academy, 2022).

Alaska’s definition of assistance with self-administration is broad enough to allow UAPs in group homes to perform virtually the same medication duties as MAP-certified personnel in Massachusetts. Similarly, California defines “assistance with self-administration” broadly enough to include virtually all MAP-covered medication administration activities, and then some, including assisting people with hand tremors to inject their medication. (California Department of Social Services, undated). California’s Department of Developmental Services does note that assistance with self-administration does not include using subterfuge or deception to ensure that an individual takes their prescribed medication. California also differentiates between residences with 15 or fewer clients—whose UAPs must receive 10 hours

⁴ New Hampshire 326-B:22 (IV) states: For tasks of client care involving the administration of medication, the following persons shall be eligible to be delegates:

- (a) Currently RNs and ARNPs;
- (b) Currently LPNs when:
 - (1) The method of medication administration is not intravenous; or
 - (2) The method of medication administration is intravenous, only in compliance with RSA 326-B:16, III;
- (c) Unlicensed assistive personnel who have competence to perform the specific task to be delegated;
- (d) Currently LNAs when they hold a certificate of medication administration issued in accordance with the provisions of this chapter.

⁵ Vermont does allow LNAs with 4,000 hours of LNA work experience (including 2,000 hours in long-term care settings) to take a 100 hour course leading to Medication Nursing Aide (MNA) status, which allows them to administer medications in nursing homes. This program is not comparable to that of Massachusetts.

of medication training—and sites with more than 15 clients, which need to provide 24 hours of training for UAPs to assist with self-administration.

20 hours to 48 hours of training. Three of the 12 states in this category also demand that candidates seeking to administer medications must be active CNAs before entering medication training. Georgia’s CNA training is at least 85 hours of instruction and must be followed by enrollment in a CMA course that, with the exam, ranges upward from 20 hours of effort. This enables medication administration in ALFs, whereas UAPs in “personal care homes” may provide assistance with self-administration based on RN delegation. In contrast, UAPs in Minnesota must be CNAs before taking the 48-hour course for trained medication assistants (TMAs). The Minnesota Network of Hospice and Palliative Care (MNHPC) takes the position that RNs in hospices delegate assistance with medication to UAPs. (Minnesota Network of Hospice and Palliative Care, 2012)

60 hours to 120 hours of training. In Arizona, “providers” can be trained to provide assistance with self-administration “[f]rom a medical practitioner or registered nurse or from a personnel member of the collaborating health care institution trained by a medical practitioner or registered nurse.” The meaning of “collaborating health care institution” eluded our research, but our interview with a nurse from Arizona BON indicated that CMAs are regulated by the state BON and administer meds at nursing homes, whereas “med techs” are under the Department of Public Health and generally work at group homes, either administering meds or assisting with self-administration. Research has not shown that training requirements for CMAs and Med Techs differ in Arizona.

Certification Requirements

Among the states we found information on, only New Hampshire does not require UAPs to pass an examination before administering medication or assisting with self-administration. UAPs in New Hampshire community residences are delegated medication-related duties by an RN. When interviewing state agency and service provider personnel in other states, we inquired about current pass rates among UAPs taking the exam required for certification to administer medications. Only seven interviewees were able to provide a response to this question, as shown in Table 11.

An earlier nationwide survey by Budden (2011a) found that the certification test pass rates for UAPs across states ranged from 40 percent to 94 percent, with an average pass rate of 73 percent (SD = 17 percent). That survey also revealed that 50 percent of the states’ certification tests did not include a skills demonstration component (e.g., transcription or med pass)⁶ and only included a written exam. Among those states, at least five required a 100 percent pass rate for the skills demonstration component. The average score needed to pass the written exam was 77 percent across all states. Budden (2011a) also found variation in certification test design and administration responsibilities among the responding states. Some of the entities respondents reported included state BONs, state health departments, D&S

⁶ Data were unavailable for 35 percent of the states surveyed (Budden, 2011a).

Diversified Technologies, Comira Testing, Pearson VUE, Psychology Services Incorporated (PSI), and Professional Healthcare Development (PHD).

Table 11. Interviewee Reported Certification Exam Pass Rates for Unlicensed Assistive Personnel (UAP) by State

State	Certification Exam Cost	Pass Rate	Interviewee Comments
AK	Free	100%	"Very basic" exam, 5 to 10 questions on medication rights
CA	Free (DDS)	97%	DDS pays
LA	Free	95%	Employer pays
MA	Free [a]	57%	
ME	Employer pays	92%	CRMA exam is 50 questions drawn from a pool of 100 questions. Questions "haven't changed in 10 years."
NJ	Not determined	≥90%	"Pretty high pass rate...upwards of 90 percent."
NM	\$45 - \$60	"Extremely high"	
TX	\$15	80%	"Probably around 80 percent overall."

[a] The certification test cost is covered by UAP's employer and allows for three attempts. After three unsuccessful attempts, the certification test cost is borne by the UAP.

Transcription skills. Six states—New Mexico, Oklahoma, South Dakota, Tennessee, Texas, and Utah—do not allow UAPs to transcribe HCP orders or pharmacy prescription labels. Interviewees and web sources in 10 states—California, Colorado, Florida, Maryland, Maine, Nebraska, New Jersey, New Mexico, Pennsylvania, and Tennessee—indicated that electronic medication administration record systems (eMARs) were in use by many providers. These systems electronically populate fields with HCP orders and pharmacy prescriptions, obviating the need for RNs or other care staff to transcribe them onto a paper MAR. A Florida service provider interviewed for the study estimated that eMARs were in use by 50 percent of providers in Florida. Although eMARs are not mandated by any state, they have been implemented to varying extent by providers in virtually all states (see Section 2.2.2 above, for more discussion on eMARs).

2.2.6 UAP Staffing

UAP Demographics

Official demographic information for UAPs administering medications is not publicly available for the 21 states interviewed for this study. Six participants representing Maine, Maryland, Alaska, Alabama, Pennsylvania, and California, offered their best estimate of the demographic profile of their UAP workforce. A director for a large-scale behavioral health and education services agency described Maine's UAP workforce as mostly women between the ages of 20 and 40, 75 percent white, with 25 percent of the workforce composed of New Americans. Healthcare professionals representing a Maryland developmental and behavioral health services agency emphasized that many UAPs speak English as a second language. A representative from the State Department of Residential Licensing described the Alaskan Direct Service Professional (DSP) workforce as "predominantly New Americans from West Africa, Polynesia, and the Philippines," and "approximately 70 percent women overall," ranging in age

from 20 to 50 years. They added that women represent 95 percent of the workforce in Alaska’s assisted living homes. A representative from the Alabama Board of Nursing described their Medication Assistant Certified (MAC) workforce as predominantly women ranging from 18 to 70 years, with “many folks taking MAC positions as a second job, or after retirement.” Representatives from the Pennsylvania Office of Developmental Programs described their UAP workforce as “mostly women.” Results from a 2016 survey administered by the Indiana Association of Rehabilitation Facilities, Inc. (INARF) suggests the typical direct service professional is a 38-year-old single woman with children employed in the field approximately three years (Indiana Association of Rehabilitation Facilities, Inc. & The Arc Indiana, 2018).

The anecdotal information gathered in our interviews aligns with the UAP demographics published by Budden (2011b) in a survey study sponsored by NCSBN. Budden (2011b) surveyed 3,300 medication aides (licensed and unlicensed) working in community programs and residential settings across the country. Budden’s findings appear below in Table 12, Table 13, and Table 14. (Budden, 2011b)

Table 12. Average Age of Unlicensed Assistive Personnel (UAP) as Reported in Budden (2011b)

Number of Survey Respondents (n)	Mean Age	Standard Deviation	Minimum Age	Maximum Age	Median Age
3,300	45.13	12.85	18.15	84.68	46.61

Table 13. Unlicensed Assistive Personnel (UAP) by Gender as Reported in Budden (2011b)

Gender	Survey Respondents	
	Number	Percent of Total
Female	3,086 (91%)	91%
Male	309 (9%)	9%
Total	3,395 (100%)	100%

Table 14. Unlicensed Assistive Personnel (UAP) by Racial/Ethnic Background, as Reported in Budden (2011b)

Race/Ethnicity	Survey Respondents	
	Number	Percent of Total
Pacific Islander	14	<1%
Asian Indian	11	<1%
Asian Other	74	2%
Native American or Alaskan Native	58	2%
Black or African American	905	27%
Hispanic	238	7%
White	2,033	60%
Other	49	1%
Total	3,382	100%

UAP Shortages

Table 15 summarizes the average vacancy rate for unlicensed assistive personnel administering medication in community programs and residences. These rates suggest approximately one-third of UAP positions remain unfilled at community programs and residences that depend on unlicensed staff to administer medications across the reporting states of responding nursing facilities reported a staff shortage. Facilities in all 50 states reported staff shortages in every professional category, including registered nurses, clinical staff, aides, and “other” staff. Notably, 26 percent of responding facilities reported a shortage in aides, a category medication aides share with certified nursing assistants, nurse aides, and medication technicians (Ochieng & Chidambaram, 2022).

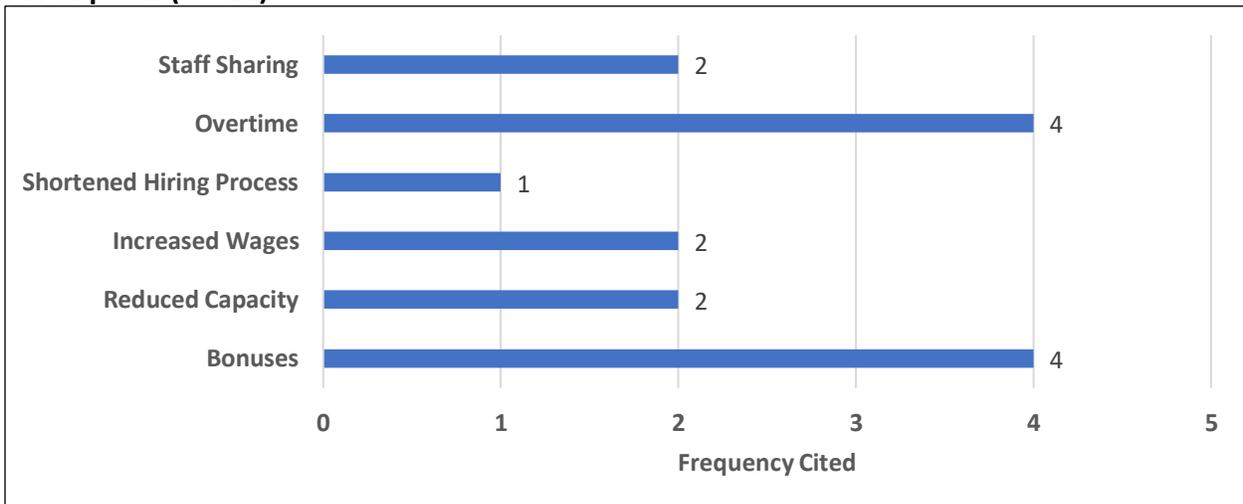
Table 15. Average Vacancy Rate for Unlicensed Assistive Personnel (UAP) Administering Medications in Community-care Settings

Number of States [a]	Mean Vacancy Rate (%)	Standard Deviation of Vacancy Rate (%)	Minimum Vacancy Rate (%)	Maximum Vacancy Rate (%)	Median Vacancy Rate (%)
8	30.75%	10%	15%	45%	32%

Five participants representing DE, ME, PA, MD, and AL offered an estimated vacancy rate during their interview. Articles were used to source vacancy rates for IN (Indiana Association of Rehabilitation Facilities, Inc. & The Arc Indiana, 2018), NH (O’Callaghan, 2021), and RI (Macris, n.d.)

In response to the worsening UAP shortage, providers and state agencies across 13 states have adopted several strategies to address the issue (Figure 1). Eleven interviewees representing eleven states provided data on this topic during their interviews. We also used published studies on the topic for Iowa (Iowa Association of Community Providers, 2022) and Indiana (Medicaid and CHIP Payment and Access Commission, 2022).

Figure 1. Strategies for Addressing Unlicensed Assistive Personnel (UAP) Shortage Cited by Participants (n = 13)



The identified strategies include payment of signing and/or referral bonuses, hourly wage rate increases, and a shortened hiring process to attract and retain UAPs; and mandatory or incentivized overtime and staff sharing to temporarily increase capacity. Providers in several states (e.g., Ohio) reported having to shut down some of their program sites due primarily to the UAP staffing shortages they were experiencing.

We also researched the career trajectory of UAPs that administer medications in community-care settings across 21 states. The majority (43 percent) of interviewees did not know enough about the career path for UAPs to opine on this question. Participants who were knowledgeable on the subject were evenly split between those who could (28 percent) and could not (29 percent) identify a career trajectory for UAPs. When a career trajectory could be identified, respondents emphasized the informality of UAP career development.

2.2.7 Medication Error Reporting

A growing body of research suggests that UAPs can safely administer medications in a variety of care settings, with no evidence to suggest that UAPs maintain higher error rates than licensed nurses. For example, Scott-Cawiezell et al. (2007) explored the relationship between credentialing⁷ and patient safety in five nursing homes. Distractions, interruptions, and medication error rates were compared across 44 medication administrations and 907 resident encounters. Researchers found no significant difference between error rates reported by RNs (34.6 percent), LPNs (40.1 percent) and UAPs (34.2 percent), with UAPs experiencing fewer interruptions and distractions during med passes.

Using a similar approach, Randolph & Scott-Cawiezell (2010) examined the relationship between credentialing and patient safety in long-term care facilities before and after UAPs were introduced. Prior to the introduction of UAPs, RNs and LPNs demonstrated error rates of 11.6 percent and 10.1 percent, respectively, with no significant difference between the two groups. Six months after the introduction of UAPs, error rates among RNs and LPNs fell to 2.8 percent and 7.3 percent, respectively, while UAPs had an error rate of 6.1 percent. With no statistical difference between error rates reported for licensed and unlicensed staff, this study provides additional evidence to support the conclusion by Scott-Cawiezell et al. (2007), that unlicensed staff are capable of safely administering medications.

To better understand the clinical significance of medication errors reported by unlicensed staff, Young, et al. (2008) observed 29 UAPs conduct 56 med passes in 12 assisted living settings. They found the average error rate to be 28 percent, which decreased to 8.2 percent when wrong-time errors were excluded. The average error rates by category are presented in Table 16.

⁷ “Credentialing” has been defined as a “formal process that utilizes an established series of guidelines to ensure that patients... are being treated by providers whose qualifications, training, licensure, and ability to practice medicine are acceptable.” (Patel & Sharma, 2022)

Wrong time errors aside, the top two errors by UAPs were wrong dose and omitted dose. Out of the 4,866 observed medication administrations, just three errors were identified as potentially “clinically significant,” further supporting the standard of safety upheld by UAPs during medication passes.

Table 16. Distribution of Observed Medication Error Types as Reported by Young, et al. (2008)

Type of Medication Error	Percent of all Errors Observed (n = 1,372)
Wrong Time	70.8%
Wrong Dose	12.9%
Omitted Dose	11.1%
Extra Dose	3.5%
Unauthorized drug	1.5%
Wrong drug	0.2%

During our own interviews, participants representing 21 states were asked whether the medication error rate is a reasonable way to assess the quality of medication administration in community care settings. Forty-three percent of respondents representing 15 states did not know whether the medication error rate would reasonably measure the quality of administration. Participants representing two states (Alaska and Pennsylvania) responded “No.” Nineteen percent of respondents representing 4 states (Alabama, Delaware, Louisiana, and Maine) responded “Yes.” Fifty-seven percent of respondents representing 12 states did not know how the public might access this information, and 42 percent of respondents representing 9 states said this information is not available to the public to the best of their knowledge.

Six participants representing California, Pennsylvania, Alabama, and Alaska expressed concerns regarding medication error reporting in community-care settings in their states. The following anecdotes underscore the importance of a standardized medication error reporting system that incentivizes transparent reporting:

- In Alaska, one representative from the Department of Residential Licensing described widespread hesitancy to call for emergency assistance in response to a medication error and/or negative medication response. To address “excessive” call outs, resource-strapped emergency medical services began issuing \$500 fines to physical addresses that generate more than eight “nuisance” or non-emergency calls per year. According to the respondent, this policy has created a disincentive to call for help, leading to negative health outcomes among residents.
- One representative from the Alabama Board of Nursing explained that the medication error rate is “helpful” but pointed to other mechanisms that ensure quality medication administration in residential settings. The representative went on to explain that the state proactively monitors medication administration in residential settings by conducting a formal review of documentation, procedures, medication administration records, and medication storage every six months.

- Representatives from the Pennsylvania Office of Developmental Programs expressed concerns that the state relied too heavily on the filing of individual medication error reports without tracking the number of medications administered in community-care settings. Without this information, “we don’t know the magnitude of the error,” one representative remarked.
- A specialist from California’s Direct Service Professional Workforce Development Team shared that medication error rates may be distorted by what may be pervasive underreporting by agencies and/or direct service professionals.

3 STAKEHOLDER PERSPECTIVES ON THE MASSACHUSETTS MEDICATION ADMINISTRATION PROGRAM (MAP)

3.1 Methodology

We used a multipronged approach to assess the design, operation, and outcomes of the Massachusetts medication administration program (MAP). Our approach involved: (1) conducting a series of semi-structured interviews with program stakeholders, including EOHHS agencies (DDS, DMH, DCF, and MRC), MAP coordinators, health care providers, pharmacists, community service providers, MAP-certified direct care workers, supervisors, program managers and other staff, and service provider organizations, such as the Association of Developmental Disabilities Providers (ADDP), the Association for Behavioral Healthcare (ABH), and the Children's League of Massachusetts; and (2) surveying MAP-certified direct care staff via email. The key objectives of this data collection were to describe how MAP is currently operating and to identify areas for improvement. More specifically, we wanted to gain a better understanding of the following factors:

- Mechanics of medication administration procedures under MAP.
- Challenges faced by direct care staff attributable to MAP policies and procedures.
- Patient safety outcomes.
- Pros and cons of different approaches to streamlining medication administration.

We conducted the interviews either in person at the provider’s site or via video conference (MS Teams or Zoom). For the service provider interviews, we aimed to recruit a sample representing different care settings, types of programs, population served, and geography. We also tried to interview providers viewed to be struggling as well as those that are performing well, according to the EOHHS agency representatives we interviewed. At each provider site selected, we spoke with multiple staff, including program managers, MAP-certified direct care staff, onsite RNs/LPNs, house supervisors, site managers, and administrative personnel. Where feasible, we also observed how med passes were conducted. Table 17 presents an anonymized list of stakeholders we interviewed, by Agency. We visited a total of 29 provider sites for these interviews—11 were DDS, 6 were MRC, 5 were DCF, and 7 were DMH. We also met with other stakeholders including chief medical officers, a closed-door

independent pharmacy serving a large number of provider sites, and MAP testing company representatives.

Table 17. Anonymized List of Stakeholders and Programs Interviewed, by Type

Agency	Interviewee ID
DCF	DCF 1, DCF 2, DCF 3, DCF 4, DCF 5
	DCF Officer
DDS	DDS 1, DDS 2, DDS 3, DDS 4, DDS 5, DDS 6, DDS 7, DDS 8, DDS 9, DDS 10, DDS 11
	ADDP Officer
	DDS MAP Coordinator
DMH	DMH Regional MAP Coordinators
	ABH Officers
	DMH Officer
	DMH 1, DMH 2, DMH 3, DMH 4, DMH 5, DMH 6, DMH 7
MRC	MRC Officer
	MRC 1, MRC 2, MRC 3, MRC 4, MRC 5, MRC 6
Other	Retired RN
	ME Company Representative
	PA Provider Representative
	Focus Group of Medical Officers
	Company MAP Trainers
	PelMeds Pharmacy
	MAP Testing Company Representative

Based on insights and information gained through these interviews, we developed a brief questionnaire to be administered online to MAP-certified direct care staff (see Appendix B for the survey instrument). We obtained the survey sampling frame from D&S Diversified Technologies LLP (D&S), the company contracted by the state to provide MAP testing and certification services. D&S provided us with a list of individuals with active MAP certifications as of May 20, 2022, and their email addresses.⁸ We launched the survey on June 13, 2022, by sending email invitations to all 20,070 individuals on this list. Of the 20,070 emails sent, about 1,800 were undeliverable.

As of June 28, 2022, we received a total of 2,740 responses from people with active MAP certifications (approximately a 13.6 percent raw response rate).⁹ Of these 2,740 responses, 1,484 (54.2 percent) were from direct care staff. Another 5.6 percent were from per diem staff and relief staff (Table 18).

Table 18. Survey of People with Active MAP Certification: Distribution of Respondents, by Job Title

Respondent Job Title	Count	Percent of Total
Administration staff	149	5.4%
Direct care staff	1,484	54.2%

⁸ D&S also maintains the Massachusetts MAP Registry.

⁹ Another 39 responses were from people who said they did not have a current MAP certification (29) or who did not answer that question (10).

Respondent Job Title	Count	Percent of Total
House supervisor	175	6.4%
Licensed practical nurse (LPN)	11	0.4%
Other	278	10.1%
Per-diem staff	41	1.5%
Program manager	368	13.4%
Registered nurse (RN)	9	0.3%
Relief staff	112	4.1%
Site manager	56	2.0%
No Response	57	2.1%
Total	2,740	100%

Source: ERG Survey of People with Active MAP Certification, June 2022.

3.2 Results

3.2.1 Approaches Adopted to Streamline Medication Administration by MAP-certified Direct Care Staff

MAP-registered care providers use many different electronic systems to populate their MARs (i.e., med sheets). MedSoft, the state-provided electronic system, was created to generate MAP compliant MARs ; however, only a few providers whose sites we visited use this system. Most providers forego MedSoft for a third-party system, and some of the sites that do use MedSoft reported that it is difficult to work with. DCF 2 and DDS 3 both told us that there have been times when the system failed to save hours of work, and two other providers whose sites we visited reported similar problems. MRC 5 indicated that they have been using MedSoft for one-and-a-half years, and even with knowledge of the software, it is a challenge to use effectively.

Other providers use EHR vendors like eHana, Icentrix, MAP my Meds, Cx360, Therap, and others, to populate their MARs. These systems often have additional capabilities that MedSoft does not and allow for more comprehensive communication between staff within the system. Like MedSoft, these systems are used primarily to populate MARs, and providers that use third party vendors are willing to pay for systems that they find are more suited to their needs.

Even though MAP does not have explicit provisions for eMARs, DDS 7, DDS 8, and DMH 3 use electronic systems to perform, or assist with, their med passes. One site reported using an eMAR, Therap, for their med passes for years until DPH learned about it and briefly disallowed it. The site claimed that their system was necessary for them and provided benefits that increased site efficiency and safety. They eventually received a waiver to continue to use their electronic system. Their eMAR performs the same functions as a paper-based system, but because MAP was created as a paper-based system, MAP policy does not allow for electronic med pass recording. Our interviewees at this site expressed very strongly that this is an outdated policy. After they reworked their system to include certain details requested by DPH, DPH accepted it as MAP compliant and issued a waiver for its use. DDS 8 indicated that the only outstanding issue is that the eMAR does not have codes that identify when the client is at a day

program or a hospital, and that the system otherwise gives all the details necessary to be MAP compliant.

This residence reported several benefits from using this platform. The entire staff communicates important treatment-related information through Therap, and the managers can remotely monitor med passes to get real-time information regarding medication status. The staff reported that this feature of remote monitoring also helps to identify errors faster. Their platform also safeguards against many transcription errors and omitted signatures because on certain forms it will not let an individual proceed without filling in necessary information. They also believe that the system reduces med pass time, because it is much more organized than a paper system where an individual has to look for and identify correct forms within a binder and go back and forth among different sheets of paper to perform checks. They said that their eMAR made med passes “safer and easier to monitor.” They reported that their evening med pass takes 1 to 1.5 hours for a single staff administering meds to 13 clients, which is considerably faster than most programs we visited. Staff did not have a problem learning the eMAR or getting used to it. They reported having hired multiple staff who came from paper MAR systems, and that all preferred the electronic system.

Although this provider is a special case (in that DPH has not authorized the use of eMARs within MAP), most providers and programs that we visited are interested in using electronic systems to administer medications. Some nurses who had used eMARs in hospitals and now work with MAP were very enthusiastic about the idea of eMARs for medication administration. Many of our interviewees believe that eMARs would alleviate some of the pressure from med passes, make the job more enjoyable, more organized, and allow direct care staff to spend more time with their clients. This could be especially beneficial given the staffing crisis felt throughout these communities. However, it was not universally accepted that an eMAR med pass module would be a benefit to every program. DCF 2, DCF 3, and DMH 1 felt that an electronic med pass system might have too high a learning curve to make the software worth it. DMH 1 and DCF 2 specifically noted that most direct care staff take these jobs because they want to work with people requiring care, and not with electronics. They also noted that their residences are small, and their paper documentation is manageable; they do not see an immediate need to introduce a new system that could confuse MAP staff.

Some interviewees and physicians expressed concerns about a mandated state-wide system, specifically mentioning that a one-size-fits-all approach is not appropriate, would interrupt procedures that individual providers have in place, and would eliminate their flexibility to choose a system that best suits the needs of their programs. DDS 8 stated that a mandated system would push them “over the edge,” as they are happy with their current system and cannot imagine switching. Further, physicians suggested that picking one system for the entire state could be met with pushback, and that it is difficult to find one electronic platform that fulfills the needs of all programs.

Most providers did not apply for the waivers that allow pre-pouring medications and use of the EpiPen and insulin. Sites reported that pre-pouring medications by a MAP-certified

direct care staff, to be administered by a non-MAP-certified staff, could put client’s health in jeopardy, and was seen as extra work as compared to a scenario where MAP-certified staff prepared and administered medications all at once. Contrary to most sites, MRC 4 took advantage of the guidelines to allow pre-pouring of medications and would like to see the policy extended indefinitely with additional guidelines. They fear that the expiration of this waiver would put more burden on their staff and exacerbate current staffing issues. DDS 5 also pre-pours medications under the COVID flexibility and is concerned that when the flexibility expires stress will rise among staff and could lead to staff members leaving.

Finally, we also asked our interviewees about the use of medications pre-packaged together by the pharmacy for each client taking multiple medications—often referred to as multi-dose packaging. Responses varied, but there was uniform agreement that, where applicable, multi-dose packaging could be a good thing. The major concerns raised were in situations where clients are frequently changing medications. One physician from a focus group of medical officers believed that multi-dose packaging would be good in populations whose medications are relatively stable, but there would have to be flexibility in the system. This sentiment was echoed by DDS 11, who believed that once a resident was stable, they should qualify for multi-dose packing. There was some concern about a multi-dose packing system leading to increased waste when medications change and the whole pack would need to be discarded. Some service providers we spoke to have experience with multi-dose packaging and found that system to be very effective. MRC 4 used to use multi-dose packaging systems and reported missing that system. Another provider, DDS 7, is pilot testing a multi-dose packaging system with bar-code scanning via PelMeds Pharmacy and is optimistic that this system will reduce their med pass time. As of this writing, this and three other pilot tests are ongoing, and initial reports are promising. See discussion of PelMeds on p. 76, below.

Table 19 presents select comments from our interviewees regarding eMARs and pharmacy-prepared, pre-packaged multi-dose medications.

Table 19. Comments on eMARs and Use of Pharmacy Pre-packaged Multi-dose Medications

Source	Comment
MRC 3	If they had something which alerted them if a med was going to be missed that would reduce 70% of their medication occurrences.
MRC 4	Automation would relieve stress placed on the staff.
DCF 3	Everyone misses multidose packaging.
DDS 11	Once residents are stable on their medications for a certain period of time then they should qualify for multipack.
DDS 3	MAP database [In MedSoft] is not so smooth.
DDS 8	"It [Therap] is safer and easier to monitor."

3.2.2 Practice of Medication Administration by MAP-certified Direct Care Staff

Generally, people in supervisory-level positions, such as house managers, MAP coordinators, or RNs, check in medications when they arrive monthly from the pharmacy. They check pharmacy labels against HCP orders for discrepancies with another staff member, then enter that information into each resident’s monthly medication sheet. Providers have varying

protocols for populating medication sheets depending on the system they use, but most involve inputting HCP orders into an electronic system that generates a med sheet ready for print. Medications are secured behind a locked door or in a locked cabinet, depending on the program.

In most cases, medications are prepared in a room, away from clients. However, some sites do not have large enough private spaces in which to prepare medications, which leads to preparations taking place in a public space. At DDS 1 and DDS 2, MAP staff do their checks and medication preparations on the kitchen table. This has led to hotline calls at both programs when residents, without direction, took a cup filled with medications from the table while the MAP staff on duty was attending to a matter requiring immediate attention. Due to staffing shortages, it is not uncommon for staff to step away briefly during a med pass to attend to another duty or event arising at the site, especially if they are the only direct care staff on duty. DDS 5 offered the following insights to the difficulties of performing direct care staff duties while administering medications:

- “Given the staffing shortages, we are only one person on shift. We cannot provide adequate supervision while we are also trying to follow burdensome regulations for med passes.”
- “The additional time it takes to prepare and pass meds means the clients suffer in other areas not getting the full attention they deserve.”
- “[MAP] delays activities that are important to the individuals.”
- “Here’s an example... several if not all residents are being picked up between 7:30-8:00 AM for day programs. Per regulations, medications cannot be administered until 7 am at the earliest. Per regulation, the staff cannot pre-pop the medications, and must administer one individual’s medications before beginning to pop another resident’s medications. Passing a single resident’s medications per MAP regulations can take 15-20 minutes, or longer if they have a lot of medications. It could take upwards of 1.5 hours to administer all medications. By this math, it would be impossible to administer medications to all individuals in time for them to leave for day programs. To further complicate matters, this single staff person is also responsible for preparing breakfast, assisting individuals with their morning routines, and completing other required duties, in an effort to be done before their shifts ends.”

Of the 19 MAP staff at DDS 5, 15 indicated that performing a MAP-compliant med pass interferes with or prevents them from fulfilling their duties as direct care staff. One staff member at DMH 3 indicated that it is difficult to prioritize med passes and follow MAP policy when their primary role is helping residents. They mentioned a time when they were preparing medications and a physical altercation started in the house. They followed MAP procedure and stored the medications that were out before leaving the med closet, but this delayed stopping the altercation.

Interviewees reported that morning med passes take anywhere from 10 minutes to 1 hour per resident. This is dependent on how familiar the MAP-certified direct care staff member is with the site and its residents, how many medications each resident has, whether MAP policy is being strictly followed, and if there are any unforeseen interruptions. Because medications can be administered up to an hour before and after a scheduled med pass, MAP staff have two hours maximum to complete their med passes. Nine sites (DDS 1, DDS 3, DMH 1, DMH 2, DDS 5, MRC 2, MRC 6, DCF 3, and DCF 5) indicated that it is common for a morning med pass to take the full two hours. This results in MAP staff commonly skipping the label check steps to ensure that they can complete a med pass on time. MRC 2 indicated that if they strictly followed MAP procedure, a morning med pass would take three hours, and similar sentiments were echoed by other providers who complained that the rigidity of MAP makes it unnecessarily time consuming. Other programs employ other strategies to save time on med passes; DCF1, DCF 2, and DDS 5 reported prepacking medications (against MAP policy), to ensure that they can complete a morning med pass. Table 20 presents stakeholder comments on how they or their coworkers need to cut corners with respect to MAP procedures.

Table 20. Stakeholder Comments on Cutting Corners on Med Pass Procedures

Source	Comment
MRC 1	Staff often don't check orders, but only go off med sheets - "pop pop pop and go on their way"
DDS 5	MAP has created a system that they can't use as directed, that forces people to cut corners
MRC 5	"...it's common for staff to not read doctor's orders"
MRC 6	"When someone has been in the house for a while and knows the residents, they skip checks"
DMH 3	Staff are "definitely" cutting corners during med passes. More often than not, the staff look at the med sheet and the pharmacy label, and don't check the doctor's orders
MRC 2	Corners are definitely cut during med passes
DMH 5	"There is a reasonable group that pick up meds...and just administer the meds with the med sheet"
DMH 4	Sometimes staff don't have time to do all necessary checks
MRC 2	Impossible to give out meds during required period if all checks are done

At times, med passes can frustrate clients as well as MAP staff. A staff member from DDS 10 reported that "residents know when MAP is failing them." From our survey of MAP-certified personnel, we found that 34 percent of respondents who usually administer meds experience clients getting frustrated or upset because of how long it takes to perform a med pass (Table 21).

Table 21. Do Clients Ever Get Upset or Frustrated by How Long it Takes to give Them Their Meds?

Response	Count	Percent of Total [a]
No, never	1498	65.0%
Yes, regularly	58	2.5%
Yes, sometimes	733	31.8%
No Response	16	0.7%
Total	2,305	100%

Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022

[a] Percentages may not add up due to rounding

Additionally, we found that nearly half (45 percent) of all MAP staff who administer medications on a regular basis administer between 6 to 9 medications per resident (Table 22), and 64 percent administer medications to 3 to 5 residents per med pass (Table 23). This means that a median med pass for MAP-certified direct care staff consists of between 18 to 45 medications. This is in line with what we heard from our stakeholder interviews, where most service provider sites had between 3 to 5 residents, with some variation in medications per resident, but usually between 7 and 10.

Table 22. Average Number of Medications Administered Per Resident

Response	Count	Percent of Total
Less than 3 medications per person	139	6.0%
3 to 5 medications per person	716	31.1%
6 to 9 medications per person	1,031	44.7%
10 to 14 medications per person	332	14.4%
15 to 19 medications per person	56	2.4%
20 or more medications per person	18	0.8%
No Response	13	0.6%
Total	2,305	100.0%

Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022

[a] Percentages may not add up due to rounding.

Table 23. Number of Residents MAP Staff Administer Medications to on an Average Med Pass

Response	Count	Percent of Total [a]
1 or 2 people	196	8.5%
3 to 5 people	1,470	63.8%
More than 5 people	634	27.5%
No Response	5	0.2%
Total	2,305	100%

Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022

[a] Percentages may not add up due to rounding.

In some cases, residents might self-administer their medications. To qualify for self-administration, residents must “demonstrate an ability to take medications independently.” Even though MAP policy officially encourages individuals to self-administer when possible, only a small number of service providers we visited had residents who self-administer. Administrative staff from DDS 5, MRC 3, MRC 6, and DMH 2 all believe that in practice MAP does not support residents to self-administer and does not give providers clear guidelines to implement self-administration for their residents (Table 24).

Table 24. Selected Comments from Site Visits About Self-Administration

Source	Comment
DMH 2	Some clients are learning to self-medicate, but they only receive a limited number of doses, which inconveniences them, forcing them to come back for more.
DDS 5	MAP does not support staff to support clients.
DDS 5	MAP does not encourage clients to be independent and self-administer medications.
MRC 3	There needs to be more guidelines for allowing residents to self-administer meds.
MRC 6	It is hard to encourage self-administration while still following MAP.

These providers would like to see more guidelines, especially for the phase between self-administration and direct administration, as well as on liability policies regarding self-administration.

3.2.3 Common Issues Encountered by MAP-certified Direct Care Staff during Medication Administration

Reconciliation of Health Care Provider (HCP) Order, Pharmacy Label, and Medication Sheet

One of the most time-consuming aspects in MAP procedure is addressing discrepancies between pharmacy labels and HCP orders. This is a problem that every residence deals with, oftentimes for labeling issues that “don’t matter [for safety]” (MRC 5). Labels need to be changed if there is a spelling error, or if a pharmacy label does not match up word for word with HCP orders, a policy that many find unnecessarily rigid, and one which can require a lot of time to fix. MRC 1 and DDS 5 indicated having to go to the pharmacy in person once a week to fix label discrepancies. When an order needs to be clarified or re-written, it usually takes a minimum of a few hours and a few phone calls. Once reached, HCPs often do not understand why orders have to be written a certain way, or why they need to write a prescription for an over-the-counter medication such as bacitracin, and this back and forth commonly creates friction between MAP and physicians. This problem is compounded by the fact that many physicians have moved to working remotely at least part time, often do not have access to a fax machine, and cannot fax new orders to the residences. The problem of HCPs not integrating with MAP is so pervasive that MRC 6 reported having one of their HCPs flat-out refusing to write MAP compliant orders. As a result, MRC 6 felt compelled to seek out a new HCP for that client. DDS 5 reported that it can take over a week to fix orders, and MRC 1 reported that “95 percent of the time, doctor’s orders are not MAP compliant.” Programs also only have 72 hours to get an HCP’s signature following a telephone order, which could be a difficult time frame to accommodate, particularly on a Thursday or Friday. For most programs, compliance with MAP required practices with regard to HCP orders and pharmacy labels evidently consumes too much program staff time, energy, and morale.

It is especially difficult to obtain MAP compliant orders after a client’s hospitalization. MAP policy is that discharge from a medical facility cancels all previous orders. This means that the medication prescribed for the client before they were hospitalized must be re-prescribed by their HCP, which requires staff to obtain reissuance of all previous orders. This is described as a “nightmarish scenario” (DMH 2). Some HCPs at medical facilities, particularly those serving in emergency rooms, do not follow MAP policy or write MAP-compliant orders, and getting these orders can take a full day at the hospital for a staff member. If there is an issue with an order, and it is not recognized until the staff and resident are back at their own residence, the prescriber might require a return visit to adjust the paperwork, lengthening the process, and potentially delaying the client’s medication. Getting orders corrected after a hospital visit takes a full workday for staff at some programs, if not longer, depending on response time from providers. This places an undue burden on staff and potentially causes missed doses of medication, an outcome inimical to MAP’s mission of fulfilling clients’ five rights.

Table 25 presents comments about HCP orders and MAP from interviews we conducted with MAP staff at all levels at program sites.

Table 25. Select Stakeholder Comments Regarding HCP Orders and MAP

Source	Comment
MRC 1	"95% of the time doctor's orders are not MAP compliant."
MRC 1	Doctors do not want to deal with the rigidity of MAP.
MRC 1	There are times when they don't have a correct order from a physician but have a resident who needs medications. According to MAP, they are not allowed to give that medication.
MRC 1	The 72 hours telephone timeframe is difficult, especially if it is happening against a weekend.
DMH 2	"Discharge orders are very, very, challenging."
DMH 2	One staff must spend a whole workday working with hospital staff and providers to fix discharge paperwork to meet MAP requirements.
DDS 5	Need for signed papers causes delays in care, medication administration.
DDS 5	Staff are responsible for getting doctors to be compliant with MAP, which creates friction between staff and healthcare orders.
DDS 5	Staff sometimes can't get important medications in a timely manner after hospital visits.
DDS 5	It has taken as long as 3 months to get a prescription from a doctor.
MRC 3	"Healthcare providers don't care about MAP."
DDS 7	Doctors do not understand MAP process.
MRC 6	Back and forth with healthcare providers places a burden on residence staff.
MRC 6	Discharging from a hospital is difficult because of how long it takes to reconcile meds.
DMH 3	It's difficult to get doctors to sign forms.
DMH 3	After hospital care is very difficult, and they average 1 hospitalization per week.
DMH 3	Obtaining forms from doctors' visits is incredibly difficult.
MRC 2	Healthcare providers don't understand MAP and do not follow MAP requirements.
DMH 7	If they get a phone order and they don't get the required signature within 72 hours, the quickest option to get a doctor's signature might be scheduling a new appointment
DMH 4	MAP's rigidity limits independence because they might have trouble getting doctor's orders to send meds home
MRC 2	Doctors are trying to make everything paperless [e.g., mychart] but MAP has to be paper
Medical Officers Focus Group	Significant time is wasted faxing orders back and forth because they are "not correct" because MAP syntax wasn't followed.

During our interview with a panel of chief medical officers, we heard similarly that MAP documentation is too rigid and inflexible. HCPs do not have time to review complicated documentation, and much time is wasted faxing orders back and forth. One physician said that MAP needs to trust that they have a reason for prescribing something, even if it is not detailed to a level of specificity required by MAP on their order. Another physician reported that the burden of this paperwork has decreased the willingness of certain providers to see the people they serve. They also voiced difficulty with emergency room and hospital visits, where sometimes a physician will put in a prescription without signing anything. This leads to staff following up with the client's outpatient provider, and sometimes this physician will not sign an order from a different doctor, leading to more phone calls, and two busy providers who are unwilling to sign what they see as frivolous paperwork.

One medical officer indicated that “we are routinely asking emergency rooms and hospitals to do something they are not familiar with.” These officers suggested that MAP should allow its staff to administer medications based on the orders that hospitals produce and be able to resolve small clerical errors either internally or directly with a pharmacy. Additionally, they indicated that there was too much emphasis on getting signatures from a PA, NP, or physician, and that nurses should be able to sign orders at medical offices. These changes would decrease the amount of confusion from providers (and MAP staff) about what needs to be signed, what needs to be filled out, who is qualified to sign what, whether electronic signatures are acceptable, and other details viewed as being unimportant by healthcare providers. Their belief is that these changes would ultimately not only make MAP more efficient, but would also make it safer, and create a healthier relationship between MAP staff, their clientele, and physicians.

OTC and PRN Medications

At MAP-registered sites, many over-the-counter medications (OTCs) require a doctor’s order or prescription, and many are prescribed to be taken as needed (*pro re nata* or PRN). Specific aspects of MAP policies addressing OTCs and PRNs have resulted in difficulties that were frequently raised by MAP staff, supervisors, and physicians we interviewed.

Under MAP, any product with drug facts on the label or an active pharmaceutical ingredient needs a prescription. Program staff are having a hard time getting doctors to write prescriptions for products that are usually bought over the counter. Typical examples are NSAIDs, bacitracin, laxatives, and cough medicine, though sometimes items that most people would not think of as drug products, such as moisturizing cream, require a pharmacy label, if they serve medical purposes.¹⁰ DDS 5 reported needing to get a pharmacy label for lactose-free milk, Chapstick, and Vaseline. For these types of OTC medications, it is sometimes difficult to get a doctor to write a prescription, especially a MAP-compliant one. Doctors often do not specify why something is being prescribed if it seems like common sense to them. Tylenol, for example, might be prescribed “for pain,” or bacitracin might be prescribed to be applied in “small amounts,” but program staff have been told that neither of these orders is specific enough for MAP and hence not MAP compliant. DCF 2 indicated that in situations like these, it feels like MAP contradicts common sense. MRC 4 said that delays in obtaining OTC medications are such that sometimes symptoms will clear before they have a MAP-compliant medication order. Other times, a resident may be experiencing back pain (for instance), and even have a prescription for acetaminophen, but the prescription specifies that it is for hip pain (in compliance with the MAP policy on specifying the purpose of the medication). In such a situation, MAP staff have to make an awkward decision: to comply with MAP and withhold the

¹⁰ MAP specifically excludes insect repellent, sunscreen, and personal hygiene products from designation as drug products. FDA’s general definition of “drug” is: “A drug is defined as: 1) a substance recognized by an official pharmacopoeia or formulary, 2) a substance intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease, 3) a substance (other than food) intended to affect the structure or any function of the body, 4) a substance intended for use as a component of a medicine but not a device or a component, part or accessory of a device. Biological products are included within this definition and are generally covered by the same laws and regulations, but differences exist regarding their manufacturing processes (chemical process versus biological process)” (U.S. Food and Drug Administration, 2017).

medication—which they know to be safe for this client—until a doctor changes the order or originates a new one; or to give the medication to treat the client’s pain, knowing that this comprises an MOR.

OTCs can also be very expensive to patients because many of them are not covered by insurance, are paid for out of pocket, and are then destroyed per MAP policy after one year (nearly always a year or two before the manufacturers’ expiration dates).

All the sites that we visited see OTC drugs under MAP as a problem, and all of them cited working with doctors as a difficulty (see Table 26 for select comments regarding OTC medications). Some sites recommended having a longer list of OTC medications that are exempt from MAP, and others suggested that nurses or other healthcare professionals should be able to use their own professional judgement to administer certain OTC drugs, or to delegate their administration.

Table 26. Select Stakeholder Comments Regarding Over-the-counter (OTC) Medications

Source	Comment
DDS 1	OTC medication policies are costly to clients, healthcare providers don't understand why they need a prescription for OTC medications such as Tylenol.
MRC 1	Trouble getting doctors to prescribe OTC meds.
MRC 1	They also waste a lot of OTC meds, which costs their residents a lot of money.
DMH 2	MAP requires an Rx for any PRN OTC treatments...this creates friction with providers, who have limited time to draft new orders. Some doctors "refuse to see our clients" due to MAP.
DDS 4	[Health care] Providers don't always understand that they need to issue a prescription for OTC meds. This is a challenge.
MRC 3	They cannot use stock medications like a bottle of Tylenol but wish they could.
DCF 2	MAP should allow some flexibility for over-the-counter drugs such as Tylenol, and at times common sense should supersede MAP policy.
MRC 4	MAP leads to delays in how quickly they can get OTC meds to clients.
MRC 6	They had an older HCP who refused to prescribe OTC medications, and they needed to switch providers as a result.
MRC 6	They are especially frustrated with Tylenol and bacitracin.
DCF 3	MAP compliance results in high rates of medication waste.
DDS 10	Need standing orders, especially for OTCs.
DDS 10	Sometimes they just buy an OTC for a client at CVS.
DCF 5	Specificity required for purpose of OTC meds is problematic.
MRC 2	OTC prescriptions lead to a lot of waste.
DDS 9	OTC meds can be challenging, doctors don't understand that they need a prescription.

3.2.4 MAP Training and Certification

Direct care employees desiring MAP certification in Massachusetts must take a 16-hour training course taught by a certified MAP instructor based on the MAP curriculum *Responsibilities in Action*, a workbook/textbook of 270+ pages. Candidates must also pass all three parts of the state examination: (1) the Knowledge test, a set of 50 multiple choice questions; (2) the Transcription test, which tests the candidates’ ability to manually transcribe a prescribed (or OTC) medication, or a change in a medication order, onto the client’s Med Sheet,

which is the day-to-day record of medications administered; and (3) the Medication Administration (or Med Pass) test, during which the candidate must demonstrate that they can follow MAP procedures without error when administering medications to a client.

The American Red Cross administered these tests until July 2011, when DPH contracted D&S to conduct the testing. The transcription and med pass test sections involved evaluating candidates as they handled packaged “drug products,” reconciled doctors’ orders, pharmacy labels, and med sheet transcriptions, and recorded their simulated administration of the ersatz drug products on client “med sheets.” Because these tests did not lend themselves to online administration, D&S apparently assigned proctors to test sites to evaluate candidates’ performance on these sections of the test. For the transcription and med pass, the med sheets filled out by the candidates were often scanned and emailed to D&S for evaluation.

Governor Baker declared a state of emergency due to the COVID-19 pandemic on March 10, 2019. Before then, MAP training was done in a classroom setting over two to four days. Employers paid candidates for their time in class and paid the state-certified MAP instructors for their services. Some of the larger providers had their own instructors on staff and held classes in their own buildings. At the height of the pandemic, all training was suspended while DPH, on an emergency basis, organized an online, self-directed training course. Meanwhile, D&S developed methods to conduct all testing online. After a two to three month suspension due to the pandemic, online training and testing began in late May 2020.

The compromises that had to be made to eliminate in-person contact during MAP training and testing occurred during a crisis in residential community care services, when MAP workers sometimes had to be quarantined in their workplaces or work two or more consecutive shifts. DPH suspended MAP recertification deadlines and generated several flexibilities in MAP policies and procedures that were meant to alleviate some of the burdens caused by the pandemic. The shift to online training and testing did enable the addition of some new MAP-certified direct care staff but has also been the focus of criticism from MAP trainers, program and company administrators, and MAP certification candidates, as we discovered in the course of our interviews.

Over 100 service provider employees, EOHHS agency officials, service provider organization representatives, and nurses that we interviewed were virtually unanimous in saying that the switch away from in-person instruction and testing prompted by the pandemic has created inequities that have exacerbated the staffing problems experienced by many MAP-registered providers.¹¹

¹¹ Notably, staffing shortfalls were not an issue for all of the programs where we interviewed. Two or three sites expressed relief that they were fully staffed, though one did express concern about remaining so in the near future. The staffing shortfall issue is discussed in detail in Section 3.2.5.

MAP Training

Once the pandemic waned enough in the summer of 2020 to allow for some degree of in-person communication, DPH enabled a “hybrid” type of training, i.e., a combination of online training and in-person support by a MAP trainer/instructor. DPH considers that a major benefit of the online training is that it provides consistent content for MAP trainees across EOHHS agencies statewide. Several EOHHS agency representatives interviewed suggested that when the training was all in-person, some MAP instructors had been concentrating on some parts of the curriculum and glossing over others, or recommending actions not entirely congruent with MAP policy, and that there were training inconsistencies that made MAP certification less portable across providers and agencies.

MAP training is based on the workbook/textbook *Responsibilities in Action*, which has evolved over the years and was most recently revised in 2020 by DDS nurses Carolyn Whittemore and Gina Hunt, with input from a panel of experienced MAP instructors. The recent revision has clarified and rewritten much of the content, but it is possible that subsequent events—namely, the incorporation of many MRC sites and additional DCF sites as MAP registrants, the labor shortage since the first pandemic summer of 2020, and the reported increase in the proportion of entry-level direct care staff for whom English is a second language (ESL)—have inspired calls for some changes in the core curriculum. As mentioned above, MAP training and testing were the topics of primary concern for many of our interviewees. They consider that the problems they perceive with MAP training and testing are inextricably, if not causally, related to problems such as low pass rates among their new hires, direct care staffing shortages, high turnover rates, and higher levels of stress among direct care personnel. Table 27 presents the comments we received on MAP training from our interviewees at the 29 programs we visited. Their comments are aggregated into categories based on their content.

As can be seen from the tables, there were more comments on the online training—which was prepared and rushed into service just a few weeks after the pandemic put a stop to classroom learning all over the Commonwealth—than on any other topic related to MAP training. Although many companies now supplement the self-directed online training with instructor-led virtual classes, in-person classroom sessions, or remedial sessions, some of the smaller providers still rely primarily on self-directed online training to prepare direct care staff for the certification exam. Other comments on MAP training were related to its complexity and relevance for the job. Interviewees also commented on the difficulties encountered during training by direct care staff for whom English is a second language and those who are not computer experienced.

MAP Testing

As mentioned above, up until July 2011, MAP testing was carried out by the Red Cross, and since then by D&S, a national online test administrator headquartered in Montana, with their online testing center operated out of Ohio. The major issue that program interviewees noted with testing is the relatively poor rate at which their recent hires are passing the test. Table 28 presents the comments we received on MAP testing from our interviewees at the 29

programs. Many of the interviewees' concerns were related to low pass rates, inclusion of tricky questions that are especially challenging for ESL individuals, high pass thresholds for the skills portion (medication administration and transcription), and anxiogenic aspects of testing that deter staff from seeking MAP certification. The sections below address some of these topics in greater detail and provide further examples.

MAP Certification Test Pass Rates. In Table 27 and Table 28, below, we present numerous interviewee comments emphasizing the difficulties that providers face in getting newly hired direct care staff certified. Even though a couple of providers reported high first-time pass rates and no trouble with multiple failures, these were exceptions among those we interviewed at the program sites visited. As can be seen by the comments presented in Table 28, estimates of the rate of test passing by first time test takers ranged from "almost nobody," "very rare," and "roughly 10 percent," to "most" staff fail, 50 percent fail, and 75 percent fail. Given that the number of program sites we were able to visit comprise a small percentage of all MAP-certified sites in Massachusetts, we also requested statewide data on MAP certification test pass/fail rates from the testing contractor D&S.

Table 27. Stakeholder Comments Related to MAP Training, by Category

Comment Category	Source	Comment
Online Training	Ind. Trainer	"In person is easier." "[UAPs] have two weeks for the training but are so slow we are always chasing them."
	DDS 2	Online training was "atrocious."
	DMH 1	Online training has "so many flaws." Students do better with in person.
	DMH 1	A majority of students drop out of online training.
	DDS 3	Supervisors and nurses try to provide one-on-one training.
	DDS 3	"It's a lot to ask of someone to teach themselves."
	DDS 5	[Interviewees at DDS 5 had no positive feedback about online MAP training.]
	DDS 5	Staff can't focus on training, difficult to self-direct training.
	DCF 2	People have preferred in-person training to online.
	DCF 2	"More people do better when they are live." People don't get discouraged.
	DDS 6	Hybrid training is best; with online-only, [staff] have to do the work themselves, pass quizzes before advancing.
	MRC 4	With online training only, it is hard to stay focused, ask questions.
	MRC 5	Online training is at staffer's discretion, trainers don't use it.
	DCF 3	Online MAP training was not well-received.
	Company Trainers	"It's a subject [i.e., MAP] that has to be taught in person."
	Regional MAP Coordinators	Has been getting conflicting information on in-person vs. online trainings. [There are] big problems with online training. Online training should be an option.
	Company Trainers	The online course prepares the student well for the knowledge portion of the exam.
	Company Trainers	Zoom classes try to get everyone done with the classes in two days.
	Company Trainers	There are less distractions in a face to face class, there are big limitations to online learning.
DDS 1	Some staff have difficulty accessing online training materials (due to not having a laptop, poor Wi-Fi access).	
DDS 9	Online training caused decline in pass rates.	
Relevance to Job	MRC 6	Transcription and curriculum are not relevant to what they do. Example: doctors' orders look nothing like an order MAP employees see in practice.
	DCF 3	There is a lot in the MAP training that is not relevant to their staff, leading to an elevated level of dissatisfaction and stress with the MAP training.
	DCF 1	"A lot more is taught and tested than is necessary for the job."
Complexity	MRC 3	There is too much information in the online course to hone in on what is important.
	MRC 3	Extensiveness of the curriculum is itself intimidating.
	DMH 1	Training is too complex for staff's duties.
	DMH 1	Training comprises "a lot of information in a short amount of time."
	DMH 1	Training has several layers of knowledge.
	DMH 1	Training should be simplified.

Comment Category	Source	Comment
	DDS 5	Training is much more difficult now than it used to be.
Policy	Regional MAP Coordinators	DDS is driving the bus, not enough collaboration with other agencies. Some aspects of the training are not applicable to other agencies.
Transcription	DDS 1	Transcription could be taught in house; it is barely used in practice and is often re-taught in-house because staff forget how to do it.
	DMH 1	The online transcription piece "has tanked my training," takes too much time.
	DMH 1	"In reality, none of our staff are ever going to do transcription."
	MRC 5	Would like an annual refresher in transcription as MAP staff use it seldom.
	DCF 3	The transcription requirement of the training is burdensome, as it's not something employees do.
	DCF 3	Training covers "a lot of stuff" too much time is spent on transcription.
ESL	Ind. Trainer	I give people [with ESL] a lot of credit." They deserve more reinforcement and don't always get it.
	DCF 1	Let people with ESL use translational apps or an ESL workbook or dictionary.
	MRC 4	Training/testing is difficult for those with English as a second language.
	MRC 5	90% of staff are originally from Africa.
	DDS 7	Electronic training and testing are tough for new hires, 90% are African or Haitian.
	DDS 3	A lot of staff have ESL, struggle with transcription.
Anxiety	DMH 1	Parts of the training emphasize risk too much.
	DCF 3	Training is stressful for staff; some have left because of it.
	DCF 3	Training is "nerve wracking."
Computer Inexperience	MRC 1	A lot of older ESL staff have trouble with computers and understanding instructions.
	DDS 6	Some staff have weak testing or lack computer experience.

Table 28. Stakeholder Comments Related to MAP Testing, by Category

Comment Category	Source	Comment
Pass Rates for First-time Test Takers	DCF 4	Most staff fail the certification test the first time they take it.
	MRC 2	"Let's have MAP trainers test and certify MAP staff." Pass rate is "not good."
	DDS 5	Roughly 10% of MAP students pass the MAP exam on the first attempt.
	DDS 1	First-time pass rate: unknown
	DMH 2	Almost no one could pass the state exam on their first attempt. "Very rare that they pass on the first go."
	DDS 2	"Very few" pass the test the first time.
	MRC 4	75% of staff pass their MAP certification on their first try, 95% pass rate overall.
	MRC 5	Initial pass rate is 50%.
Test Pass Rates	MRC 6	Estimated 50% pass MAP exams on first try.
	DDS 3	Pass rate has declined since online training started.
	MRC 4	Managers don't think the online test gives enough time, especially for those who do not use computers a lot.
People are Failed Arbitrarily	MRC 4	Note that with online testing there are no ways to ask questions in real time.
	DMH 2	If staff lose connectivity while they are taking the exam, they fail automatically.
	Company Trainers	One failure occurred because tester "didn't like the way someone crossed their "t"
	Company Trainers	Another failure because an individual wrote their initials "ss" and one of the esses looked like a 'j'.
	Company Trainers	A student was failed on the Med Pass because they wrote "8 am" to look like "8 an."
	DDS 6	[Trainer for DDS 6] was "100% confident" that one staff member would pass, but she failed transcription for using a pencil point to count squares on med sheet, which left faint tic marks or indentations in some squares. "Frustrating that she failed for something that seems immaterial."
	MRC 6	No-show rigidity is inconsistent and irritating.
Text Anxiety	DCF 5	One person failed med test by using the "wrong" initials.
	DDS 2	"People go in [to the test] with so much anxiety."
	DDS 2	Knowledge test failure rate is high due to anxiety, adult learner issues, ESL.
	DDS 6	"Lowering their anxiety level is a big thing" for trainees ahead of the test.
	DCF 5	Staff loses confidence with repeated failure.
	DMH 3	Biggest issue is ESL and test anxiety, issues with computers for older staff.
	DDS 2	"People go in [to the test] with so much anxiety."
	DDS 2	Knowledge test failure rate is high due to anxiety, adult learner issues, ESL.
Some Direct Care Staff Do Not Want to	DDS 6	"Lowering their anxiety level is a big thing" for trainees ahead of the test.
	DCF 5	Staff loses confidence with repeated failure.
Some Direct Care Staff Do Not Want to	DCF 4	Some staff knowingly fail the certification test; they are worried about making an inadvertent mistake during a med pass and getting 51(A)s.

Comment Category	Source	Comment
Administer Medications	DMH 2	"Why would they [staff] want to go through this aggravation?"
	DDS 2	They have "a group of people not motivated to pass."
	DDS 7	[UAPs are] Supposed to get certified in 6 months, just 10% do.
ESL	DDS 5	People with ESL face a significant barrier.
	MRC 1	Staff that have ESL have a harder time passing.
	DMH 2	Exam is more difficult for ESL folks (especially with more abbreviations) and those with different computer skills.
	MRC 4	Training/testing is difficult for those with English as a second language.
	MRC 5	Language is a hurdle, as 90% of new staff needing MAP cert. are African.
	DDS 7	Language and software problems.
	DDS 7	Computer training/testing harder for those with ESL, older trainees; folks are timing out – not quick enough to complete taking their time is important.
	MRC 6	Language is a big barrier for ESL students
	MRC 6	They don't have a lot of staff with ESL because they have trouble passing MAP.
	DMH 3	Biggest issue is ESL and test anxiety, issues with computers for older staff.
	DCF 5	"Tests are culturally biased, most [candidates] have ESL."
	DDS 11	Many MAP staff have ESL.
DDS 11	Some staff are deaf and have ESL, and there's virtually no way for them to pass the test.	
Knowledge Test	MRC 5	Knowledge test is a problem.
	DDS 9	Knowledge test is most often failed.
	DCF 5	Knowledge test is important, but a stumbling block.
	Company Trainers	Knowledge test is very tricky, questions should be re-evaluated.
	DCF 1	The knowledge test is vague questions where two answers could be right. [Questions about] count books, chain of custody, generics and brands - that is not med pass. We are still in the caring profession. What happened to letting the managers and the staff do this teaching? Why is the MAP program more important than the employees themselves?
Test Often Not Relevant to Job	MRC 1	The test does not actually prepare individuals for the complexities of an in-house med pass.
	DMH 2	"Hate to have staff do something in a simulation they would never do in real life." Transcription is done with pen & paper in the field.
	DCF 3	Standardized test is not very related to "what we do."
	DMH 3	Testing doesn't cater to specific disciplines or offer real world examples of what MAP is going to look like at the programs.
	DDS 11	Test is no longer focused on safety and meds, but a test of test taking.
	DCF 1	"A lot more is taught and tested than is necessary for the job."
	MRC 6	Med pass portion of the exam is the most difficult to pass.

Comment Category	Source	Comment
Medication Administration Test Module	DCF 5	13 of 15 staff just failed the medication test; most had passed Knowledge and Transcription.
	DCF 5	Med Pass test procedure is prone to tester error, too many variables and people involved.
	DCF 5	Requiring a 100% score is too high, many fail with 90% or 95% because of a technical error that would present no risk of harm to a client.
	Company Trainers	Med pass test should be more flexible about non-material mistakes.
Tricky Questions (Knowledge Test)	DDS 5	Often this [failure] is due to the hyper-specific language in the exam.
	DDS 1	Wording is unnecessarily tricky in Knowledge section.
	DDS 2	"People feel like the test is trying to trick them."
	DMH 1	5 years ago, the test questions were straightforward, now they get tricky on purpose.
	DMH 1	Questions are more like nurses' training questions.
	MRC 5	"Questions are designed from nursing school exams."
	MRC 5	"Tricky wording."
	MRC 5	"[People taking test] should be able to identify the answer."
	DCF 3	"Questions are tricky" especially challenging for ESL individuals.
	DDS 9	"It's almost like the test is designed to fail people."
	DDS 11	Test is not knowledge-based, is not conducive to passing, seems set up to fail people.
Transcription Module	MRC 1	Their MAP staff transcribe, and it's needed often because of how variable medications are.
	DMH 2	Completing the transcription section virtually is "impossible."
	DMH 2	Staff have had to hold their cell phone up to capture their movements during the exam, making it difficult to complete the transcription section, which requires extensive mouse and keyboard manipulation.
	Regional MAP Coordinators	People have a real hard time passing the transcription part.
	Company Trainers	Trainer C. says the only request [about the test] he has is to allow students to do transcription on paper, or at the very least, give them a better program.
	Company Trainers	Trainer C. said that Transcription test was on paper for a year into Covid before it went online.
	DDS 3	D&S stopped allowing scanned paper transcriptions in June 2021.
	DDS 6	Transcription toughest to pass.
	MRC 4	Difficult to draw transcription lines on the computer during exam, wastes exam time.
	DDS 11	Transcription was the hardest part.
DDS 11	They [MAP staff] do have to do transcription at times.	
Computer Inexperience	DDS 5	Test failure often due to inadequate tools (ex: trying to write with a computer mouse)
	DDS 1	"It's the computer work." (Reason for not passing).
	MRC 4	The online test doesn't give enough time, especially for those who do not use computers a lot.
	MRC 4	Difficult to draw transcription lines on the computer during exam, wastes exam time.
	DMH 1	There's an expectation that students will have a smartphone to bring to testing.

Comment Category	Source	Comment
	DDS 7	Electronic training and testing are tough for new hires, 90% are African or Haitian.
	DDS 11	Some parts of the test are about how well you can use your computer.
Other	DDS 5	Staff often take months to do training and pass exams.
	DMH 2	The material is so challenging, one of their directors failed a pretest.
	DDS 4	House manager helped new staff get certified though a new staffer "tried to give up." It took him 3 years to pass; he is now assistant house manager.
	DDS 6	MAP and MAP testing are too rigid.
	DMH 3	There is a lot of community/helping around testing and training.
	DCF 1	Time allowed for test is an issue if they even get through the Knowledge test.

In Table 29, the test results are disaggregated by test section and the rates represent the percentage of tests—not candidates—that were successful. The bottom row supplies the number and percentage of candidates that attempted and eventually passed all three tests to become MAP certified. That percentage remains relatively stable, between 50 percent and 57 percent—a very modest level—across the three years. The figures that stand out are the raw numbers of tests and students passed, which plummeted in the high pandemic year 2020, and just partially rebounded in 2021.

Table 29. MAP Certification Testing: Pass Rates by Test Section, 2019 – 2021

Test Section	2019 [a]			2020			2021		
	No. of Tests [b]	Passed Tests		No. of Tests [b]	Passed Tests		No. of Tests [b]	Passed Tests	
		Count	Rate		Count	Rate		Count	Rate
Knowledge	9,139	6,215	68%	3,102	1,854	60%	7,002	3,763	54%
Transcription	9,090	4,909	54%	3,015	1,977	66%	6,134	4,116	67%
Medication Administration				2,826	1,866	66%			
Total Students	8,497	4,588	54%	3,109	1,543	50%	5,142	2,929	57%

Source: D&S, 2022

[a] Before 2020, pass rates for transcription and medication administration were not tracked individually. The reported figure for 2019 cover both skill tests.

[b] Because an individual can take a given test several times, the number of recorded tests is always greater than or equal to the number of individuals.

Table 30 presents pass rates for first attempts at each section of the test. These data show a noticeable decline in first attempt success on the Knowledge test over the 3 years. Because the data for the 2019 Transcription and Medication Administration modules are combined, the 49 percent figure implies that almost half of everybody taking both these tests for the first time in 2019 passed them both. Thus, it is quite possible that the percentages reported for each of these two tests separately in 2020 and 2021 may actually represent a decline in overall first try success.

Table 30. MAP Test First Attempt Pass Rates, 2019 – 2021

Test Section	Attempt No.	2019 [a]		2020		2021	
		Recorded Tests	Pass Rate (%)	Recorded Tests	Pass Rate (%)	Recorded Tests	Pass Rate (%)
Knowledge	Attempt 1	7,251	75%	2,338	64%	5,009	57%
Transcription	Attempt 1	5,988	49%	2,382	66%	4,904	67%
Medication Administration	Attempt 1			2,288	65%		

Source: D&S, 2022

[a] Before 2020, pass rates for transcription and medication administration were not tracked individually. The reported figure for 2019 covers both skill tests.

To provide context for the longitudinal trends observed in the MAP certification testing data provided by D&S, we also looked at the results from our survey of active MAP-certified personnel. Among the questions we asked in our survey was “How many times did you take each section of the test before you passed that section?” For each test section, we compared MAP staff that had been certified 0 to 2 years before the survey (06/2020 – 06/2022) with MAP

staff that had been certified 5+ years ago (before June 2017). We further limited our search to people indicating that they “usually” administer medication to individuals under their care. The results appear in Table 31, below.

Table 31. First-try Pass Rates for MAP-certified Staff That Usually Give Medication to Individuals Under Their Care, Before and During the COVID-19 Pandemic

MAP Staff Member Certified...	No. of Responses	Passed Knowledge 1 st Try	Passed Transcription 1 st Try	Passed Medication Administration 1 st Try	Passed all Three 1 st Try
0 – 2 Years Ago	676	433	463	413	225
		64.0%	68.4%	61.0%	33.2%
5+ Years Ago	888	741	675	662	494
		83.4%	76.0%	74.5%	55.6%

Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022.

This table lends some support to the observations of our interviewees that the test overall is becoming more difficult to pass. The 56 percent of candidates who passed all three sections of the test *on their first try* five or more years ago compares very favorably with the 33 percent who did so from mid-2020 to mid-2022. We can speculate on the reasons for this trend, but there is every reason to closely consider the commentary offered by the highly experienced people we interviewed, as summarized above. The increase in online-only training and subsequent reductions of in-class training during the COVID-19 pandemic (Table 32) may have also contributed to this test performance.

Table 32. Prevalence of Training Types over Two Timeframes

Types of MAP Training	Time of MAP Certification			
	4+ Years Ago, Before 06/2018 n = 1,118		0-2 Years Ago, 06/2020 – 06/2022 n = 676	
Online only	8	0.7%	120	17.8%
In class only	751	67.2%	179	26.5%
Online classes w/ MAP Trainer	17	1.5%	178	26.3%
Both in class and online	339	30.3%	198	29.3%
No response	3	0.3%	1	0.15%
Total	1,118	100%	676	100%

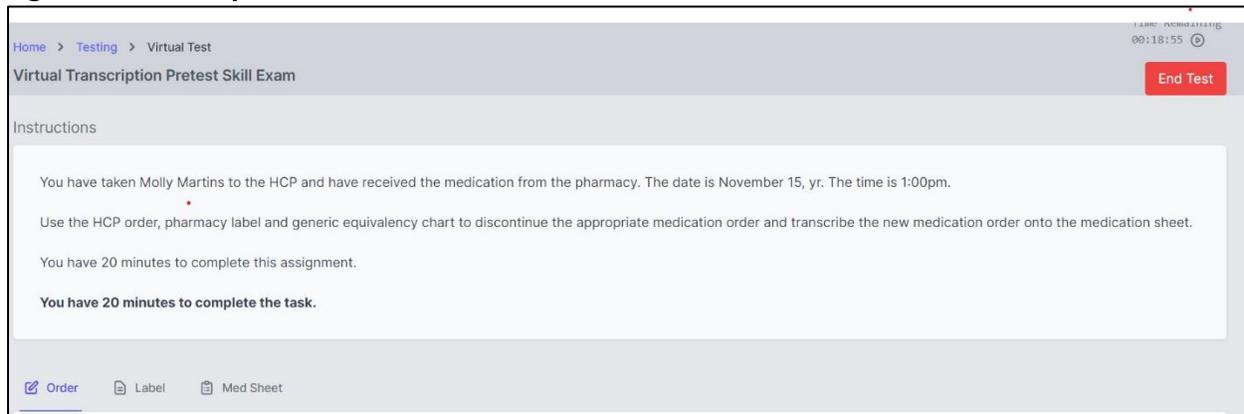
Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022.

Transcription Test. Many of our interviewees observed that transcription is rarely required of most MAP-certified direct care staff, and that when it is, a supervisor will often QC their work before the next med pass. Aside from being a skill rarely used by most MAP-certified direct care staff, the online test for transcription received much criticism, mainly because the test depends on using a mouse and text boxes—instead of a pen or pencil—to draw lines and insert text in appropriate places on the medication sheet. With access to the online practice tests, we attempted to examine the subject of these criticisms.

The transcription pretest opens with an instructional paragraph (Figure 2). The candidate is expected to click the “Order” and “Label” links in the lower left of the screen to

access those documents, which are necessary to complete the test. The instructions to do so are oblique at best. They say “use the HCP Order, pharmacy label, and generic equivalency chart...” but there is no mention of clicking the links. While it is true that MAP trainers will rehearse the mechanics of this test with their students, clear and unambiguous instructions, e.g., “click the links to the Order, Label, and Med Sheet on the lower left of this page to get to those forms,” should be a *sine qua non* of all elements of the MAP test.

Figure 2. Transcription Pretest Instructions



Clicking the Order and Label links does bring the test taker to those documents, which present the information that needs to be entered onto the resident’s med sheet (Figure 3). We note that the links to the Doctor’s Order and Pharmacy Label are now in the upper left. The test taker can use those buttons to move back and forth from the Order or Label to the Med Sheet. If they find this too awkward, they must copy the Order and Label by hand to use as a reference while making the correct entries on the med sheet. The text boxes, bounded on both ends with big Xs, are obtained by clicking the TEXT button in the upper left. They are awkward to use and visually distracting, and can easily be unintentionally created, as illustrated by the two randomly placed boxes on this example. The diagonal red line is supposed to indicate that administration of this medication has been discontinued. The sawtooth effect was unintentional, incidental to dragging a finger repeatedly across the touchpad.

Two interviewees pointed out that this attempt to replicate handwritten transcription using mouse and keyboard replaced a workable system in which the test taker’s handwritten transcription was scanned by the test proctor and emailed to the remote evaluator. This workable system was replaced by the current setup, which is awkward and confounding, only in mid-2021, about a year after other elements of the online training and testing system were in place. It is not surprising that trainers have complained that this part of the test has created a time sink in their training schedules (“The transcription test has tanked my training”).

To summarize, the current online transcription test is an awkward and frustrating attempt to assess a skill set that most MAP-certified direct care staff rarely use and which many are likely to forget during the interval between passing the test and the first time they need to perform transcription on the job.

Figure 3. Transcription Pretest Medication Administration Sheet

Month and Year: November yr MEDICATION ADMINISTRATION SHEET Allergies: Shellfish

Start: Generic Benzospan Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 1-1-yr Brand Bonrolae 8am LWAS SWSD LWLWSD SD SD AS LWLWAS SD SD
 Strength 0.5mg Dose 1mg
 Stop Amount 2 tabs Route mouth
 Cont. Frequency Twice daily Click here to edit text

Special instructions: Reason: Anxiety

Start: Generic Symfenib Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 1-1-yr Brand Symtrim 8am LWAS SWSD LWLWSD SD SD AS LWLWAS SD SD
 Strength 100mg Dose 100mg
 Stop Amount 1 tab Route mouth
 Cont. Frequency Once daily in the morning

Special instructions: Reason: Schizophrenia

Start: Generic Alosporin Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 Brand Empicin Click here to edit text
 Strength 250 mg Dose
 Stop Amount 1 Route by mouth
 Cont. Frequency 2x daily for 10 days

Special instructions: Reason:

Start: Hour 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
 Brand Dose
 Stop Amount Route
 Cont. Frequency

Special instructions: Reason:

Name: Molly Martins	CODES		Signature	
Site: 45 Shade Street Treetop MA 00000	DP-day program/day hab	SD	Sam Dowd	
	LOA-leave of absence	AS	Amanda Smith	
	P-packaged	LW	Linda White	
	W-work	SW	Serena Wilson	
	H-hospital, nursing home, rehab center	JS	Jenna Sherman	
S-school	TM	Timothy Miller		

Accuracy Check 1 Linda White Date 10/31/yr Time 8pm Accuracy Check 2 Amanda Smith Date: 10/31/yr Time 10pm

Tricky Questions. We examined two versions of the 30-question Knowledge pretest and did find questions that might be considered tricky (Table 33). A more detailed look at the Knowledge test questions for ambiguity and interpretability by people with ESL and making appropriate revisions would be worthwhile.

Table 33. Examples of MAP Knowledge Test Questions That May be Considered "Tricky"

Question	Comment
When disposing of medications, the number of staff required to be present with the supervisor is: A. 1 B. 2 C. 3 D. 4	Two certified people must be present during med disposal, so the correct answer here is 1.
Handwashing by staff must be done before: A. Beginning your work shift. B. You come into contact with blood or body fluids. C. After each medication administration. D. Removing medication from the storage area.	All the responses are arguably correct, even C, which could be interpreted as meaning before and after each med pass, rather than before and after giving each individual tablet or other dosage.

Question	Comment
If the HCP orders 50mg of medication and the pharmacy delivers 100mg tablets you should: A. Return the medication B. Administer the 100mg tablet C. Break the tablet in half, then administer D. See if someone else has a 50mg tablet	“Someone else” (option D) could mean another pharmacy, which doesn’t seem an inappropriate step if the need is dire and would be the first step if the HCP could issue another prescription in a timely manner.

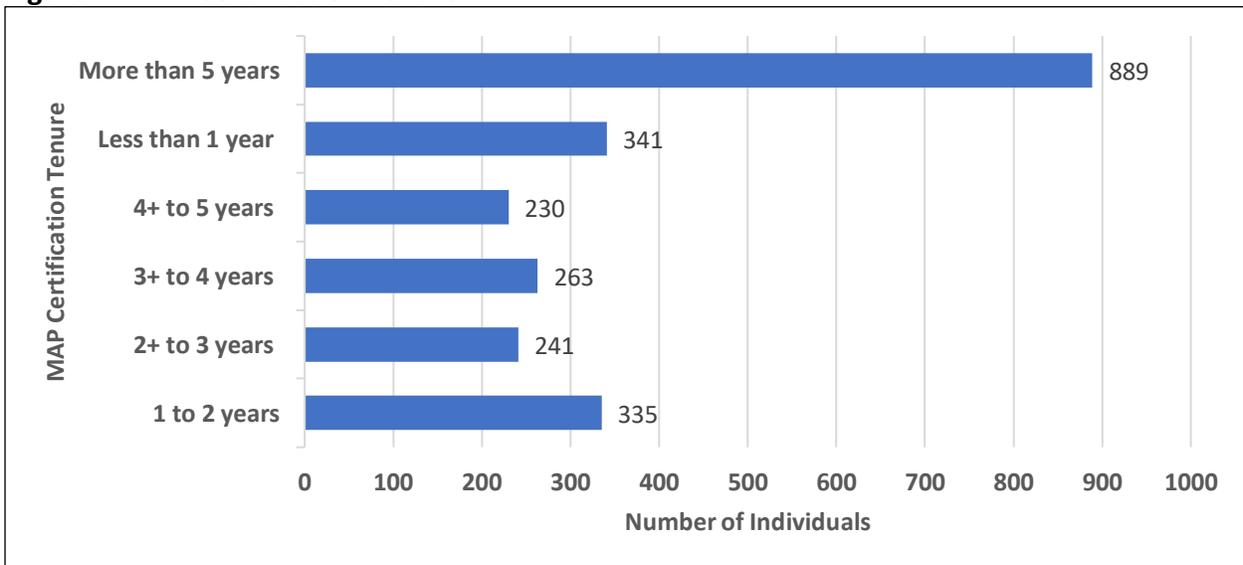
3.2.5 MAP-certified Direct Care Staff Workforce

MAP-certified Direct Care Staff Demographics

Across the companies whose programs we visited, MAP staff commonly comprise a diverse group of individuals. Frequently, the majority of MAP staff at the programs are women; some programs reported that their staff comprises mainly women of color. MRC 6 described staff as being on the older side (40s and 50s), supplemented by younger staff members. Generally, they reported that staff consist of a mix of older members and younger people who are either in college or have recently graduated with an undergraduate degree.

In our survey of MAP-certified direct care staff in Massachusetts, 39 percent reported being MAP certified for more than 5 years. Individuals who have been MAP certified for less than one year made up the second greatest share of MAP staff responding to the survey (15 percent). This could indicate a bi-modal distribution where a portion of MAP staff leaves the field within 4 years and another portion stays in the field for long periods of time. Figure 4 depicts the distribution of MAP certification tenure among individuals responding to our survey of MAP staff.

Figure 4. MAP Certification Tenure



Unfortunately, we could gather little data about the MAP-certified population as a whole that would have enabled us to verify that the respondents to our survey comprised a representative sample of the entire MAP-certified population.

Many MAP staff have English as a second language (ESL). Of the 2,305 respondents to our survey who say they “usually” pass meds, 28.3 percent say that English is not their first language, although this may under-represent the percentage of people with ESL in the MAP-certified population as a whole.¹² One provider estimated that staff with English as a second language comprise as much as 90 percent of their direct care workforce (DDS 7). Some providers did report having few MAP staff with ESL. MRC 6 reports most of their staff are women whose first language is English. The reason MRC 6 reported for not having more ESL staff was that recent hires with ESL had been less likely to pass the MAP examination and then had to be let go as a result. Many providers said MAP training and testing was a barrier to hiring ESL staff. MRC 4 described how having English as a second language makes MAP class comprehension difficult. MRC 3 highlighted that online classes are especially difficult for ESL MAP students because they cannot ask clarifying language questions. One staff member at DDS 1 described MAP training and testing as “multi-culturally insensitive.” A staff member at DDS 5 explained that extra barriers to passing MAP posed by having English as a second language often compound any issues individuals have using the technology employed in MAP training and testing. The barriers to MAP certification that confront many individuals with ESL reduce the number of high-quality job applicants available to providers and exacerbates current staffing issues.

MAP-certified Direct Care Staff Salaries and Career Trajectory

We gathered data on starting wage rates for MAP-certified staff and MAP candidates from the 29 service provider sites we visited for this study. We also gathered information on the pay differential received by existing MAP-certified employees. Table 34 presents the hourly pay rates for entry-level direct care staff reported to us across 15 sites. The average hourly starting wage for MAP-certified direct care staff is \$16.54 with a range of \$12.50 to \$19.00. The average starting wage for MAP candidates was \$16.18, with a range of \$12.50 to \$16.50. The lower bound of this range reported by DDS 10 is below the Commonwealth’s \$14.25 minimum wage.¹³ Current staff who become MAP certified on the job receive an average wage differential of \$0.73 per hour, with a range of \$0.25 to \$1.00 per hour. Asked why the pay increase after MAP certification was so minimal, some providers said that direct care staff were

¹² It is reasonable to hypothesize that people with ESL are less inclined to respond to a survey in English, and that recent hires (0-2 years), a higher proportion of whom have ESL, are also less inclined to respond.

¹³ Under M.G.L. c.151 § 1, as amended by St.2018, c. 121, § 17-21, the minimum wage in Massachusetts was scheduled to increase by \$0.75 annually every January 1 until it reaches \$15.00 in 2023, as follows:

1/1/2019	\$ 12.00
1/1/2020	\$ 12.75
1/1/2021	\$ 13.50
1/1/2022	\$ 14.25
1/1/2023	\$ 15.00

hired with the understanding that they would become MAP certified, so their certification was already built into their entry level wage.

Table 34. Starting Hourly Wage Rates (\$) of MAP-certified and MAP-track Direct Care Staff Reported by Personnel Interviewed at 15 Service Providers

Direct Care Staff MAP Status	Sites (#)	Mean (\$/hour)	Standard Deviation (\$/hour)	Minimum (\$/hour)	Maximum (\$/hour)	Median (\$/hour)
After MAP Certification	15	\$16.54	\$1.60	\$12.50	\$20.00	\$17.00
Before MAP Certification	15	\$16.18	\$1.57	\$12.50	\$20.00	\$16.50
Pay Differential	8	\$0.73	\$0.29	\$0.25	\$1.00	\$0.80

Regardless of certification status, starting wages observed in our sample fall more than \$4.00 below the average hourly wage for UAPs in 33 states, which is \$21.37 (adjusted to account for the variation in cost of living across states) (see Table 9, above). DCF 2 struggles to attract applicants with what staff consider low starting wages. A program manager at DDS 6 knows the company's \$15 per hour starting wage is "on the low end" and presents a "problem" for hiring and retention. Although the program offers an \$0.84 differential once staff are MAP-certified, management expressed concern that this "may not be big enough." Data gathered during our interviews with other service providers support this theory. DDS 7 offers three dollars more than DDS 6 and still struggles to compete with Target and other big-box retailers offering comparable (or better) wages for jobs with less pressure and responsibility. DDS 6 is not alone. Despite offering \$17.25, DDS 1 identifies their starting wage as the "number one" reason they are unable to hire staff. To be truly competitive, an interviewee at MRC 3 believes the starting wage should be raised from \$16.50 to \$23 per hour.

Participants at MRC 6 noted that MAP positions are labor intensive and involve multiple responsibilities, including day trips, doctors' visits, pharmacy visits – all for modest pay. Data collected during our interviews offers evidence to suggest that below-market compensation for MAP-certified staff and candidates takes a toll. Ten sites identified hourly wages and/or non-wage compensation as a major issue for their residence (DDS 1, DDS 5, MRC 3, DDS 6, MRC 4, MRC 6, DCF 3, DDS 10, DCF 5, DDS 11). To comply with minimum staffing requirements in the face of severe staff shortages, many sites depend on overtime, while others ask MAP-certified staff to travel among multiple sites to administer medications (DDS 3). Forty percent to 50 percent of staff at DDS 6 work between 10 hours and 40 hours of overtime weekly. Staff at DDS 5 and DDS 6 have not been able to take time off since the pandemic began due to staffing shortages. At DDS 6, paid time off represents a sizable portion of non-wage benefits. Staff earn 3 weeks of vacation, 12 paid holidays, and can accrue up to 240 hours of paid time off, with a buyout option once they stop accruing. Severe staffing shortages do not accommodate time off, leaving staff with no option but to accept the buyout. With little time off and some staff working two jobs, it is unsurprising that staff are slow to pursue or complete MAP certification, especially when onsite training may be canceled or curtailed due to critical staffing shortages.

When this report was written, 15 sites (DDS 1, MRC 1, MRC 2, MRC 3, DDS 4, DDS 6, DDS 11, MRC 5, MRC 6, DCF 2, DCF 3, DCF 7, DCF 5, DMH 1, DMH 2) had increased compensation for

direct care staff since the pandemic began. Eight sites (MRC 1, MRC 2, DMH 2, DDS 4, MRC 3, DDS 6, MRC 5, DDS 7) introduced or increased bonuses, eight increased starting wages (MRC 2, MRC 3, DCF 2, DDS 7, MRC 6, DCF 3, DMH 1, DCF 5), and three increased wages for current staff (MRC 3, MRC 6, DCF 5). Five sites (MRC 2, MRC 3, DDS 7, MRC 6, DCF 5) expanded multiple forms of compensation (bonus, starting wages, wages for existing staff). However, the hiring results are mixed. Despite expanded compensation packages, five sites (DDS 1, MRC 6, DCF 3, DMH 1, DDS 11) failed to achieve a corresponding increase in applicants. However, DCF 5 saw applications increase by 233 percent over 6 months after increasing starting pay from \$15 per hour to \$20 per hour. MRC 1 has seen more applications since they began offering a \$3,000 sign-on bonus, paid after three months of work.

Staff and management at each service provider site we visited were asked to reflect on career paths for entry level MAP candidates and MAP-certified direct care staff. Interviewees at seven sites were able to identify and describe a clear career path. They said that certified MAP personnel are reasonably positioned to pursue a career as a program manager (DMH 2, DDS 4, DDS 6, MRC 4, DDS 7) or shift supervisor (DCF 2, DCF 5). A MAP-certified staff member at DDS 6 was enrolled in nursing school at the time of our site visit. DDS 4, DCF 2, DDS 6, MRC4, and DDS 7 have seen entry level staff rise to supervisory positions, including residential management. When a career trajectory could be identified, interviewees emphasized the personal responsibility of MAP staff and their own self-motivation in pursuing opportunities for professional advancement. Interviewees at MRC 5 agreed that for most entry level staff, MAP certification is the ceiling for career advancement as a direct care service professional in this field.

MAP-certified Direct Care Staff Shortages

There is a staffing shortage among MAP personnel across all but a few service providers that we visited in Massachusetts. Staffing shortages are often severe. For example, DDS 10 described staffing at their residence as “dangerously insufficient and underfunded.” Vacancies for MAP personnel have been reported as high as fifty percent (MRC 3, DDS 5, and DDS 6). In DDS 5, the staffing shortage was so severe that the CEO had begun picking up direct care shifts to compensate for the lack of staff availability. Additionally, one staff member had moved into a residence full-time because she was the only MAP staff available for that site. Some programs, such as DDS 10 and DCF 2, said their attempts to fill vacancies have slowed down or stopped completely.

It is apparent that most programs and providers are struggling to hire new staff. Frequently identified reasons for the lack of applicants to MAP-certified direct care staff positions include:

- Starting wages comparable or lower than entry-level jobs in retail or fast food services.
- Difficult job duties.

- Long work hours.
- Inability and/or unwillingness to pass MAP examination.

MAP personnel in direct care positions face difficult daily duties. Providing care to clients requires careful action and diligent attention by MAP staff. Additionally, employees may be exposed to physical and verbal assaults from clients while performing daily duties. MRC 6 described MAP staff being subject to racist and mean comments from clients. DDS 5 staff described being hit by clients at work. Due to staffing shortages, employers often ask MAP personnel to work long hours, which can lead to employee fatigue. Some MAP staff expressed concern that if they make mistakes or act negligently, whether real or perceived, legal action may be taken against them. For a similar starting wage, MAP staff could choose instead to take a job with less difficult daily duties and lower legal risks. For example, many retail and food service positions pay a starting wage similar to—or higher than—entry-level direct care workers.

The need for staff to obtain MAP certification exacerbates staffing issues. Interviewees noted that, in addition to new hires that genuinely struggle to pass the MAP examination, some employees may be failing MAP examinations intentionally to avoid assuming MAP-related responsibilities. Additionally, short-staffed programs struggle to set aside time for employees to focus on MAP training and examination preparation instead of daily care duties. Until recently, most providers required that new hires be MAP-certified or become certified within three to six months, but such requirements have commonly been relaxed (at least temporarily) to cope with staffing shortages. Some interviewees said that the education and experience of newly hired staff had generally declined since the onset of the COVID-19 pandemic. In cases where there are insufficient MAP-certified personnel to appropriately staff each site, some companies choose to hire uncertified staff to provide direct care and move MAP-certified staff around from residence to residence to complete medication passes. This is time consuming for supervisors to schedule and costly to providers. Among MAP staff responding to our survey, 13 percent said they may not attempt recertification when the time comes.

Turnover among recently hired MAP personnel is often high. MRC 3 reported a turnover rate of 50 percent. Another provider reported that MAP personnel stay on about one year, two years maximum. Many interviewees reported that MAP personnel who stay on longer than one or two years are likely to remain at the company for several years. Among direct care MAP staff responding to our survey, 62 percent said they were highly likely or very likely to stay in their current job for the next year (Table 35).

Some providers and programs, such as DCF 3 and DDS 8, are exceptions to the trends presented above. They are successful in employing a full MAP staff and/or maintaining low turnover. Companies that are successful in hiring and maintaining MAP staff tend to report warm and friendly work environments. DCF 3 reported that their robust nursing staff relieves MAP staff of some of their work responsibilities.

Table 35. Probability that MAP-certified Direct Care Staff Will Stay at Their Current Job for the Next 12 Months

Response	Count	Percent of Total
Highly likely	512	33.4%
Very likely	433	28.3%
Somewhat likely	254	16.6%
Not likely	91	5.9%
No Response	242	15.8%
Total	1,532	100.0%

Source: ERG Survey of Certified MAP Staff in Massachusetts, June 2022

3.2.6 Medication Error Reporting

The Massachusetts EOHHS defines a medication occurrence as a breach of one of the five patient rights: right individual, right time, right medication, right dose, and right route. When one of these rights is breached, MAP-registered sites are required to file a Medication Occurrence Report (MOR) with the Department(s) they serve. When errors take place in programs serving DDS, MORs are filed through the Home and Community Services Information System (HCSIS) (Massachusetts Executive Office of Health and Human Services, 2018). When a medication occurrence is followed by “medical intervention (including but not limited to lab work, tests, Emergency Room visit, HCP visit, etc.), illness, injury, or death,” a Hotline Medication Occurrence (HMO) or “hotline call” is initiated (Hunt & Whitemore, 2017).

At each site visit, staff were asked about the number of MORs and HMOs filed with the Commonwealth in recent history. Limited information was made available to quantify MOR activity by site, with data collection standards varying by agency and department served. MRC 4 was the only site to disclose the number of MORs filed with the Commonwealth. This site filed three MORs in the three weeks prior to our site visit and 63 in the past year. MRC 4 does not track the number of doses administered. Six sites filed HMOs in recent history. Two sites (DDS 1 and MRC 2) reported their last HMO more than 10 years ago. In the last year, MRC 1 filed one HMO, DDS 3 filed three, and DMH 2 filed five.

To provide context for the frequency and severity of these errors, we gathered state-level MOR data from DDS, MRC, and DCF. Table 36 presents state-level MOR rates provided by DDS for fiscal years 2019, 2020, and 2021. Between FY 2019 and 2021, DDS received an annual average of 7.98 MORs for every 100,000 doses administered by MAP personnel. MOR rates declined by 30 percent during this period, even as the number of doses administered by MAP personnel climbed. Over three years, 260 MORs (2 percent) resulted in an HMO.

Table 36. Medication Occurrence Records (MORs) Filed with DDS, 2019 - 2021

Parameter	FY 2019	FY 2020	FY 2021
Doses Administered	50,221,080	57,548,925	58,600,020
Medication Occurrences	4,720	4,990	3,568
MORs per 100,000 Doses	9.4	8.7	6.08
Hotline Medication Occurrences	99	80	81

The rate of hotline occurrences per medication doses administered over the three years is one hotline event per 640,000 doses administered, or 0.00016%. It should be noted that relatively few HMOs result in illness or injury to the client.

MRC began tracking medication occurrences in May 2021 when they began registering their sites under MAP. MRC's annual reporting cycle ended on June 30, 2022. As of April 4, 2022, MRC had received 45 MOR filings. Three MORs (6 percent) resulted in an HMO.

DCF programs reported approximately 300 MORs in 2021, with 3 (1 percent) resulting in a hotline call. This was a marked improvement since 2018, when 3,000 MORs were filed with DCF, resulting in approximately 20 hotline calls (7 percent).

For historical context, in January 2011, DDS published a four page brief titled *Medication Occurrences* as one of its Quality is No Accident publications (Massachusetts DDS, 2011). In it, the authors reported MOR data from FY2009 that showed:

- DDS sites administered over 38.3 million doses of medication during FY2009.
- DDS sites reported 4,539 MORs, a rate of approximately 10.1 MORs per 100,000 doses.
- According to the 2011 brief, "44 incidents resulted in medical intervention, (defined as a visit to a health care provider or ER, lab work, vital signs or hospitalization), 11 in illness, and 1 in injury." Thus, 12 medication administration occurrences out of more than 38 million doses administered had clinically adverse effects. (Massachusetts DDS, 2011)

Most medication errors are minor and do not result in injury or adverse health outcomes for clients. Frequently, MORs are filed due to a missed dose. The HMOs that were described to us at the sites where they had happened were triggered by adverse reactions to coumadin (DDS 1, DDS 6, DDS 7), or a resident consuming another resident's medication (DMH 2, DDS 1). The latter events happened during momentary chaos on the floor while medications were being passed in a common area, due to space limitations (DDS 1), or while staff were responding to behavioral issues (DDS 1, DDS 2, DDS 6). When asked to identify the major reasons for medication errors (regardless of hotline status), interviewees frequently identified the following factors:

- **Clerical errors and discrepancies between an HCP order and pharmacy label.** A staff member at DDS 6 described the MAP program as "rigid" and "very particular" regarding transcription. "Every word has to match," they remarked, forcing nurse managers to create a fresh label or return a medication to the pharmacy for relabeling when labels are missing a letter, indication, or timing instructions. MRC 4 returns medications to the pharmacy for relabeling at least once every two months. This delays clients from receiving medications, especially OTCs, which often arrive without a label. The same site has filed MORs due to non-material discrepancies

between the units that doctors use for the dosage of liquid medications (ml) and the dosage units required by MAP (mg). One interviewee remarked that MAP requirements (specifically around PRN medications and OTCs) create friction with physicians, who have limited time to draft new orders solely to adhere to seemingly esoteric MAP requirements. This raises concerns for client welfare when some HCPs "refuse" to see residents due to MAP. See Table 20 and Section 3.2.2 for additional interviewee assessments of MAP procedures.

- **Omitted doses.** These occur due to client refusal, client scheduling conflicts, difficulty filling prescriptions on time, pharmaceutical supply chain issues, prior authorizations, pharmacy staff shortages, and pharmacy hours. Interviewees at DMH 2 asserted that pharmacies are critically understaffed. To get nighttime deliveries at DMH 2, orders need to arrive at their pharmacy no later than 3 pm. If orders do not arrive at the pharmacy before 3 pm, the medication may not be delivered until the next business day, resulting in an omitted dose and a corresponding MOR. This can be challenging if a client is discharged in the afternoon with orders for a new nighttime prescription.
- **Difficulty reaching primary care providers and specialists to clarify or update instructions.** An interviewee at MRC 6 explained that MAP requirements cause friction with physicians, especially around documentation. MRC 6 encountered one physician who "refused" to prescribe according to MAP standards, forcing the site to find a replacement. The back and forth with HCPs creates "undue burden" on staff and delays medication administration for clients, which may result in MORs. Staff at MRC 6 reported waiting two weeks to get a medication order straightened out. "This gets in the way of patient safety," they remarked. The same issue persists at DDS 6, where interviewees raised concerns for client welfare when providers "refuse" to see residents due to MAP.
- **Failing to check the HCP order against the prescription label and the medication administration record.** Interviewees at most sites we visited indicated that MAP personnel cut corners when it comes to the three documentation checks MAP requires for each dosage of medication. For MAP personnel at DDS 6, for example, working in a typically lean staffing situation, three 2-way checks can be prohibitively time consuming. A manager at this site explained that staff under pressure "will cut corners," often neglecting to compare the medication sheet and prescription label to the HCP order. Some staff at this location "don't pay attention to doctor's order" or "don't always look at the med sheet" before dispensing. Even the most rule-abiding MAP personnel may face challenges when attempting to complete three 2-way checks. A manager at DMH 2 reflected that not all clients are willing to sit for three full checks, especially those with behavioral challenges. When staff follow MAP to the letter, medication passes can take multiple hours. This comes at the client's cost as staff are forced to allocate more time to medication administration and less to

their other essential care tasks like cooking, cleaning, bathing, dressing, strengthening life skills, building independence, and interacting with clients.

- **Administration of PRN medications outside of uses expressly identified by provider.** DMH 2 incurred 7 MORs recently because they “gave [over-the-counter] Tylenol to a resident for tooth pain when it was only prescribed for hip pain.” An interviewee at DMH 2 found safety “overly complex” under MAP. “Of course, we need to have the right med,” they remarked, but MAP procedure “goes out the window” when staff see a clear reason to administer a PRN, but the HCP order does not explicitly identify the symptoms the client is exhibiting. For example, when the client expresses discomfort due to a headache, staff may not administer the ibuprofen unless the HCP order expressly authorizes the use of said PRN in response to a headache. This can leave clients in pain or result in an MOR if staff decide to administer the medication.

Staff and management at DMH 2 discussed the role medication error reporting plays in monitoring and client safety. “When we don’t get MORs, I’m actually concerned [about unreported errors],” one manager stated. When audits are “only triggered if you report an MOR,” this manager expressed concern that DPH has created a disincentive to report. A manager with 30 years of experience at DMH 2 acknowledged that medication administration prior to MAP was the “wild west,” but in general opined that “there are an equal number of errors.” This manager went on to say that DPH could “get rid of everything we have to do [for MAP] and it wouldn’t make things less safe.”

4 RECOMMENDATIONS AND DISCUSSION

The recommendations that follow are based on our research into the literature on UAP medication administration; our review of other states’ laws and policies; interviews with officials and service providers on how medication administration is handled in other states; and, our interviews with staff at 29 community residences of varying sizes and missions across the four state agencies that register MAP programs in Massachusetts, as well as interviews with DPH and agency officers, physicians, pharmacists, and interest group representatives. All recommendations we made as a result of this research had to meet four criteria:

1. *Feasibility.* Our recommendations have to be practical and realizable within specific constraints of time and resources.
2. *Predictability.* The desired effects of our recommendations should be predictable by logical analysis based on current knowledge while recognizing that actions can have unforeseen effects, but that such effects should be minor or even beneficial.
3. *Necessity.* Our recommendations should be necessary to ameliorate the specific issues or problems they address. This criterion helped us to avoid extreme or extravagant measures.

4. *Urgency.* The problems and issues that our recommendations address are those that have put MAP in a state of crisis or near crisis.

We also aimed to make each recommendation independent, such that its adoption is not predicated on the adoption of another. However, we recognize that adoption of certain recommendations may make others moot. For example, adoption of an electronic medication administration record (eMAR) system (R2.1) may eliminate the need for adopting R4.2, which recommends enabling a resident nurse and/or pharmacist to resolve common HCP-pharmacy label-medication sheet discrepancies, such as an HCP order stating “twice a day” rather than “twice daily AM and PM.” We recognize that the transition to eMARs from the current paper-based system will take some time, so many of our recommendations are meant to alleviate problems within the paper-based system that will eventually be eliminated by widespread eMARs adoption.

The guiding principle of these recommendations is the same as that of MAP itself, i.e., to ensure and improve upon the safety of medication administration to clients of MAP-registered programs. MAP has been extraordinarily successful at this. As mentioned above, one of our interviewees whose experience stretches back to pre-MAP days described those times as “the wild west.” However, factors internal to MAP and detailed in the previous sections have been exacerbated by the pandemic, its direct impacts on employment levels and wages, and the effects of government’s efforts to stabilize the economy and avert widespread economic displacement.

While the guiding principle of MAP is to maximize the safety of clients during medication administration, the operating principle has been to minimize to the greatest extent possible any decision-making or judgment by the direct care person administering medication. By establishing a detailed and unvarying series of prescribed actions and record-keeping rules when administering meds, MAP seeks to prevent administration errors by direct care staff and thereby ensure the clients’ five “rights.” This approach undoubtedly improved client safety effectively in the 1990s and 2000s and enabled safer medication administration by unlicensed personnel—i.e., non-nurses. Changes since then—the expansion of MAP to additional agencies; the steady increase in the numbers of MAP-registered programs and clients; and increases in the numbers and kinds of drugs prescribed to clients—have made the med passes of 2022 much more time and labor intensive than those of 15 years ago. After the pandemic struck and labor shortages and entry-level wage increases set in virtually everywhere, the pressures on remaining MAP staff became intense. Unfortunately, as one respondent to our survey of MAP-certified employees put it, “MAP has become so intricate in an attempt to make it idiot-proof and easier to understand that there are almost too many rules now and it has become more confusing.” None of these recommendations and suggestions should be interpreted as criticisms of past or present MAP administrative personnel, all of whom are committed to the same principle of ensuring and improving client safety and well-being when receiving their medications. Table 37 presents a summary of all our recommendations by category. We discuss each recommendation and its rationale in further detail in the sections following Table 37.

Table 37. Summary of Recommendations

Area	Recommendations
Establishing an Interagency MAP Data Center	Interagency MAP Data Center
	R1.1. Establish an interagency data center to which EOHHS agencies regularly submit MAP-related data (e.g., number of site closures and openings, number of clients served, client demographics, number of staff with active MAP-certifications, number and type of medications administered per patient, number of medication occurrence reports and hotline calls received, etc.) to inform MAP decision making and conduct of epidemiological studies. Client-related data will have to be scrubbed of identifiers, per HIPAA. These kinds of data are necessary to make informed long-term plans and resource allocation decisions; identifying any health outcome trends, potential problem areas, and to avoid being less than prepared when another disease or climate change effect occurs..
Technology-based Medication Administration Electronic Medication Administration Record (eMAR) Systems	Electronic Medication Administration Record (eMAR) Systems
	R2.1. Change MAP policy to allow implementation of Electronic Medication Administration Record (eMAR) systems, enabling service providers to move away from a paper-based system.
	R2.2. Incentivize programs and providers to implement eMAR systems by funding the costs of implementation and ongoing charges for a single eMAR system, chosen through the appropriate selection process. Once selected, the eMAR system should be made available to service providers free of charge or at minimal cost.
	R2.3. Promote eMAR adoption throughout the Commonwealth with an outreach program. R2.4. Enable pharmacies to provide multi-pack dosing for residents whose prescriptions are less likely to change.
Practice of Medication Administration	Medication Administration
	R3.1. Provide guidelines and flexibilities that promote self-administration of medications, while accounting for a potentially higher risk of MORs.
	R3.2. Enable a resident nurse and/or pharmacist to resolve common issues such as orders stating “twice a day” rather than “twice daily AM and PM” without calling the HCP or pharmacy.
	R3.3. Reach out to programs that are using current waivers that allow insulin administration by MAP staff, rescue inhalers, and epinephrine auto-injector (EpiPen) administration by MAP staff, and pre-packing of medications by MAP staff to be administered by non-MAP staff. Assess the degree of benefit these flexibilities have provided, as well as the levels of risk and actual harm to clients they may have caused.
	R3.4. Simplify HCP Orders and reduce the emphasis on HCP signatures.
	R3.5. Allow MAP staff to administer medications based on hospital/medical facility discharge orders.
	R3.6. Broaden allowances for MAP staff to take telephone orders from HCPs and eliminate the need for follow-up signatures.
	R3.7. For MAP direct care staff, replace the three 2-way matching procedures for each medication they administer with a single two-way check prior to administration. Have direct care staff perform the following steps for each medication being administered. <ul style="list-style-type: none"> (a) Check if there are any medication changes flagged on the med sheet, noted in Progress notes, or flagged on the medication container/closure. (b) Check that the pharmacy label and med sheet agree as to person, medication, dose, frequency, and route. (c) “Pour” the medication if label and med sheet agree. (d) Administer the med(s) and document the administration.

Area	Recommendations
OTC Medications	Expand OTC Exempt Tier
	R4.1. Expand the tier of OTC medications that are exempt from needing an HCP order for administration, e.g., dandruff shampoos, fluoride toothpaste, certain topicals such as non-steroidal skin moisturizers, anti-perspirant deodorants, non-alcoholic mouthwashes, and others to be determined by DPH.
	R4.2. Educate all stakeholders regarding the products that are on the exempt OTC tier.
	R4.3. Allow service providers to obtain standing orders from HCPs for non-exempt OTC tier medications, during the client’s regular physical check-up.
MAP Training and Testing	MAP Training
	R5.1. Examine MAP curriculum, <i>Responsibilities in Action</i> , to correct content and instructions inconsistent with MAP policy and revise curriculum accordingly.
	R5.2. Establish a channel of communication between MAP candidates and trainers and MAP policy officials—for instance, an FAQ web page with a dedicated email account-- where candidates and trainers can get authoritative information and answers to questions about MAP policy, acceptable MAP procedures, MAP curriculum, and certification exams.
	R5.3 (Suggestion). Agencies and DPH should consider ways to encourage and facilitate adding in-person training for programs that now rely primarily on the online training.
	R5.4. Allow flexibility in the requirement that a candidate’s identification at the time of the test match their test registration information exactly. If a proctor at the test site vouches for the test taker’s identity, that should be enough to allow the candidate to take the exam.
	MAP Certification Testing
	R5.5. Eliminate the transcription test as a requirement for MAP certification; keep transcription as part of the curriculum and training.
	R5.6. Apply the “100%” performance level required to pass the Med Pass test only to administering the medications correctly per the 5 rights; verifying that the HCP order, the pharmacy label, and the med sheet are all consistent; and properly administering the medication and recording its administration. Further, have the med pass test performance of each candidate recorded and evaluated by a proctor at the test site, rather than by the contracted remote evaluator.
	R5.7. Increase the time permitted for completing the Med Pass Test from 15 to 25 minutes.
	R5.8. Edit the Knowledge test questions and response options to simplify sentence structure, syntax, and vocabulary, and eliminate potential ambiguities. This will benefit all test takers and will help mitigate inequity experienced by people with ESL that are taking the test. Further, increase the time allowed for the 50-question test from 75 minutes to 100 minutes.
R5.9. Allow people with ESL to bring online or hard copy translational dictionaries that translate between English and their first language.	
R5.10. Candidates must take and pass a 30-question Knowledge pretest before they are allowed to take the 50-question Knowledge certification test. The Knowledge pretest is part of MAP training and can be taken as often as needed. To ensure that the 30-question Knowledge pretest provides suitable preparation for the Knowledge certification test, draw at least half of the 30 pretest questions at random from the current pool of 620 certification test questions.	

Area	Recommendations
	R5.11. Allow all candidates to refer to the curriculum <i>Responsibilities in Action</i> —either in hard copy or the online version— as well as their notes and other training materials when taking the Knowledge certification test.
MAP Staffing and Career Trajectory	MAP Staffing and MAP Career Trajectories
	R6.1. Increase compensation for direct care workers.
	R6.2. Develop a course and externship program on direct care for students enrolled in Career/Vocational Technical Education (VTE) Medical Assisting Programs with a unit dedicated to medication administration.
	R6.3. Offer grant funding to support MAP-certified staff in pursuing additional training or education in the health or community-service fields.
	R6.4. Consider counting MAP certification toward the requirements of other medical certification or licensure programs.

4.1 Access to MAP Data and other Program-related Data Required for Strategic Planning

R1.1. Establish an Interagency MAP Data Center to which EOHHS agencies regularly submit MAP-related data (e.g., number of site closures and openings, number of clients served, client demographics, number of staff with active MAP-certifications, number and types of medications administered per patient, number of medication occurrence reports and hotline calls received, etc.).

Although DDS, DMH, DCF, and MRC all have access to some data from the residential programs and service providers registered with their own agencies, there is an apparent lack of coordination between them in determining the content, format, frequency of updates, etc. of the data they are gathering. For a program like MAP, which operates across all four agencies, the lack of systematic longitudinal data is problematic. DPH is the organizing entity for programs like MAP. Detailed data on the number and types of residential programs, service providers, clients and their demographics, morbidities, and health status; medications prescribed and administered; MOR reports and hotline calls—must be accessible to inform long-term plans and allocate resources optimally, to identify any health outcome trends, potential problem areas, and to be adequately prepared when another disease or climate change related crisis hits.

4.2 Technology-based Medication Administration and Recordkeeping Systems

Many of the issues that are manifesting as MAP problems—med passes bogged down by tedious and repetitive MAP procedures, such as comparisons between orders, labels, and med sheets; error-prone manual transcription of med changes; repeated calls to HCPs with requests to sign this order or make that order MAP compliant—can all be obviated by widespread adoption of an effective eMAR system by MAP-registered service providers. Our recommendations below are, we believe, the necessary first steps toward widespread implementation of eMAR by MAP-registered service providers

We have spoken with representatives of several community service providers in other states and in Massachusetts who have implemented a range of eMAR systems from different companies. All have been enthusiastic regarding the labor savings, time saved during med passes, and virtual elimination of medication errors they experienced since implementing their systems. Replacing the paper-based system that is still the basis of MAP recordkeeping after 32 years with an electronic system is inevitable; the advantages are simply too great. Gains in medication safety, medication error reduction, complete and automatic recordkeeping, improved MAP staff morale and job satisfaction—these are a few of the advantages that we consider probable, based on our research and interviews.

R2.1. Change MAP policy to allow implementation of Electronic Medication Administration Record (eMAR) systems, enabling service providers to move away from a paper-based system.

MAP is currently a paper-based system and requires staff to perform three checks between the HCP order and the pharmacy label and the pharmacy label and the med sheet, as a three-pronged safeguard to ensure that the five rights are correctly provided to all clients during medication administration. These three 2-way checks are time consuming, and, owing to how MAP policy has been implemented, a small inconsequential discrepancy between the three documents (see *Example 1* for the comparison of “daily in the evening” and “every evening at 8:00 p.m.” on p 84 of this report) can result in hours spent contacting an HCP, delays in medication administration, relabeling medications, and, occasionally, friction between HCPs and residential service providers. We also found, through our interviews, that many MAP staff routinely skip the three-way check to save time; they do often compare the pharmacy label with the med sheet but feel that the three 2-way checks are unnecessary.

The issue of reconciling discrepancies between the three documents is one that we heard universally from sites, often as a primary complaint. The introduction of eMARs and their ability to interface directly with the pharmacy will eliminate the need for three 2-way checks, because the pharmacy would receive the prescription from the HCP and update the information in the eMAR, visible at the program in real time. This builds a more harmonious system that eliminates the need for MAP-registered providers to keep track of the three separate documents and eliminates the need for direct care staff to perform transcription. This change would reduce unnecessary HCP consultations as well, improving the efficiency of the overall system. These benefits also reduce the stress on direct care staff, freeing them up to perform other duties, and could lead to higher job satisfaction, lower turnover, and making MAP-certified direct care a more attractive job in healthcare.

During our interviews at various sites, we frequently spoke with people experienced with eMARs who said that they would love to be able to use an eMAR for MAP duties. Other MAP staff who had not yet used an eMAR were very enthusiastic about the idea as well. Multiple sites we visited were already using systems with eMAR capabilities but were not using the med pass module because it is not allowed under MAP. There is demand for an electronic system to simplify med passes and allow real time communication between pharmacies, MAP-registered programs, and HCPs. There is no reason MAP should continue to be a paper-only system when there are proven alternatives.

R2.2. Through the appropriate process, DPH should select a single eMAR system and offer it free of charge to all MAP-registered service providers. With the Commonwealth funding the costs of licensing, installation, and monthly service charges, eMAR system implementation at MAP-registered programs should accelerate quickly.

eMAR systems have multiple advantages over a paper-based system. They streamline medication administration, reduce burdens on direct care staff, enable real-time monitoring of

med passes by administrators, provide safeguards from misadministration of meds (e.g., eMAR systems will not allow medications to be given before they are due), expedite MAP audits, etc. eMAR systems are being used more widely throughout the country, with other states, e.g., New Jersey, Nebraska, and Delaware, mandating eMAR use in certain community care settings. Massachusetts should strongly incentivize the use of eMAR systems at MAP-registered sites for two reasons:

1. eMAR systems are quick and easy to use and provide safeguards against maladministration.
2. The benefits of eMAR systems are realized more fully with higher buy-in.

eMAR benefits are fully realized with buy-in from pharmacies that can adopt the chosen eMAR pharmacy interface. We believe that if the state were to provide one eMAR system, at either a highly discounted rate or free of charge, that many pharmacies would adopt this interface quickly. Additionally, the standardization would be good for MAP auditors, and relief agency staff. One possible challenge of partial adoption of eMAR systems is that certain relief agency staff who do not have login credentials or are not familiar with certain eMAR systems would not be able to work at providers who use systems unfamiliar to them. This might make eMAR adoption difficult for sites that are dependent on relief agency staff, as adoption of an eMAR could diminish their available workforce. A state contract with a specific eMAR that provides the platform to service providers at low or no cost would likely lead to wider and more rapid adoption, without precluding other sites from continuing to use their own systems if they choose to do so. For these reasons, we recommend that Massachusetts evaluate proposals from several different eMAR systems, and then select the optimum one (based on pre-established criteria) to offer to service providers at no or minimal cost.

R2.3. Promote eMAR system adoption throughout the Commonwealth with an outreach program.

In order to ensure a smooth transition from paper, we recommend that DPH and the four Agencies develop an outreach program to DMH, DDS, MRC, and DCF affiliated sites and work with trade groups to explicate the benefits of an eMAR system and answer any questions from staff. A substantial majority of our interview sites responded very positively to the idea of an eMAR system, and eMAR system adoption would likely happen at most sites if the system were provided free of charge and allowable under MAP policy. However, to expedite implementation and to encourage service providers that are on the fence about adopting an eMAR, a program sponsored by DPH to further inform providers and direct care staff would be beneficial.

R2.4. Enable pharmacies to provide multi-dose packaging for residents deemed stable on their medications.

Popping individual tablets out of blister packs is time consuming for direct care staff, especially when also performing three 2-way checks for every medication. Our survey of MAP-

certified staff asked them to tell us, within specific ranges, how many meds per client they administered and how many clients they served per med pass. The median ranges selected were 6 to 9 meds per client and 3 to 5 clients per med pass, though it is not uncommon for MAP staff to administer and serve more than that. For populations that have relatively stable medications, multi-dose packaging should be allowed to save time and improve efficiency. With adoption of eMAR systems, multi-dose packaging can be done with a barcode scanner, and this process eliminates the need for MAP staff to use blister packs (excepting PRNs and certain drugs that are packaged separately). PelMeds pharmacy is currently piloting a multi-dose packaging system with its own eMAR software in four programs and reports that feedback from staff has been overwhelmingly positive. One program estimated that multi-dose packaging and PelMeds software have reduced medication administration time by 75 percent; another program reported that before the pilot their med passes took an hour-and-a-half and now they take 30 minutes with PelMeds, and another site reported that PelMeds has reduced medication administration times from an hour-and-a-half to 10 minutes. These time savings are significant, and these systems have safeguards against administering meds at the wrong time.

4.3 Practice of Medication Administration

R3.1. Provide guidelines and flexibilities that promote self-administration of medications.

Additional guidelines on how to develop self-administration training plans and support self-administration of medication under MAP may make MAP staff more confident about encouraging residents to self-administer medication. Self-administration is recognized as having therapeutic value for residential clients, promoting their sense of autonomy and self-efficacy. Further, every medication self-administered is a medication removed from the med pass, lightening the burden, however slightly, of medication administration.¹⁴

Currently, however, staff report feeling challenged when promoting self-administration to residents while adhering to MAP policy. Providing clear recommendations as to how MAP staff can encourage resident self-administration of medication may increase staff's ability and confidence in supporting self-administration.

A residential coordinator that we spoke with stated that MAP should specify additional guidelines to widen the opportunity for residents to self-administer medications. The MAP policy manual does not currently include guidance on legal liability for potential adverse medical outcomes (i.e., damages) resulting from errors made by a client while self-administering medication (or while training to self-administer) result in adverse medical outcomes. Providing guidance on liability for adverse events associated with self-administration

¹⁴ We should note that self-administration of medication has been associated with an elevated risk of medication error (Massachusetts DDS, 2011). There is also evidence that a self-administration of medication (SAM) program improves patients' adherence after discharge from hospital (Murray, 2011), and that an evidence-based system for evaluating patients' suitability for self-administration can facilitate safer self-management of medications (Vanwesemael, et al., 2018).

would help MAP staff to understand the scale of the risks that they assume when facilitating residents to self-administer medication.

Staff at some DMH facilities reported that encouraging self-administration is challenging due to concerns that residents might intentionally harm themselves with their medication. For many residents that pose a danger to themselves or have engaged in self-harming behavior, it may not be safe to keep their own medications, despite being otherwise capable of self-administration. Currently under MAP policy, self-administering residents must store their medications so that they are inaccessible to individuals who are not self-administering. Incorporating additional flexibilities will encourage staff to further encourage self-administration. For example, allowing self-administering individuals to store their medications in the medication closet or a separate lockbox accessible to staff may encourage individuals to self-administer.

R3.2. Enable a resident nurse and/or pharmacist to resolve common issues, such as orders stating “twice a day” rather than “twice daily AM and PM.”

MAP staff we interviewed often cited the rigidity of MAP policy as a time-consuming barrier to providing quality care. MAP staff commonly reported seeing minor discrepancies between pharmacy labels and doctor’s orders, such as the above-mentioned “twice a day” and “twice daily AM and PM.” MAP staff reported that minor discrepancies are MAP noncompliant and must be corrected, but fixing such discrepancies can take a long time and require significant effort. Some MAP staff said sometimes it took up to a month to fix labeling discrepancies on a medication. During this time, staff, per MAP policy, are not allowed to administer the medication. Some staff reported that their program will still administer the medication, despite the noncompliant label or order, if they are confident that they understand the discrepancy. The frequency of such discrepancies varies by site. Some programs report discrepancies only a few times a year, while others report frequent labeling discrepancies. Enabling a program nurse and/or pharmacist to resolve common labeling issues without requiring further attention from the HCP or pharmacy would save MAP staff substantial time and effort now spent on the phone or writing emails, trying to get busy doctors to make minor (in their view) changes to paperwork that they considered done. In addition, minimizing or eliminating situations in which medication is withheld due to noncompliant HCP orders or pharmacy labels and would improve residents’ access to prescribed medications.

R3.3: Reach out to programs that are using current waivers that allow insulin administration by MAP staff, rescue inhaler, and epinephrine auto-injector (EpiPen) administration by MAP staff, and pre-packing of medications by MAP staff to be administered by non-MAP staff. Assess the degree of benefit these flexibilities have provided, as well as the levels of risk and actual harm to clients they may have caused.

Under MAP policy 06-01(1), only licensed professionals are authorized to administer injectables (Executive Office of Health and Human Services Drug Control Program, September 1,

2015). COVID 19-related staffing shortages challenged compliance with MAP policy 06-01(1). In response, DPH waived MAP policy 06-01(1) as it pertains to insulin. The waiver allows MAP staff to administer insulin if they are trained to do so by a licensed professional and adhere to specified documentation practices. The MAP policy manual includes guidelines on injectables, citing insulin and epinephrine injection by MAP staff specifically (p. 40). MAP policy 06-01(1) stipulates that for MAP staff to administer insulin or epinephrine they must complete a DPH-approved course on insulin administration. No such course has been approved for insulin injection, so MAP staff can only administer insulin under the 06-01(1) MAP policy waiver. An approved insulin administration course would support sites' ability to provide care to residents with diabetes, especially at sites with severe staffing shortages.

Injectable medications are kept in a locked medication closet, accessible only to MAP-trained staff and licensed professionals. Keeping insulin and epinephrine in a locked medicine closet increases reaction times to emergency medical situations and endangers the health of affected individuals. Keeping at least one MAP staff member or licensed professional on site at all times is unattainable for some programs experiencing staffing shortages. If a program resident experiences a health emergency, such as anaphylaxis, and no MAP staff or licensed professional is on site, emergency treatment may be severely delayed, which could result in serious harm or even the death of the affected resident. Non-MAP staff should be trained in responding to emergency-level allergic reactions with an epi-pen injection, and, if any program residents are diabetic, to sudden severe drops in blood sugar with a glucagon injection kit or a pre-filled insulin pen. These delivery systems require minimal training and are often part of first-aid training. All direct care staff, including uncertified staff, should have access to EpiPens, pre-filled insulin pens, and/or glucagon injection kits. Additionally, many sites have LPNs on site, and it may be effective and efficient to allow LPNs to monitor and train all staff in using epinephrine and insulin administration devices.

R3.4. Simplify HCP Orders and reduce the emphasis on HCP signatures.

One common complaint about MAP procedures that we have heard from physicians and MAP staff is that the emphasis on requiring physicians' signatures on HCP orders is very onerous. A Chief Medical Officer (CMO) that we spoke with indicated that the need to sign and date every page of a paper form following a discharge from a health care facility is unreasonable and continued that "documents shouldn't require multiple signatures." These sentiments were echoed by MAP staff at several programs. Staff at MRC 3, DDS 5, DMH 2, and other sites, all reported troubles stemming from the requirements of getting signatures from HCPs. Some interviewees reported that documentation requirements create friction between HCPs and MAP-registered programs, sometimes leading to MAP programs needing to find new, more amenable HCPs for some residents. Once electronic systems are more widespread, this should not be a problem, but for the transition period MAP should be amended to reduce the need for physician signatures; allow other licensed personnel to sign orders; and eliminate the requirement that HCPs sign every page of discharge orders from hospitals and other medical

facilities.¹⁵ Additionally, HCP orders should be simplified. In their general practices, HCPs do not write out information to the level of specificity demanded by MAP, and this often presents a problem. MAP also directs physicians not to use abbreviations on their orders, a restriction that doctors are often unaware of. Many sites we visited indicated that physicians do not write MAP compliant orders because they are not used to them, and because they do not have time for them.

In the interim before electronic systems are more widely adopted, HCP order forms should mimic the information needed for a prescription – name of individual, dose, route, date, and space for additional information. For topicals, specifications surrounding the amount of topical to be used (“small” vs “dime sized”) should be relaxed. MAP compliant HCP orders do not reflect standard medical practices. Requirements found on page 136 of the MAP Policy Manual should be reevaluated to exclude unnecessary fields that can cause clerical errors.

R3.5: Allow MAP staff to administer medications based on hospital discharge orders.

To further mitigate the above problems, we suggest that MAP staff be allowed to administer medications from discharge summaries or after-visit paperwork. Time is wasted, and sometimes medication administration is delayed, in getting orders to be MAP compliant. Allowing medication administration based on discharge orders from hospitals and ERs would greatly improve the efficiency of MAP. We recognize the importance of reconciling the discharge medication orders and the client’s medication regimen when at the program. MAP policy calls for the program MAP staffer to go over both medication orders with the discharging physician and then again with the client’s usual prescribing HCP to reconcile the lists and avoid any potential adverse medication interactions. In practice, it is often very difficult for MAP staff to get the attention of a busy hospitalist or ER physician at the time of discharge; it can also be difficult to get the attention of the prescribing HCP in a timely manner to review the discharge orders and re-issue prescriptions that the client was taking before hospitalization. The main purpose of this recommendation is to avoid delays in administering medication after discharge caused by tracking down extra signatures or getting healthcare facility physicians or staff to correct clerical errors that have no effect on medication administration.

R3.6. Broaden allowances for telephone orders and eliminate the need for follow-up signatures.

The requirement, per section 13-3 of the MAP Policy Manual, that the service provider must obtain an HCP signature within 72 hours of taking a telephone order to continue administering the medication as indicated by the order should be eliminated. This is a burdensome policy which does not improve safety of residents. If an order is taken over the

¹⁵ There are some distinctions about the requirement that every page of an HCP order be signed. When a client is discharged from a health care facility, every page of the discharge order must be signed by the HCP, see p. 144 of the MAP Policy Manual (Executive Office of Health and Human Services Drug Control Program, September 1, 2015). Orders from prescribing HCPs—such as the client’s primary care physician—that run to multiple pages need not have every page signed.

phone, and there is no confusion on the part of the MAP staff or the doctor, then there is no need for additional paperwork. (If there is confusion, then MAP staff or a program supervisor can phone the HCP for clarification.) In these instances, the pharmacy label and crosschecks serve as a safeguard against medication error, and an HCP signature is not necessary. We heard from interviewees that it is often impractical to get an HCP signature within 72 hours of receiving a telephone order, especially when the provider does not understand that it is required by MAP, and if the order is received at the end of the week. With the current staffing crisis throughout the healthcare industry, doctors sometimes do not respond within 72 hours. Some programs resort to scheduling in-person appointments solely to get paperwork filled out so they can meet the 72-hour deadline. Other programs will call to get a new phone order within the 72-hour window just to reset the 72 hour clock, in what could be called “evergreening” the phone order. Additionally, this policy was written when faxing was more prevalent. As more providers work from home, and more healthcare paperwork goes online, it has gotten more difficult to obtain physician signatures. This policy is forcing MAP program staff to do additional work, burdens both them and the HCPs, and (we were told) creates tension between physicians and programs. Because there is already a safeguard against improper administration (the pharmacy label can be checked against the telephone order), the requirement of an HCP signature for telephone orders should be eliminated.

R3.7. For MAP direct care staff, replace the three 2-way matching procedures for each medication they administer with a 2-way check prior to administration. Have direct care staff perform the following steps for each medication being administered:

- a. Check if there are any medication changes flagged on the med sheet, noted in Progress notes, or flagged on the medication container/closure.***
- b. Check that the pharmacy label and med sheet agree as to person, medication, dose, frequency, and route.***
- c. If the drug label and med sheet agree, “pour” the medication.***
- d. Administer the med(s) to the client and document the administration.***

The common practice among numerous states of having unlicensed direct care staff administer medications has been facilitated by the application of one of two distinct models of professional oversight: nurse delegation and direct physician authorization. The current practice of comparing the HCP order, the pharmacy label, and/or the medication sheet three times before administering each dose of medication is a result of the Commonwealth’s policy abjuring nurse delegation in favor of direct authorization by prescribers as the model for assigning medication administration to unlicensed personnel.

The mechanism for direct authorization is the physician’s order, or HCP order, which primarily comprises the prescription. By sending their care order to the service provider, the health care provider authorizes the service provider to administer the medication as described in their order. This means that the HCP order must match the prescription label for the authorized service provider to be sure they are administering the medication as ordered by the HCP.

Fulfilling this responsibility has evolved into the three-time, 2-way matching protocol that has proven too time consuming and onerous for many providers.¹⁶ Many MAP staff now apparently bypass at least some of these steps. MAP policies currently in place make the three-time, 2-way checks by MAP direct care staff redundant. MAP Policies 13-1 and 13-2 specify the required procedures that certified or licensed service provider personnel must follow when receiving ongoing HCP orders, changes in current HCP orders, or new HCP orders. Ongoing HCP orders for prescription drugs supplied monthly are transcribed into the new monthly med sheets by certified or licensed personnel (often supervisory personnel), using Medsoft, another electronic medication record platform, or by hand. Before med sheets are posted at the med stations, a second certified, licensed, or supervisory person often performs quality assurance on the transcription. When the medications associated with the HCP orders arrive from the pharmacy, the labels are checked against the HCP orders and the med sheet entries. Per the policy, if any HCP order is “unclear or confusing,” the program must contact the HCP for clarification before administering the medication.

For mid-month, new HCP orders or mid-month changes to ongoing orders, the procedure called for by MAP policies is the same—one certified or licensed person transcribes the order into the med sheet, and another performs QA on the transcription. If an HCP order is changed, it must be prominently flagged on the med sheet and the med container/closure, and all staff must be verbally informed of the change. When the medication arrives, the drug label is checked against the order and the med sheet transcription. Again, if any HCP order is “unclear or confusing,” the program must contact the HCP for clarification before administering the medication.

Given these procedures, the daily repetitive, time-consuming three 2-way checks by MAP staff for every dose they administer during med passes seem to contribute little to client safety from medication error. As a check on the accuracy of the transcription or pharmacy label relative to the HCP order, it is unnecessary, as two experienced certified or licensed employees have already checked and QA’ed that the three documents agree and are neither unclear nor confusing. If the purpose of the three 2-way checks is to prevent the MAP direct care staff from making an error like popping a tablet from the wrong blister pack, the simpler steps outlined above should serve the function. As the transcription has already been verified by experienced personnel to be parallel to the HCP order, matching the medication label to the transcription just before “pouring” the medication is protection enough against a basic “wrong medication” or “wrong person” error by the MAP-certified staff.

¹⁶ The current MAP procedure for administering each dose of medication calls for MAP staff to (1) compare the 5 rights on the HCP order with the 5 rights on the pharmacy label to make sure they agree; (2) compare the 5 rights on the pharmacy label with the 5 rights transcribed onto the med sheet and if they agree, “pour” the medication; (3) repeat comparison of the 5 rights on the pharmacy label with the 5 rights transcribed onto the med sheet, then give the medication to the client; (5) “look back” and compare the pharmacy label with the med sheet a third time “to make sure that what the person just swallowed is what you intended to administer” (Massachusetts Medication Administration Program, 2020).

The three 2-way checks have unintended negative impacts on the MAP mission. It is plausible, if not probable, that some of the negative effects of the three 2-way checks are undermining client well-being to some extent. Such effects include: widespread bypassing of the multiple checks by many MAP staff (intentionally bypassing a prescribed practice like the three 2-way checks probably disaffects employees from MAP, and tends to lower morale); time pressures experienced by MAP staff that are doing the three 2-way checks during med passes; annoyance and even anger vented by some clients owing to the time consumed by the med pass due to the three 2-way checks; and the stumbling block to passing the med administration part of the certification test that the three 2-way checks present to MAP test takers (candidates must read out loud the 5 rights on the HCP order, Rx label, and transcription three times during the test).

The three 2-way checks do not contribute appreciably to preventing medication errors that require medical attention (i.e., hotline calls). Interviewees at residences where we were told that MAP direct care staff routinely or often bypass the three 2-way checks, did not report having more hotline MORs since this practice began to widen. Because of the small numbers of programs and MORs involved, no statistical inferences can be drawn from this. Other practices, such as over-flagging med sheets for minor adjustments to labels or HCP orders, to the point where real medication change flags become less noticeable, are reportedly a greater source of MORs.

MORs and potential hotline MORs can also result when an HCP sends a medication change order to the service provider but does not send a corresponding prescription to the pharmacy. One closed-door (i.e., non-retail) pharmacy we spoke with that handles over 20,000 group home prescriptions per month, indicated that “about a third” of the HCP orders for medication changes sent to group homes are not sent to their pharmacy. Eventually, communications between the three entities produce a prescription for the pharmacy to fill and send to the program, but meanwhile wrong dose or omitted dose or other errors may result. Following the recommended steps (a) and (b) above would alert staff that there was no new prescription available to correspond to the transcription of the changed HCP order.

4.4 Over-the-Counter (OTC) Medication Exempt Tier Recommendations

R4.1: Expand the OTC tier that is exempt from needing an HCP order for administration, e.g., dandruff shampoos, fluoride toothpaste, certain topicals such as non-steroidal skin moisturizers, anti-perspirant deodorants, non-alcoholic mouthwashes, and others to be determined by DPH.

During our interviews, MAP staff reported needing to obtain HCP orders for many common OTCs and OTC PRNs, even including dandruff shampoo, fluoride toothpaste, and topicals such as sunscreen. One MAP staff member recounted seeing a pharmacy label on a container of lactose-free milk, although food products, including nutritional supplements, are not under MAP purview.

Staff often expressed frustration in our interviews about personal care items requiring an HCP order under MAP, due to the significant time and effort they expend to obtain HCP orders and pharmacy labels for such items. Yet, the September 2020 revision of the MAP Curriculum states on p. 38 that “Sunscreen, insect repellent, and personal hygiene cleansing products do not require an HCP order.” Expanding the OTC tier of products exempt from needing an HCP order would increase residents’ access to products important for everyday personal care and free up MAP staff members’ time to focus on resident care.

R4.2: Educate all stakeholders on what medications are on the exempt OTC tier.

The fact that staff members at MAP sites often manifested confusion about what products are exempt from requiring an HCP order highlights the need for DPH and the four agencies to conduct outreach to programs regarding which products are on the exempt tier. Staff we interviewed have described historical and ongoing uncertainty about which products were exempt, mainly due to frequent changes in which products are so designated. Once an initial list of additional exempt products has been drawn up, MAP administrators should reach out repeatedly to apprise all stakeholders regarding the new products on the OTC tier, thereby limiting superfluous efforts by MAP staff to obtain unnecessary HCP orders for products not requiring one.

R4.3: Allow service providers to obtain standing orders from HCPs for non-exempt OTC medications, during the client’s regular physical checkup.

MAP staff across our interview sites reported that MAP created barriers to treatment for individuals suffering from mild ailments that could easily be treated using non-exempt OTC medications. MAP staff complained about the time and level of effort required to obtain HCP orders for OTC medications to treat minor ailments such as headaches. MAP staff reported that such minor ailments may clear up before MAP staff can administer the medication under MAP policy. Such short-term ailments sometimes go untreated due to MAP policy restrictions, and residents are left in needless pain or discomfort without treatment options. Once an HCP order is received and the medication is available, residents often have OTC medication left over. According to MAP policy, the leftover medication can only be used for the specific reason cited on the HCP order. If the resident develops a different ailment for which the same OTC medication could be administered for treatment, a new HCP order must be obtained, and new medication must be purchased. The excess medication from the prior HCP order cannot be used to treat a different ailment from the one listed on its HCP order.

For example: a resident has a headache, obtains an HCP order for OTC Tylenol to treat a headache, and uses just six Tylenol pills out of a blister pack of 20. If the same resident develops a toothache a few days or weeks later, the resident cannot be given any of the remaining Tylenol because it was prescribed for headache, not toothache. The resident must obtain another HCP order for Tylenol specifying that it is to treat tooth pain. In situations like this, MAP policy technicalities diminish access to treatment and increase medical costs to residents (because they must purchase and then wait for additional OTC medication to be

obtained, despite having the same medication on site). Some MAP-registered sites reported trying to skirt this MAP restriction by suggesting to HCPs that they provide broader reasons for treatment on their orders for OTC medications, such as “general pain” or “general body pain.” Interviewees indicated that they missed being able to have standing orders from HCPs, which allowed them to administer certain OTC medications as needed, while adhering to the OTC’s label directions.

A standing order for each resident, obtained during the resident’s regular checkup, can be used by MAP staff to administer the OTC on an as-needed basis (following the OTC’s label directions and given that there are no changes to the resident’s non-OTC medications). This would allow more timely treatment for residents, reduce their medical expenses for OTC meds, and reduce the time and energy MAP staff currently expend obtaining HCP orders.¹⁷

4.5 MAP Certification Training and Testing

R5.1: Examine MAP curriculum to correct content and instructions inconsistent with MAP policy and revise curriculum accordingly.

MAP training is based on the curriculum published in *The Massachusetts Medication Administration Program Certification Training: Responsibilities in Action*. The curriculum was last revised in September 2020. Some of our interviewees said that MAP auditors were requiring procedures that were in the curriculum but not in the MAP Policy Manual. A couple of examples of potential misinterpretations of MAP policy or internal inconsistencies within the curriculum follow.

- *Example 1.* An exercise on p. 131 of the curriculum asks the student to “compare the 5 rights between” a sample HCP order and the accompanying medication label sent from the pharmacy. Students are asked, “Do the 5 rights agree? If not why not?”

The answer on p. 266 is: “No. The frequency listed on the HCP order is ‘daily in the evening’ and the frequency listed on the pharmacy label is ‘every evening at 8 p.m.’”

MAP policy on medication administration times (p. 44 of the MAP Policy Manual) (Executive Office of Health and Human Services Drug Control Program, September 1, 2015) states that HCP Orders “are not required to have exact administration times” but “should specify the time of day daily medications should be given.”¹⁸ Quite obviously, the five rights in this example do agree; there is no discrepancy between “daily in the evening” and “every evening at 8 p.m.” Following either direction would comply with the doctor’s order regarding timing and frequency. The purpose of calling this innocuous difference in wording (not meaning) a disagreement between the order and the label may be to reinforce to MAP

¹⁷ If any changes are made to the resident’s prescription medications, the standing order(s) would be voided and the resident’s HCP would have to issue a new one, or not, as they deem appropriate.

¹⁸ The MAP Policy Manual considers “time of day” to be defined by terms like morning, afternoon, evening, etc., rather than using the more common definition, i.e., the time on a watch or clock. This has caused some misinterpretation by program personnel as to what is required on the HCP in terms of “time of day.”

candidates that all such differences count and should be referred to a supervisor or MAP consultant. At best, doing so would interrupt the med pass for a few minutes. At worst, given current staffing problems, a supervisor may not be on duty and there may be a delay in reaching a MAP consultant, which could then escalate this alleged discrepancy into a missed med MOR.

- *Example 2.* Page 137 of the Curriculum presents a summary of the Medication Administration Process “if you are administering multiple medications due at the same time, to one person.” For each medication, under the second stage (“Administer”), the curriculum states:

“Check 1-verbalize and point to compare the 5 rights (HCP order and pharmacy label)

“Check 2-verbalize and point to compare the 5 rights (pharmacy label and med sheet)

“Prepare the medication

“Check 3- verbalize and point to compare the 5 rights (pharmacy label and med sheet)

“Give the med

“Look back (silent comparison between pharmacy label and med sheet)”

At one residence where we interviewed the MAP coordinator, we were assured that MAP staff do read the HCP orders, labels, and med sheet transcriptions out loud, repetitively, when administering meds and that this was required by MAP. Reading these out loud does not appear in the Policy Manual, and interviewees at other MAP-registered programs expressed surprise at the idea. The Med Pass test does require candidates to read these three items out loud, but this is to demonstrate to the test evaluator that the candidate is actually performing the required checks. It is not required by the MAP Policy Manual. Some MAP staff may choose to describe the name and dose of each medication conversationally to the client as they pop them out of the blister pack into a paper cup, but it is not required by policy to do so.

R5.2. Establish an ongoing channel of communication between and among MAP candidates, trainers, program managers, and service provider officials to communicate with MAP policy officials at the four Agencies. For instance, an FAQ page and a dedicated email account where candidates and trainers can get authoritative information and answers to questions about MAP policy, acceptable MAP procedures, MAP curriculum, and certification exams.

At a time when many smaller programs rely on the online MAP training, and staffing shortages limit opportunities for on-the-job tutoring by experienced coworkers, it would be very helpful to MAP candidates—as well as trainers and program supervisors—to be able to submit questions about the curriculum or acceptable MAP procedures to knowledgeable people at their program’s state agency. An initial step toward this, for example, would be a web page with FAQs about the training and certification tests, with an invitation to send questions

to a dedicated email address. We are not aware of a communication channel that affords direct care workers this kind of access.

While our focus is MAP, it is also apparent that some details and intentions of MAP policy and recent flexibilities¹⁹ have occasionally been misunderstood or misinterpreted by some providers and staff. More formal and more open avenues of mutual communication are desirable, to facilitate communications between and among DPH, the four agencies registering MAP programs, across the four agencies, and between the four agencies and service providers' management and program personnel. Within each of the four agencies, vertical communication should be encouraged and facilitated so that agency management can be more in touch with what their MAP coordinators are encountering.

R5.3. In-person training should be encouraged and facilitated for programs that now rely primarily on the online training.

We heard numerous complaints about the self-directed online training, which was rushed into service after the State of Emergency caused all in-person MAP training to be suspended as of March 10, 2020. Most programs that we visited now combine the online training with in-person classes –i.e., hybrid training—conducted by trained staff or by outside trainers, or virtual classes on Zoom. Other programs offer less formal support sessions to varying extents. The Department and registering Agencies undoubtedly can assess avenues and opportunities for encouraging smaller companies or stand-alone residences to augment online training with in-person instruction.

R5.4. Allow flexibility in the requirement that a candidate's identification at the time of the certification tests match their test registration information exactly. If a proctor at the test site vouches for the test taker's identity, that should be enough to allow the candidate to take the exam.

Many of our interviewees related experiences of one or more of their candidates that were not permitted to take the test by contracted test administrators due to apparent “zero tolerance” for the slightest difference between the candidate's official identification and the information the contractor had on their registration form. Discrepancies could be as slight as a missing middle initial, a name misspelled by the contractor, or a different address on the identification card/license. Despite the test proctor vouching for the candidate's identity, candidates have been denied the test for such trivial reasons. However rare or common such injustices are, they should not occur at all. This form of zero tolerance potentially disadvantages certain people who, by choice or necessity, have changed their names since obtaining their most recent state-issued identification, including transgender and gender neutral people, married or divorced women, and battered spouses who may be shielding their identity. This inflexibility on the part of the test contractor must be modified, at the least to allow the test proctor to attest to the candidate's identity.

¹⁹ Flexibilities are short- or medium-term modifications to policies issued to meet emergency conditions, most recently those brought on by the pandemic.

R5.5: Eliminate the transcription test as a requirement for MAP certification; keep transcription as part of the curriculum and training.

As described above in Section 3.2.4, MAP direct care workers perform transcription infrequently, if at all. Nearly all programs we visited have nurses or other supervisory personnel transcribe incoming monthly medication deliveries to create the monthly med sheets by computer. The med sheet files are then distributed to or printed at each residence or med station. Thus, the only transcription a MAP staffer might perform is when an HCP calls in a med change or orders a new prescription mid-month. Even then, if the new order is called in or the medication delivered when no supervisor or house manager is present, and the MAP staff does transcribe the new medication order, their work will be checked and corrected when a certified supervisor or house manager arrives.

Programs where med changes are more frequent are more likely to require transcription by MAP staff. Some interviewees at DMH sites were concerned that MAP staff should know how to transcribe accurately. But even they stated that their MAP staff did transcription just once or twice a month and agreed that the current testing for transcription was so cumbersome and unrelated to the actual experience of transcription as practiced that the testing could be eliminated. Keeping the training for transcription and eliminating the transcription test would eliminate a major source of anxiety and cause of failure for MAP candidates, and a source of frustration for trainers, who currently must waste instruction time teaching MAP students the mechanics of how to take the transcription test on a computer, rather than explaining the content being tested.

For these reasons, we recommend eliminating the transcription test as a requirement for MAP certification, while retaining transcription training.

R5.6. Apply the “100%” performance level required to pass the Med Pass test only to administering the medications correctly per the 5 rights; verifying that the HCP order, the pharmacy label, and the med sheet are all consistent; and properly administering the medication and recording its administration. Further, have the Med Pass test performance of each candidate recorded and evaluated by a proctor at the test site, rather than by the contracted remote evaluator.

Many interviewees involved in preparing MAP candidates for the certification tests related anecdotes about competent and valued direct care staff who failed the Med Pass test due to errors caused by anxiety or due to the de facto “zero tolerance” policy arbitrarily applied by remote evaluators to “errors” such as: (1) test taker entering the initials of their middle and last names instead of the initials of their first and last names; (2) writing a word or abbreviation in which one of the letters “looks wrong;” (3) using a pencil point to count empty rectangles on the med sheet and thereby leaving (invisible) “stray marks” in some of the squares; and (4), in one instance, told to us by the MAP trainer, passing a candidate who that trainer felt had surely failed the test.

We are aware that anecdotes are not data and believe that most Med Pass tests are well conducted and properly evaluated. Nevertheless, stories about a small number of arbitrary or unjust med pass failures travel through the MAP community and are likely to have heightened anxiety and soured attitudes about the test among MAP candidates.

For all these reasons, we recommend that the 100% standard for passing the Med Pass Test be applied only to the candidate's performance of the 5 rights and that the performance of the candidates be evaluated by an on-site proctor.

R5.7. Increase the time permitted for completing the Med Pass Test from 15 to 25 minutes.

Allowing some extra time for candidates to complete the Med Pass Test will help diminish test anxiety, as will replacing the remote test evaluator with an onsite neutral evaluator. Also, allowing the extra time should be a small benefit to some candidates with ESL and diminish the inherent inequities many face when taking the test.

R5.8: Edit the Knowledge test questions and response options to simplify sentence structure, syntax, and vocabulary; eliminate potential ambiguities. This will benefit all test takers and will help mitigate inequity experienced by people with ESL that are taking the test. Further, increase the time allowed for the 50-question test from 75 minutes to 100 minutes.

The Knowledge certification test comprises 50 multiple choice questions on various aspects of MAP policy and procedure. As detailed in Section 3.2.4, an author of this report took the Knowledge pre-test,²⁰ which has 30 questions, to try and assess how justified the many complaints are that our interviewees voiced about this test. The main issues raised repeatedly were that many of the questions are “tricky,” are testing material not directly relevant to MAP staff duties, are difficult for many candidates with ESL to interpret, and are too technical and difficult (we heard the phrase “more like a nursing school exam” more than once). Based on taking the 30 question pretest and scrutinizing the questions and response options, we found all but the last criticism (i.e., the test is “too technical”) to be appropriate.

Simplification of language and disambiguation of test questions have been investigated by researchers over the past two decades, with specific attention to accommodation of English language learners (ELLs) in middle and high schools being assessed for mathematics achievement. In general, the effect of simplifying language in story-type math problems has been shown to raise performance levels of ELLs (Buono & Jang, 2021; Pennock-Roman & Rivera, 2011; Abedi & Lord, 2001). In Virginia, since 2009, the state has accommodated “limited English

²⁰ The Knowledge pretest is a set of 30 questions that candidates must answer and pass in the classroom under closed-book conditions before they are allowed to take the 50-question Knowledge certification test. (This pretest qualification is meant to screen underprepared candidates from wasting one of the three test attempts they have before having to repeat the 16-hour curriculum.) The pretest is also educative; even candidates that pass it can take it repeatedly as practice for the Knowledge certification test, which they must pass with at least 80% to be MAP certified.

proficient” (LEP) students with a Plain English version of their mathematics Standards of Learning (SOL) tests (Virginia Department of Education, 2014). The simplification of language has no impact on the difficulty of the mathematical problems that test takers are asked to solve. The steps that the Virginia DOE took to simplify the language in their tests are summarized in Appendix C. Also, the Federal government has made recommendations to achieve plain English writing, secondary to the Plain Writing Act of 2010, 5 U.S.C. 105. The major purpose of the legislation is that “Government documents issued to the public must be written clearly.” In the *Federal Plain Language Guidelines* (2011), the authors’ primary emphasis and first guideline is to “Write for your audience.” (Plain Language Action and Information Network, 2011)

A large percentage of the “audience” for the MAP Knowledge test comprises candidates with ESL. Although MAP candidates with ESL have, at a minimum, achieved competency in English sufficient to be hired by service providers for positions requiring English competency, many will still have more difficulty interpreting test questions than candidates with English as their first language. Further, simplification of the language and disambiguation of the Knowledge test questions will benefit all test takers, those with ESL and those with English as their first language.

Appendix C presents a table with the 30 original questions from the pretest reviewed by our team member in May 2022 (in the left column) and the same questions edited to reduce ambiguities, simplify sentence structure, minimize potential confusion, and improve comprehension. This is the sort of review we recommend for all the Knowledge test questions. Simpler synonyms are used for words potentially unfamiliar to people with ESL, such as “obscenities” or “incidents;” present tense and active voice are applied; and the second person is used to personalize the situations described in many of the questions. Ambiguous phrases are rewritten. For instance, in question 3 (“When completing medication administration, the last thing you should do is...”), does “completing medication administration” mean when finishing the med pass, or when finishing the administration of one medication dose to a single client? The available response options make clear that the question intends to ask: “What do you do after you finish giving a resident one of their medications?” We can infer this from the available responses, but there is no reason a MAP candidate should have to confront questions that slow them down as they try to interpret just what they are being asked. This issue is compounded for many people with ESL.

R5.9. Allow people with ESL to bring online or hard copy translational dictionaries that translate between English and their first language.

One of our site visit interviewees stressed that MAP candidates with ESL deserved special recognition for their diligence and fortitude in meeting the added difficulties of being tested in a foreign language. One way of recognizing these extra difficulties and levelling the playing field a little is to allow people with ESL to access dictionaries that translate between English and their first language while taking the test. This idea was greeted enthusiastically by interviewees to whom we mentioned it. It is also consistent with the goals of diversity,

inclusion, and equal opportunity expressed in Governor Baker’s executive order #592 (Baker, 2020).

R5.10. To ensure that the 30-question Knowledge pretest provides suitable preparation for the 50-question Knowledge certification test, draw at least half of the 30 pretest questions at random from the current pool of 620 certification test questions.

Currently, MAP test designers have developed a pool of 620 questions designated for the Knowledge certification test and approximately 200 questions for use in the Knowledge pretest. During some of our later site interviews, we were told MAP trainers and residential supervisors that the pretest questions no longer fairly represented the topics or complexity of the questions in the certification test. It is entirely possible that recent pretests have randomly presented a disproportionate number of easier questions, while the certification test questions have been (again by chance) more difficult than usual. Using 15 or more random certification test questions in the pretest should lower the probability of a wide divergence in difficulty between pretest and certification test. With such a large pool of potential questions, the probability of the same question appearing in a pretest and a near-term certification test is small enough to be of no concern.

R5.11. Allow all candidates to refer to the curriculum Responsibilities in Action, either in hard copy or online version, their notes, and other training materials when taking the Knowledge test.

Research and experimentation in cognitive psychology have shown: (1) that studying material, then testing with feedback after the test, enhance retention of the material being tested more than studying without testing, a phenomenon called the *testing effect* (Rowland, 2014); and (2) that open-book testing and closed-book testing with feedback are equally effective at enhancing long-term retention of material being tested, viz., “both produced equivalent retention on a delayed test.” Agarwal et al. (2008). There has been some debate about the latter finding, and some researchers have obtained conflicting results. However, recent experimentation using a longer gap (four months) between the closed- and open-book tests and the subsequent assessment of retained knowledge did not produce significant differences in long-term retention (Spiegel & Nivette, 2021). An additional (if unsurprising) advantage of open-book testing was elicited by a survey of dental students in Britain, 85 percent of whom disagreed with the statement that “open book testing is stressful” (Dave, et al., 2020).

A thorough review of the literature on open book versus closed book testing is out of place here.²¹ There seems little reason not to make the Knowledge test open book. A common rationale for open-book testing is that it more closely resembles decision-making and problem solving in most jobs, in which people have numerous resources to draw upon for applicable knowledge. This is certainly true for MAP-certified staff. When on the job, the candidates will have access to the curriculum to refer to in case any of the matters on the Knowledge test arise and confound them. Further, as shown by the research cited above, looking up answers to test questions is educative in itself, evidently just as much as guessing and being told the correct answer later. MAP testing should be viewed more as part of the training than as an assessment of a candidate's ability to do the job without looking anything up.

4.6 MAP Staffing Issues and Career Trajectories

R6.1. Increase compensation for direct care workers.

Starting wages among direct care workers in Massachusetts observed in our sample fall more than \$4 below the average hourly wage for UAPs in 33 states when controlling for cost-of-living differences between Massachusetts and the other states. As agencies struggle to attract quality candidates and retain existing talent, managers are keenly aware that below market wages present a serious challenge for hiring and retention. Direct care roles are labor intensive and involve multiple responsibilities, including day trips, visits to the doctor and pharmacy, and preparing meals. In addition to meeting these demands, MAP-certified staff are responsible for safely administering medications multiple times a day – all for modest pay. Data collected during our interviews offers evidence to suggest that below-market compensation takes a toll. To comply with minimum staffing requirements in the face of severe staff shortages, many sites depend on overtime, while others ask MAP-certified staff to travel to multiple sites to administer medications. With long hours, little time off, and some staff working multiple jobs, it is unsurprising that staff have left the field.

The Massachusetts Coalition of Families and Advocates (COFAR) is a statewide nonprofit that advocates for people with intellectual and developmental disabilities, their families, and guardians. In response to deep, prolonged staffing shortages, the Coalition has urged the state legislature to increase compensation for direct care workers using reserve funds, with a budget provision that would direct 75 percent of funds to direct care workers (Coffey, 2022). On July 18, 2022, Governor Baker signed a \$52.7 billion fiscal year 2023 state budget, which included the 75 percent provision, which will direct up to \$173 million in state funding to direct care workers through DDS and other human services agencies (Kassel, 2022). We recommend raising

²¹ Much of the research on testing formats has been performed with undergraduate and graduate/professional school students as subjects and often focuses on their perceptions of future academic performance. Some students that report increased anxiety in response to open book testing, for example, express concern that they will be less prepared for future classes, thereby hindering their educational careers, or have their academic achievement viewed skeptically by peers. Such concerns are unlikely to affect many MAP candidates, who are more likely to view MAP certification, at least for the time being, as their end goal, and would presumably experience more optimism and reduced anxiety while training with an open book test in mind.

wages for direct care workers. MAP agencies could monitor the enforcement of this provision and evaluate the impact on direct care worker salaries.

Currently, service providers are remunerated under their state contracts for the labor of MAP direct care workers at an hourly rate based on the median hourly rate reported by the Bureau of Labor Statistics (BLS) for workers in Massachusetts with corresponding job titles. A recent analysis by the leadership of four stakeholder organizations argues for using the 75th percentile hourly wage rate as a benchmark for direct care wages, rather than the median (50th percentile). Using the 2020 BLS data, this would have raised the benchmark rate from \$16.79 to \$20.30 (Attaliades, et al., 2022).

The remuneration rate is set every two years, which, as the authors pointed out, can make the benchmark wage even less competitive in the second year, even without upward pressure on wages due to a labor shortage and inflation (Attaliades, et al., 2022). An entry-level wage of \$20/hr for community residence direct care workers in Massachusetts would at least put those jobs closer to an equal footing with other entry-level opportunities in the food service and retail industries. We also note that the 2020 BLS wage data mainly reflects conditions before and at the very beginning of the pandemic, i.e., before the labor shortage caused many organizations to increase entry-level wage rates, and before inflation began to gain momentum. The real and perceived value of a wage rate of \$16.79 per hour is certainly much lower now than it was just before the pandemic. Based on the experiences of our interviewees, a jump to \$20/hr will at least help attract some more candidates to schedule job interviews. Other incentives and efforts, described below, will be needed to build a larger pool of candidates for MAP direct care jobs.

R6.2: Develop a course and externship program on direct care for students enrolled in Career/Vocational Technical Education (VTE) Medical Assisting Programs with a unit dedicated to medication administration.

The Massachusetts Department of Elementary and Secondary Education Office for Career/Vocational Technical Education (VTE) administers state and federal law governing vocational technical education programs in public schools. As of this writing, more than 900 students are enrolled in Medical Assisting Programs administered by 16 Career/Vocational Technical Education schools regulated by VTE. These programs adhere to the topics, standards, and objectives published in the 2014 Medical Assisting Vocational Technical Education Framework under the Health Services Occupational Cluster (Massachusetts Department of Elementary & Secondary Education, 2014). Medications are one of fifteen Technical Knowledge and Skills topics covered in this Framework. The curriculum on this topic is designed to support the standards and objectives drawn directly from the VTE Medical Assisting Framework (see Exhibit).

These standards and objectives demonstrate meaningful overlap with the MAP curriculum, *Responsibilities in Action* (Massachusetts Medication Administration Program, 2020). DPH, with supportive partnership from the Office for Career/Vocational Technical Education (CVTE), the Massachusetts Association of Vocational Administrators (MAVA), and the

Massachusetts Vocational Association (MVA), could potentially convince Medical Assisting Programs across the state to prepare students for MAP certification and entry level direct care employment. Relevant initiatives might include:

- Forming a Model Curriculum Unit (MCU) Team through the Massachusetts Department of Elementary and Secondary Education to develop a course on direct care for students enrolled VTE Medical Assisting Programs with a unit dedicated to medication administration; and designing this unit based on *VTE Medical Assisting Framework, Section 2M Medications*, and MAP curriculum published in the *MAP Certification Training: Responsibilities in Action (RIA)*, including preparation for the state MAP examination.
- Collaborating with providers and the Office for Career/Vocational Technical Education (CVTE) to establish a direct care externship program at community residences and programs across the Commonwealth for students enrolled in VTE Medical Assisting Programs. (Students enrolled in VTE Medical Assisting Programs are required to complete a supervised student practicum as part of their course of study in accordance with *VTE Medical Assisting Framework Section 2.0, Externship*.)

VTE Medical Assisting Framework – Standards and Objectives

2.M Medications

- 2.M.01 Demonstrate an understanding of pharmacology.
 - 2.M.01.01 Differentiate among various drug classifications.
 - 2.M.01.02 Explain the role of governing agencies (e.g., Drug Enforcement Administration (DEA), U.S. Food and Drug Administration (FDA), etc.).
 - 2.M.01.03 Demonstrate the use of the Physician’s Desk Reference.
 - 2.M.01.04 Understand principal actions of drugs.
- 2.M.02 Prepare medications for administration.
 - 2.M.02.01 Reconstitute medication from a powder.
 - 2.M.02.02 Withdraw medication from a vial.
 - 2.M.02.03 Calculate medication dosage as ordered.
 - 2.M.02.04 Identify the Six Rights of Medication Administration.
- 2.M.03 Perform and state the common routes of medication administration.
 - 2.M.03.01 Perform oral administration.
 - 2.M.03.02 Perform intramuscular administration.
 - 2.M.03.03 Perform intradermal administration.

To support this work, eligible parties might consider applying for a Career and Technical Education (CTE) Partnership Planning Grant, a federal program for regional and local partnerships to expand existing, and/or develop new, CTE programs and initiatives that increase student access to CTE opportunities, primarily through more effective use and integration of current capacity and resources.

R6.3: Offer grant funding to support MAP-certified staff in pursuing additional training or education in health care or community services.

During our interviews with MAP-registered service providers, we asked staff and management about career paths available to entry level MAP candidates and MAP-certified direct care staff. Service providers asserted that MAP-certified personnel were reasonably

positioned to pursue jobs as a program manager or shift supervisor and that they have seen entry-level staff rise to supervisory positions, including residential management. While some certified staff advance their careers within their companies, MAP certification is not widely viewed as the first rung on a career ladder. To incentivize MAP certification and support retention, we recommend establishing a professional development/educational grant program to support MAP-certified staff pursuing further training or education in community-services.

The Commonwealth Corporation offers a model for grant-funded workforce training. Designed to “help businesses respond quickly to change and keep employees engaged” the Training Fund Express Program matches employers up to \$3,000 (\$30,000 per year) for employees that complete a course from a flexible directory of trainings approved by the Corporation. Express is the fastest path to funding offered by the Corporation, with grants awarded in as few as 21 days. As of this writing, the Express Fund Directory offers a limited number of approved healthcare courses and just one certificate program. However, training providers may request to register new courses with the directory. We recommend:

- Partnering with healthcare and community-service training providers to register courses and certificate programs with the Training Fund Express Program, or
- Establishing a new grant fund exclusively available to MAP-certified direct care workers modeled after the Express Program.

Because MAP-certified direct care workers are reasonably positioned to pursue a career as a shift supervisor, program manager, or residential manager, we recommend including coursework and training opportunities that prepare staff for advancement and excellence in these roles.

R6.4: Consider counting MAP certification toward the requirements of other medical certification or licensure programs.

To qualify for MAP certification, staff are required to complete 16 hours of training based on the curriculum published in *The Massachusetts Medication Administration Program Certification Training: Responsibilities in Action (RIA)*. This curriculum covers handwashing, indirect care, vital signs, and patient rights, clinical skills and concepts that are fundamental to a wide range of direct care roles. To incentivize MAP certification and support career development among direct care personnel, we recommend the Bureau of Health Care Safety and Quality Division of Health Care Facility Licensure & Certification consider counting MAP certification toward the requirements of other medical certification or licensure programs.

One example might be the Nurse Aide Certification Program, which requires 75 hours of training through an approved Nurse Aide Training (NAT) Program, including 25 hours of clinical experience. NAT programs cover clinical skills like taking vital signs; patient care; safety; food service; personal care; elimination; hygiene and infection control. These skills are exercised by MAP-certified direct care workers in residential and community programs every day. Some (vital signs, resident care, hygiene, infection control) are covered directly in the RIA curriculum.

Given this overlap, DPH might consider extending a partial waiver of training hours or clinical experience required for Nurse Aide Certification.

Waiver provisions are already available for individuals that can verify they meet the qualifications listed at 105 CMR 156.100: *The training of nurses' aides in long-term care facilities*. Individuals are eligible for the Nurse Aide Training Waiver to take the Massachusetts Nurse Aide Competency Evaluation if (a) the individual is currently certified as a nurse aide in another state; (b) the individual has successfully completed a nurse aide training program in another state that has been approved by that state; or (c) the individual has successfully completed a clinical course in an approved school of nursing. A similar waiver might be extended to MAP-certified direct care workers if they choose to pursue nurse aide certification, or other applicable medical licensure programs.

5 REFERENCES

- Abedi, J. & Lord, C., 2001. The language factor in mathematics tests. *Applied Measurement in Education*, 14(3), pp. 219-234.
- Agarwal, P. K. et al., 2008. Examining the testing effect with open-and closed-book tests. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, 22(7), pp. 861-876.
- American Nurses Association, 2013. *ANA's Principles for Delegation by Registered Nurses to Unlicensed Assistive Personnel (UAP)*. [Online]
Available at:
<https://www.nursingworld.org/~4af4f2/globalassets/docs/ana/ethics/principlesofdelegation.pdf>
- Attaliades, E., Conley, L., Gwaltney, R. & Weekes, M., 2022. *The Collaborative's FY23 Chapter 257 Rate Reserve Request (Line Item 1599-6903)*.
- Baker, C., 2020. *Executive Order No. 592: Advancing Workforce Diversity, Inclusion, Equal Opportunity, Non-Discrimination, and Affirmative Action*. [Online]
Available at: <https://www.mass.gov/executive-orders/no-592-advancing-workforce-diversity-inclusion-equal-opportunity-non-discrimination-and-affirmative-action>
- Budden, J. S., 2011a. The Safety and Regulation of Medication Aides. *Journal of Nursing Regulation*, 2(2), pp. 18-23.
- Budden, J. S., 2011b. The First National Survey of Medication Aides. *Journal of Nursing Regulation*, 2(3), pp. 4-12.
- Buono, S. & Jang, E. E., 2021. The Effect of Linguistic Factors on Assessment of English Language Learners' Mathematical Ability: A Differential Item Functioning Analysis. *Educational Assessment*, 26(2), pp. 125-144.

California Department of Social Services, undated. *Medications Guide, Residential Care Facilities for the Elderly*. [Online]

Available at: https://caassistedliving.org/pdf/resources/dss_meds_guide.pdf

Carder, P. C. & O’Keeffe, J., 2016. State Regulation of Medication Administration by Unlicensed Assistive Personnel in Residential Care and Adult Day Services Settings. *Research in Gerontological Nursing*, 9(5), pp. 209-222.

Coffey, D., 2022. Is Help for the Helpers on the Way? *Cape Cod Times*, 29 May.

Dave, M., Dixon, C. & Patel, N., 2020. Open-book exams. *British Dental Journal*, Volume 229 , p. 759.

Eastern Iowa Community College, 2022. *Medication Manager*. [Online]

Available at: <https://www.eicc.edu/future-students/our-programs/health-short-term/medication-manager.aspx>

Elite Medical Academy, 2022. *Med Tech Training – (Online) 6 Hour Course*. [Online]

Available at: <https://www.elitemedacademy.com/product/med-tech-6-hour-medication-assist/>

[Accessed 2 June 2022].

Executive Office of Health and Human Services Drug Control Program, September 1, 2015. *MAP Policy Manual*. [Online]

Available at: <https://www.mass.gov/doc/medication-administration-program-map-policy-manual-0/download>

Indiana Association of Rehabilitation Facilities, Inc. & The Arc Indiana, 2018. *Work Force Crisis Creates Critical Gap in Services*, <https://www.in.gov/fssa/ddrs/files/WP-Work-Force-Shortage.pdf>.

Iowa Association of Community Providers, 2022. *Close the Gap on Iowa's DSP Workforce Crisis.*, Urbandale. Available at:

<https://theiacp.memberclicks.net/assets/2022%20DSP%20Workforce%20Crisis%20One-pager.pdf>

Iowa Department of Inspections and Appeals, 2016. *New Rules Ease Restrictions on Certified Medication Aide Training for Some Individuals*. [Online]

Available at: <https://dia.iowa.gov/press-release/2016-11-04/new-rules-ease-restrictions-certified-medication-aide-training-some>

Kassel, D., 2022. DDS emails show concern that governor’s COVID vaccination mandate could worsen staffing shortage in state-op group homes. *COFAR Blog*, 8 August .pp.

<https://cofarblog.com/2022/08/08/dds-emails-show-concern-that-governors-covid-vaccination-mandate-could-worsen-staffing-shortage-in-state-op-group-homes/>.

- Macris, G., n.d. "Significant" Raises Proposed For RI DD Workers After Court-Ordered Talks. *Developmental Disability News*.
- Massachusetts DDS, 2011. *Quality Is No Accident: Medication Occurrences*. Available at: <https://www.mass.gov/doc/qa-qina-brief-morpdf/download>.
- Massachusetts Department of Elementary & Secondary Education, 2014. *Vocational Technical Education Framework Medical Assisting (VMED)*. Available at: <https://www.doe.mass.edu/ccte/cvte/frameworks/medicalassisting.pdf>
- Massachusetts Department of Public Health Drug Control Program, 2022. *MAP Information for Service Providers*. [Online]
Available at: <https://www.mass.gov/service-details/map-information-for-service-providers>
[Accessed 2 June 2022].
- Massachusetts Medication Administration Program, 2020. *The Massachusetts Medication Administration Program Certification Training--Responsibilities in Action*. September 2020 ed. s.l.:s.n.
- Medicaid and CHIP Payment and Access Commission, 2022. *State Efforts to Address Medicaid Home-and Community-Based Services Workforce Shortages*, Washington, D.C.: s.n.
- Middlesex Community College, 2022. *Nurse Assistant / Home Health Aide Certificate*. [Online]
Available at: <https://www.middlesex.mass.edu/careertraining/nahhc.aspx>
[Accessed 2 June 2022].
- Minnesota Network of Hospice and Palliative Care, 2012. *Position Statement: Delegation of Medication Administration to Unlicensed Personnel*. [Online]
Available at:
https://www.leadingagemn.org/assets/docs/MNHPC_Position_Statement_Delegation_of_Medicament_Administration_rev.pdf
- Missouri Economic Research and Information Center, 2021. *Cost of Living Data Series*. [Online]
Available at: <https://meric.mo.gov/data/cost-living-data-series>
[Accessed 3 June 2022].
- Mitty, E., 2009. Medication Management in Assisted Living: A National Survey of Policies and Practices. *Journal of the American Medical Directors Association*, Volume 10, pp. 107-114. doi:10.1016/j.jamda.2008.08.006.
- Murray, A., 2011. The implementation of a self-administration of medication programmes within Older Persons Mental Health. *Journal of Psychiatric and Mental Health Nursing*, 18(2), pp. 113-121.

- National Council of State Boards of Nursing, 2007. *Medication Assistant-Certified (MA-C) Model Curriculum*, Chicago: National Council of State Boards of Nursing.
- NIA, 2017. *Residential Facilities, Assisted Living, and Nursing Homes*. [Online] Available at: <https://www.nia.nih.gov/health/residential-facilities-assisted-living-and-nursing-homes> [Accessed 03 06 2022].
- O'Callaghan, S., 2021. My Turn: Sustainable raises, training will help address direct-care provider shortage in NH. *Concord Monitor*, 31 July.
- Ochieng, N. & Chidambaram, P., 2022. *Nursing Facility Staffing Shortages During the COVID-19 Pandemic*, San Francisco: Kaiser Family Foundation.
- Oregon Secretary of State, 2019. *Department of Human Services, Administrative Rules, Chapter 411, Division 54: Residential Care and Assisted Living Facilities*. [Online] Available at: [https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=260635#:~:text=\(h\)](https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=260635#:~:text=(h))
- Patel & Sharma, 2022. Credentialing. *StatPearls Publishing*, Jan..p. <https://www.ncbi.nlm.nih.gov/books/NBK519504/>.
- Pennock-Roman, M. & Rivera, C., 2011. Mean effects of test accommodations for ELLs and non-ELLs: A meta-analysis of experimental studies. *Educational Measurement: Issues and Practice*, 30(3), pp. 10-28.
- Plain Language Action and Information Network, 2011. *Federal Plain Language Guidelines*. Available at: <https://www.plainlanguage.gov/media/FederalPLGuidelines.pdf>
- Randolph, P. & Scott-Cawiezell, J., 2010. Developing a Statewide Medication Technician Pilot Program in Nursing Homes. *Journal of Gerontological Nursing*, Volume 36, pp. 36-44. doi:10.3928/00989134-20100330-06.
- Rowland, C., 2014. The effect of testing versus restudy on retention: a meta-analytic review of the testing effect. *Psychological bulletin*, 140(6), p. 1432.
- Scott-Cawiezell, J. et al., 2007. Nursing home error and level of staff credentials. *Clinical Nursing Research*, Issue 16, pp. 72-78.
- Spiegel, T. & Nivette, A., 2021. The relative impact of in-class closed book versus take-home open-book examination type on academic performance, student knowledge retention and wellbeing. *Assessment & Evaluation in Higher Education*.

- Therap, 2022. *Therap for States*. [Online]
Available at: <https://help.therapservices.net/app/states>
[Accessed 3 6 2022].
- U.S. Food and Drug Administration, 2017. Drugs@FDA Glossary of Terms.
- Vanwesemael, T., Dilles, T., Van Rompaey, B. & Boussery, K., 2018. An evidence-based procedure for self-management of medication in hospital: development and validation of the SelfMED procedure. *Pharmacy*, 6(3), p. 77.
- Virginia Department of Education, 2014. 2009 Mathematics Standards of Learning. Plain English Mathematics Tests Information. 14 May.
- Vogelsmeier, A., 2011. Medication Administration in Nursing Homes: RN Delegation to Unlicensed Assistive Personnel. *Journal of Nursing Regulation*, 2(3), pp. 49-55.
- Young, H. et al., 2008. Types, Prevalence, and Potential Clinical Significance of Medication Administration Errors in Assisted Living. *Journal of the American Geriatrics Society*, Volume 56, pp. 1199-1205. doi:10.1111/j.1532-5415.2008.01754.x.

APPENDIX A: DATA COLLECTION FORM FOR COMPILING INFORMATION ON STATE LAWS, REGULATIONS, AND POLICIES ON MEDICATION ADMINISTRATION BY UNLICENSED ASSISTIVE PERSONNEL (UAP)

1. Does the state allow administration of medications by UAPs?
 - Assisting with self-administration
 - Direct administration
2. What are the categories (job titles) of unlicensed medication assistants recognized by the state?
3. What type of settings are UAPs allowed to administer medications (e.g., residential care, schools, adult day programs, etc.)?
4. What are the limitations on the types of medications UAPs are allowed to administer?
5. Do the state's laws allow registered nurses (RNs) to delegate medication administration to UAPs? Are there any limitations by setting or type of medication?
6. What are the eligibility criteria for becoming a UAP that administers medication?
 - Age
 - Education
 - Other
7. Is there a UAP training program?
 - Duration
 - Type (e.g., on-the-job with physician supervision, classroom training, online training, etc.)
 - Other
8. Are there exams that UAPs need to pass to become certified?
 - Expense
 - Pass rates
 - Limitations by care setting and/or type of medication
 - Transferability of credentials
 - Transcription skills
 - Other
9. What are the reporting/transcription requirements for UAPs when administering medications?
10. What percent of a UAP's time is spent on medication administration and reporting compared to their other job responsibilities?
11. How do the medical orders (and changes in orders) get to the UAP? Is there someone else responsible for taking the order, clarifying if necessary, then passing the list of medications to be administered to the UAP?
12. Are there well-defined laws regarding UAP liability?
13. What role, if any, do pharmacists play in the medication administration process?
14. What are some of the common problems UAPs encounter when administering medications? Do these problems vary by setting, and if so, how?
15. What type of support do UAPs have (e.g., on-call nurse for consultations, etc.) for addressing any issues that come up during medication administration?

16. Has the state adopted any new approaches to streamline medication administration by UAPs and/or minimize medication errors such as use of electronic systems (e.g., eMARs or other tools)?
 - Lessons learned during adoption
 - Program outcomes
 - Regulatory changes
 - Other
17. Is there a shortage of UAPs that administer medication? How is that shortage being addressed by the state? By providers?
18. Approximately, how many UAPs are there in the state? Is there information on their demographics?
 - Pre-COVID
 - COVID
 - Current
19. What is the average state-wide hourly wage for UAPs?
20. What is the turnover rate for UAPs?
 - Pre-COVID
 - COVID
 - Current
21. What does a career trajectory look like for a UAP?
22. Does the state have a medication error reporting program?
23. Are there data on medication errors by UAPs?
 - Trends
 - Impact of COVID-19
 - Other
24. Are programs that use UAPs for medication administration audited by a state or other independent entity? How frequently?

APPENDIX B SURVEY OF MAP-CERTIFIED DIRECT CARE STAFF - SURVEY QUESTIONNAIRE

Thank you for taking the time to answer a few questions about your experience with the Medication Administration Program, also known as MAP. The Department of Public Health (DPH) needs your feedback to improve how MAP works and to improve medication administration safety for all people in group homes and day programs registered with MAP.

The survey will only take **5 minutes** of your time.

This survey is being conducted for DPH by Eastern Research Group, Inc. (ERG), in Lexington MA. Your name, email address, and all your survey responses will be **PRIVATE**. ERG will not identify you or your workplace to DPH, to your employer, or to anyone else. Your answers to the questions will be combined with the answers from other people taking the survey. The combined results will help DPH decide how to improve MAP training, testing, procedures, and policies.

QUESTIONS ABOUT THE SURVEY?

Please call the Survey Helpline at 1-866-623-8999 or email MAPsurveyhelp@erg.com. Please note that your responses are saved each time you click "Next." You may stop at any time by closing your browser window. You can start again at the last saved question by clicking the survey link in your email again.

1. Do you hold an active MAP certification?

- Yes
- No [Go to END]

2. What is your first language?

- Akan Twi
- Chinese
- Creole
- English
- Ethiopian
- French
- Hausa
- Portuguese
- Romanian
- Russian
- Spanish
- Somali
- Swahili
- Vietnamese

Other (please specify) _____

3. How long have you been MAP-certified?

- Less than 1 year
- 1 to 2 years
- 2+ to 3 years
- 3+ to 4 years
- 4+ to 5 years
- More than 5 years

4. What type of MAP training did you have before you passed the state test?

- In-class training only
- Online classes with a MAP trainer
- Online training on my own
- Both in-class and online training

5. Many people have to try two or more times to pass all three parts of the state MAP test. How many times did you have to take each part of the MAP test before you passed?

	1 time	2 times	3 times	4 times	5 times or more
Knowledge	<input type="radio"/>				
Transcription	<input type="radio"/>				
Medication Administration	<input type="radio"/>				

6. Please check one job title on the list below that is closest to the job you are doing now.

- Administration staff
- Program manager
- Site manager
- House supervisor
- Registered nurse (RN)
- Licensed nurse practitioner (LPN)
- Direct care staff
- Relief staff
- Per-diem staff
- Other (please specify) _____

7. What type of program do you work at?

- Adult program
- Youth program
- Other (please specify) _____

8. Which of the Massachusetts state agencies is your program registered with? Please check all that apply.
- Department of Children and Families (DCF)
 - Department of Mental Health (DMH)
 - Department of Developmental Services (DDS)
 - Massachusetts Rehabilitation Commission (MRC)
 - Not sure
9. Do you usually give medications to people under your care?
- Yes
 - No [Go to Q21]
10. On a normal med pass, how many people do you give medications to?
- 1 or 2 people
 - 3 to 5 people
 - More than 5 people
11. On average, about how many medications do you give per person during a typical med pass?
- Less than 3 medications per person
 - 3 to 5 medications per person
 - 6 to 9 medications per person
 - 10 to 14 medications per person
 - 15 to 19 medications per person
 - 20 or more medications per person
12. Do any of the people you give medications to get upset or frustrated by how long it takes to get all their meds?
- No, never
 - Yes, sometimes
 - Yes, regularly
13. Have you pre-packaged medications before a med pass so that a staff person that is not MAP-certified can give out the meds?
- Yes
 - No [Go to Q15]
14. How often do you pre-package medications to be given out by a staff member that is not MAP-certified?

- Occasionally, a few times per month
- Regularly, a few times per week
- Every day

15. On a scale from 1 to 10, how difficult is it to do all the MAP procedures when you are giving medication?

1										10
Very Simple	2	3	4	5	6	7	8	9		Very Difficult
<input type="radio"/>										

16. How often do you do transcription?

- Never
- Less than 6 times a year
- 6 to 12 times a year
- Once or twice a month
- Once a week
- More than once a week

17. About how many times per month do you call a MAP consultant, pharmacist, doctor, or others to resolve differences between a doctor's order and the pharmacy's label?

- Never [Go to Q19]
- 1 to 4 times a month
- 5 to 8 times a month
- 9 to 12 times a month
- More than 12 times a month

18. How long does it usually take to resolve a difference between a doctor's order and the pharmacy label?

- Less than 15 minutes
- 15 minutes to 1 hour
- 1 to 2 hours
- 2 to 8 hours
- 8 to 12 hours
- 12 to 24 hours
- More than 24 hours
- Don't Know

19. What kind of differences between a doctor's order and the pharmacy label have you seen?
Please check all that apply.

- Timing of the medication is not specific (for example, the doctor’s order indicates that the medication needs to be taken daily but does not specify morning (a.m.), afternoon (p.m.), or time of day)
- Dosage of the medication is not specific (for example, the doctor’s order indicates that a “small amount” of a cream or ointment needs to be applied but does not describe the amount by saying “pea-sized,” “quarter-sized,” etc.)
- Medication name is spelled wrong
- Other (please specify)_____

20. Consider that you are doing a typical med pass. Please write about how much time (in minutes) it takes to do each of the activities on the list below. Your estimate should be the total time each activity takes for an average patient getting meds. Your best estimate is fine.

	Time Required Minutes
Checking the doctor’s order against the pharmacy label of the medication(s) and resolving inconsistencies	_____
Transcribing the doctor’s order to the medication sheet	_____
Removing the medications from their containers	_____
Administering the medication to the person	_____
Monitoring the person after medication administration	_____
Other (please specify)_____	_____

21. Do you plan on doing MAP recertification when the time comes?

- No
- Probably will not
- Not sure
- Probably will
- Yes

1.

22. How likely are you to stay at your current job for the next 12 months?

- Not likely
- Somewhat likely
- Very likely
- Highly likely

23. What is your current hourly pay?

\$_____ per hour

Thank you very much for your participation.

APPENDIX C: THIRTY KNOWLEDGE PRETEST QUESTIONS—ORIGINAL TEXT AND TEXT EDITED TO IMPROVE COMPREHENSION OF QUESTION

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>1. You observe John shouting obscenities at a staff person. You should report this incident by telling</p> <ol style="list-style-type: none"> your supervisor that John is angry other staff that John is acting out the pharmacist to provide a different medication your supervisor that you observed John shouting obscenities at a staff person previously 	<p>1. You see a resident, John, shouting curses at a staff person. You should report this by telling...</p> <ol style="list-style-type: none"> your supervisor that John is angry. other staff that John is acting out. the pharmacist to provide a different medication. your supervisor that you saw John shouting curses at a staff person.
<p>2. The best way to treat the people you support is to</p> <ol style="list-style-type: none"> do everything for them. respect their rights as individuals. speak to their HCP for them. convince them you know what is best. 	<p>2. 2. The best way to treat the people you support is to...</p> <ol style="list-style-type: none"> do everything for them. respect them and their rights as individuals. speak to their HCP for them. convince them you know what is best
<p>3. When completing medication administration, the last thing you should do is</p> <ol style="list-style-type: none"> identify the individual receiving the medication document the administration of the medication administer the medication by the right route compare the medication sheet to the order 	<p>3. The last thing you should do when you are finished giving a resident one of their medications is...</p> <ol style="list-style-type: none"> identify the individual receiving the medication document the administration of the medication administer the medication by the right route compare the medication sheet to the order
<p>4. The abbreviation "mg" means</p> <ol style="list-style-type: none"> milligram microliter microgram Milliliter 	<p>4. [No edits.]</p>
<p>5. When disposing of medications, the number of staff required to be present with the supervisor is</p> <ol style="list-style-type: none"> 1 2 3 4 	<p>5. How many staff people must be there when medications are being disposed of?</p> <ol style="list-style-type: none"> 1 2 3 4

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>6. Mary Stevens takes a medication four times a day. She usually gets up at 7:30 AM and likes to go to bed at 9 PM. Appropriate times to administer her medication are</p> <ol style="list-style-type: none"> 7 AM, 11 AM, 6 PM, and 9 PM 7 AM, 10AM, 5 PM, and 9 PM 8 AM, 12 PM, 4 PM, and 8 PM 10 AM, noon, 2 PM, and 4 PM 	<p>6. A resident, Mary, has to take a medication four times a day. She usually gets up at 7:30 a.m. and goes to bed at 9 p.m. What are the best times to give Mary her medication?</p> <ol style="list-style-type: none"> 7 a.m., 11 a.m., 6 p.m., and 9 p.m. 7 a.m., 10 a.m., 5 p.m., and 9 p.m. 8 a.m., 12 p.m., 4 p.m., and 8 p.m. 10 a.m., 12 noon, 2 p.m., and 4 p.m. <p>[Is scheduling the times to administer meds a MAP direct care person's responsibility?]</p>
<p>7. Harry is starting a new day program. Sharing information about his medications is the responsibility of</p> <ol style="list-style-type: none"> the residential staff Harry's family Harry's HCP the day program staff 	<p>7. Harry is a resident. He is starting a new day program. Who should tell the day program about his medication?</p> <ol style="list-style-type: none"> the residential staff Harry's family Harry's HCP the day program staff
<p>8. Medications that can be bought in a drug store without a prescription are called</p> <ol style="list-style-type: none"> controlled substances over the counter schedule II-V medications antipsychotic medications 	<p>8. Medications that you can buy in a drug store without a prescription are called</p> <ol style="list-style-type: none"> controlled substances over-the-counter (OTC) meds schedule II-V medications antipsychotic medications
<p>9. When a mistake in documentation is made while completing the medication count sheet you should</p> <ol style="list-style-type: none"> draw a line through the mistake, write the correct information, and write your initials cover the mistake with liquid paper, write the correct information and write your initials write the correct information over the mistake and include your initials get a new form, transcribe all of the old information and include the correct information 	<p>9. You and a coworker are doing the med count. If one of you makes a mistake on the med count sheet, you should...</p> <ol style="list-style-type: none"> draw a line through the mistake, write the correct information, and write your initials. cover the mistake with liquid paper, write the correct information, and write your initials. write the correct information over the mistake and write your initials. get a new form, transcribe all of the old information, and include the correct information.

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>10. The medication sheet indicates a person was supposed to receive a medication during the previous shift but there are no staff initials indicating the medication was administered. You should</p> <ol style="list-style-type: none"> ask the person if they received any medication on the previous shift record that the medication was administered on the previous shift contact a MAP consultant immediately and follow the recommendation administer the medication immediately and contact the MAP consultant 	<p>10. The medication sheet shows that a resident, John, was supposed to take a medication during the previous shift. But there are no initials in the box to show that the medication was given to John. You should...</p> <ol style="list-style-type: none"> ask John if he received that medication on the previous shift. record that the medication was administered on the previous shift. contact a MAP consultant immediately and do what they say you should do. give the medication immediately and then call the MAP consultant.
<p>11. A health care provider orders a 500 mg dose of medication. The pharmacy supplies the medication in a liquid form with a notation of 250 mg/10 mL. You would expect the pharmacy label directions to instruct you to prepare</p> <ol style="list-style-type: none"> 10 mL 20 mL 250 mg 500 mg 	<p>11. A health care provider orders a 500 mg dose of medication. The pharmacy supplies the medication in a liquid form with a note on the label that says 250 mg/10 mL. How much of the liquid medication should you pour out to equal one dose?</p> <ol style="list-style-type: none"> 10 mL 20 mL 250 mg 500 mg
<p>12. The HCP asks you why an individual is being seen in the office today. You let the individual answer first. This is an example of</p> <ol style="list-style-type: none"> being a passive observer ignoring the HCP promoting dependence encouraging participation 	<p>12. You are with a resident at a doctor's appointment. The doctor asks you why the resident is being seen in the office today. You let the resident answer first. This is a good way to...</p> <ol style="list-style-type: none"> be a passive observer ignore the doctor promote dependence encourage participation
<p>13. Posting a health care provider order is completed after</p> <ol style="list-style-type: none"> administering dispensing transcribing Counting 	<p>13. Posting a health care provider's order is done after you...</p> <ol style="list-style-type: none"> administer the medication dispense the medication transcribe the order count the medications
<p>14. Verifying a health care provider order is done after</p> <ol style="list-style-type: none"> dispensing administering counting posting 	<p>14. Verifying a health care provider's order is done after you...</p> <ol style="list-style-type: none"> dispense the medication administer the medication count the medications post the health care provider's order

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>15. On the medication sheet, in addition to a medication progress note explaining the reason for a missed dose of medication you must also</p> <ol style="list-style-type: none"> place an "X" in the box circle the letter "R" circle your initials leave the box empty 	<p>15. You are passing meds when you find that a resident is missing a medication because the delivery was not made by the pharmacy. You write a medication progress note on the med sheet explaining why the resident missed a dose of medication. You must also...</p> <ol style="list-style-type: none"> place an "X" in the box. circle the letter "R." circle your initials. leave the box empty
<p>16. While doing the shift count you notice there are fewer Ativan tablets in the blister pack than the number documented in the count book. You should immediately contact the</p> <ol style="list-style-type: none"> doctor supervisor guardian Pharmacist 	<p>16. You are counting meds at the end of your shift. You find that there are fewer Ativan tablets in a blister pack than the number documented in the count book. You should immediately contact...</p> <ol style="list-style-type: none"> the doctor your supervisor the resident's guardian the pharmacist
<p>17. Keeping information about the people you support private and not sharing it with others not involved in their care is called</p> <ol style="list-style-type: none"> immediate reporting secretive routine reporting Confidentiality 	<p>17. You have a duty to keep information about the residents you support private. You can speak about private medical information only with people directly involved with their care. You cannot share it with people who are not involved in their care. These rules are called...</p> <ol style="list-style-type: none"> immediate reporting being secretive routine reporting maintaining confidentiality
<p>18. 50mg of medication was ordered but the pharmacy delivers 100mg tablets. You should contact the pharmacy then</p> <ol style="list-style-type: none"> administer the 100mg tablet break the tablet in half, then administer destroy the medication return the medication 	<p>18. The HCP ordered 50 mg tablets of a medication, but the pharmacy delivered 100 mg tablets. You should call the pharmacy, then...</p> <ol style="list-style-type: none"> ...administer the 100 mg tablet. ...break the tablet in half, then administer a half tablet. ...destroy the medication. ...return the 100 mg tablets to the pharmacy.
<p>19. During the medication administration process, after comparing the label to the medication sheet for the first time, you</p> <ol style="list-style-type: none"> administer the medication prepare the medication observe for side effects document the administration 	<p>19. When you are passing meds, after the first time you compare the medication label to the med sheet, your next step is to...</p> <ol style="list-style-type: none"> administer the medication prepare the medication observe for side effects. document the administration.

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>20. The number of checks required before administering a medication is</p> <ol style="list-style-type: none"> 1 2 3 4 	<p>20. The number of checks required before you give a medication to a resident is</p> <ol style="list-style-type: none"> 1 2 3 4
<p>21. When storing medications you should</p> <ol style="list-style-type: none"> put them in a moist area put them in a warm area keep them in their original containers keep them in an unlocked closet 	<p>21. When you store medications, you should...</p> <ol style="list-style-type: none"> put them in a moist area put them in a warm area keep them in their original containers keep them in an unlocked closet
<p>22. Keys to the medication area must be kept on the person responsible for administering medications. Access to a back up set of keys is known to</p> <ol style="list-style-type: none"> only the Pharmacist only the Administrator all MAP certified staff all staff whether MAP certified or not 	<p>22. If you are passing meds, you must keep the keys to the medication area with you. There is always an extra set of keys that is available to...</p> <ol style="list-style-type: none"> only the Pharmacist only the Administrator all MAP-certified staff all staff, whether MAP-certified or not
<p>23. Leaving the medication area and going to a different room to administer medications requires that you</p> <ol style="list-style-type: none"> wash your hands and observe lock the storage box and area tell your supervisor and other staff tell your MAP consultant and other staff 	<p>23. If you leave the medication area to pass meds in another room, you are required to...</p> <ol style="list-style-type: none"> wash your hands and observe lock the storage box and area tell your supervisor and other staff tell your MAP consultant and other staff <p>[Couldn't a or c also be correct under some circumstances?]</p>
<p>24. A HCP orders a 250mg dose of medication. The pharmacy supplies the medication in a liquid form with a notation of 125mg/5mL. The amount you would expect the pharmacy label directions to instruct you to prepare would be</p> <ol style="list-style-type: none"> 10mL 20mL 125mg 250mg 	<p>24. The pharmacy supplies a medication in liquid form with a notation on the label that says "125 mg/5 mL". What does this notation mean?</p> <ol style="list-style-type: none"> 125 milligrams divided by 5 milliliters. There are 125 milligrams of medication in every 5 milliliters of liquid. 125 micrograms divided by 5 microliters. There are 125 micrograms of medication in every 5 milliliters of liquid.

Original Questions from Knowledge Pretest	Questions Edited to Improve Comprehension Edits in Red
<p>25. When accepting a telephone order, the person accepting the order must</p> <ol style="list-style-type: none"> document on the medication sheet what is to be given tell the HCP your MAP certification number call the prescription into the pharmacy always administer the first dose of medication 	<p>25. When you are accepting a medication order over the phone, you must...</p> <ol style="list-style-type: none"> ...document on the medication sheet what is to be given. ...tell the HCP your MAP certification number. ...call the prescription in to the pharmacy. ...always administer the first dose of medication.
<p>26. When a medication works correctly, as intended, it produces</p> <ol style="list-style-type: none"> an unwanted effect an untherapeutic effect the desired effect a paradoxical effect 	<p>26. When a medication works correctly, as intended, the effect it causes is called...</p> <ol style="list-style-type: none"> an unwanted effect an untherapeutic effect the desired effect a paradoxical effect
<p>27. What a person tells you about how they feel is</p> <ol style="list-style-type: none"> objective information routine reporting subjective information mandatory reporting 	<p>27. When a resident tells you how they feel, it is usually considered...</p> <ol style="list-style-type: none"> objective information routine reporting subjective information mandatory reporting
<p>28. The term "mindfulness" means</p> <ol style="list-style-type: none"> being attentive, careful and observant being open-minded, flexible and smart being attentive, careful and inflexible being careful, observant and quiet 	<p>28. In MAP, when we use the word "mindfulness," we mean being attentive,</p> <ol style="list-style-type: none"> ...careful, and observant. ...narrow-minded, and inflexible. ...quiet, and inflexible ...careful, and quiet.
<p>29. A good way to make sure you don't forget important information is to</p> <ol style="list-style-type: none"> keep repeating it to yourself ask another staff to remind you memorize it write it down 	<p>29. [Suggest deleting. These are all "good" ways to make sure you don't forget important information, hence there is no wrong answer. Also, if writing something down is to be effective, the writing has to be done in a place that is frequently viewed. And how does this apply to MAP duties? If we want to make sure they know to write down phone orders as they hear them, the question should be about that.]</p>
<p>30. A medication that is too old to administer to an individual is</p> <ol style="list-style-type: none"> contaminated expired returned spoiled 	<p>30. A medication that is too old to give to a resident is...</p> <ol style="list-style-type: none"> contaminated expired returned spoiled

Addendum: From the Virginia Department of Education 2009 Mathematics Standards of Learning Plain English Mathematics Tests Information publication, dated May 14, 2014.

https://doe.virginia.gov/testing/sol/standards_docs/mathematics/plain_english_information.pdf

- “Unfamiliar contexts may be revised to familiar situations in word problem scenarios. Sometimes the skill may be assessed without the use of context. (This can be done only if the standard does not require the use of a context.)
- “Mathematics vocabulary remains in the item when it is construct-relevant, such as when students must know the vocabulary in order to demonstrate mastery of the standard. For example, “Which polynomial has a factor of...”
- “Clear, direct wording is maintained:
 - Sentences may be simplified by avoiding the use of additional descriptive language that is not needed to assess the standard.
 - Complex sentences may be broken into shorter simple sentences.
 - Passive forms of verbs ... are avoided whenever possible; simple present tense or past tense verbs ... are used.
 - Words with multiple meanings are avoided, when possible, such as the name Bill. However, sometimes a word with multiple meanings cannot be avoided, such as product and root: “What is the product of 16 and 24?” and “What is the root of...”
 - Consistent terminology is used within test questions. This sample question uses consistent terminology: “Mary ate cups of popcorn and cups of pretzels after school. What is the total amount of popcorn and pretzels Mary ate after school?” This sample question does NOT use consistent terminology: “Mary ate cups of popcorn and cups of pretzels after school. What is the total amount of snacks Mary ate after school?”
 - Idioms or colloquial expressions are avoided.”
- “Information is presented in a bulleted list when appropriate.”