**PHCAST Year 2 Report**

**Commonwealth Corporation**

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**PHCAST Project Overview**

In 2010, Massachusetts was one of six states awarded a Personal and Home Care Aide State Training Program (PHCAST) grant by the U.S. Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA) Bureau of Health Professions/Division of Nursing. The three-year grant funds a demonstration project to develop, evaluate, and disseminate a core-competency-based curriculum for direct care workers across health and human service sectors in Massachusetts, with training being provided to Personal Care Attendants (PCAs) and Personal Care Homemakers (PCHMs). PCAs and PCHMs offer in-home assistance to older adults and persons with disabilities, assisting them with activities of daily living and instrumental activities of daily living. The purpose of the grant program is to improve quality of care provided to consumers, increase and sustain a direct care workforce through easy access to training and transferability of skills across multiple human service provider agencies. Trainings began in summer 2011 with the first pilot classes, which were reported in the Year 1 report, and trainings have continued through 2012.

The Massachusetts Executive Offices of Health and Human Services and Elder Affairs have partnered with several organizations throughout the state to implement the PHCAST grant. These organizations representing the grant team include the University of Massachusetts Medical School/Massachusetts Area Health Education Center (MassAHEC), Bristol Community College (BCC), the Massachusetts Council for Home Care Aide Services (Mass Council), the Personal Care Attendant (PCA) Workforce Council, and Commonwealth Corporation (CommCorp). In Years 1 and 2 of the grant, the Paraprofessional Healthcare Institute (PHI) operated as a subcontractor for curriculum development and the adult learner-centered method for training adults. Additionally, an Advisory Group has been assembled to provide feedback on the PHCAST grant implementation process. The PHCAST Advisory Group holds quarterly meetings that include members of various state agencies, advocacy groups, community colleges, provider organizations, PCA consumers, and labor union representatives.

Overarching goals at the state-level also include support of Massachusetts' population of older adults and persons with disabilities, ongoing professional development of the direct care workforce (in accordance with the MA Community First Olmstead Plan[[1]](#footnote-1)), and continued support of informal caregivers. These goals are addressed via development of a core competency curriculum and training for both PCAs, who are typically employed directly by consumers, and PCHMs, who are typically employed by home care agencies.

**Summary of Year 1 Activities**

After establishing relationships with grant partners and related organizations across the state, the primary Year 1 goal of the PHCAST project required the grant team to define core-competencies and develop a core curriculum to create a standardized training for direct care professionals, with the primary audience being PCAs and PCHMs. Weekly conference calls with partners constituting the grant’s curriculum development workgroup resulted in identification of content-specific topics for the nine core competencies provided by the federal grantors. Skills trainings include special emphasis on following employer direction. Employers include independent consumer employers for PCAs and Registered Nurse Supervisors for PCHMs. Accordingly, the nine core competencies were as follows:

1. **Roles and Responsibilities of a Personal Care or Personal Home Care Aide**: Topics included Massachusetts definitions of PCA and PCHM, as well as discussion of the duties required of these professionals.
2. **Personal Care Skills and Nutritional Support**: Topics included employer direction for effective bathing, grooming, and dressing techniques and basic food safety and housekeeping.
3. **Basic Restorative Skills**: Topics included proper body mechanics and employer direction for effective toileting, repositioning and transferring techniques, as well as use of assistive devices and instruction to help PCAs and PCHMs assist consumers with self care.
4. **Consumer/Needs-Specific Training**: Topics included an overview of various types of health conditions and disabilities commonly observed in the field.
5. **Consumer Rights, Ethics, and Confidentiality**: Topics included respecting the rights of consumers, maintaining confidentiality, reporting suspected abuse or neglect, resolving disputes, and interacting appropriately with consumers’ family members.
6. **Interpersonal Skills**: Topics included providing information on how to manage time effectively; abating stress; developing relationships with consumers, their surrogates and family members; maintaining cultural and lifestyle sensitivity, and basic problem-solving skills.
7. **Infection Control**: Topics focused on universal precautions, including proper hand washing, how and when to use gloves and other basic protective equipment, andhow to maintain a sanitary environment.
8. **Safety and Emergency Training**: Topics included responding to medical emergencies and maintaining a safe home environment.
9. **Health Care Support**: Topics included a broad overview of assisting consumers to manage their own care, health appointments, and medications (if applicable).

Once these core topics were identified, the curriculum development workgroup engaged in ongoing discussions to identify common denominators across the different types of direct care workers in Massachusetts. In Year 1, the workgroup focused on four key competencies to begin curriculum development:

* Personal Care Skills and Nutrition Support,
* Basic Restorative Skills,
* Infection Control, and
* Safety and Emergency Training.

In Year 1, both the Mass Council and BCC continued to use their existing curricula for the remaining five competencies. For the pilot training sessions, PCHM students were taught by Registered Nurses who were employed by the home care agency training sites and affiliated with the Mass Council. PCAs were trained by a combination of community college Registered Nurse instructors and contracted PCA educators. All Year 1 instructors attended a train-the-trainer seminar, which focused on teaching adult learner-centered principles for educating adult students; the evaluation components of the curriculum, including required knowledge and skills assessments; and the grant-specific details and requirements. Instructors were oriented to the learning materials through use of handouts, worksheets, instruction scripts, practice labs, and teaching tools.

The Mass Council conducted a total of 15 pilot trainings from June through September 2011. Each of the Mass Council-affiliated pilot training sessions lasted approximately three weeks, and they were supplemented with a PCHM-Home Health Aide curriculum in order to meet state training requirements for both fields. The community college pilot training was offered once on an academic semester schedule, lasting approximately ten weeks during the fall of 2011 focusing on the independent consumer model. Approximately 204 students took part in trainings during Year 1, and 191 students completed training.

**Summary of Year 2 Activities**

The formative evaluation that followed Year 1 defined the process for completing the curriculum content for the remaining five modules. Year 2 was the first year in which the full curriculum was available for use with both Mass Council and BCC training locations. Therefore, information sessions were provided to the instructors to introduce the new materials that had been developed since the initial train-the-trainer session in Year 1. Instructors were encouraged to ask questions and state concerns related to their past experiences with the training, and they were also encouraged to share feedback concerning the full curriculum training materials.

Between January and June 2012 a total of 23 trainings were conducted; three of these were held at BCC, and the remaining 20 were offered at Mass Council training locations. Training sessions at both Mass Council and BCC locations lasted approximately three weeks from start to completion.A total of 315 individuals enrolled in training in Year 2; 63 of these were PCAs, and 252 were PCHMs. The overall attrition rate for Years 1 and 2 was 7.5%.

**Evaluation Design**

The purpose of the PHCAST grant evaluation is to demonstrate whether the PHCAST curriculum leads to increased recruitment and retention of the workforce; skills and knowledge gains for PCAs and PCHMs; and improved demonstration of skills on the job by PCAs and PCHMs that will support improved consumer outcomes for clients and consumers (Table 1). During Year 1, the evaluation focus was on the primary evaluation outcomes to ascertain students’ knowledge and skills gains after completing the training with the four initial modules in the training curriculum. The evaluation also assessed the transferability of the workforce, specifically across independent consumer employers and agency based employment models, while supporting career lattices. For Year 2, primary evaluation continued with analyses of the full curriculum, including all 9 modules of training. As Year 2 trainings were completed, the curriculum was revised again. Changes that resulted from this comprehensive review included adding additional core modules, enhancing existing modules, reducing the number of curriculum student handouts, translating student materials, and producing skills videos, all of which will be aspects of primary evaluation in Year 3. Secondary evaluation also began at the close of Year 2 and will be a central goal for the final year of PHCAST-funded training.

 ***Table 1: Evaluation Design***

|  |  |  |
| --- | --- | --- |
| **Evaluation Number and Type** | **Evaluation Question** | **Data Collection and Analysis Tools** |
| 1: Primary Evaluation | What are the skills and knowledge gains of participants? | Pre- and post-assessments; Skills assessments |
| 2: Secondary Evaluation | What is the change in practice for program participants? | Surveys and interviews of supervisors or employers |
| 3: Tertiary Evaluation | What is the change in consumer/client outcomes? | To be determined |

While the tertiary evaluation could allow for greater understanding of the PHCAST curriculum’s impact on PCA and PCHM performance, reaching consumers without violating privacy can be a complex process. Massachusetts is partnering with the National Evaluators to achieve a viable strategy for collecting these tertiary data.

 ***State-Specific Evaluation***

For Year 2, PCA and PCHM trainees were assessed using the same methods as those used in Year 1, though these tools were revised based on Year 1 findings:

* Pre-test. All students completed a written, multiple-choice knowledge assessment prior to beginning the training course (pre-test), which included questions pertaining to all 9 training modules. The test is used to assess baseline knowledge. Questions were drawn primarily from a random selection of questions previously developed by the Mass Council and BCC. Questions were allocated based on time spent in training; for example, if Roles and Responsibilities comprised ten percent of the curriculum time, ten percent of the assessment questions were drawn from material covered in the Roles and Responsibilities module. When existing Mass Council or BCC questions were unavailable or insufficient to cover certain topics, new questions were developed and added to the assessment. Assessment questions in Year 1 were analyzed for ease of understanding, with careful attention given to language proficiency, comprehension, and sentence structure. Questions were revised or rewritten in Year 2 based on the percentage of incorrect responses from the study sample or a sizable subsample (e.g., if a majority of self-reported non-native English speakers missed a given question in Year 1, that question was revised for Year 2).
* Post-test. All students re-took the Year 2 multiple-choice knowledge assessment when they had completed training (post-test) to determine knowledge gains over the initial baseline pre-test results.
* Skills Assessment. Year 2 students also completed a hands-on skills assessment, consisting of Registered Nurse evaluations of needed skills demonstrations, such as hand-washing, use of gloves, assistance with toileting, and transfers of consumer/clients from bed to wheelchair. In comparison, all Year 1 students were evaluated by their instructors. Although all students presented satisfactory results during the Year 1 skills assessments, the evaluation team sought to ensure that results were generated from trainees’ “first passes.” A "first pass" was defined as a student trying each skill for the first time, without receiving prompts or having opportunity for previous trials before the assessed attempt. First pass scores are the best means of assessing that outcomes are based on the training curriculum. Thus, to ensure that the curriculum was being evaluated effectively, the Year 2 skills assessment protocol instituted the use of third party Registered Nurse skills assessors who reported trainees' "first pass" scores.

In Year 2 the skills and knowledge assessment results were compared to results from a comparison group consisting of 10 PCAs and 32 PCHMs. The PCHMs received training within the past three years, using state-approved training materials that preceded development of the PHCAST core competency training. The PCAs received training within the past three years from their independent consumer employers. Sample biases were controlled by accessing a sample that was demographically similar to the PHCAST trainee population. However, selection bias may exist within the comparison group, as participants were contacted through their employers or through local union officers and were offered a cash honorarium for their participation.

Additionally, a formative evaluation plan was developed to ensure receipt of ongoing feedback on the curriculum, as well as reactions to the training during the pilots. During both the first and second years, participating students completed a student reaction survey to obtain their opinions about the overall training program. Instructors completed a similar instructor self-assessment regarding their comfort with and success in teaching the new curriculum; they also provided feedback about the curriculum content. These assessment tools were identical between Years 1 and 2, though the Year 1 instructor assessments focused only on the four completed modules, while the Year 2 instructor assessments sought feedback on the full curriculum.

***Federal Reporting Requirements***

In accordance with HHS’ Health Resources and Services Administration (HRSA), the federal funder for the PHCAST grant, Massachusetts PHCAST partners have collaborated to ensure that all grant goals, requests, and expectations are met. One example of this compliance is the practice of having all trainees complete registration forms prior to beginning training. In Year 1, the registration forms collected general demographic data pertaining to age, race/ethnicity, gender, recent employment history, experience in direct care, education level, language ability, and income status. These data were used primarily for comparison of results across different groups, such as contrasting assessment results of native English speakers with those results of non-native speakers.

For Year 2, Massachusetts complied with new guidelines pertaining to specific race categories, new income measures, and a focus on underserved populations and geographic regions. Accordingly, the initial registration form underwent significant revisions for Year 2 and included the following key items and results:

* Trainee Gender: For Massachusetts, most trainees have identified as female. In Year 2, a total of 92% of trainees were female, and 8% were male.
* Trainee Age: All trainees were divided into age categories. For Year 2, trainees ranged in age from 17 to 80 at the time of PHCAST training enrollment. Most trainees were between ages 20-29 and 30-39 at the time of enrollment (Table 2).

***Table 2: Year 2 Trainee Age Ranges***

|  |  |
| --- | --- |
| **Age Range** | **Total** |
| <20 | 6% |
| 20-29 | 23% |
| 30-39 | 30% |
| 40-49 | 17% |
| 50-59 | 16% |
| 60-69 | 6% |
| 70+ | 1% |
| Unknown Age | 1% |
| Total | 100% |

* Trainee Education Level: Trainees in Massachusetts had a wide range of educational backgrounds, though the largest group of students had completed high school or high school equivalency (39%). Students with stronger educational backgrounds were also more likely to stay in training, which helps support PHCAST's low attrition rate, which was 11% in Year 2 (Table 3).

***Table 3: Year 2 Trainee Education Level***

|  |  |
| --- | --- |
| **Education Level** | **Total** |
| Less than 9th grade | 3% |
| Grade 9-12, non graduate | 9% |
| HS Diploma | 30% |
| GED/HS equivalency | 9% |
| Other post-secondary training | 6% |
| Some college, no degree | 30% |
| Associates Degree | 7% |
| Bachelors Degree | 5% |
| Master's Degree | 1% |
| Total | 100% |

* Trainee Employment: While PHCAST trainees have diverse backgrounds, some reported that they were already working in health-related fields when they began the PHCAST training, and nearly half said they were unemployed when they began training (Table 4).

***Table 4: Year 2 Trainee Employment at Time of Enrollment***

|  |  |
| --- | --- |
| **Employment** | **Total** |
| Working in Health Field | 31% |
| Working in Non-Health Field | 20% |
| Unemployed | 49% |
| Total | 100% |

* Underrepresented Asian Trainees: The Census-standard "Asian" race category was divided into two separate groupings for Year 2. The first, "represented Asian,” included individuals identifying as Asian Indian, Chinese, Filipino, Japanese, Korean, Thai, or Vietnamese. The "underrepresented Asian" category includes individuals from all other Asian nations (e.g., Bangladeshi, Cambodian, Laotian, or Malay, among many others). The total number of underrepresented Asian trainees was 0% for Years 1 and 2 (Table 5).

***Table 5: Year 2 Trainee Race and Ethnicity***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Asian** | **African-American** | **White** | **Multi-Racial** | **Other/****Unknown** | **Total** |
| Hispanic/ Latino | - | 3% | 4% | 1% | 17% | 25% |
| Non-Hispanic/ Latino | 3% | 17% | 46% | - | 4% | 70% |
| Unknown | - | 2% | 2% | - | 1% | 5% |
| Total | 3% | 22% | 52% | 1% | 22% | 100% |

* Language Skills: Since a primary goal of Massachusetts’ PHCAST is reaching all types of direct care workers across the state, the Massachusetts team has collaborated to ensure that training is available to individuals for whom English is not a first language. For Year 2, 19% of trainees reported that their English was limited, while 81% said they had no English language difficulties.
* Low-Income Status: For Year 1, data were collected concerning participation in public assistance programs. Thus, participation in income-limited or means-tested programs, (e.g., SNAP or TANF) was imputed to determine low-income status. For Year 2, data were collected based on federal guidelines for defining low-income status, calculated as 200% of the 2012 Poverty Guidelines. Thus, all participants were asked to report the number of persons residing within their households and were asked to identify an income range. For example, a household with three members was defined as low-income if total earnings fell below $38,180 for the previous year[[2]](#footnote-2). Some trainees chose not to report household size or income level; therefore, participation in income-limited or means-tested programs was used as a secondary means of determining low-income status. Accordingly, the majority of PHCAST trainees were defined as low-income (Table 6).

***Table 6: Year 2 Trainee Low-Income Status***

|  |  |
| --- | --- |
|  | **Total** |
| Low-Income | 78% |
| Non-low-income | 22% |
| Total | 100% |

* Underserved Geographic Areas: In Year 1, general geographic data concerning training locations and residences were collected for all PHCAST trainees. For Year 2, these data were used to define trainees' geographic regions as "urban," "rural," or "suburban." Rural regions were defined by the federal funders using specific zip codes, and suburban and urban regions were calculated by the evaluation team based on 2010 Census data. Trainees’ self-reported residential zip codes were compared to Census data, such that zip codes with populations of 50,000 residents or more were deemed "urban." Suburban residences were defined as having fewer than 50,000 residents as of the 2010 Census and were not also identified as rural. Accordingly, for Year 2, with the majority of trainees in Massachusetts were described as residing in urban or suburban areas (Table 7).

***Table 7: Year 2 Underserved Geographic Areas***

|  |  |
| --- | --- |
| **Geographic Area** | **Total** |
| Urban | 59% |
| Suburban | 34% |
| Rural | 7% |
| Total | 100% |

In addition to inclusion in this report, Year 2 trainees’ demographic data were reported in a series of online tables submitted to the federal funders in September 2012. For Year 3, the same registration form will be used to collect demographic data for all trainees, and results will be reported in accordance with grant requirements.

**Overview of Year 2 Student Assessment Results**

In both Years 1 and 2, PCA and PCHM students completed paper-based pre- and post-test assessments. All paper results were input and compiled using an online survey collection platform. Results were analyzed using SPSS 18.0, a statistical software program, for the skills assessments, pre- and post-tests, and participant reaction surveys. A second statistical software program, STATA, was used to run a pre- and post-test regression analysis to identify whether test results improved significantly after students completed training with the new curriculum. A discussion of results by assessment follows.

Since only four modules of the core curriculum were revised for Year 1 trainings, significance of results reflected only changes made to those four curriculum modules. For Year 2, all curriculum modules were assessed. PHCAST grant staff administered the pre- and post-tests in person, and skills assessments were administered by third-party Registered Nurses. In the absence of mannequins, third party volunteers were used as consumers to demonstrate hands-on skills, such as transfers. All trainees were reminded that their personal information would be kept confidential, and they were also reminded that assessment results were intended to evaluate the PHCAST curriculum and training.

***Hands-on Skills Assessment Results***

The skills assessment tool was designed to evaluate student performance on several skills constituting the competencies critical to PCAs and PCHMs. Skills were described and demonstrated during training, and then students were asked to demonstrate each skill on their own. Each student was evaluated on a three-point scale as skilled, satisfactory, or needs review. Registered Nurses were asked to assess students on the "first pass," meaning the first time that students demonstrated each skill. First pass results would link skill performance to curriculum and training, rather than to improvement made on prior attempts or from feedback received. The skills assessment was given only once at the end of the full training or immediately after completion of the modules in which skills were demonstrated.

Hands-on skills included in the assessment were hand-washing, use of gloves, dressing, body mechanics/lifting, toileting with a bedpan, toileting in the restroom, transferring from bed to wheelchair, repositioning to sit up in bed, turning in bed, bathing in bed, bathing in a bathtub, bathing in a shower, personal hygiene/peri-care, and providing consumers with mouth hygiene and denture care. Each student was asked to perform at least one of each type of skill; for instance, all students completed hand-washing and gloving, as there are no substitutes or similar comparisons for these skills. However, a trainee who was asked to demonstrate shower bathing would not likely also demonstrate bathing in a bathtub, as one type of bathing skills demonstration would suffice for the assessment. Students were assigned random combinations of skills to help ensure that possible communication between students would not influence performance. After completing student assessments, the Registered Nurse skills assessors reviewed results with instructors. Students whose assessment results showed any need for improvement were flagged by the Registered Nurses and mentioned to instructors. Instructors were advised to remediate any students needing improvement prior to training completion.

A total of 315 students completed the skills assessment at pilot training sessions by home health agencies affiliated with the Mass Council (PCHM) or BCC (PCA). Data were analyzed to compare PCHM and PCA students. Data were also analyzed to identify differences in student performance based on employment history (self-identified current employment in the long-term care or healthcare industry compared to other employment types), and by English language skills (self-identified difficulty with English that may impede career advancement compared to no difficulty with English). No statistically significant differences were found within or across these groups.

Overall, students performed very well on the majority of skills, where "performing very well" is defined as at least 80% of students being described as "skilled" or "satisfactory." As was true in Year 1, hand-washing was among the strongest skills in Year 2. Consumer Transfers, Oral Care, and Dressing were also strong in Year 2.

All results for PHCAST Year 2 trainees were significantly stronger than results for the comparison groups of non-PHCAST direct care workers. PCHMs who received some formal training prior to PHCAST had only slightly weaker skills than the PHCAST-trainees. However, the PCA comparison group members, none of whom had received formal training, demonstrated weaker skills. Despite these raw data differences within the comparison group population, the numbers were too small to provide statistically valid results by sub-groups. Accordingly, results are presented only for the total comparison group (Table 8).

 ***Table 8: Skills Assessment Average Results for Years 1 and 2 with Comparison Group***

| **Skills Assessed** | **Year 1** | **Year 2**  | **Year 2** **Comparison Group**  |
| --- | --- | --- | --- |
| **Average % "Skilled" or "Satisfactory"[[3]](#footnote-3)** | **Average % "Skilled" or "Satisfactory"** | **Average % "Skilled" or "Satisfactory"** |
| Hand-washing | 100% | 97% | 56% |
| Gloving | 100% | 95% | 60% |
| Body Mechanics | 100% | 96% | 76% |
| Consumer Transfers *(In Bed, Bed to Chair, Bed to Standing, etc.)* | 98% | 97% | 83% |
| Toileting *(Bedpan, Portable Commode, & Toilet)* | 99% | 92% | 60% |
| Bathing *(Bed Bath, Tub, & Shower)* | 98% | 95% | 60% |
| Personal Hygiene/Peri-care | - | 96% | 60% |
| Oral Hygiene/Mouth Care | 100% | 97% | 97% |
| Dressing | 100% | 97% | 94% |
| Average Overall Skill Total | 99% | 96% | 72% |

Overall, hand-washing was found to be the weakest of all comparison group skills, followed by gloving, toileting, bathing, and peri-care. Given the nature of these skills, the data indicate potential for possible infection or other public health risks associated with improper personal care and hand-hygiene. These results suggest that training may represent a meaningful opportunity to improve the quality of care provided to consumers and the safety of the care environment for direct care workers (Table 8).

***Pre-Test/Post-Test Results***

The pre-test and post-test were identical assessments given to PCA and PCHM students prior to the beginning of the training and again after training had been completed. In Year 2, trainees completed multiple choice questions covering all PHCAST core competencies, compared with the Year 1 test which included the four PHCAST curriculum modules that had been developed and general questions about the remaining modules. For students with limited reading ability, including those who reported limited English language abilities, the assessment was offered verbally. As with the skills assessment, Year 2 data were evaluated to compare students (1) by employment history (self-identified current employment in a healthcare industry compared to other types of employment), (2) for English language skills (self-identified difficulty with English that may prevent career advancement compared to no difficulty with English), (3) by education (those with high school or less education compared to those with some education beyond high school), and (4) against the comparison group of individuals who had not participated in the PHCAST training.

In Year 1, student responses were only recorded as correct or incorrect, meaning that analyses of incorrect answer selections was not possible. For Year 2, all responses were documented to identify possible patterns in responses, such as a majority of students choosing the same incorrect response to a given question. This pattern matching process allowed for more thorough analyses and will encourage improvement of the assessment for Year 3. Additionally, total scores were calculated as one point awarded for a correct response and zero points awarded for an incorrect response. Creating this total score variable for each student's pre-test and post-test in both Years 1 and 2 allows for comparison of test score changes through use of a multiple regression model that controls for training setting, employment, self-reported English language skill level, and education level (Table 9).

***Table 9: Highlights of Written Assessment Pre-test and Post-test Years 1 and 2***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Year 1 Pre-Test** | **Year 1 Post-Test** | **Year 2 Pre-Test** | **Year 2 Post-Test** | **Year 2 Comparison Group Test**  |
| Number of Test Questions | 67 | 67 | 60 | 60 | 60 |
| Total Score (Mean percent) | 79.84% | 89.41% | 71.80% | 81.07% | 71.63% |
| Correct Answers (Mean total) | 53.49 | 59.9 | 43.08 | 48.64 | 42.97 |
| Group Average % Change | 9.57% | 9.27% | - |
| Individual Average % Change | 14.61% | 19.17% | - |

Overall, students performed well on the pre- and post-tests in both Years 1 and 2; however, the test for Year 2 is assumed to be more difficult than the one administered in Year 1 because the newer version included questions designed specifically to assess the impact of the full curriculum. Although the Year 1 and Year 2 group average percent change between the pre- and post-tests were nearly the same, the individual average percent change was higher for Year 2 trainees. This statistically significant percentage increase for each student in Year 2 suggests a greater individual knowledge gain. In total these results indicate that the full curriculum used in Year 2 may have had a greater impact on student knowledge gain than the partial PHCAST curriculum used in Year 1.

Use of paired T-test and regression models indicates a positive, significant change (P=0.000) between the pre-test and post-test results in Years 1 and 2, suggesting that there is a strong relationship between students' pre-test performance and the post-test improvement in both years. When controlling for relationships between this test score change and employment history, language skills, and education, the results showed no significance at the .05 or .10 levels in Year 1. In Year 2, language and education were significant at the .05 level, but employment history was found to be insignificant (P=0.087). Since the education level and language proficiency of trainees cannot be changed prior to enrolling, the best way to help improve scores for these trainees is to meet their needs by offering more varied learning opportunities and trainings available in multiple languages, both of which will be addressed for Year 3.

Comparing the Year 2 results to the comparison group yielded significant findings. The total scores (mean questions and mean percentages) for the comparison group are almost identical to the pre-test scores for the Year 2 PHCAST trainees, indicating that individuals who have not yet begun the PHCAST training are statistically similar to individuals who are not taking the PHCAST training at all. In short, this result suggests that the comparison group sample is similar to the PHCAST trainee sample, indicating a strong likelihood that selection of the comparison group was adequate to represent a population that is very much like the PHCAST group. Since the comparison group’s results were similar only to the PHCAST trainees’ pre-test results, these findings show that the positive effect of the PHCAST training, demonstrated through increased post-test scores, is correlated to knowledge gain among direct care worker trainees.

***Pre-Test/Post-Test Revisions***

In reviewing the overall results across Year 2, specific questions within the Year 2 assessment were identified as being potentially problematic, where "problematic" questions had fewer than 80% of students providing correct post-test responses, among either the full student sample or among a sub-sample. Assessment changes were made based solely on questions that were problematic for all trainees or for those for whom English is a second language (ESL). Other subgroups, such as trainees by work experience or by education level were not found to be significantly different than ESL or the whole sample. Alternatively, some questions were found to be too easy, meaning that scores were 89% or better on the pre-test and even higher on the post-test (Table 10). All questions recommended for review are listed as follows:

***Table 10: Year 2 Pre/Post-Test Questions Recommended for Review***

|  |  |  |
| --- | --- | --- |
| **Question #** | **Study Sample Type** | **Reason for Review** |
| 2 | total | Question may be too easy |
| 7 | ESL | Question easy, but negative gain in post |
| 8 | ESL | 4% skipped question pre; question may be too hard |
| 10 | total | Question easy, but no improvement in post |
| 12 | total and ESL | Question may be too hard; Check answer B |
| 13 | ESL | Question easy, but negative gain in post |
| 14 | total and ESL | Question may be too easy (negative gain for ESL) |
| 19 | total and ESL | Question may be too hard; Check answer A |
| 22 | ESL | 4% skipped question pre; question may be too hard |
| 23 | total and ESL | Question easy, but negative gain in post (no gain for ESL) |
| 32 | ESL | 8% skipped question pre; question may be too hard |
| 33 | ESL | 4% skipped question pre; no knowledge gain |
| 38 | ESL | 4% skipped question pre; question may be too hard; Check A |
| 50 | total | 5% skipped question pre; no knowledge gain |
| 52 | total and ESL | Question may be too easy |
| 54 | total and ESL | Negative gain in post; check D |
| 56 | total and ESL | Question may be too easy |
| 59 | total and ESL | Question may be too hard; check D (negative gain for ESL) |
| 60 | total | Question may be too hard; Check answer D |

These questions will be reviewed for revision or replacement on the Year 3 pre- and post-test assessments.

**Year 2 Formative Evaluation Overview**

***Students***

As in Year 1, Year 2 trainees were asked to describe their overall reactions to the PHCAST training experience. These results can be used to evaluate the training from the participants' perspective, while also identifying any potential areas for improvement.

***Participant Reaction Survey Results***

For the participant reaction survey, students were asked a series of questions to gauge overall perceptions of the training process, while also identifying students' long range career goals and plans to work as PCAs or PCHMs. Overall, students reported very high levels of satisfaction with the PHCAST training they received during Year 1, and these results carried over through Year 2. Students in Year 2 rated their overall satisfaction and satisfaction with instructors highest, while the amount of time available to learn material and their ability to understand course materials earned slightly lower scores. Although some results in Year 2 appear slightly lower than the Year 1 findings, these differences are not statistically significant, and overall satisfaction remains very high across both years (Table 11).

Most Year 2 students also indicated that they are currently working as PCAs/PCHMs or are planning to work in the field. More than 80% reported that they would like to pursue additional training in the future to become home health aides or licensed practical nurses, and some also sought other health training at the college level. In terms of open-ended (qualitative) responses, trainees reported high satisfaction with the adult learner-centered approach to the classes. When asked about recommendations for future improvement, Year 2 trainees expressed an interest in more adult-centered learning and diverse learning activities through hands-on skills practice, videos, and related non-lecture instruction (Table 11). Students also requested more practice time during the skills training sections.

 ***Table 11: Average Satisfaction Across Years 1 and 2***

|  |  |  |
| --- | --- | --- |
| **Average Satisfaction** | **Year 1 Mean Agreement** | **Year 2 Mean Agreement** |
| Overall Satisfaction with PHCAST | 98% | 98% |
| Training Met Expectations | 99% | 95% |
| "I learned new skills in the PHCAST program." | 95% | 95% |
| "I understand how training will be used on the job." | 96% | 95% |
| "I am confident I have the knowledge and skills to do a good job as a PCA/PCHM." | 95% | 95% |
| "I understand my roles and responsibilities as a PCA/PCHM." | 96% | 95% |
| "I had enough time to learn the content covered in the training." | 92% | 90% |
| "I found the course materials, handouts, etc. to be helpful." | 95% | 93% |
| "I found the instructor to be enthusiastic about the subject." | 98% | 97% |
| "My questions and concerns were addressed by the instructor." | 97% | 96% |
| "Course material was presented in a way that I could understand." | 92% | 93% |
| Opinion of Training as Preparation for PCA/PCHM work | 96% | 94% |
| Mean Likelihood of working as PCA/PCHM | 94% | 94% |
| Average Overall Satisfaction | 96% | 95% |

***Instructors***

In both Years 1 and 2, feedback from instructors was gathered in two forms: a feedback survey and a self-assessment, both using paper surveys; these results were compiled via an online survey collection platform. All results were analyzed using the statistical program SPSS, and specific responses by instructors were reviewed for comparison to student assessment results. It is important to note that because there were significantly fewer instructors than students (23 total trainings in Year 2), sub-analyses by instructor or training location have not been performed. The small sample size would render any more detailed analyses non-robust. A discussion of all results by assessment follows.

***Instructor Feedback Results***

Instructors provided feedback on all of the competencies in the full version of the training. In general, instructor feedback was very positive across competencies. The broad suggestions from instructors focus on timing, language issues, and visual learning tools. A few modules, including personal care, infection control, and health care support, were said to include too much information and not allow enough time for thorough discussion or hands-on practice. In contrast, safety was said to be a bit too slow-moving. One other issue related to class size. For smaller groups (≤15 students), all activities and skills demonstrations seemed to flow more easily, while a few instructors said they struggled with larger classes. For example, one instructor reported that a class of 22 had difficulty across modules due to volume of questions and the time-consuming nature of some activities.

Despite discrepancies as to which modules may take too much time and which take too little, most instructors seemed to agree on a need for language assistance within the training curriculum. In particular, conflict resolution and interpersonal skills were said to be difficult modules for non-native English speakers. Similarly, several instructors mentioned a need for more visual aids, particularly videos. Videos were said to be especially necessary for teaching personal care skills. Instructors also said that videos might be beneficial across modules to offer another type of learning medium to students. In particular, students with language or reading issues might benefit from the visual presentation of video demonstrations. Instructors also expressed the need for more time devoted to the skills training.

Comparisons across Years 1 and 2 are not available for this measure, given the changes made to the curriculum and the assessment tool between the two years. The assessment in Year 1 asked instructors for feedback on only those four competency areas that had been completed with the new PHCAST curriculum. The Year 2 assessment reviewed all competency areas, including significant revisions to the original four. As a result, no data are available within or across years to evaluate all modules, but the Year 3 results will include findings for all thirteen modules.

***Instructor Self-Assessment Results***

In Years 1 and 2, instructors were asked to review their own performance and instruction using the PHCAST curriculum. Results indicated that nearly all instructors rated themselves very highly for providing feedback to students without blame or judgment, as well as adapting teaching styles to meet different learning styles and needs. Instructor confidence was somewhat lower, particularly for interpersonal skills, nutrition, and conflict management, though instructors seemed to feel their overall teaching abilities were stronger in Year 2. Overall ratings indicated that instructors perceive their instruction to be strong, with a majority of instructors ranking themselves as 8, 9, or 10 out of 10 for confidence in their knowledge of the curriculum and adult-centered learning model. These findings mirror the results from the student reaction survey that indicated students have very good impressions of instructors.

**Next Steps: Year 3**

To align with the Massachusetts training goal of developing a universal, standardized core competency curriculum to train a quality, transferrable workforce, final revisions will be made to the curriculum ahead of beginning Year 3 trainings. At the end of Year 2, the Advisory Group members recommended revisions to the curriculum that use stackable modules, such that modules can be administered in manageable segments conducive to the needs of the workforce. As a result, the nine modules used during Year 2 trainings were expanded to twelve modules at the end of Year 2, with an estimated time of 3 hours for each module. Additionally, based on favorable feedback concerning the Life Skills activity within the Interpersonal Skills module, a thirteenth separate module, Life Skills, was also added at the end of Year 2. These revisions resulted in a planned Year 3 curriculum consisting of 13 stackable, universal core modules. This 13 module version of the curriculum for use in Year 3 and beyond is as follows:

1. **Roles and Responsibilities**: This module includes definitions of PCA and PCHM, as well as discussions of the duties required of these professions.
2. **Communication Skills**: For this module, PCAs and PCHMs learn how to interact with consumers and surrogates, including learning about body language and learning to be active listeners.
3. **Culture & Diversity**: Since consumers may have different backgrounds than their PCAs or PCHMs, this module focuses on respecting these differences through good communication and accepting behaviors.
4. **Health Care Support: Body Systems and Common Diseases**: This module provides a summary of general body systems and functions, as well as common conditions or diseases that pertain to each system.
5. **Infection Control**: Focused on universal precautions, this module teaches PCAs and PCHMs how to wash their hands properly, how to use gloves and other basic protective equipment, andhow to maintain a sanitary environment.
6. **Basic Restorative Skills**: This module focuses on proper body mechanics, toileting, repositioning and transferring, use of assistive devices, and instruction on how to help PCAs and PCHMs assist consumers with self care.
7. **Personal Care Skills**: For this module, PCAs and PCHMs learn proper techniques for bathing, providing mouth care, grooming, and dressing individuals.
8. **Nutritional Skills**: For this module, PCAs and PCHMs learn about the food groups and healthy eating to encourage consumers to eat well. They also learn proper techniques for safe food handling and preparation.
9. **Housekeeping**: For this module, PCAs and PCHMs learn proper techniques for bathing, providing mouth care, grooming, and dressing consumers.
10. **Consumer/Needs-Specific Training**: This module includes an overview of various types of health conditions and disabilities commonly observed in the field.
11. **Safety and Emergency Training**: PCAs and PCHMs learn how to respond to medical emergencies and maintain safety for consumers in their homes.
12. **Consumer Rights, Ethics, and Confidentiality**: PCAs and PCHMs learn how to respect the rights of consumers, maintain confidentiality, resolve disputes, and interact appropriately with consumers’ family members.
13. **Life Skills**: This module provided information on managing time management, stress abatement, relationship development with consumers, and basic problem solving skills.

The Year 1 and 2 pilot training results indicated that the curriculum is well-designed to meet the needs of the direct care workforce. Although the assessment tools, particularly the pre-/post-test will be revised for Year 3 to adjust individual questions and to include all thirteen final curriculum modules, the other aspects of the curriculum seem to be very strong without significant content changes needed beyond Year 2. Transferability is a key goal for the PHCAST curriculum and assessments, such that both the training and assessment tools could be sustained across multiple training venues statewide after the three-year grant demonstration project is completed.

Based on the sustainability goals and feedback received from students and instructors, offering the curriculum in multiple languages and offering more visual learning tools would be great assets to the existing PHCAST model. One new offering for Year 3 will be bilingual trainings to meet the needs of the diverse direct care workforce, informal caregivers, and direct care consumers in Massachusetts. As a result, all of the student handouts and assessment tools will be available in three additional languages that were reported to be dominant within the Massachusetts direct care workforce: Spanish, Brazilian Portuguese, and Haitian-Creole.

Additionally, the federal funders agreed to allow some of the grant funds to be used for video production. For Year 3, all trainings will use new PHCAST skills videos that provide visual demonstrations or most of the major skills assessed in the curriculum, including hand-washing, gloving, dressing, mouth care, and consumer transfers. A realistic job preview video was also created to help give workers a better understanding of work as a PCA or PCHM in Massachusetts, and a short public service video was developed to help market direct care employment across the state and beyond the life of the grant.

Since students and instructors requested more time to demonstrate and practice skills, this issue will also be addressed in the coming months. However, these changes will be reflected in the final version of the curriculum, not the version used for the Year 3 trainings. For the purpose of measuring the effectiveness of the curriculum over time, the skills portion of the curriculum will match the Year 2 training model, which focuses on the importance of measuring first pass skills performances. Beyond the grant, more time will be allowed for demonstrating and assessing skills.

The Year 3 evaluation tools, including the student and instructor feedback surveys, have been revised to include questions about videos and, for those trainees enrolled in bilingual classes, evaluation tools also ask about the effectiveness of bilingual handouts and other course materials. New instructors who will use the bilingual curriculum and new instructors from new partner organizations, including several community colleges around the state, will also participate in a PHCAST sustainability symposium, the success of which will be evaluated with a brief satisfaction survey.

Year 3 necessitates additional evaluation goals to address secondary and tertiary outcomes. For the secondary evaluation, a focus group of instructors will evaluate how trainees performed after the second year of training. Year 2 trainees will also be offered a follow-up survey in Year 3 to track their experiences since completing training, and their supervisors will complete an online survey to review PHCAST trainees’ performance in the workforce. Both surveys will be anonymous, and they will allow the evaluation team to gauge the long-term impact of the PHCAST training.

Also in Year 3, a fundamental introductory class will be offered to PCAs who have never received training and to others who might be interested in direct care. These quick introduction classes are the first step in the stackable design of the Year 3 curriculum, providing a one-time three or four hour opportunity to learn a few basic skills, such as hand-washing. A mini version of the pre/post-test (15 total questions) and a mini-version of the skills assessment will be used in conjunction with a satisfaction survey to determine success of this introductory model.

For existing PHCAST trainees, continuing education classes will be offered in Year 3 on specific topics including asthma, overweight consumers, LGBT consumers, abuse, surrogates, disabled children, and Alzheimer's disease, as well as other topics. These three- to four-hour continuing education trainings are part of the ongoing sustainability plan for the grant to help encourage lifelong learning and performance improvement. To that end, PHCAST trainees from Years 1 and 2 will have the opportunity to participate in the continuing education trainings, and all continuing education participants will be given a satisfaction survey at the end of each continuing education training.

In terms of tertiary outcomes, an online stakeholder study will be developed to gauge statewide buy-in and success of PHCAST through Years 1 and 2. Consumer surveys are also being discussed with guidance from the National Evaluators. A possible resource, the state SAMS database, may provide an avenue for access to some consumer-level data, but this opportunity is still being reviewed to determine whether it would achieve the tertiary goal of determining PHCAST success for consumers.

**Appendices**

A full analysis of pre-/post-test data for Year 2 is presented on the following pages.

1. This program is a statewide action plan to encourage persons with disabilities and older adults to reside as active members of their communities. For more information, visit the MA Executive Office of Health and Human Services (http://www.mass.gov/eohhs/consumer/disability-services/living-supports/community-first/community-first-olmstead-plan.html). [↑](#footnote-ref-1)
2. Income thresholds calculated based on 200% of 2012 Poverty Guidelines. 77 Fed. Reg. 17 (26 January 2012). [↑](#footnote-ref-2)
3. For Year 1, Skills Assessments were conducted by instructors. In Year 2, third-party Registered Nurses conducted all skills assessments. [↑](#footnote-ref-3)