

Home Safety Training for Vulnerable Populations: An Evaluation of the ‘Safe at Home’ Program

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Abstract

This demonstration project field tested an individualized fire safety training program delivered by an inter-professional partnership of care providers and fire safety educators to 26 participants with intellectual/developmental disabilities (IDD) transitioning to independent living. The program taught participants four key fire safety skills and removed several common fire hazards. A pre-post-follow-up evaluation documented a statistically significant reduction in environmental hazards and statistically significant improvements in the participants’ mastery of four key safety skills.

An individualized hazard remediation and skill training program delivered by an inter-professional team can make it possible for people with IDD to live independently more safely.

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Introduction

Safety, specifically the prevention of unintentional injuries, is a major health concern as unintentional injuries are the third leading cause of death in the United States. In 2017 alone, they resulted in 28,027,606 emergency department visits including 2,615,181 resulting in a hospitalization. (Centers for Disease Control and Prevention, 2019a).

Falls and fires are major contributors to the problem of unintentional injuries. In 2017, 388,402 fire and burn injuries were treated in emergency departments and 2902 individuals died (Centers for Disease Control and Prevention, 2019b). In addition, over 8,500,000 people were treated for fall injuries and 36,338 died. Not every demographic subgroup is at equal risk however. The elderly and those with disabilities are at greater risk for both fall and fire and burn injuries than the general population. Older adults, those 65 and older, are 2.5 times more likely to die in a fire than the population (United States Fire Administration, 2019) and 6 times more likely to die from a fall (Centers for Disease Control and Prevention, 2019b). Individuals with intellectual & developmental disabilities (IDD) are four times more likely to die in a fire and 6 times more likely to die from a fall than the general population (Strauss, 1998).

For people with IDD, the risk of an unintentional injury increases as the degree of supervision in the residence decreases. Those living semi-independently in uncertified settings (separate residences with periodic visits by staff) are at 35% greater risk of injury than those living in small group homes, 50% more likely than those living in family homes and 130% more likely than those living in institutional/developmental centers. (Strauss et al., 1998).

For both of these populations, older adults and individuals with IDD, living independently is a priority. As adults age, they want to remain in their homes as long as possible. For those with IDD moving into their own apartments with as much independence as possible is an increasingly important goal, a goal supported in the law and encouraged by an increasing number of state agencies. The Centers for Medicare and Medicaid Services state “emphasis is now on people living in their own homes, controlling their own lives and being an integral part of their home community” (Centers for Medicare and Medicaid Services, 2017, para.3).

In order to enhance opportunities for community inclusion and overall quality of life, more people with IDD are living in residences not certified by state authorities and not subject to the same strict fire safety regulations. For example, in New York State, 75% of the 154,000 individuals with IDD receiving services from the Office for People with Developmental Disabilities (OPWDD) live in noncertified settings (NYS OPWDD, 2017). This number will continue to grow as more people choose to live independently supported by government assistance.

One impediment to independent living for both older adults and people with IDD is the families’ concern about the risk of injury and the inability to quickly and appropriately respond to an emergency. In 2015 a workshop regarding home safety for people with IDD living independently sponsored by Monroe Community College, the New York State Office for People with Developmental Disabilities and Prevention First was held. Individuals with IDD, their families and agency staff were asked to rank their top concerns surrounding independent living. The 76 individuals who completed a ranking placed fire safety number one and kitchen/cooking safety number two and fall safety number seven. For this reason, our subsequent work focused on fire and kitchen safety.

The factors influencing the risk of injury for older adults and people with IDD are similar to the factors for the general population and fall into three broad categories: (1) environmental risks; (2) cognitive limitations; and (3) physical and biological conditions (Sherrard, Ozanne-Smith & Staines, 2004). Environmental risks for fire injury and death include the absence of working smoke alarms, poor lighting, and cluttered exit pathways, all essential for an early warning and safe, rapid escape. Cognitive limitations include deficits in adaptation and coping with environmental challenges, evident in a declining use of safe cooking practices and lack of exit planning and practice. Physical and biological factors include epilepsy, psychopathology (e.g., anxiety, disruption in mood states particularly mood reactivity, and/or persistent difficulties in attention/focus/impulsivity), the display of challenging behaviors, and deficits in sensory motor skills (e.g., a visual or hearing impairment, such as an inability to see a tripping hazard or hear a smoke alarm, hypersensitivity to noise, limited mobility).

Prior Attempts to Teach Safety Skills. There is a paucity of literature regarding injury prevention among those with IDD. We identified five studies, published over 30 years ago, that specifically addressed fire safety, fire extinction or fire exit ((Haney & Jones, 1982; Holburn & Dougher, 1985; Jones & Thorton, 1987; Katz & Singh, 1986; Rowe & Kedesdy, 1988). All used primarily behavioral-analytic teaching strategies such as shaping, task analysis, and modeling and demonstrated successful skill acquisition within the framework of single-case experimental

designs. Bannerman, Sheldon & Sherman (1991) successfully taught three individuals with severe IDD to exit their group home following the sounding of a fire alarm using a similar approach. Bigelow, Huynen & Lutzker (1993) also had success teaching a nonverbal nine-year-old with autism to exit her group home. All of these evaluations demonstrated fire safety skill acquisition within the framework of small sample sizes of 3 or less.

More recent reviews (Palmen, Didden & Lang, 2012; Matson, Hattier & Belva, 2012; Flynn & Healy, 2012) provide support for the use of systematic behavioral-analytic teaching strategies such as task analyses and prompt fading to teach adaptive living skills to individuals with autism spectrum disorder (ASD). Matson et al. (2012) specifically commented that applied behavior analysis methods “have proven to be highly effective as a means of teaching adaptive living skills in a variety of disabled populations” (p. 274).

While none of these more recent studies directly address fire safety, their emphasis on adaptive living skills, including vocational, domestic, self-help and personal hygiene, provide additional support and a framework for enhancing fire prevention and fire escape for individuals with IDD who are living, or who hope to live, independently. Palmen et al. (2012) concluded that specific instruction and differential reinforcement seem to be “promising for improving task engagement” (p. 615), critical for self-initiated fire prevention skills. The authors also underscored the importance of incorporating direct observation of skill performance in naturalistic settings and paying specific attention to the programming for maintenance of skills over time.

The Safe at Home Program. Based on these principles we developed a framework to guide an interprofessional partnership of individuals who have experience working with vulnerable populations and those with appropriate content expertise. We then conducted a field demonstration of its feasibility and effectiveness in reducing environmental hazards and teaching selected safety skills.

To support individuals living or hoping to live in less restrictive settings, the Safe at Home program was designed to identify and address the environmental risks present in the individual’s residence most likely to pose a fire risk or impede a safe exit (specifically addressing fall risk) should a fire occur, and to teach four critical safety skills tailored to the demands of the residence and the specific capabilities of the individual. The primary focus of the program was fire safety given that it was the number one concern of staff and family at our conference. The Safe at Home program relies on an interprofessional partnership of the fire service and individuals with experience in home visitation and skilled in building rapport and promoting behavior change, accordingly we built two person teams including a fire safety educator and a developmental disabilities service providers. The program addresses 15 common environmental risks and four fire prevention/fire survival skills: testing smoke and carbon monoxide (CO) alarms, safe exiting in the event of a fire, calling 911 and kitchen fire safety.

The Environmental Assessment. Cooking, heating, electrical wiring and electrical appliances account for 71% of home structure fires and 65% of home fire injuries (Ahrens, 2016a) and thus explain the inclusion of several items in our environmental assessment: (1) nothing flammable near stovetop, (2) stovetop and oven are clean and free of grease, (3) no space or portable

heaters, (4) HVAC inspected within 12 months, (5) electrical cords in good condition, (6) large appliances connected directly to wall outlet, (7) dryer vent free of lint. While candles account for only 3% of home fires, they account for 7% of home fire injuries and are a major concern of the families of people with developmental disabilities, so we also assessed for (8) the presence of open flames specifically candles and fireplaces. In addition to fire and fire injuries we are also concerned about contact burns and scalds and thus included a measure of hot water temperature, (9) water temperature at the faucet being no more than 110 degrees following the New York State Office for People with Developmental Disabilities standard.

An additional six items addressed environmental factors that ensure the early warning of a fire and facilitate a rapid and safe exit (10) working smoke alarms less than 10 years old on every floor and outside sleeping areas, (11) working CO alarms less than 7 years old on every floor, (12) all windows can be opened, (13) little or no clutter especially along exit paths, (14) rugs have nonskid backing, (15) working nightlights in hallways and bedrooms.

Safety Skills Training. 70% of those killed in a home fire and 37% of those injured were either sleeping or trying to escape (Ahrens, 2014). Installing and routinely testing smoke alarms provides a critical early warning, especially if asleep, and skills training helps ensure participants know the best way out of the house and are prepared to move quickly.

Verifying the presence of working smoke alarms during our residential assessment does not ensure they will operate when needed. When smoke alarms had been installed but failed to activate during a fire, almost half (46%) had missing or disconnected batteries (Ahrens, 2015). Routine testing of the alarms alerts the residents to dead or missing batteries and inoperable alarms, raises the participants' awareness of the importance of having working smoke alarms, and helps ensure no one will remove or disconnect the alarms or their batteries.

Exiting the bedroom at night in the event of a fire is one of the more challenging escape scenarios and one of the most critical. While most fires happen during the day, most fatal fires occur at night (52%) (Ahrens 2016a). Being awakened during the night in a dark room is disorienting, particularly if there is an alarm or smoke, etc. Developing an exit plan that incorporates preparation to go outside, specifies both a primary and a secondary exit route, and the practice of a rapid but cautious exit is essential.

A critical final step is contacting 911 and providing all relevant details including one's name, address, phone number, nearest cross-street and a description of the emergency.

Sixty-eight percent of cooking fires result from four conditions: (1) unattended cooking, (2) combustible materials too near the heat source (i.e. the burners), (3) unintentionally turning on or forgetting to turn off the burners, and (4) a failure to clean the burners or oven. (Ahrens, 2016b). These four items were the essential tasks included in teaching kitchen safety.

Materials and Methods

Development of the Safe at Home Skill Training Framework. The first step in creating the Safe at Home framework was to subdivide each of the four identified safety skills (testing smoke and carbon monoxide (CO) alarms, safe exiting in the event of a fire, calling 911 and kitchen fire

safety) into a set of small, discrete steps that could be individually demonstrated and practiced. In our community based program, the participants lived in a variety of environments so the final steps involved in exiting or testing a smoke alarm varied. To provide the training team with a general guideline, we developed a set of necessary but not always sufficient steps to be included. The training teams modified each set, further subdividing the skills or adding new skills as necessary, to accommodate the environment and skill of the participant.

To develop this core set of steps, each of the members of our team tested their own smoke alarms, exited their bedroom and made a mock call to 911 writing down each action required. We then compared each person's action list and created a set of the essential, common steps. For kitchen fire safety, each action is a single discrete step based on the most essential kitchen fire safety behaviors. The core steps for each behavior are listed in Table 1.

As part of the task analysis, task sheets were developed to guide the teaching and record progress in learning. Each sheet included the component tasks constituting each skill. At each session, each task was recorded as either performed without prompting, with a verbal or gestural prompt, or if a demonstration or physical assistance was provided. As noted each skill was assessed at the beginning of each session as a measure of what the participant remembered from prior sessions, not what they could demonstrate immediately following instruction.

Program Implementation. The intervention was delivered individually to each participant in his or her residence. This ensured that the skills taught could be modified to fit that environment directly and no generalization from one environment to another or from a classroom setting to home would be necessary.

At the initial visit, once the program was described and consent was obtained, the interprofessional team met with the participant, his or her family and/or staff to review the specific skills, confirm which are appropriate to address, and the approaches to teaching that would be used. Modifications were made to accommodate the ability of the participant, particular learning needs and the nature and specific features of the residence.

For example, some residences had hardwired alarm systems monitored by outside services. We did not address testing these alarms. Some participants did not cook, were not interested in cooking and had all meals provided by family or staff. Some participants used cell phones and some used only landlines. Perhaps most importantly, individual materials or strategies were created to address the particular needs of some participants. One participant was hyperlexic. Our trainers confirmed the possibility of texting 911 in an emergency instead of calling and worked with the family to secure a cell phone to enable texting. Another had an extreme fear of the smoke alarm. Rather than training solely on the installed unit on the ceiling, the trainers brought in a smoke alarm, muffled the sound, demonstrated the smoke alarm with the sound quieted, and then let the participant hold and test this alarm on her own until her fear dissipated. For other participants, cues to action, or the critical elements of key skills, were written out or illustrated as appropriate and given to the participant. These modifications did not lower our standards but tailored our instructional methods to help the participants achieve our safety goals and their maximum level of independence.

Once specific goals were identified, the fire safety educator conducted the residential assessment with the participant or a member of his family or circle of support. In addition to identifying hazards, suggestions were made about how to effectively and inexpensively eliminate those hazards.

As the residential assessment was being conducted, the developmental disabilities service provider conducted a baseline assessment of the participant's ability to perform each of the four skills without prompting or guidance. Successful completion of each of the core steps was recorded. The instructor then provided instruction on the remaining steps, modelling of correct behavior and an opportunity for practice offering verbal and gestural prompts when needed and verbal reinforcement when appropriate.

Multiple, relatively brief (30 to 45 minutes) weekly teaching sessions were then provided. At the start of each of these follow-up visits, participants were asked if they recalled a particular skill and were then asked to demonstrate the skill. If the participant could not move forward on their own, or asked for help, verbal or gestural prompts or if needed, modeling, was provided. The skills were reviewed in this manner at each session until the participant could successfully complete all the component steps of a skill without prompting or guidance at the beginning of the session or until the trainer and the participant's circle of support (staff and family) agreed that no further improvement was likely.

The length of each session varied from 15 to 45 minutes depending on the engagement, attention and motivation of the participant. Similarly, the number of sessions varied to accommodate the pace at which each participant learned each skill.

Participants. The participants were recruited through local agencies and the NYS Office for People with Developmental Disabilities (NYS OPWDD). All were receiving services from NYS OPWDD having received a diagnosis of IDD prior to age 22, but were living independently, with varying levels of staff support, or were living with families. None of the residences were certified by New York State and thus not subject to the strict fire safety requirements of certified settings. Participants were recruited over a period of eleven months from May 2016 through March 2017 and started the program on a staggered basis.

The recruitment and consent procedures were reviewed and evaluated by our independent advisory board including representatives from the NYS Office of Developmental Disabilities Region 1, several local community agencies serving people with IDD (including Starbridge, Trinity Assistance, Lifetime Assistance, Arc of Ontario, and People, Inc.).

Twenty-six people participated in the program. Thirteen participants were living independently and thirteen were living with family. Most, 12 of the 26, were in their 20s, five were teenagers, four were in their 30s, and the remainder ranged in age from 40 to 70. Seventeen were men and nine were women. Three had limited mobility requiring aides such as walkers or wheelchairs. Two individuals had hearing deficits requiring additional alarm options, specifically strobe light alarms or bed shakers. As noted, one was hyperlexic and could communicate only through written communication and one other was nonverbal. Two others had significant mental health issues including thought disturbance and behavioral challenges. Developmental age was not

included as a criteria for participation. Thus, participants were not excluded from participation based on their IQ.

Sixteen of the participants were actively engaged in the program, willingly participating in activities and displaying no opposition or apprehension. Eight participants were cooperative but uninterested, becoming easily distracted and often engaged in other activities (taking lengthy bathroom breaks, phone calls, showing more interest in watching television or listening to the radio). Finally, two participants were resistant, anxious, and overwhelmed and refused to participate in any training session. These individuals had significant mental health issues showing an inability to focus on task, not oriented in time or place, and exhibiting behavioral challenges. One had a panic disorder. In spite of repeated attempts to build a rapport and stimulate some interest in learning a skill, we were unable to engage these two participants. No skills data were obtained from these individuals and they are considered nonparticipants in our evaluation of the program efficacy. One minimally cooperative participant was only willing to work with us on calling 911, so data are available for him on only that skill. One other participant was nonverbal and unable to address calling 911 and general cooking safety, and another refused to test his smoke alarm; no data were obtained from these two individuals on these skills.

Design. The program evaluation was a single group, pre-post design with a three month follow-up. We conducted an inspection of the residence at the time of our initial visit (baseline) and again at the end of training. The number of identified hazards was recorded at both time points. Our measure of success in reducing environmental risk was a reduction in the number of hazards present over the time of the program.

Similarly we asked each participant to demonstrate, without prompting or guidance, each of the four safety skills at baseline and at the beginning of each training session. Repeat assessments provided guidance to the trainer about which skill steps needed review and practice. Our measure of success in teaching the safety behaviors was improvement in the number of skill steps correctly demonstrated without prompting or guidance.

We established a goal for each participant to be able to perform at least 80% of the skill steps for exiting the bedroom, calling 911 and kitchen safety unprompted by the end of training. This level of success would provide a substantial degree of safety. For example, if a participant forgot their shoes or cell phone, didn't go to or stay at the meeting place after exiting, they would still be motivated to quickly exit at the sound of the alarm and have a plan to do so. Similarly knowing to initiate a call to the 911 operator puts into motion the emergency response system even if every detail about the emergency or location is not provided. Also, every kitchen safety behavior learned independently reduces fire risk. The only skill for which we maintained a goal of mastering 100% of the steps is testing the smoke alarm. If one of those steps is omitted, the alarm would not be tested and reported.

Results

Environmental Assessment. Of the 15 potential hazards assessed at our initial assessment, we identified problems with an average of 4.5. Four hazards were present in a majority of the residences: water temperature at the faucet greater than 110 degrees (86%), inadequate smoke

alarm coverage (73%), no working nightlights (68%) and inadequate carbon monoxide coverage (60%). At the end of the training phase of the program, working with families and staff, we had reduced the average number of hazards to 3.50, a meaningful and statistically significant 23% reduction ($t = 3.907$, $df = 24$, $p < 0.001$).

Further modification of the environment was difficult as 19 of the 26 participants lived with roommates or family and lifestyle decisions about removing hazards or installing safety devices were not made by the participants alone, although recommendations were offered.

Skills Training: Exiting the Bedroom at Night. At baseline the 24 active participants could perform, without prompting, an average of only 20% of the component tasks relevant to their environment. At the end of training, participants on average performed 83% of the full set of tasks unprompted (paired $t = 9.927$, $DF=24$, $p < .001$). At baseline, no participants met our threshold for success, but by the end of training 15 (62%) achieved success (Fisher Exact Test (FET) $p < .0001$).

Skills Training: Calling 911. Twenty-two participants engaged in this task (three refused and one was nonverbal and unable to participate). At baseline, these 22 participants performed an average of 48% of the relevant component tasks unprompted. At the end of training participants successfully demonstrated 92% of the component tasks unprompted (paired $t = 7.349$, $DF=21$, $p < .001$). At baseline 5 (23%) of the participants met our threshold for success, by the end of training 19 (86%) achieved success (FET $p < .0001$).

Skills Training: Testing Smoke and Carbon Monoxide Alarms. These skills were relevant for 16 participants. It was not relevant primarily in homes where the participant was living with family, was unwilling or very anxious about assuming responsibility for this task, or where the alarms were hardwired into a central system. At baseline the 16 participants completed 35% of the component tasks unprompted. At the end of training, the average number of successfully completed steps increased to 99% (paired $t = 9.155$, $DF=15$, $p < .001$). At baseline, 2 (12.5%) of the participants could successfully complete all the steps to test their alarm, at the end all 16 achieved complete success FET $p < .0001$).

Skills Training: Maintaining a Safe Kitchen Environment. We introduced kitchen safety skills after having completed the first six participants and thus have no data on these individuals. Ten of the remaining 20 participants engaged in some form of cooking. At baseline these ten participants could complete only 26% of the skills steps without prompting. At the end of training, the average number of successfully completed steps increased to 93% (paired $t = 10.65$, $DF=9$, $p < .001$). At baseline no participant demonstrated our goal of 80% of the steps completed unprompted, at the end of training 8 (80%) achieved this level of success (FET $p = .0007$).

The Impact of Level of Engagement on Success. There were no differences in either the initial assessment of skills or in the skill level achieved between those who were judged to be cooperative and those who were actively engaged.

Skill Retention: The Three Month Follow-up. We successfully completed three-month follow-up visits with a total of 18 participants, although not all 18 had engaged in all four tasks. The

remaining eight refused participation in our follow-up. In general, we had more success scheduling and completing the three-month assessments with those who did well in the program. This provided an opportunity to evaluate the critical question as to whether or not those who achieved success during the training phase retained what they had learned.

Eleven people participated in the follow-up evaluation of exiting the bedroom and calling 911. At the end of the active training, these 11 overall could perform 90% of the skill steps for exiting the bedroom and 94% of the skill steps for calling 911 unprompted. At follow-up success for exiting was unchanged at 90%, calling 911 has dropped from 94% to 88%, a small, non-significant reduction. Seven people completed the follow-up assessment of alarm testing and five for cooking safety. Success at testing the alarm remained at 100%, success at cooking safety remained at 93%.

Discussion

The baseline environmental and skill assessments confirmed that these participants, in spite of their families' concern about safety, were at risk because of the number of fire hazards present and their inability to perform critical safety skills. In particular, we were surprised how few had adequate smoke alarm protection – the most crucial element in fire preparedness given the 50% reduction in fire deaths attributed to the presence of a working smoke alarm (Ahrens, 2015).

The program was successful in reducing the number of hazards present and in teaching the four targeted skills. This success did not require a deep commitment to the program, only cooperation, nor was it dependent on the skill of a carefully selected set of trainers. Over time, we had a number of teams training involving two fire safety educators and four developmental disability service providers. Trainers were selected primarily because of their interest in the project and their availability.

Second, for those who were successful, the skills were retained at the three month assessment. In addition, a few individuals continued to improve and actually performed better at follow-up. We improved the safety of the majority of the participants and that improvement was maintained over time.

Third, all participants and their circles of support (staff and/or family) received feedback and education regarding the hazards that were identified and the skills level the participants achieved. These individuals all had an understanding of the specific skills and a template for continued practice. The high level of skill maintenance achieved may be attributed to the continued practicing of skills after the training was completed and suggests that it will be maintained over an even longer time frame. For those participants who did not master the skills, the circles of support were made aware of the participants' vulnerability.

During the baseline assessment at the first visit, each participant was asked to perform each skill. If it seemed that the participant was unclear about what they should do, the trainer repeated the request and provided a second opportunity. Most participants were clear about the request but were unable to perform the skill. At this visit, instructions were provided and the skill was modeled and practiced. One concern was that we might have caught the participant on a bad day and their initial difficulty was not a true representation of their ability. Thus some of the

subsequent improvement might be a return to their true higher level of skill, not the result of our intervention. This is unlikely, however, as we observed the same level of improvement, developing slowly over time, for most participants. Figure 1 is designed to show the average pace of improvement over time for the group as a whole.

Another possible limitation is that the trainers, invested in the success of the program, might have overestimated the participants' improvement at each session. This too is unlikely as the trainers' overriding goal was to improve the participants' safety – our trainers, all experienced fire safety professionals and developmental disability service providers, were more committed to the participants than to the program evaluation – and thus were committed to ensuring demonstrable improvement in the participants' safety skills and to providing realistic assessments of the participants' skills to staff and family so that they could make informed decisions about supervision and support. We do not have independent verification of their ratings. That would have required greater resources than we had available to us.

We believe that successful implementation of this type of program is feasible for any community willing to invest the resources to make possible a short series of home training visits. Many health care and social service providers already make routine home visits so adding this content would be relatively cost effective. It is our belief that the success of the program, identifying and remediating hazards, teaching skills and providing feedback to family, was largely dependent on the formation of the interprofessional teams of fire safety educators and service providers. This partnership provided both the fire safety expertise, and the logic behind the environmental assessment and selected skills, as well as an understanding of the needs and challenges faced by the participants and the skill required to engage the participants.

Also critical was the involvement of staff and family. Our interprofessional teams worked with the participants' circles of support to identify which of our goals, if not all, were most relevant, to review our teaching strategies and to make modifications to accommodate the specific learning needs of the participants, and to engage them in eliminating the hazards we identified. This individualization was key to our success in engaging the participants, their staff and families, and to maximize the impact of our limited resources.

The participants themselves were not a highly selected group of individuals. They had a range of developmental levels and a number had specific physical or cognitive limitations. Some were actively engaged and all but a very few were at least cooperative. The motivation for participation came largely from the family or care providers who were concerned about safety as their family member or client moved to independent living and sought to take control over as much of their own life as possible. This group of participants is representative of similar sets of individuals in other communities.

The residential and baseline skill assessments confirmed the critical need of an individualized fire safety program delivered in the residences of the participants. Having a firefighter assess the environment, identify hazards and recommend specific solutions to the participant's family and/or circle of support directly increased safety. Similarly, working with the participants to develop an exit plan from their actual residence, teaching them to provide critical information to the 911 operator pertaining to their exact location and to test the alarms installed in their

residence also provided an immediate improvement in safety without requiring the participant, their family or care providers to take a more generalized training and then apply it to their individual circumstance.

Being responsive to the participants' abilities and concerns facilitated their involvement in the program. Learning the skills also increased their confidence and the confidence of their family in their ability to live safely. High initial levels of motivation were not required for success, only a willingness to cooperate.

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Declaration of Interest

None of the authors has a financial conflict of interest. Community Health Strategies continues to provide residential assessments and trainings to individuals in the community. Prevention First Foundation, or the clients' sponsoring agencies, compensate CHS for the time of the contract trainers, none of whom are authors on the paper.

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Table 1. Four Targeted Skills and the Essential and Optional Included Task

Locating and Testing Smoke and CO Alarms

- (1) Find the smoke alarm
- (2) Identify the test button
- (3) Press the test button for a 3 count or until it sounds
- (4) Listen for the alarm sound
- (5) Judge whether the alarm works
- (6) If TouchStream* tablet installed: Return to the TouchStream screen
- (7) If TouchStream* tablet installed: Record that it has been tested
- (8) Identify who to contact if any concerns arise
- (9) Repeat with other alarms

Exiting the Bedroom at Night

- (1) Put on shoes or slippers
- (2) Take the cell phone (if applicable)
- (3) Demonstrate the primary exit path
- (4) Get low if there is smoke
- (5) Check if the door is hot
- (6) Go to the meeting place
- (7) Stay at the meeting place
- (8) Identify an alternative route if the primary exit is blocked
- (9) Call 911 from cell phone (if applicable)

Calling 911

- (1) Decide which phone to use (if multiple phones)
- (2) Write down/recite the phone number
- (3) Bring up the dial screen (if using a smart phone)
- (4) Dial 9-1-1 (simulate)
- (5) Describe your emergency (fire in my house...)
- (6) Tell the operator your street address
- (7) Tell the operator your town
- (8) Tell the operator the nearest cross street
- (9) Tell the operator your name
- (10) Tell the operator your telephone number
- (11) Stay on the line until told to hang up

Cooking Safety

- (1) Keep cooking surfaces and appliances clean and free of grease
- (2) Keep cooking surfaces free of anything that might burn (paper, paper towels, towels, etc.)
- (3) Do not leave the cooktop while it is in use
- (4) Turn off the cooktop and remove pans from the burner if interrupted
- (5) Turn off stove, cooktop and all kitchen appliances after use
- (6) At night, check the stove, cooktop and all kitchen appliances to be sure they are off

* The TouchStream™ tablet is an interconnected device that permits the participant's circle of support to prompt behavior and the participant to record when that behavior has been performed. If participants had these tablets installed, they were incorporated into the task list.

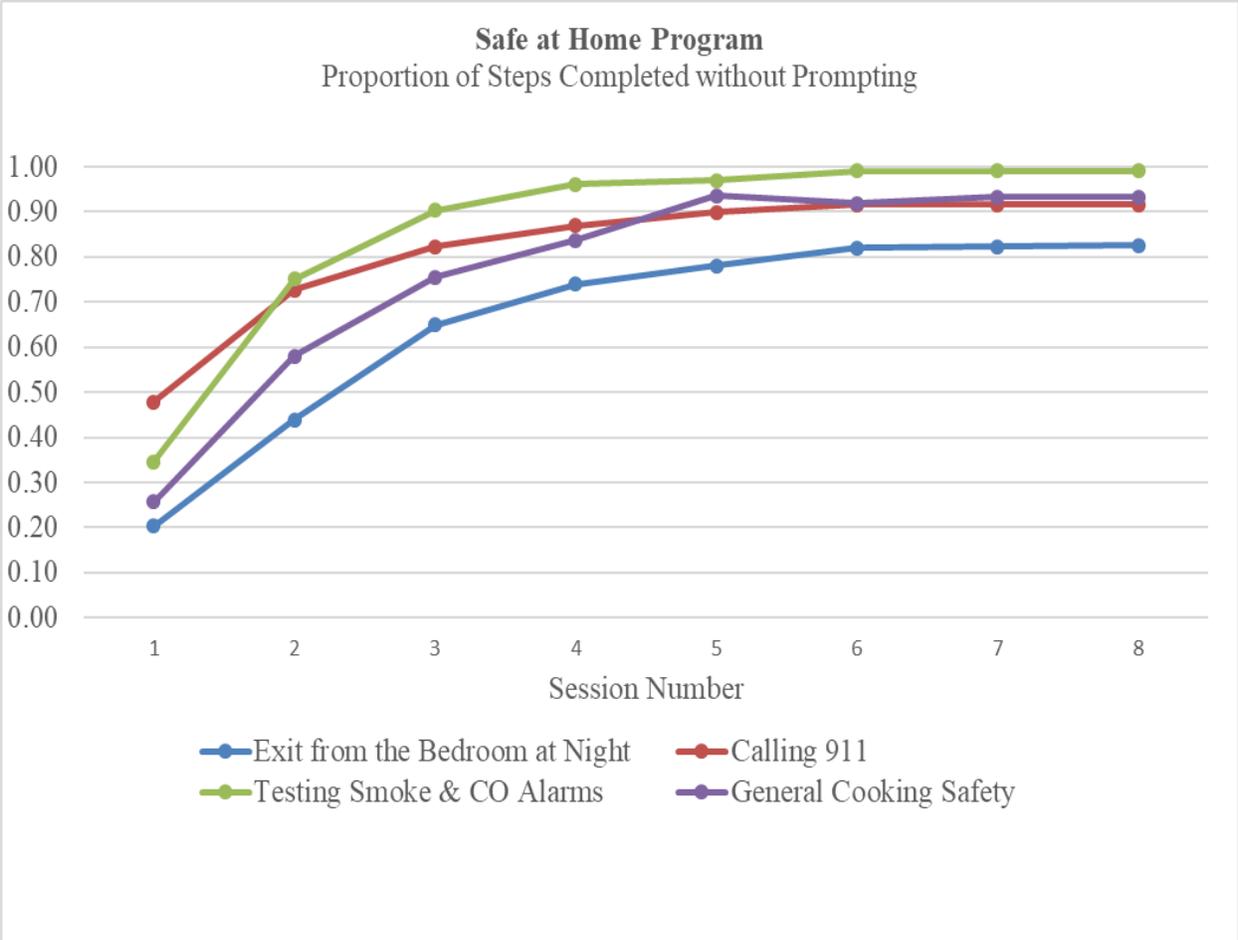


Figure 1. Progress in Skill Acquisition Over Time