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## Home Health Care Patients and Safety Hazards in the Home: Preliminary Findings

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### Abstract

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**Introduction:** Home health care is the fastest growing sector in the health care industry, with an anticipated growth of 66 percent over the next 10 years and with over 7 million patients served each year. With the increasing acuteness of care provided in home health care and the increasing number of frail elderly that make up this patient population, it is important to identify risk factors that affect patient health and safety in this setting. **Methods:** A convenience sample of 1,561 home health aides, attendants, and personal care workers completed a risk assessment survey. Items addressed personal, patient, and home characteristics and health hazards. All activities had prior Institutional Review Board approval. **Preliminary Results:** Ninety-five percent of home health care workers (HHCWs) were female with an average of 8 years experience. The majority of clients were elderly, with a smaller percentage of adult (26 percent) and pediatric (7 percent) cases. HHCWs reported the following exposures at their clients' homes: cockroaches (33 percent), cigarette smoke (30 percent), vermin (23 percent), irritating chemicals (17 percent), and peeling paint (15 percent). The following conditions were also described: clutter (17 percent), temperature extremes (9 percent), unsanitary (12 percent) and unsafe (6 percent) conditions in the home, neighborhood violence/crime (11 percent), and aggressive pets (6 percent). Two percent of respondents reported the presence of guns in the home. Additionally, 12 percent of HHCWs reported signs of abuse of their clients. **Conclusion:** Both HHCWs and home care patients appear to be at potential risk due to a variety of health hazards/exposures in the clients' homes. Given the growing population of both HHCWs and recipients, it is important to document this risk as an important first step in prevention and management.

### Introduction

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The home care setting is a challenging work environment in terms of patient safety for a number of reasons. First, residential settings may present household-related hazards (e.g., poor indoor air quality, lead paint, toxic substances) that are associated with numerous negative health effects.<sup>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</sup> Second, many of the same well-defined hazards related to health care—such as spread of nosocomial infections, development of resistant organisms, medication errors, and others—are also found in home care settings.<sup>13, 14, 15</sup> Third, home care may be delivered under conditions that may be uncontrolled. Fourth, health care providers may have limited training or expertise in the area of patient safety and often have little or no direct supervision.<sup>16, 17, 18, 19</sup> Finally, risk management is especially problematic in home care because each home is, in essence, a “worksites,” yet all the necessary health care workplace protections for both workers and patients may not be in place or readily available.<sup>20</sup>

For these reasons, controlling hazards in home care can be difficult. Although we continually add to our knowledge base of patient safety in the acute care setting, our understanding of the health and safety hazards associated with home care is limited and highly reliant on anecdotal and qualitative reports, even though these hazards have important implications for the health and well-being of home care patients. Importantly, an unsafe household can adversely affect not only the patient, but also home health care providers and household caregivers. To address these concerns, risk assessment data are needed to develop evidence-

based strategies to reduce risk, including strategies that may require tailoring to this unique health care setting.

As a step in closing the research gap in home care, a large cross-sectional survey of New York City-based home health aides and personal assistants was conducted to assess home health care-associated potential health and safety hazards.

### Home Health Care Sector

Home health care is the fastest growing sector in the health care industry, with 66 percent growth projected over the next 10 years.<sup>21</sup> The sector is large, employing over 1.3 million workers in a variety of occupations, including roughly 1.2 million aides and personal assistants.<sup>21</sup> Most growth occurred after the enactment of Medicare in 1965, although the agencies were first established in the late nineteenth century. Even more dramatic growth occurred after the 1987 revisions to Medicare, which led to facilitated reimbursement to home care agencies.<sup>22</sup> By 2005, over 20 thousand home care agencies were providing care to an estimated 8 million individuals. This likely represents only a fraction of the true number of home care patients, since many receive informal care through non-Medicare-certified agencies or individuals.<sup>22</sup>

In general, there are three types of home care agencies: (1) certified home health agencies (CHHAs), (2) long-term home health care programs (LTHHCPs), and (3) licensed home care services agencies (LHCSAs). CHHAs are authorized to serve both Medicare and Medicaid recipients in need of short-term skilled nursing care and to provide nursing, home health aide, personal care, and homemaker and housekeeper services. LTHHCPs, also known as “nursing homes without walls,” provide services that enable individuals eligible for nursing homes to remain at home. They operate under a Federal waiver for home and community-based services and are required to provide all the services provided by a CHHA, as well as case management. Finally, LHCSAs provide at least one of the following services, either directly or through contracts with another program: nursing care, home health aides, personal care, private duty nursing, homemakers, and physical/occupational and speech therapies.

Most formal home care is provided by freestanding proprietary agencies (55 percent), followed by hospital-based agencies (24 percent), with nonprofit public health agencies and nonprofit private agencies providing a smaller portion of home care.<sup>23</sup> Another large and growing type of home care is home hospice care. Since 1983, when Medicare added hospice benefits to the plan, the number of certified hospices grew from 31 to 2,444.<sup>22, 23</sup> The actual size of the informal, uncertified, and unlicensed home care network is not known, but it is believed to be nearly as large as the formal network.

In addition to over 110,000 registered nurses providing skilled nursing care or supervision in home care, a large workforce, comprising home health aides, home attendants, and personal care workers, provides the bulk of day-to-day care in the home care setting.<sup>24</sup> Under medical direction, although without direct supervision, home health aides provide basic medical services that allow patients to convalesce outside of the traditional hospital and hospice setting. They check patients' vital signs, conduct physical therapy, change dressings, and assist with the use of medical equipment. In addition, they may provide other services that neither patients nor their families are able to provide on their own, such as assistance with ambulation, bathing, and grooming the patient. Home health aides may also be asked to perform light housekeeping.<sup>24</sup>

Personal care workers and home care attendants, commonly referred to as “personal assistants,” provide more personal care assistance to patients in the home setting. Their responsibilities primarily focus on activities of daily living (e.g., bathing, grooming, dressing, feeding), housekeeping, and transportation. Such responsibilities usually do not entail providing medical or nursing care, although in practice this is not always the case. Personal care workers and home care attendants may also provide advice about nutrition and hygiene to patients and their families.<sup>25</sup>

A high school diploma is not generally required for employment as a home health aide or personal assistant. However, home health aides working for agencies that receive funding from the Federal Government must pass a competency test. Additionally, the National Association for Home Care and Hospice offers a national certification for home care aides, which evaluates home health care workers (HHCWs) on 17 unique skills. Training and other certification requirements may vary from State to State for personal assistants and home health care aides.<sup>24, 25, 26, 27</sup>

It is important to note that HHCWs have an increased incidence of injury compared to other health care and human services workers.<sup>19, 28</sup> A review by Galinsky, et al., provided exhaustive documentation of overexertion injuries in HHCWs.<sup>29</sup> They found that forceful exertions and awkward postures during patient care, especially lifting and shifting patients, were the main risk factors for musculoskeletal disorders in this workgroup. The impact of these types of injuries and the relationship between HHCW health and safety in general, and the safety of patients (e.g., patient falls), have not been assessed. Such an assessment is clearly needed, especially in light of the growing prominence of home care.

With the annual U.S. expenditures for home health care in excess of \$40 billion per year, the scope of home care is broad and, as noted, covers a wide range of services, from assistance with daily living activities to providing the more complex care required by postsurgical or chronically ill patients.<sup>30</sup> Even with the increasing acuity of care that is provided in the home setting, the cost per day of home care is significantly lower than that of a nursing home or an inpatient hospital stay (\$109 vs. \$3,838, respectively) and is increasingly more desirable by both patients and their families.<sup>22</sup>

## Home Care Patients

The patient population served by home health care is large, growing, and increasingly frail and elderly. The increase in home care is being driven by continued efforts at medical cost saving<sup>24</sup> that began in the late 1980s when a nationwide campaign to reduce medical costs led to decreased length of hospital stays and the early discharge of many patients to home care. For example, in 2003, patients were discharged from hospitals after 4.8 days on average; in 1990, the average hospital stay was 6.4 days<sup>31</sup>; in 2000, 48 percent of discharged Medicare patients were discharged to home care.<sup>32</sup>

Perhaps the most significant factor affecting home care is the aging post-World War II (“baby-boomers”) cohort. The first wave of the cohort will reach age 65 in 2012, and by 2032, the cohort will have reached age 85,<sup>33</sup> resulting in a dramatic increase in the number of older Americans. For example, in 1960, 16.2 million people in the United States were aged 65 or older; by 2000, that number had increased to 35 million, and by 2030 this number is projected to increase to 72 million.<sup>33</sup>

An even greater magnitude of growth is projected for the extremely elderly cohort. In 1960, less than 1 million Americans were 85 years or older; by 2000, this number had increased to 4.2 million, and it is anticipated that by 2030, nearly 10 million Americans will be 85 years or older.<sup>31</sup> These shifts are due not only to sweeping demographic changes in the population, but also to reductions in U.S. mortality rates. Combined, the result will strain the services provided to the elderly, including home care services. Even though the home care workforce is large, with an estimated 1.3 million workers overall, the projected need is great, with perhaps twice as many home care employees needed by 2030.<sup>34</sup> This is especially problematic given that the workforce itself is undergoing similar demographic age shifts and, as is the case with the nursing profession, is steadily experiencing increasing shortages for a variety of reasons.

These demographic changes in the U.S. population can also be seen acutely in the home care patient population. For example, in 2000, almost 70 percent of the Nation’s 8 million patients receiving formal home care were 65 years or older, and 17 percent were 85 years or older. By 2012, this is expected to increase substantially as the baby boomer cohort ages, with perhaps as many as 20 million or more patients needing home care.<sup>22</sup>

Other shifts in home care are noted as well. For example, while currently about half of home care patients aged 64 or younger are female, there are nearly twice as many females in the 65 years and older age group.<sup>22</sup> Although the vast majority of home care patients receiving formal care are white (90 percent), this is expected to change as a reflection of the increased growth in minority populations.<sup>22</sup>

There are also current and projected changes related to the health condition of home care patients. A large proportion of current home care patients have heart disease diagnoses (47 percent), followed by injuries (16 percent), osteoarthritis (14 percent), and respiratory ailments (12 percent),<sup>22</sup> and increasingly frail and vulnerable patients continue to enter home care with many highly complex medical problems and multiple diagnoses, thus requiring a greater intensity of care.

All these trends suggest that home care will become even more challenging and that the expectations placed upon the sector, including the caregivers, will most likely become more demanding. By increasing our awareness and understanding of the health hazards inherent in the home care environment, it may be possible to reduce the risk of injury and illness to the home care patient and to improve the quality of work life for the caregiver.

### Health and Safety Hazards Associated with Home Health Care

Most of our information regarding home health hazards comes from anecdotal or qualitative reports, and only a few surveys have been conducted. Although there is a wide range of hazards, the hazards generally fall into two major categories: those related to violence or the threat of violence and those related to unsanitary household conditions.

A good overview of the scope of home hazards is provided in a recently published qualitative study by Markkanen, et al.<sup>35</sup> Data on occupational hazards were collected from HHCWs participating in focus groups and in-depth interviews. They identified general security/personal safety hazards that could present a threat to patient safety, including unsafe neighborhoods, violent or unstable patients and family members, and potentially dangerous pets. The study participants also raised environmental concerns, including overheated room temperatures, poor indoor air quality, and unsanitary conditions, such as the presence of insects and rodents.

Unsanitary conditions are a special concern, since the spread of infectious disease within the household is well documented, and various procedures in home care could present a risk of infection. Cross-contamination (e.g., transfer of pathogens through direct and indirect contact with raw foods, animals, and contaminated inanimate objects) can place the frail elderly and others at risk. One household area of potential concern in this regard is the bathroom. Gerba, et al., tested the spread and survivability of microbes in household toilets and found that droplets formed during flushing could result in the spread of organisms on various bathroom surfaces and that the droplets remained airborne and viable for extended periods.<sup>36</sup> This may become a concern in special cases, such as where the number of enteric pathogenic organisms is high and when hosts are especially vulnerable. Household laundry is also a concern because it has been shown to be a route for the spread of disease. For example, spread of *Staphylococcus aureus* via laundry has been documented.<sup>37</sup> A review on domestic hygiene noted that changes in household laundry practices—such as lower temperatures, less use of household bleach, and lower water volume—had an adverse impact on laundry hygiene in general.<sup>38</sup> These changes could place home care patients at increased risk of infection.

Studies have also documented the survivability and spread of microbes in the kitchen. Pathogens associated with raw or undercooked food items, such as poultry, have caused disease in household members, including those who are especially vulnerable due to age or immune status.<sup>39</sup> For example, cases of salmonellosis related to this type of contamination have been reported.<sup>39</sup> Dirty kitchen surfaces, rags, sponges, mops, etc., are potential sources of cross-contamination and can spread disease causing microorganisms in the home care setting.

Mismanagement of medical waste may also be a cause for concern in the home care environment because it can be a source of pathogenic microbes. Although each State regulates the transportation, storage, and disposal of biomedical waste, usually via individual health departments, the home care setting is not easily regulated. Anecdotal reports of improperly disposed sharps (e.g., using empty food containers) are common and can lead to needlestick injuries in caregivers, patients, household members, and sanitation workers. In a recent pilot study of HHCWs, Gershon, et al., found that 13 percent of home health care nurses (N = 72) experienced a needlestick injury in the 12-month period preceding the self-administered survey, and most of these were disposal-related.<sup>40</sup> Other authors have documented needlesticks associated with home care, although the studies usually have targeted home health nurses.<sup>41, 42, 43</sup>

Another area of concern is the reuse of certain single-use disposable items. For example, it has been reported that many diabetes patients repeatedly reuse insulin syringes, without disinfection, until the needle is no longer sharp.<sup>44</sup> Similarly, in the home care setting, drainage bags may be disinfected and reused, a practice that rarely occurs in the hospital setting.<sup>45</sup>

Urinary drainage systems, normally kept intact for patients with indwelling catheters, may be breached when the home care patient needs to use a leg bag.<sup>45</sup> Indwelling devices in general, which are the greatest predictors of nosocomial infection, are increasingly prevalent in home care patients.<sup>46</sup> Between 1993 and 1995, the Centers for Disease Control and Prevention (CDC) investigated three outbreaks of bloodstream infections in patients receiving home infusion therapy.<sup>13, 14, 15</sup> Inappropriate disinfection of semi-critical items (e.g., reusable thermometers) is reportedly common.

The issue of home hygiene, including disinfection practices, needs addressing. Unfortunately, we still do not yet have a national surveillance system in place in the United States for health care-associated infections in home care settings, even though this has been suggested.<sup>46</sup> Specific CDC guidelines for infection control practices for home care have not yet been published, although a number of thorough reviews of home infection control practices and guidance have been provided by national and State organizations.<sup>44, 45</sup> Although the reviews are somewhat dated, much of the advice remains sound and is currently in practice. The CDC Web site also provides useful references in this regard.<sup>47</sup>

Finally, a topic of special concern in home care, especially urban home care, is the issue of crime and violence. A recent article by Geiger-Brown, et al., includes a thorough review of the risks and risk factors for violence in home care.<sup>20</sup> The few studies that have explored this issue have found that verbal abuse was the most commonly reported form of abuse,<sup>48, 49</sup> in one study, the prevalence was as high as 52 percent.<sup>49</sup> Other forms of violence or the threat of violence have been reported, with dangerous neighborhoods, family members, and patients most often cited as threatening.<sup>50, 51</sup> In a small survey by Kendra, et al., administrators and staff were asked to rank factors associated with high-risk assignments with respect to the personal safety of staff members.<sup>52</sup> Both groups gave similar responses: geographic location, high crime areas, inappropriate patient or caregiver behavior, the threat of infectious diseases, and evening assignments (with only staff reporting this last risk factor).

## Methods

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### Survey Design

In 2006–2007, a health and safety survey was constructed following extensive developmental steps, including in-depth interviews, focus groups, cognitive interviews, and pilot testing. The survey was designed to assess the health hazards associated with the delivery of home health care. Two versions of the survey were prepared, one targeting home health aides, home attendants, and personal care workers, here referred to collectively as “aides”; and the other targeting home health care registered nurses. This paper focuses on the aides’ survey instrument. The 58-item survey included items that addressed the following: demographics of the HHCW, description of the client’s residence, level/type of care provided, potential occupational health hazards, potential home health hazards, and use and training on safety devices. The survey was designed to be completed within 30 minutes and was prepared in English at a sixth-grade reading level to facilitate rapid completion. The survey responses were primarily categorical, although some items had 4- to 5-point Likert-type scale response choices, and several items were open-ended. The survey and codebook are available by contacting the corresponding author.

### Survey Distribution

Although the survey was anonymous, each participant was asked to sign an informed consent form, and all procedures involving subject participation had the prior approval of the Columbia University Institutional Review Board. A brief one-page document describing the study was provided to potential participants. Because of the well-established difficulty in surveying HHCWs in general, and the additional challenges in recruitment of individuals for whom English may be a second language (as is the case for many home health aides), an in-person recruitment strategy was employed. To facilitate this, a collaborative relationship was formed with an occupational health organization that conducts mandatory health assessments and screenings for home care agencies throughout New York City.

Recruitment of participants took place in the organizations’ waiting rooms, conveniently located in offices that were easily accessible to the New York City-based research team. Participants could complete the study



survey in private areas located adjacent to the waiting rooms. In some cases, the data collector helped to facilitate the survey administration by reading the questions out loud, although generally, data were collected through self-administration. Data collection days were held until the targeted goal of a convenience sample of 1,500 aides was reached. Participating aides represented numerous agencies. The incentive for participation was a single \$1 scratch-off lottery ticket and enrollment in a lottery drawing for a \$25 gift card prize (chance of winning: 1:100).

## Data Analysis

All completed surveys were returned to the study office where they were checked for legibility and completion. Surveys missing substantial amounts of data were not included in the data analysis. All data were double-entered into a database and then reviewed by a data manager to ensure accuracy. Data editing, including recoding and collapsing of variables and the formation of new variables, was followed by basic descriptive analysis of the data, including the calculation of means, medians, percentages, proportions, and standard deviations. All analyses were conducted using SPSS® (SPSS, Inc., Chicago IL: SPSS Inc.).

## Results

Demographic information is provided in Table 1. The sample of participants was predominantly middle-aged women (mean age, 43.5 years, range 18–82). Most aides (83 percent) reported that English was spoken at their own home. Participants were more likely to report that they worked as a home health aide rather than as a personal assistant, and nearly 15 percent reported that they performed both jobs.

| Characteristic          | Number (N) (%) |
|-------------------------|----------------|
| Age (mean)              | 43.5 (43.5)    |
| Age (range)             | 18–82          |
| Sex                     | 1,561 (100)    |
| Age Group (years)       | 43.5 (43.5)    |
| Language spoken at home | 1,561 (100)    |
| English                 | 1,300 (83.3)   |
| Spanish                 | 261 (16.7)     |
| Other                   | 0 (0)          |
| Age (mean)              | 43.5 (43.5)    |
| Age (range)             | 18–82          |
| Sex                     | 1,561 (100)    |
| Age Group (years)       | 43.5 (43.5)    |
| Language spoken at home | 1,561 (100)    |
| English                 | 1,300 (83.3)   |
| Spanish                 | 261 (16.7)     |
| Other                   | 0 (0)          |

**Table 1**

Description of the sample, home health care aides, and personal assistants: New York City, 2007 (N = 1,561).

Most participants had worked in the home care sector for slightly more than 8 years, but some had worked in the field for as many as 35 years. The sample was predominantly unionized (67 percent). The vast majority of the sample (91 percent) commuted to and from work (i.e., home visits) using public transportation, with an average daily travel time of 2.2 hours.

Most aides provided care for a single patient, although some aides had as many as 10 or more patients in a typical week. The majority of the participants' patients lived in apartment buildings (71 percent), with the remainder living in houses (29 percent), assisted living facilities (15 percent), or group homes or shelters (2 percent). Typically, patients were elderly (64 percent), long-term patients (83 percent), although adults (26 percent) in long-term care (77 percent) constituted a sizeable portion of their patient population. Children (7 percent) were also provided care, generally on a long-term basis (66 percent).

As expected, the job duties consisted primarily of assisting with activities of daily living (Table 2), including bathing, toileting, dressing, etc. Although 24 percent of participants reported that they provided wound care, only a small proportion (13 percent) reported using needles. Performing household chores was common: mainly cooking, light housekeeping, and washing laundry. Participants reported activities with the potential for back injuries and muscle strain, such as transferring patients (77 percent), walking and ambulating patients (87 percent), and turning and positioning patients (68 percent).

| Activity                                  | Number (N) reporting |
|---|----------------------|
| Assisting with activities of daily living | 1,561 (100)          |
| Bathing                                   | 1,561 (100)          |
| Toileting                                 | 1,561 (100)          |
| Dressing                                  | 1,561 (100)          |
| Feeding                                   | 1,561 (100)          |
| Medication management                     | 1,561 (100)          |
| Wound care                                | 375 (24)             |
| Needle use                                | 200 (13)             |
| Household chores                          | 1,561 (100)          |
| Cooking                                   | 1,561 (100)          |
| Light housekeeping                        | 1,561 (100)          |
| Washing laundry                           | 1,561 (100)          |
| Transferring patients                     | 1,211 (77)           |
| Walking and ambulating patients           | 1,358 (87)           |
| Turning and positioning patients          | 1,063 (68)           |

**Table 2**

Provision of care, activities performed, reported by home health care aides/personal assistants (N = 1,561).

## Infection Control Practices and Safety Equipment and Supplies

Self-reported compliance with infection control measures was generally good. For example, most of the aides (92 percent) reported the use of gloves when the possibility of contact with blood and other bodily fluids was present. Frequent handwashing was very common (97 percent), as was the use of hand gels or foams (83

percent). Many aides (79 percent) used protective aprons as a clothing barrier. Nearly all participants (92 percent) reported quickly cleaning up blood or bodily fluid spills. While most aides (79 percent) avoided eating or drinking in areas where the client received care, a sizeable percentage (21 percent), nevertheless, reported that this sometimes did occur. Poor compliance was noted for handling of contaminated needles, with 66 percent of aides reporting that they usually recapped needles. Sharps containers were used by 80 percent of the sample.

Personal protective gear, gowns, or aprons were reportedly available to just over half (57 percent) of aides. Other protective gear, such as eye goggles and face masks, were only available to 18 percent and 34 percent of aides, respectively. Disposable gloves were the most commonly available item of personal protective gear; 89 percent of aides reported that these were readily available to them.

Eight percent of the aides reported that they felt they were at risk of exposure to contagious diseases. However, self-reported hepatitis B virus (HBV) vaccine rates were suboptimal; only 57 percent of participants reported that they had received all three doses, and 10 percent received only one or two doses; 2 percent reported that they had not been vaccinated, because they were HBV antibody-positive. The majority of aides reported tuberculin skin testing (i.e., PPD), with 67 percent reporting annual testing, 19 percent reporting twice-yearly testing, and only 2 percent reporting that they were never tested.

### Hazardous Home Conditions

Potential health hazards in the home (Table 3) were frequently reported. Most commonly reported hazards were unsanitary conditions (e.g., insects, rodents) and air pollutants (e.g., animal hair, dust, peeling paint, cigarette smoke, mold). Violence, threats of violence, and abuse were also commonly perceived threats, with threatening neighbors most frequently reported (55 percent), followed by threatening family members (38 percent), threatening patients (31 percent), and aggressive pets (17 percent). Twenty-eight percent of participants reported verbal abuse, and 9 percent of the aides reported racial or ethnic discrimination. Other potential personal safety hazards included evidence of drug use in the home (5 percent) and guns in the home (2 percent).

| Table 3. Health and safety hazards in patients' households, as reported by home health care aides (N = 1,561). |                |
|--|----------------|
| Hazard   | Percentage (%) |
| Unsanitary conditions (e.g., insects, rodents)   | 55.0           |
| Air pollutants (e.g., animal hair, dust, peeling paint, cigarette smoke, mold)                                 | 38.0           |
| Violence, threats of violence, and abuse   | 31.0           |
| Threatening neighbors  | 28.0           |
| Threatening family members   | 17.0           |
| Threatening patients   | 17.0           |
| Aggressive pets  | 17.0           |
| Verbal abuse   | 28.0           |
| Racial or ethnic discrimination  | 9.0            |
| Evidence of drug use in the home   | 5.0            |
| Guns in the home   | 2.0            |

**Table 3**

Health and safety hazards in patients' households, as reported by home health care aides/personal assistants (N = 1,561).

Signs of patient abuse (e.g., by the patient's family) were noted by 12 percent of the aides. When noted, 77 percent reported this to their supervisor, but 13 percent did not, and the remainder stated that they sometimes reported the abuse.

Practices that could result in harm to both the caregiver and the patient were reported by most of the respondents, for example, turning and positioning, walking and ambulating the client, and transferring and lifting the client. Yet only a small proportion of respondents reported access to safe lifting devices such as Hoyer lifts (20 percent) and/or transfer boards (9 percent). Reports of hazards that could lead to slips, trips, and falls—such as excessive clutter, loose rags, etc.—were not infrequent (17 percent). Poor lighting, which could also result in injuries, was also noted (5 percent).

Other potential health hazards included exposure to irritating chemicals, which were mainly used for cleaning spills. Diluted bleach was most commonly used (51 percent), followed by full strength bleach (9 percent) and bleach mixed with other chemicals (8 percent).

### Health and Safety Training

Almost all aides (90 percent) reported training in workplace health and safety. This included training on safe lifting (83 percent); the proper use of Hoyer lifts (73 percent); electrical safety (58 percent); fire safety and evacuation (81 percent); personal safety (74 percent); respiratory protection (52 percent); slip, trip, and fall prevention (73 percent); and standard precautions and infection control (78 percent). However, in the past 12 months, 6 percent said they did not receive any safety training, and 53 percent reported receiving only one to two sessions of safety-related training, including infection control. Roughly one-third (36 percent) of the aides

reported receiving three or more safety-related training sessions in the previous 12 months.

## Discussion

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These results document a high prevalence of a number of health and safety hazards associated with home care. They generally support earlier, primarily qualitative findings on home health hazards and establish that home care patients and HHCWs may be at risk of exposure to a range of unsafe conditions. While this large data set was limited to just one geographic area, it is representative of the New York City home care aides population and is most likely representative of any large urban area in the United States.

Several aspects of these findings deserve special mention. First, the infection control practices, although generally acceptable, were suboptimal in certain areas. The lack of availability of even the most basic personal protective equipment, such as gloves (11 percent) and aprons (43 percent), is worrisome. In some cases, sharps handling and disposal practices were not in compliance with the Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard.<sup>53</sup> While aides are not supposed to handle needles, anecdotal reports from focus groups that were held in the development phase of this study suggest that this is very common when clients have been prescribed injectable insulin. These needles are often left for disposal by the aide. If sharps containers are not provided, aides recap before discarding them in the regular trash or, in some cases, into household containers. Given the fact that more than 50 percent of the aides received safety-related training only once or twice a year or less, additional training, specifically on infection control, appears warranted. Agencies should not only ensure that aides have all the necessary equipment and supplies, but also that they are trained in their proper use. This is especially true for safe transfer equipment, such as Hoyer lifts, which can be difficult to use. However, very few aides actually had these available to them.

Unsanitary conditions were quite common. During questionnaire development, the study team conducted field observations and, almost uniformly, observed clutter, unhygienic practices, poor lighting, overheating, and loose rugs. The quantitative data presented here confirm these observations. These conditions may result from the inability of patients—many of whom are infirm and elderly and often live alone with few resources—to maintain a safe and orderly household. In some cases, the personal care attendant does perform household chores and thus has more control over the situation. However, in cases where other household members perform these chores, additional training or support may be required. Policies and procedures for addressing this issue should be the subject of further inquiry and interventional studies. This is important, not only in terms of the risk that unsanitary conditions present for the transmission of infectious disease, but also because some of these hazards increase the risk of injury (e.g., falls), and some conditions (e.g., excessive clutter) are fire safety hazards.

Hepatitis B vaccination rates were generally lower than recently published rates for other health care work groups. A large sample of nonhospital-based registered nurses had an 84 percent rate of complete series.<sup>54</sup> Slightly more than 50 percent of the aides in our sample reported receiving all three doses. Under the Bloodborne Pathogens Standard, home health aides would be classified as having potential risk of exposure to blood and potentially infectious materials. Therefore, the hepatitis B vaccine and annual bloodborne pathogen training must be offered to them at no cost.<sup>53</sup> However, some aides are not employed by a single agency full time and, thus, might not be eligible for this coverage. Given the close personal contact with patients and body fluids, such low rates of HBV vaccine coverage are a concern. Since infected aides might also present a risk of HBV transmission to their patients, universal vaccination should be encouraged and supported.

The perception of risk of personal injury was high. Threatening neighbors, clients, and family members; dangerous neighborhoods; and the presence of illicit drugs and guns in the home increased this perception. As noted in earlier studies, verbal abuse was common. A large proportion of our HHCW sample (68 percent) reported that they can refuse a case, and 65 percent said that they had done so in the past. These results are somewhat lower than those reported by Kendra, et al., in a small sample of home care staff, where 85 percent of staff reported that they could refuse a high safety risk assignment.<sup>52</sup> However, their sample of 62 staff members might have included full-time registered nurses who may have been more willing to decline than a part-time aide. It was telling that, while all administrators in the Kendra, et al., study said that no negative ramifications would result from refusal, only 37 percent of staff agreed, with the remainder leaving this question blank. The potential adverse impact on patients who were refused was acknowledged by both administrators and staff in that study. In our sample, in cases where aides refused to provide care, it is unknown how this



affected their employment or the provision or quality of the care their patients received.

Agencies and staff have implemented several strategies to improve the safety of home health care staff. These include extensive preplanning, personal escorts, frequent communication, providing cell phones, additional training, and encouraging staff to carry chemical spray and weapons. Other strategies that have been considered include alternative care sites, early morning visits, and reliance on local police for protection.<sup>52</sup> The implementation rate or efficacy of these strategies is not known.

This study had several strengths and limitations. As noted, the sample was confined to one geographic area, although aides were employed by many different agencies, and the sample demographics were representative of New York City aides as a whole. Because the survey was available only in English, there may have been response bias. However, in instances where it was requested, the questions were read out loud, which may have mitigated this bias to some extent. Also, in order to be employed in New York State, aides were required to have at least a basic understanding of the English language.

Another potential concern is that aides may have given socially desirable responses to some of the sensitive questions (e.g., those on patient abuse). However, the surveys were anonymous, and there was no evidence that certain questions were left largely unanswered.

In summary, this study presented evidence from a large sample of home health aides indicating a high prevalence for certain home care-associated health hazards, many of which might be amenable to intervention. Much more research is needed in this understudied health care sector. Additional risk assessment studies, especially targeting home care patients, and intervention-type studies are especially warranted.

## Conclusion

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The underlying question of these home care-associated hazards is the extent to which they adversely impact patient quality of care. When staff are concerned about personal risk and are at risk of exposure to numerous and varied health hazards, quality of care may be compromised. Unaddressed household health hazards also present a direct risk to the health and safety of the patient and other household members.

The financial constraints currently imposed on agencies are significant and may only increase with time. Agencies need to be reimbursed adequately so that aides can be hired as full-time employees with eligibility for benefits, including health care benefits. Training time, both for trainers and trainees, must also be reimbursed so that training does not impose a financial hardship. Adequate funding is also needed for appropriate safety equipment and supplies. The impetus for improvements for reimbursement is made clear in a timely article on the pathways to improvement in the health of the U.S. population.<sup>55</sup> The authors suggest that the United States should focus its attention on the most vulnerable segment of the population—in most cases the very population served by home care agencies. In order to improve the health and well being of home care populations, these larger issues will require policy changes at the highest levels.

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