

9-2015

Perceived barriers to infection prevention and control for nursing home certified nursing assistants: a qualitative study.

Jasmine Travers
Columbia University School of Nursing

Carolyn T A Herzig
Columbia University School of Nursing

Monika Pogorzelska-Maziarz
Thomas Jefferson University

Eileen Carter
Columbia University School of Nursing

Catherine C Cohen
Follow this and additional works at: <https://jdc.jefferson.edu/nursfp>
Columbia University School of Nursing

 Part of the [Geriatric Nursing Commons](#)

[Let us know how access to this document benefits you](#)

See next page for additional authors

Recommended Citation

Travers, Jasmine; Herzig, Carolyn T A; Pogorzelska-Maziarz, Monika; Carter, Eileen; Cohen, Catherine C; Semeraro, Patricia K; Bjarnadottir, Ragnhildur I; and Stone, Patricia W, "Perceived barriers to infection prevention and control for nursing home certified nursing assistants: a qualitative study." (2015). *College of Nursing Faculty Papers & Presentations*. Paper 82.
<https://jdc.jefferson.edu/nursfp/82>

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's [Center for Teaching and Learning \(CTL\)](#). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in College of Nursing Faculty Papers & Presentations by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.

Authors

Jasmine Travers, Carolyn T A Herzig, Monika Pogorzelska-Maziarz, Eileen Carter, Catherine C Cohen, Patricia K Semeraro, Ragnhildur I Bjarnadottir, and Patricia W Stone



HHS Public Access

Author manuscript

Geriatr Nurs. Author manuscript; available in PMC 2016 September 01.

Published in final edited form as:

Geriatr Nurs. 2015 ; 36(5): 355–360. doi:10.1016/j.gerinurse.2015.05.001.

Perceived Barriers to Infection Prevention and Control for Nursing Home Certified Nursing Assistants: A Qualitative Study

Jasmine Travers, BS, MS^a, Carolyn T.A. Herzig, MS^{a,c}, Monika Pogorzelska-Maziarz, PhD, MPH^b, Eileen Carter, PhD, RN^{a,d}, Catherine C. Cohen, PhD(c)^a, Patricia K. Semeraro, PhD(c)^a, Ragnhildur I. Bjarnadottir, BSN, MPH^a, and Patricia W. Stone, PhD, FAAN^a

^aCenter for Health Policy, Columbia University School of Nursing, 630 West 168th Street, Mail Code 6, New York, NY, 10032, USA

^bJefferson School of Nursing, Thomas Jefferson University, 130 South 9th Street, Suite 847, Philadelphia, PA, 19107 USA

^cDepartment of Epidemiology, Columbia University Mailman School of Public Health, 722 West 168th Street, New York, NY, 10032, USA

^dNew York Presbyterian Hospital, New York, NY, USA

Abstract

Healthcare-associated infections, while preventable, result in increased morbidity and mortality in nursing home (NH) residents. Frontline personnel, such as certified nursing assistants (CNAs), are crucial to successful implementation of infection prevention and control (IPC) practices. The purpose of this study was to explore barriers to implementing and maintaining IPC practices for NH CNAs as well as to describe strategies used to overcome these barriers. We conducted a multi-site qualitative study of NH personnel important to infection control. Audio-recorded interviews were transcribed verbatim and transcripts were analyzed using conventional content analysis. Five key themes emerged as perceived barriers to effective IPC for CNAs: 1) language/culture; 2) knowledge/training; 3) per-diem/part-time staff; 4) workload; and 5) accountability. Strategies used to overcome these barriers included: translating in-services, hands on training, on-the-spot training for per-diem/part-time staff, increased staffing ratios, and inclusion/empowerment of CNAs. Understanding IPC barriers and strategies to overcome these barriers may better enable NHs to achieve infection reduction goals.

Corresponding author: Jasmine Travers, Columbia University School of Nursing, Mailing: 630 West 168th Street, Mail Code 6, New York, NY 10032, Phone: 631-838-9963, jt2766@columbia.edu.

Conflict of Interest: M. Pogorzelska-Maziarz serves as a paid consultant to Becton, Dickinson and Company. The consulting work was not related to the research presented in this article. The remaining authors have no conflicts of interest to disclose.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Nursing Homes; Infection Prevention and Control; Certified Nursing Assistants; Healthcare-Associated Infections

Introduction

Healthcare-associated infections (HAIs) in nursing homes (NHs) are an increasingly important concern resulting in increased hospital admissions, morbidity, and mortality among NH residents.¹ There are an estimated 1.4 to 5.2 infections per 1,000 resident-care days in NHs and skilled nursing facilities^{1,2}, costing the US healthcare system an additional \$673 million.^{2,3} The Department of Health and Human Services has declared HAI prevention in NHs a national priority,³ and the Centers for Disease Control and Prevention provides toolkits to reduce the number of HAIs occurring in this vulnerable population.⁴ HAIs are thought to be largely avoidable through adherence to infection prevention and control (IPC) practices.⁵ Furthermore, education and training of frontline personnel is key to ensuring compliance and successful implementation of those practices.⁶

Certified nursing assistants (CNAs) comprise the majority of frontline personnel in NHs⁷ and are increasingly responsible for the identification and reporting of residents presenting with signs and symptoms of infection.^{8,9} When not performed effectively, activities primarily carried out by CNAs such as feeding, hydrating, hygienic care, toileting, ambulation, and resident turning and positioning, may increase the risk of infection transmission.³

Despite the potentially significant role CNAs play in reducing infection transmission, to our knowledge, there are no studies that explore the challenges to IPC compliance for NH CNAs. Therefore, the purposes of this study were to explore barriers to instituting and maintaining IPC practices for NH CNAs as well as to describe strategies utilized by NH personnel to overcome these barriers.

Material and methods

Study Sample & Design

This study was part of a larger, mixed-method, multi-site study designed to describe the phenomena of infection control in NHs (NINR R01 NR013687). The methods utilized in this study are described in detail elsewhere.¹⁰ Briefly, NHs were purposively sampled to obtain variation in geographic distribution, bed size, and ownership status. At each NH, we interviewed personnel important to IPC including: CNAs, infection preventionists (IP), directors and assistant directors of nursing, NH administrators, advanced clinicians, environmental services workers, staff development/risk managers/quality improvement coordinators, minimum data set (MDS) coordinators, and staff nurses. Participants were English-speaking staff that worked in the facility for approximately one year or longer. Written informed consent was obtained from all participants. The Institutional Review Boards of Columbia University Medical Center, University of Pittsburgh, and the RAND Corporation approved the study.

Data Collection & Analysis

Between May and September 2013, we enrolled facilities and conducted site visits at 10 NHs located across the country (Northeast: n = 3; South: n= 4; West/Midwest: n= 3). NH size ranged from approximately 40 to 200 beds. Additional details about NH demographics are described elsewhere.¹⁰ Semi-structured in-person interviews were conducted by a team of eight interviewers. All interviewers used topic guides tailored to the respondents' roles and interview methods were reviewed to ensure consistent data collection procedures. The interview guides (available upon request) were informed by Donabedian's conceptual framework of healthcare quality, that includes structures, processes, and outcomes,¹¹ and published guidelines for infection prevention in NHs.⁶ Questions were open-ended and specific to infection prevention. Specific questions that were the focus of this sub-study included: "What are some of the barriers to effective infection control in your facility?", "What are the facilitators in your facility that have helped you prevent or control infections?", and "Tell me about the challenges related to infection control in your facility."

All interviews were digitally recorded, transcribed verbatim, and de-identified. Data were coded using a conventional content analysis¹² in NVivo 10 data analysis software (QSR International Pty Ltd. Version 10, 2012). This analysis allows for codes to flow from the data and is ideal when exploring a phenomenon that is poorly understood. Three members of the research team (PKS, RIB, CCC) coded all transcripts and, subsequently, data specific to the CNA's role were analyzed for themes related to barriers and facilitators of IPC. Coding discrepancies were reconciled during weekly team meetings. Emerging themes were also discussed in these meetings to ensure consensus of all interpretations. Analysis concluded when no new themes emerged from the data.

Results

In total, 73 interviews were conducted (Table 1) and averaged approximately 45 minutes in length. Many of the personnel interviewed, including all of the IPs (n=9), had multiple roles.¹⁰ For example, a participant may have been interviewed for their role as an IP, but may have also served as the Director of Nursing/Assistant Director of Nursing, Staff Nurse, or Staff Development Coordinator. These characteristics are further described in detail elsewhere.¹⁰ Five key themes emerged describing perceived barriers to implementing and maintaining IPC practices for CNAs: 1) language and culture; 2) knowledge and training; 3) per-diem and part-time staff; 4) workload; and 5) accountability. Descriptions of each theme with exemplar quotes of the barriers and strategies used to overcome the barriers can be found in Table 2.

Language and culture

Language and culture were perceived as common barriers to ensuring effective implementation of IPC practices. Participants noted that many of the CNAs came from diverse cultural backgrounds and were often non-native English speakers. These characteristics were perceived to limit the CNAs' ability to understand and, therefore, effectively adhere to routine IPC practices. For example, a risk manager responsible for

resident and staff safety at NH 3 realized that a tool developed to help CNAs care for the resident,

“really was not effective because some of [the CNAs] could not read it.”

In addition to language, the diverse cultures of CNAs were perceived to present challenges to IPC practices. An administrator from NH 2 described this as an issue of particular importance,

“if you come from a culture where you don’t really discuss medical issues... sometimes that could be a barrier.”

To address barriers associated with language and culture, NHs provided translated in-services and rules and regulations. The same administrator from NH 2 stated that because of

“an overwhelming number of nursing staff that [are non-native English speakers]... when you do education in both languages, we’re making sure that everyone is grasping the concept.”

Pictures and color-coding of messages were also described by participants as beneficial when working with diverse languages and cultures.

Knowledge and training

Lack of knowledge and training were perceived by participants to impede information delivery and limit the CNA’s ability to effectively implement and adhere to IPC processes. Specifically, the lower educational requirements of CNAs, compared to those of other health professions, were perceived as a barrier when providing instruction on IPC practices. While discussing in-service trainings at the facility, a participant responsible for quality improvement from NH 1 noted,

“I’m very aware that I’m sitting with a graduate person and I may be talking in the same session to somebody who has a GED [General Education Development certification]. Both people need what I have to say. Both people are going to view it differently, but the outcome must be the same. So I have to hope that the [graduate] person recognizes I’m certainly not talking down, but I’m putting it in language that can be understood. And that’s my challenge.”

A registered nurse in charge of staff development at NH 4 discussed the varying educational levels of NH personnel and the importance of stressing the process of hand washing to the CNAs because,

“when you’re talking blood borne pathogens and things like that, sometimes that’s not well-understood, but hand-washing is.”

In other circumstances, even if it was perceived that CNAs were educated appropriately on IPC practices, lapses still existed when it came to CNAs applying what they had learned to their everyday resident care. An administrator from NH 6 noted,

“It could be that we’re trying to roll out a certain program and we educate; we in-service [the CNAs]. Thirty days later, there is one person always in the group that still does it the old way.”

Barriers in IPC knowledge and training were also described as being influenced by the length of time a CNA had been employed at the facility or tenure in the profession. In particular, a CNA from NH 5 described the challenges of knowledge and training as it relates to newer staff,

“...we have new staff that come in and they’re maybe not aware of certain things when they first start.”

One suggested solution to overcoming these barriers was to examine how infection control policies and practices were taught to CNAs. A nurse from NH 3 noted,

“[The CNAs] learned the procedure, but not necessarily the why. [Those in charge of IPC education are] going to teach you how to do it and maybe the emphasis is not enough on the why and the consequences of what could happen [if you do not comply]. And I think once you know that, then you can think a little more. “

Using signs outside the residents’ rooms to provide knowledge about infection control was reported as helpful by a CNA from NH 6. Participants also reported the use of many techniques to address issues related to training including hands on training with CNAs as a way to ensure comprehension. Dedicating specific trainings for the CNAs and education on urinary tract infection, perineal care, and pneumonia prevention (e.g., providing adequate hydration, hand washing) were additional approaches offered. Personnel from several facilities described the importance of alerting CNAs if they were not doing something correctly as the circumstance occurred, as opposed to after the fact. Tenure of the CNAs was described as a facilitator to overcoming barriers created by lack of training and constant reiterations of the policies and reminders were described as key to ensuring compliance.

Per-diem and part-time staff

Participants reported a reliance on per-diem and part-time CNA staff to fill the voids created by sick calls, turnover, and staffing shortages. However, they also reported limited opportunities to educate this group on IPC practices, thus creating barriers to effective IPC. An IP from NH 2 explained this barrier as being,

“...really tricky. It’s not like I can schedule an in-service and gather everybody together because the next day I could have more private duty aides.”

Additionally, after surveillance revealed unacceptable practice patterns (e.g., poor trash disposal habits), the same IP stated,

“I’ll identify very quickly that it’s not necessarily our [permanent] staff... [per-diem staff] are putting things in the garbage [inadvertently], for instance. So I need to stop the private duty aides and in-service them as well.”

Participants described various approaches to training per-diem and part-time CNA staff on IPC policies and practices. These included utilizing current staff to intervene and educating individuals who were unfamiliar with the facility’s protocols. Additional approaches were annual meetings with per-diem and part-time staff, identifying and in-servicing those staff when they first started working at the facility, and providing one-on-one in-services when

feasible. Having more permanent staff, lower turnover, and an infection control coordinator at the NH facility were described as facilitators to IPC compliance.

Workload

Many discussed how workload prevented CNAs from effectively carrying out every day IPC practices. A director of nursing from NH 10 described that, despite CNAs' awareness of IPC practices, adherence was low because of increased workload and being in a hurry to finish one task and move on to another. When asked for reasons why CNAs might not follow an infection control policy a CNA from NH 1 stated, "*I would say multitasking.*" An IP from NH 10 discussed an example of workload resulting in poor hydration,

"...if a CNA is in a hurry ... maybe they get to work late, they have an extra [resident] today, so now they have nine [residents] instead of eight. And they came late so they're a little bit rushed... Or if they don't offer enough fluids and then the urine just gets concentrated..."

Solutions to overcoming barriers created by increased workload involved hiring more staff. However, respondents noted that this approach would likely not result from a state inspection as a nurse from NH 8 stated,

"the only real way that [the state addresses] inadequate staffing is if they come in and see that there is... just a total lack of care...If they see that the [residents] are being taken care of, even though there are seventeen [residents] for one [CNA], then they kind of overlook it and say it's okay."

Accountability

Gaps in CNA accountability related to IPC were reported by many participants. A director of nursing from NH 8 indicated that CNAs have the ability to effectively implement IPC, however, she went on to say:

"I think you have to stay on top of the CNAs, making sure that they're providing their care... because they [are not] used to accounting for their behavior."

Additionally, an IP from NH 2 noted issues related to teamwork and being accountable for communicating about IPC,

"I think [CNAs] have to understand that everybody is here to complement each other, but I don't see them communicating. I know my charge nurses will communicate to environmental [services]. I'd like to see my nurse's aide communicate a little bit more. I think they rely on the uppers to do that..."

In order to increase accountability, empowerment and inclusion activities were frequently discussed as key approaches to ensure that CNAs felt they were part of IPC initiatives. For instance, an administrator from NH 2 described the importance of providing CNAs with the tools and training to execute IPC practices,

"from an administrative standpoint you want your staff to know what your policy and your system is so that they can put it into play when your nursing management is not in the building."

Additionally, a physician assistant from NH 1 discussed the importance of including CNAs in IPC

“...because they’re the ones that are doing the hands on care.”

Discussion

In this study, CNAs were described as a diverse group whose challenges to implementing IPC effectively centered on language and culture, lack of knowledge and training, reliance on per-diem and part-time staff, high workload, and limited accountability. While existing studies have described barriers to implementing quality care practices and maintaining compliance among CNAs,^{13–16} none have examined barriers to IPC specifically. Our work explored IPC barriers qualitatively, allowing participants to give an account of the barriers they encountered and the strategies participants were using.

There is a growing national trend toward diversity among CNAs and, compared to what was seen in the 1990s, this group is now less likely to be US-born.^{17,18} Furthermore, the demographics of CNAs have shifted from primarily non-Hispanic White to primarily Black, Hispanic, or other races/ethnicities.¹⁹ Our findings indicate that the diverse workforce of CNAs presented challenges to IPC and that additional resources/trainings were useful in improving IPC practices. Steps that NH administrators have taken to respond to these challenges (i.e., translation of in-services and educational material) align with recommendations by the American Medical Directors Association (AMDA)⁸ to implement teaching methods that are sensitive to language and culture, yet such methods may still fall short of ensuring that CNAs understand IPC processes. In most states CNAs are required to hold a high school diploma or pass a GED equivalency exam as well as take an exam for CNA certification and to participate in on the job CNA training that covers infection control and the importance of hand washing. These credentials require reading and writing in English.²⁰ However, based on what was described by participants in this study, a deficit still remains with regard to language and culture when CNAs are placed in NH settings. A review of current minimum educational requirements for CNAs may be warranted to ensure that CNAs are best prepared educationally, linguistically, and culturally to satisfy the requirements of their position.

Further, it is important to take into account the variations of terminology and meanings across different cultures and the challenges that accompany comprehension of foreign terms and practices. This is critical, particularly as effective infection control also involves delivering communication (e.g., relaying health concerns to the correct personnel and addressing resident concerns).⁷ The reiteration of important messages to CNAs was described as an important strategy to overcome such challenges. This may take the form of posting important reminders and messages in areas where CNAs can see them, providing CNAs with information cards that can be placed in work ID holders, and incorporating CNAs into team huddles. While these extended activities can assist with CNAs’ ability to assess and deliver important information appropriately, addressing the CNAs’ communication responsibilities was only minimally discussed in this study. Therefore,

additional research is needed to better understand the mechanisms CNAs can use to communicate resident assessments and needs.

Lack of knowledge and training can also impact IPC practices among all NH personnel.^{10,21} In this study, knowledge was influenced not only by how much experience one had working in a particular facility, but also by the educational requirements of the position. Providing effective education for personnel who have differing educational backgrounds was a challenge. In another study investigating the educational needs of licensed NH nursing staff and CNAs who provide end-of-life care, lack of knowledge and skills and communication difficulties were also cited as major needs areas.²² AMDA recommends employing teaching methods that are sensitive to workforce personnel with varying educational levels.⁸ Because IPs are key players in IPC education, including these personnel in cultural competency and sensitivity activities may be beneficial in addressing challenges in CNA knowledge and training. Additionally, IPC compliance related to training was particularly problematic when CNA staff were newer to the facility. In one study, CNAs reported that initial training only provided them with half of what they needed to know and they learned the remainder informally on the job.²³ Therefore, it may be beneficial for IP staff to develop CNA-focused IPC programs that span longer periods of time. However, despite reported IPC training that did focus on CNAs, compliance was said to have varied in this study, suggesting the need for further research on which mode(s) of teaching and preparation would be most effective for this group.

Inability to maintain adequate staffing levels also affected CNA IPC practices. Unfortunately, limited staffing is a prevalent issue in the nursing professions and is only expected to worsen in the future.^{24,25} This is particularly true in long-term care settings. Individuals over the age of 65 will make up 20% of the US population by the year 2050 compared to 13.7% in the year 2012.²⁶ Therefore, the need for long-term care services is expected to grow with the increasingly large elderly population, thereby increasing the demand for more CNAs. CNAs who do not hold full-time status within NH facilities are instrumental in filling staffing gaps. However, providing this group with the tools, knowledge, and training necessary to carry out expected IPC practices has been a challenge. One strategy for connecting with per-diem and part-time CNAs includes engaging them immediately when they begin their day/night at the facility. For instance, per-diem and part-time staff may be provided with IPC updates, in-services, and trainings at a central location 15 minutes prior to the start of their shift. Another important finding in our study was the suggestion to equip other staff with the ability to deliver IPC education as opposed to having IPs primarily responsible for this task. This approach can be particularly useful as IPs regularly work hours that do not fully align with the start of the CNA shift and those CNAs working off-shift. Moreover, additional attention to meeting the needs of CNAs and reaching them despite their sporadic schedules is necessary, as is holding per-diem and part-time staff to the same standards of full-time CNAs. These strategies are important for maintaining consistent IPC practices.

Without adequate staffing and sufficient per-diem and part-time personnel to fill staffing gaps, CNAs work in less than optimum conditions with increasing workloads. Given this reality, it is important to acknowledge that overworked staff pose a threat to resident safety

and quality of care as the attention of CNAs can be diverted from important care areas related to infection control. Studies have shown that inadequate CNA staffing is associated with poorer quality measures such as increased infection rates,²⁷ increased deficiency citations,²⁸ and decreased rates of resident influenza and pneumococcal vaccination.²⁹ Despite quality care concerns found both in our study and others,^{27–29} minimum staffing ratios for direct care staff are present in only 36 states²⁴ and still fall short of Centers for Medicare and Medicaid Services recommended staffing ratios.²³

Strengths and Limitations

NHs were purposively sampled to achieve variation in location, size, and ownership status in our participant selection. Recruitment in this study continued until data saturation was reached across the entire NH sample for infection-related topics posed by the interview guides. Confirmability was achieved through documentation of field notes upon completion of interviews. Credibility was achieved through peer debriefings and reflexivity, thus increasing the rigor and trustworthiness of our results.³⁰

Important to note, CNA responses to questions about barriers and facilitators to effective IPC were limited compared with how other NH personnel responded. Despite being informed that all responses would remain confidential, CNA reluctance to discuss IPC barriers may have been due to fear of repercussions. Transferability of these results to other CNAs should be made with caution as a result. Additionally, although CNAs are required to speak, read, and write in English, there were limitations with language during the interviews which impeded communication.

Last, because this was a secondary data analysis and the purpose of the primary study was to explore the overall phenomena of IPC, and not just as it relates to the CNAs, we were limited to the methods and design of the primary study and the study guides were not piloted with CNAs. Future researchers investigating these phenomena more fully should consider piloting interview guides with CNAs and/or incorporating focus groups to facilitate CNA responses to questions about barriers of IPC.

Conclusions

These findings provide necessary information to guide the implementation of successful IPC policies and programs in NHs. CNAs are in the frontlines of providing direct care in NHs and, therefore, they are key to implementing effective IPC activities in practice. CNAs in our study were described as being a highly diverse group. High turnover and understaffing increased the need for per-diem and part-time staff and also increased CNA workload. Furthermore, holding CNAs accountable for IPC was deemed important. It is necessary to implement strategies designed for this diverse workforce to improve CNA work performance and overcome IPC barriers. Our findings provide information to guide the implementation of IPC policies and programs in NHs. Further research is needed to better understand IPC barriers that CNAs face and how these barriers may be effectively overcome. Such studies will enable NHs to achieve reduction in HAI among their residents.

Acknowledgments

Funding sources:

This study was funded by the National Institute of Nursing Research (NINR) (R01NR013687, T32NR013454, F31NR015176). J.T. received additional support from the Jonas Center for Nursing and Veterans Healthcare. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Jonas Center for Nursing and Veterans Healthcare.

The authors would like to thank the research team (Nicholas Castle, Laurie Conway, Andrew Dick, John Engberg, Elaine Larson, Victoria Raveis, and Mayuko Uchida-Nakakoji) and our advisory board (Steven Schwoen, Philip Smith, and Nimalie Stone) for their contributions to this study.

References

1. Koch A, Eriksen H, Elstrom P, Aavitsland P, Harthug S. Severe consequences of healthcare-associated infections among residents of nursing homes: a cohort study. *J Hosp Infect.* 2009; 71(3): 269–274.10.1016/j.jhin.2008.10.032 [PubMed: 19147254]
2. Pennsylvania Patient Safety Authority. 2009 Annual Report. 2009. http://patientsafetyauthority.org/Documents/Annual_Report_2009.pdf. Cited March 24, 2015
3. US Department of Health and Human Services. National action plan to prevent healthcare-associated infections: Roadmap to elimination. 2013. Available at: <http://www.health.gov/hai/pdfs/hai-action-plan-ltcf.pdf>. Cited December 18, 2014
4. Blumenstock, J. Eliminating healthcare associated infections: State policy options. 2011. Available at: http://www.cdc.gov/hai/pdfs/toolkits/toolkit-hai-policy-final_01-2012.pdf. Cited November 12, 2014
5. HealthyPeople.gov. Healthcare-Associated Infections. 2014. Available at: <http://www.healthypeople.gov/2020/topics-objectives/topic/healthcare-associated-infections?topicid=17>. Cited October 6, 2014
6. Smith PW, Bennett G, Bradley S, et al. SHEA/APIC Guideline: infection prevention and control in the long-term care facility. *Am J Infect Control.* 2008; 36(7):504.10.1086/593114 [PubMed: 18786461]
7. U.S. Bureau of Labor Statistics. Nursing Assistants and Orderlies: Occupational Outlook Handbook. Available at: <http://www.bls.gov/ooh/healthcare/nursing-assistants.htm>. Cited August 21, 2014
8. American Medical Directors Association. Common infections in the long-term care setting. 2011. Available at: <http://www.guideline.gov/content.aspx?id=32667>. Cited December 29, 2014
9. Department of Health and Health Protection Agency. Prevention and control of infection in care homes-an information resource. 2013. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/214929/Care-home-resource-18-February-2013.pdf. Cited December 18, 2014
10. Stone PHC, Pogorzelska-Maziarz M, Carter E, Bjarnadottir R, Semeraro P, Cohen C, Travers J, Schwoen S. Understanding infection prevention and control in nursing homes: A qualitative study. *Geriatr Nur.* 2015;10.1016/j.gerinurse.2015.02.023
11. Donabedian A. Evaluating the quality of medical care. *The Milbank memorial fund quarterly.* 1966;166–206. [PubMed: 5338568]
12. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005; 15(9):1277–1288.10.1177/1049732305276687 [PubMed: 16204405]
13. Crogan NL, Shultz JA. Nursing assistants' perceptions of barriers to nutrition care for residents in long-term care facilities. *J Nurses Prof Dev.* 2000; 16(5):216–221.
14. Lekan-Rutledge D, Palmer MH, Belyea M. In their own words: Nursing assistants' perceptions of barriers to implementation of prompted voiding in long-term care. *Gerontologist.* 1998; 38(3): 370–378.10.1093/geront/38.3.370 [PubMed: 9640857]
15. Mather KF, Bakas T. Nursing assistants' perceptions of their ability to provide continence care. *Geriatr Nur.* 2002; 23(2):76–81.10.1067/mgn.2002.123788

16. Resnick B, Petzer-Aboff I, Galik E, et al. Barriers and benefits to implementing a restorative care intervention in nursing homes. *J Am Med Dir Assoc*. 2008; 9(2):102–108.10.1016/j.jamda.2007.08.011 [PubMed: 18261702]
17. Yamada Y. Profile of Home Care Aides, Nursing Home Aides, and Hospital Aides Historical Changes and Data Recommendations. *Gerontologist*. 2002; 42(2):199–206.10.1093/geront/42.2.199 [PubMed: 11914463]
18. Priester R, Reinardy JR. Recruiting immigrants for long-term care nursing positions. *J Aging Soc Policy*. 2003; 15(4):1–19.10.1300/J031v15n04_01 [PubMed: 14733442]
19. Squillace MR, Remsburg RE, Harris-Kojetin LD, Bercovitz A, Rosenoff E, Han B. The national nursing assistant survey: Improving the evidence base for policy initiatives to strengthen the certified nursing assistant workforce. *Gerontologist*. 2009; 49(2):185–197.10.1093/geront/gnp024 [PubMed: 19363014]
20. Nursing Assistant Resources On The Web. Everything you want to know about being a CNA. 2012. Available at: <http://www.nursingassistants.net/educational-articles/everything-you-want-to-know-about-being-a-cna/>. Cited March 19, 2015
21. Cohen, C.; Pogorzelska-Maziarz, M.; Herzig, CTA., et al. Isolation-based infection prevention and control practices in nursing homes: a qualitative study. *BMJ Qual Saf*. Published Online first: 22 May 2015; <http://doi:10.1136/bmjqs-2015-003952>
22. Ersek M, Kraybill BM, Hansberry J. Investigating the educational needs of licensed nursing staff and certified nursing assistants in nursing homes regarding end-of-life care. *Am J Hosp Palliat Care*. 1999; 16(4):573–582.10.1177/104990919901600406 [PubMed: 10661065]
23. Centers for Medicare Medicaid Services. Report to Congress: Appropriateness of Minimum Nurse Staffing Ratios In Nursing Homes: Phase II Final Report. 2001. Available at: <http://phinational.org/sites/phinational.org/files/clearinghouse/PhaseIIVolumelofIII.pdf>. Cited December 18, 2014
24. Harrington, C. Nursing home staffing standards in state statutes and regulations. 2010. Available at: <http://theconsumervoice.org/uploads/files/issues/Harrington-state-staffing-table-2010.pdf>. Cited December 18, 2014
25. Castle NG, Engberg J. Staff turnover and quality of care in nursing homes. *Med Care*. 2005; 43(6): 616–626. [PubMed: 15908857]
26. Congressional Budget Office. Rising demand for long-term services and supports for elderly people. 2013. Available at: <http://www.cbo.gov/sites/default/files/44363-LTC.pdf>. Cited January 8, 2015
27. Zimmerman S, Gruber-Baldini AL, Hebel JR, Sloane PD, Magaziner J. Nursing home facility risk factors for infection and hospitalization: importance of registered nurse turnover, administration, and social factors. *J Am Geriatr Soc*. 2002; 50(12):1987–1995.10.1046/j.1532-5415.2002.50610.x [PubMed: 12473010]
28. Hyer K, Thomas KS, Branch LG, Harman JS, Johnson CE, Weech-Maldonado R. The influence of nurse staffing levels on quality of care in nursing homes. *Gerontologist*. 2011; 51(5):610–616.10.1093/geront/gnr050 [PubMed: 21602292]
29. Hutt E, Radcliff TA, Liebrecht D, Fish R, McNulty M, Kramer AM. Associations among nurse and certified nursing assistant hours per resident per day and adherence to guidelines for treating nursing home-acquired pneumonia. *J Gerontol A Biol Sci Med Sci*. 2008; 63(10):1105–1111. [PubMed: 18948562]
30. Jeanfreau SG, Jack L. Appraising qualitative research in health education: Guidelines for public health educators. *Health Promot Pract*. 2010; 11(5):612–617.10.1177/1524839910363537 [PubMed: 20817630]

Table 1

Personnel Interviewed from a National Sample of Nursing Homes

Participant Role	N
Administrator	9
Staff Development/Risk Manager/Quality Improvement Coordinator	4
Advanced Clinician	3
Infection Preventionist	9
Director/Assistant Director of Nursing	8
Staff Nurse	10
Environmental Services	10
Certified Nurse Aide	9
Minimum Data Set Coordinator	11
Total	73

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2

Key Themes and Exemplar Quotes of IPC Barriers and Strategies

Theme	Description	Exemplar Quotes
Language and Culture	CNAs were often described as non-native English speakers with diverse cultural backgrounds and this impacted the manner in which IPC information was delivered.	Barrier: “...when you’re dealing with elderly people and the majority of the elderly people are [native English speakers]... there is a big language barrier... I think that’s something we could really improve.” Admin NH 2 Strategy: “We also use symbols that alert the CNA... We use little yellow smileys on the door and yellow armbands if someone is at risk for aspiration... If you look on the inside of the armoire, you will see aspiration precautions with pictures.” RM NH 3
Knowledge and Training	Education and training of CNAs impeded information delivery and the implementation and adherence to IPC processes.	Barrier: “... one of the things I want to add [is] having an actual orientation [for new personnel], and in that orientation I would like to have a [session] for infection control where [we] ... talk about hand washing ...and educate on the flu.... So that’s something that I am working towards because if you’re a new CNA or a new nurse you really don’t know because you haven’t been taught and you haven’t been educated.” IP NH 5 Strategy: “... when [we] first get hired we go through a big orientation, and we go through more orientation than [other NH staff] because we deal more with the residents... [we are taught] how we do it at this facility. This is how we want our aides to work.” CNA NH4
Per-Diem and Part-Time Staff	The infrequent work schedules of per-diem and part-time staff posed difficulties for IPC communication and resulted in IPC breakdown.	Barrier: “... we do brief infection control training, but again if it’s once a year it’s very hard ...there’s such an influx of private duty aides and it could be three private duty aides per one resident because of the different shifts and the times. So, it’s very hard to isolate...and catch everybody.” IP NH 2 Strategy: “Once I can identify [per-diem and part-time staff] ... and in-service them, there’s more compliance.” Nurse NH 2
Workload	Time constraints and understaffing impeded effective IPC practices.	Barrier: “I think a lack of staff and a lack of time... make you cut corners. I’m not saying that the aides don’t want to do it right or don’t know how to do it right. They don’t have the time to do it right.” Nurse NH 8 Strategy: “...the only real way that [the state addresses] inadequate staffing is if they come in and see that there is... just a total lack of care... If they see that the patients are being taken care of, even though there are seventeen [residents] for one [CNA], then they kind of overlook it and say it’s okay.” Nurse NH 8
Accountability	Lack of ownership of IPC created breakdown in infection control practices and communication.	Barrier: “When we talk about [CNAs and infection control] ...sometimes [CNAs] think [it doesn’t relate to them]. For example, [CNAs] wear gloves when they shouldn’t. When we talk about [IPC] just [in] general, [CNAs] think [there is no relevance to them].” DON NH 10 Strategy: “I think when you empower people, when you really make people realize that it’s so important what they’re doing, and you give praise to people. ...the person that you see taking off their robe before leaving the room, washing their hands and coming out... you tell them ‘You know... I can always count on you.’” QIC NH 1

Note: CNA= Certified Nursing Assistant; IPC= Infection Prevention and Control; NH= Nursing Home; Admin= Administrator; RM= Risk Manager; IP = Infection Preventionist; DON= Director of Nursing; QIC= Quality Improvement Coordinator