

A competency-based approach to promoting effective hand hygiene in long-term care facilities*

Un enfoque basado en competencias para promover la higiene de manos eficaz en los centros de atención a largo plazo

Uma abordagem baseada em competências para promover a higiene eficaz das mãos em ambientes de cuidados de longa duração

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Abstract

Introduction: Long-term care facilities comprise a large proportion of healthcare service users due to the increasing ageing population. Healthcare-associated infections constitute a major burden in long-term care facilities and are associated with significant infectious disease outbreaks and mortality. The non-adherence to effective hand hygiene practice due to missed opportunities for staff to explore its role in infection prevention and control within these settings has been emphasised by the COVID-19 pandemic.

Methods: This article is designed to assist the continuing professional development needs of nursing and associate professionals in long-term care facilities. It explores the factors contributing to the poor attitude of staff members towards non-compliance with infection prevention and control measures in long-term care facilities.

Results: Recommendations for improving infection prevention and control measures were further made based on the Infection Prevention Society competency framework which serves as a tool for individuals to improve their performance continually and become efficient practitioners.

Conclusion: After reading this article, healthcare practitioners should be able to (i) identify various means of promoting adequate hand hygiene in long-term care facilities; (ii) understand that every activity taken to prevent the spread of healthcare-associated infections begins and ends with effective hand hygiene; (iii) recognise steps to prevent cross-infection through improved compliance with the five moments of hand hygiene in long-term care facilities; (iv) develop a satisfactory attitude towards hand hygiene compliance in the workplace, and (v) appraise own competence, and promote staff compliance through feedback.

Keywords

hand hygiene, healthcare-associated infection, infection prevention, long-term care, preventive health services.

Resumen

Introducción: Los centros de atención a largo plazo comprenden una gran proporción de usuarios de servicios de salud debido al creciente envejecimiento de la población. Las infecciones asociadas a la atención de la salud constituyen una carga importante en los centros de atención a largo plazo y están asociadas con brotes y mortalidad significativos de enfermedades infecciosas. La falta de adherencia a una práctica eficaz de higiene de manos debido a la pérdida de oportunidades para que el personal explore su papel en la prevención y el control de infecciones dentro de estos entornos ha sido enfatizada por la pandemia de COVID-19.

Métodos: Este artículo está diseñado para ayudar a las necesidades de desarrollo profesional continuo de los profesionales de enfermería y asociados en los centros de atención a largo plazo. Explora los factores que contribuyen a la mala actitud de los miembros del personal hacia el incumplimiento de las medidas de prevención y control de infecciones en los centros de atención a largo plazo.

Resultados: Además, se hicieron recomendaciones para mejorar las medidas de prevención y control de infecciones basadas en el marco de competencias de la Sociedad de Prevención de Infecciones, que sirve como una herramienta para que las personas mejoren su desempeño continuamente y se conviertan en profesionales eficientes.

Conclusión: Después de leer este artículo, los profesionales de la salud deberían poder (i) identificar varios medios para promover una higiene de manos adecuada en los centros de atención a largo plazo; (ii) entender que toda actividad realizada para prevenir la propagación de infecciones asociadas a la atención médica comienza y termina con una higiene de manos efectiva; (iii) reconocer los pasos para prevenir la infección cruzada a través de un mejor cumplimiento de los cinco momentos de la higiene de manos en los centros de atención a largo plazo; (iv) desarrollar una actitud satisfactoria hacia el cumplimiento de la higiene de manos

en el lugar de trabajo, y (v) evaluar la propia competencia y promover el cumplimiento del personal a través de la retroalimentación.

Palabras clave: higiene de manos, infección asociada a la atención de la salud, prevención de infecciones, atención a largo plazo, servicios de salud preventivos.

Resumo

Introdução: As instituições de longa permanência compreendem uma grande proporção de usuários de serviços de saúde devido ao crescente envelhecimento da população. As infecções associadas aos cuidados de saúde constituem um fardo importante nas instituições de cuidados de longa duração e estão associadas a surtos significativos de doenças infecciosas e mortalidade. A não adesão à prática eficaz de higiene das mãos devido à perda de oportunidades para a equipe explorar seu papel na prevenção e controle de infecções nesses ambientes foi enfatizada pela pandemia de COVID-19.

Métodos: Este artigo destina-se a atender às necessidades de desenvolvimento profissional contínuo de profissionais de enfermagem e associados em instituições de longa permanência. Explora os fatores que contribuem para a má atitude dos membros da equipe em relação ao não cumprimento das medidas de prevenção e controle de infecção em instituições de longa permanência.

Resultados: As recomendações para melhorar as medidas de prevenção e controle de infecções foram feitas com base na estrutura de competências da Infection Prevention Society, que serve como uma ferramenta para os indivíduos melhorarem continuamente seu desempenho e se tornarem profissionais eficientes.

Conclusão: Após a leitura deste artigo, os profissionais de saúde devem ser capazes de (i) identificar vários meios de promover a higiene adequada das mãos em instituições de longa permanência; (ii) entender que toda ação realizada para prevenir a disseminação de infecções relacionadas à assistência à saúde começa e termina com a higienização efetiva das mãos; (iii) reconhecer medidas para prevenir a infecção cruzada por meio da melhoria do cumprimento dos cinco momentos de higienização das mãos em instituições de longa permanência; (iv) desenvolver uma atitude satisfatória em relação à adesão à higiene das mãos no local de

trabalho, e (v) avaliar a própria competência e promover a adesão do pessoal através de feedback.

Palavras-chave

higiene das mãos, infecção associada à assistência à saúde, prevenção de infecção, cuidados de longa duração, serviços de saúde preventiva.

Introduction

Long-term care facilities (LTCFs) comprise a large proportion of the healthcare systems globally due to the increasing ageing population. These settings primarily serve older patients, who are associated with higher levels of multi-morbidity (1). Long-term care facilities may likely constitute a breeding ground for Healthcare-associated infections (HAIs) where strict adherence to infection prevention and control (IPC) measures are not followed. Frequently isolated microorganisms in LTCFs such as *Escherichia coli*, *Streptococcus pneumoniae*, *Staphylococcus aureus*, *Candida spp.* and *Pseudomonas aeruginosa* can be readily transmitted from one individual to another through inadequate hand hygiene practice (2). While these opportunistic organisms make up the normal microbiome of the gut and skin, they are likely to cause severe infection in individuals with a weak immune system or when they are introduced into susceptible organs (3).

Although common issues on infection prevention and control in LTCF ranges from funding, staff shortage, high staff turnover, and poorly structured guidelines for IPC (4,5), challenges related to poor operational structures, inability to implement fundamental IPC guidelines, low compliance rate and adopting a structured means of assessing staff competencies was further emphasised by Nguyen et al. (4). On the operational level, nurses, care support staff, and cleaners play a major role in implementing efficient and safe IPC measures in LTCFs. For instance, in the United Kingdom and United States, nursing homes, residential homes, hospices, and home care services are primarily run by nurses and nurse assistants (6,7). In this care environment, it becomes important that staff members adhere to recommended standard precautions for IPC (8,9). These standards for IPC aim to promote patient safety, which can only be achieved when healthcare professionals adhere to the guidelines, which greatly emphasise effective hand hygiene.

Hand hygiene and personal protective equipment (PPE)

Hand hygiene is the primary measure that has been proven to be effective in preventing HAIs, and as such, there is great emphasis on hand hygiene with soap and water or hand gel as a means for IPC (10). Effective hand hygiene is recommended before and after each contact with a patient, after touching the patient's surrounding area, before performing an aseptic procedure, and after exposure to bodily fluids (11). Together, these are known as the five moments for hand hygiene. (See: https://bit.ly/Your_5_Moments). It is important to note that hand decontamination with soap and water is the standard recommended method when hands are visibly dirty or soiled. In case of *Clostridium difficile* infection, vomiting or a diarrhoeal illness, Loveday et al. (12) emphasised that hand decontamination with soap and water should be performed before and after patient contact irrespective of whether gloves have been worn. This is because alcohol-based handrub is ineffective against *C. difficile*. All other clinical situations, for example before and after patient contact, should see hands sanitised with an alcohol-based handrub (10,13). Although standard hand hygiene practice is often sufficient, it is worth considering other activities or moments where hand hygiene may be appropriate for HCWs. For instance, fomites such as the patient's clothes, bedrails, mobile aids, utensils, and table surface are also likely to harbour microorganisms.

Additional opportunities for hand hygiene come into play where a handwashing facility is in the patient's room. Considering the barrier that exists between the patient's room and the surrounding environment, there are also potentials for bacteria to reside on light switches or door handles, and hand hygiene may be required after its use. While hand hygiene after these activities could further reduce infection rates, it may not be realistic in a busy healthcare environment. The strict implementation of the 5 components of the WHO (14) multimodal strategy to improve hand hygiene has been emphasised to mitigate these lapses. Components of the multimodal strategy for hand hygiene includes access to a safe hand washing facility at

the point of care, continuous staff training and feedback, reminders in the workplace and an organisation that promotes patient safety.

The Global COVID-19 pandemic has necessitated a more extensive use of personal protective equipment (PPE) for HCWs, including those working in LTCFs. Similar to other lethal respiratory tract infections such as influenza (from strains A and B), pneumonia, bronchitis, bronchiolitis and severe acute respiratory syndrome (SARS), droplets can survive on surfaces and are transmitted when a contaminated hand touches the eyes, nose, or mouth (15). Hand hygiene must be performed and extended to exposed forearms after removing PPE such as aprons, gloves, masks and after administering supplemental oxygen. Although the evidence base for promoting good respiratory hygiene as a major infection control measure is well established, it is also important to note that effective hand hygiene practice complements respiratory hygiene (see: <https://bit.ly/catch-bin-kill>). Much emphasis has been placed on hand hygiene as a means of mitigating HAIs because every IPC measure taken to prevent the spread of infection begins and ends with effective hand hygiene.

Activity

Reflect on ways you could promote effective infection prevention and control practices at your workplace. This includes necessary measures to be taken in minimising cross-infection between healthcare service users and compliance with hand hygiene requirements.

Factors influencing compliance with hand hygiene in LTCFs.

An enquiry into factors contributing to the non-compliance of hand hygiene reveals that human behaviour was attributed to the observed lapses. Good hand hygiene should be considered a habit. This cognitive process has been extensively studied using the theory of planned behaviour (conscious behaviours) to explore human factors such as the perceived intention which is influenced by attitude, subjective norms, and level of control over a situation at any

given time (16). Therefore, knowledge of the consequence of not engaging in a behaviour is the major driving factor for engaging in such behaviour. In addition, the social norms behind these actions are often embedded in the organisational goals which suggest good role modelling by staff members.

As humans, our beliefs tend to shape how we think, which further determine our habits and everyday activities. Less conscious human behaviours often lead to promoting or less prioritisation of hand hygiene in the workplace (17,18). The feeling of disgust, responding to audits and the belief of protecting oneself and other HCW and service users is a driving factor for carrying out effective hand hygiene (16,18). In contrast, perceived lack of control over other factors such as time constraints, workload, frequent interruption, skin irritation and glove preference are barriers to effective hand hygiene (16,19,20). A common knowledge-based error often encountered during hand hygiene is non-compliance with all the steps involved in hand decontamination. This is a matter of concern as there is a strong belief among HCWs that hand hygiene has been performed, despite not being carried out effectively.

Gluyas (17) highlighted that errors resulting from deliberate and non-deliberate violations while undertaking hand hygiene may occur. Some violations are also accompanied by an assessment of the low risk involved in not performing hand hygiene. For instance, research shows that HCWs perceive non-compliance with two of the five moments for hand hygiene – before touching a patient, and after touching the surrounding area of a patient – as less risky than some of the other moments (17,21). Similarly, McLaughlin et al. (22) found that healthcare workers perceive the risk of cross-infection to be low after touching surfaces. More recent evidence by Stephens et al. (23) has revealed that pathogenic microorganisms are present in high levels on surfaces with human occupancy.

Activity

Consider the steps taken to effectively perform hands hygiene. Although these steps are supposed to be performed with minimum conscious thought, reflect on how often each step is completed. (See: <https://bit.ly/hand-hygiene-information>).

Cognitive performance of hand hygiene is often affected by much familiarity with the task and coping with adjustment in work situations, and there is a high tendency of staff to work around evidence-based guidelines. Although strategic placing of infographics on the procedure for performing effective hand hygiene is likely to minimise errors observed during routine hand hygiene, prior reflection on such activity should be encouraged to enhance the cognitive process. However, according to McLaughlin et al. (22), it is almost certain that in life-saving situations, such as preventing falls and assisting a choking patient, where compliance with hand hygiene may be challenging, HCWs may not miss the opportunity to carry out hand hygiene if they perceive any risk to themselves. Moreover, while some of these slips and lapses are in response to exceptional circumstances which are beyond their control, others may be deliberate due to the lack of knowledge, poor role modelling or little organisational support (17,24). Another form of non-compliance is the excessive use of gloves or the belief in using gloves as a substitute for hand hygiene. In this regard, appropriate hand hygiene after the use of gloves in healthcare settings has been emphasised by several authors (25,26). The aim is to reduce the colonisation of microorganisms on the palm and wrist which often result from inappropriate donning and doffing of hand gloves.

Several environmental factors have been linked to low compliance with hand hygiene in healthcare. Time constraints for staff are frequently cited in the literature as one of the biggest factors that prevent compliance with hand hygiene (18,19,27). As well as time, Gluyas and Morrison (27) identified inadequate knowledge on IPC and pressure due to increased workload as negative factors. It was also recognised that the structure and layout of some facilities may

not promote effective infection prevention and hand hygiene. For example, poor siting of sanitising gel dispensers, sluice and washbasins may likely not suit the work plan of HCWs. White et al. (16) identified the availability of facilities themselves as one of the most frequently reported factors which negatively influenced compliance.

Improving compliance with hand hygiene using the competency framework for IPC practitioners

Competencies are demonstrated ability to apply knowledge, skills, and attitudes for personal development to achieve observable results. These motives and personal traits often exhibited by individuals help them evaluate how they perform certain tasks. In 2011, the Infection Prevention Society (IPS) developed a framework to enable IPC practitioners to enhance their knowledge and skills to help increase patient safety and quality of care (8). This framework which comprises four core competencies and domains can aid in assessing education programmes, staff appraisal and review of organisational structures to determine areas for improvement and further training requirements. The competency framework and domains comprise (i) clinical practice; (ii) quality improvement & research; (iii) education; and (v) leadership and management. Table 1 provides guidance on the knowledge and skill that staff members responsible for the development and implementation of IPC measures in LTCFs should have, in order to carry out their responsibilities. Particular emphasis was paid to the IPS core competencies because it gives a summary of the skill base required for effective practice in specific job roles. This also coincides with the step-wise approach to implementing the WHO (14) multimodal hand hygiene improvement strategy which is (i) facility preparedness; (ii) baseline evaluation; (iii) implementation; (iv) follow-up evaluation; and (v) review and planning. Furthermore, recommendations for improving hand hygiene compliance in the workplace were made based on the multimodal improvement strategy.

Table 1: IPS core competency and domains

Deliver appropriate and effective information and advice on infection prevention and control				
Domain	Practice Indicator	Knowledge	Skills	Required level of competence
Clinical practice	Use surveillance data apply the principles of epidemiology to designing and implementing strategies to prevent and control infection.	Evidence underpinning IPC including microbiology, laboratory methods and reporting, Immunology, antimicrobial agents, resistance, and treatment of infection; epidemiology of HAI, infection transmission and prevention. Infection prevention in relevant clinical procedures.	Critical evaluation of guidelines, research and other sources of evidence and application of findings to clinical practice	<p>Entry-level clinical support practitioners Able to show a progression from the position of assisted to supervised within 6 months.</p> <p>Clinical support practitioners Maintain competence as supervised practitioners.</p>
	Advise on possible infection risks based on healthcare facility design and available handwashing facilities.			
	Identify IPC risks and develop appropriate strategies to manage, mitigate, minimise, or contain them.			
Education	Recognise gaps in knowledge, skills and competence of self and others in relation to IPC and develops improvement strategies.	Evidence underpinning infection prevention and control practice	Critical evaluation of guidelines, research and other sources of evidence and application of findings to clinical practice.	<p>Non-managerial employee Supervised practitioners.</p> <p>Managers Independent practitioners</p>
	Critically evaluate research and other forms of evidence to underpin IPC advice.	Interpretation of research findings, assessment of study quality and validity of study findings or recommendations	Apply research findings to clinical practice	
Leadership and management	Communicate IPC information effectively in a verbal and/or written format at an appropriate level for the target audience.	Strategies for delivering information effectively	Communicate complex messages clearly and effectively. Evaluate the effectiveness of communication	<p>Senior support practitioners / Staff nurses Should have attained the supervised competence level upon recruitment.</p> <p>Line managers Must be independent practitioners.</p>
	Communicate confidently and competently to staff and service users and the public about infection and IPC at a level to suit the audience.	Appropriate and timely IPC information	Uses a wide range of communication strategies to meet the needs of their audience i.e., leaflets, dashboards, reports	
	Develop, assist, and encourage staff and team members to practice effectively and efficiently including engagement events with service users and the public where applicable and appropriate to do so.	Knowledge of the best evidence underpinning infection prevention and control practice.	Identify and build effective relationships	
	Build and sustain effective working relationships, influencing others to recognise the importance of IPC practice in promoting, improving, and maintaining patient safety.	Relationship management	Identify, build, and maintain key relationships	

Quality improvement and research	Methodologies to develop, support and maintain effective root cause analysis processes.	Knowledge of the best evidence underpinning infection prevention and control practice.	Critical evaluation of guidelines, research and other sources of evidence and application of findings to clinical practice.	Lead nurse & Practice development nurse Must be independent practitioners
	Develop a strategy for providing and sustaining an effective infection prevention & control service aligned to organisational objectives and vision.	Knowledge of the best evidence underpinning infection prevention and control practice.	Critical evaluation of guidelines, research, and other sources of evidence and application of findings to clinical practice	

Adopted from IPS Competencies 2020 Version 2.1

Assisted: Performs the skill, task, or responsibility but under direct or indirect supervision

Supervised: Performs the skill, task, or responsibility as an autonomous practitioner

Independent: Practitioner who has the knowledge and skills to work autonomously without any supervision or assistance.

Support for improving compliance with IPC in LTCFs.

Insufficient time, poor knowledge, and pressure due to increased workload and organisational barriers have been attributed to the noncompliance with effective hand hygiene. In the light of the contributing factors to non-compliance with hand hygiene discussed in the previous section, various studies recommended that a habit of effective hand hygiene can be formed with practice (18,28,29). It was further emphasised that the development of habitual hand hygiene practices as unconscious automated behaviour could lead to better compliance with IPC measures (18). According to Lally et al. (30), it can take between 18 to 254 days for a behaviour to transform into a habit. While this period is highly subjective to the individual, Lee et al. (31) also observed that repetitive theoretical and practice sessions lead to a significant improvement of the HCW's competencies in IPC in their workplace. Gluyas (17) also emphasised the need for senior healthcare staff to act as role models in promoting hand hygiene in their workplaces. It was further suggested that a lack of role modelling could contribute to low levels of compliance with all 5 moments of hand hygiene by staff members (17). Hence, there is the need to develop a competency-based framework for training healthcare support workers in IPC.

While evidence underpinning IPC such as epidemiology of HAI, infection transmission and prevention procedures are basic requirements for an entry-level practitioner which can be developed further through practice and education. Lee et al. (31) identified that education,

monitoring, and feedback were components of an IPC training programme that resulted in significant behavioural change within healthcare staff in LTCFs. Koo et al. (32) also highlighted how training can influence compliance, with self-reported compliance with hand hygiene independently associated with the receipt of training and participation in a previous hand hygiene campaign. It is however certain that progressing from one competency level to another provides IPC practitioners with the ability to display evidence of IPC competencies expected in a previous role, as well as their willingness to work towards specialist advanced competencies.

Giving timely feedback as a means of motivating and empowering staff to continue with optimal hand hygiene practice have been recommended in various literature (33,34). While this approach is likely to encourage good practice, Burnett (35) suggested that feedback provided to staff should focus on hand hygiene compliance rather than non-compliance, as this is more likely to impede the personal development of defaulting staff. Lee et al. (31) have also suggested that frequent training, continuous audits, and timely feedback bring about behavioural change amongst HCWs working in LTCFs. Furthermore, considering the role of audits in IPC, Erasmus et al. (21) and Srigley et al. (34) advised that a positive response resulting from an awareness of being assessed is likely to bring about a behaviour change. Therefore, positive feedback on IPC compliance also provides support for behaviour change as junior staff members are most likely to change practice with motivation from their senior colleagues.

Storr et al. (33) recommended a series of best practice elements for effective infection prevention and control programmes in line with WHO recommendations. These comprise implementing efficient IPC programmes, continuous training, monitoring and feedback, and adequate institutional support. In this paper, the author recommended an integration of the IPC

competencies as an approach to implementing the WHO multimodal strategy. Working through the assisted, supervised, and independent competency levels further enable practitioners to meet evidence-based recommendations proffered in recent literature on hand hygiene compliance (33,36). The competencies also promote self-reported compliance with hand hygiene which is independently associated with receipt of training and participation in previous hand hygiene campaigns.

In the recently published report by the WHO (36) on promoting quality health care, it was revealed that inadequate access to handwashing facilities and poor hand hygiene habits in health care settings suggests that good IPC practices may be difficult to implement. Surprisingly, poor positioning of handwashing facilities and the inability to access alcohol-based handrub at the point of care were identified as factors that impede recommended IPC practices (36). These findings reflect those of Salcedo-Cifuentes et al. (37) who also reported that hand hygiene compliance goes beyond good habits but also the availability of handwashing sinks or alcohol-based disinfectants at the point of care, and proper management. In addition to the availability of hand hygiene facilities, its visibility is also an important factor that is likely to increase handwashing practices. Thus, the positioning of hand hygiene stations should be strategically considered when planning and redesigning healthcare facilities.

In using the IPC framework, HCWs are able to adopt components of the multimodal strategy for hand hygiene. Achieving the required level of competence that corresponds with the education and clinical practice domains implies that access to a safe hand washing facility at the point of care and continuous staff training is guaranteed. Efficient leadership and management within the healthcare team further encourages constructive feedback in the workplace. In this regard, where the knowledge and skills corresponding to quality

improvement and research domain have been met, it may then be considered that the organisation adheres to promoting patient safety in its day-to-day activities.

Conclusions and recommendations for effective practice

This paper has argued that nurses and nursing assistants play a major role in delivering safe and effective care in LTCFs. While these facilities make up a valuable proportion of the healthcare systems globally, it becomes important to establish at least the minimum IPC requirements, which represent a strong knowledge base for developing effective competencies. The author's practice recommendations are based on the WHO step-wise approach to implementing the multimodal hand hygiene improvement strategy. While senior HCWs often serve as role models for other junior staff through education and mentoring at the point of care, they should also be able to influence behaviour towards efficient hand hygiene practices. Furthermore, it is important that senior practitioners recognise any skill gaps within the IPC team and contribute towards the personal development of team members. Therefore, assisting practitioners who may be new to infection prevention and control to develop their knowledge and skills should be the first call of action with regards to building an institutional safety climate. A practitioner who may require observation and direction to carry out a specific task or unfamiliar role must be supported with constructive feedback. As a step-wise approach to maintaining effective IPC strategy, providing appropriate infrastructures, giving timely feedback on hand hygiene compliance, and providing an enabling environment are critical elements that should form key performance indicators in LTCFs.

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Conflict of interest statement

The authors declare no conflict of interest. The opinions expressed are the authors' own and not those of their employers, or any other organisation.

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