

Name of journal: Nursing Standard

Article reference: NS12158

Date submitted: 17th March 2023

Date accepted: 31st March 2023

Infection Control from a Community Perspective

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Abstract

Managing community acquired infections remains an ongoing challenge for community nursing teams. The Coronavirus pandemic has increased the need for healthcare workers to ensure they are practising safely and effectively to ensure patient safety and reducing the impact on NHS services. The community setting is often unpredictable and unequipped with the right resources and environment compared to patients in acute settings. This article outlines the need for community nursing staff to risk-manage and develop strategies for effective and safe care delivery, whilst working in line with local and national frameworks for safe, evidence based practice.

Keywords: To be drawn from the Nursing Standard taxonomy

Infection prevention and control (IPC) is an essential component of the skills required to care for patients in community settings. Community nursing staff work with patients not only in their own homes, but also care homes, residential settings and potentially those currently without permanent accommodation, that is the homeless. The profile of safe and effective IPC in the community has never been more significant, considering the implications of the Coronavirus resulting in the rapid spread of disease to vulnerable patients in community settings. Even prior to the pandemic, the NHS was under significant pressure due to emergency unplanned admissions including community acquired infections (CAI's), an increase of 42% over the last decade (Royal College of Nursing and the Queens Nursing Institute, 2019). CAIs include the spread and transmission of parasites, bacteria and viruses outside of healthcare settings. There has been an abundance of research focused on the identification of adherence to safe IPC interventions for acute nursing care, however minimal focus on the unique challenges faced in community services (Higginson, 2018). This remains a gap in community nursing literature as no sufficient evidence-base has yet been established on the effectiveness of IPC guideline adherence with clinical protocol, although an American based study from Dowding, McDonald and Shang (2020) make recommendations specifically to community settings in the UK.

IPC in essence is considered the clinical application of microbiology in clinical practice (RCN, 2020). Relevant to community nursing, staff visiting patients in their own homes and residences need to ensure that correct practice is followed to reduce the risk of spread and contamination of microbes and pathogens. It is widely recognised that these settings can create optimal conditions for the transference of micro-organisms between the staff delivering care and the patient receiving medical intervention (Dowding, McDonald and Shang, 2020; Murphy, 2021). These micro-organisms are inherently opportunistic and thrive on the ability to exploit routes to colonise or enter the body, which could result in an infection.

Community nursing services deliver care to patients who have an inability or difficulty accessing healthcare centres such as GP surgeries, walk-in centres and hospitals due to a combination of health

and social limitations, including reduced or limited mobility, long-term conditions and acute/chronic illness. The NHS (2019) Long Term Plan explicitly identifies primary care as a priority for better IPC control, with expectations of a 50% reduction in Gram-negative bloodstream infections and a focus on antibiotic stewardship as key targets, further highlighted by Aziz (2020). NHS England (2022) clearly outlines the importance of good infection prevention to ensure the safety and quality of care required to treat complex patients in community settings. However, this needs works in tandem with appropriate healthcare infrastructure, staff and equipment resourcing as well as sufficient support and training in order for clinical practice to perform safe and effective IPC measures.

This is more challenging in community settings, where clinicians often have reduced control over the environment and regularly need to adapt to the situation they are presented with. Many homes and residences do not have appropriate hand-washing facilities and community nurses may be presented with less than hygienic environments, including the presence of domesticated pets and untidied general household waste. This requires community nursing staff to risk assess upon visits, proactively responding to reduce the chances of spread or contamination of micro-organisms using alternative methods (Ward, 2017). However, this responsibility does not solely lie with the clinical staff providing care. Palmer (2022) highlights the role of government to ensure that strategies used to manage IPC are evidence-based and in line with contemporary clinical care guidelines, however during the pandemic it was in the guidance released by Public Health England that inpatients affected by Coronavirus were considered safe to return to residential care homes, resulting in significant spread of the virus resulting in an increased number of deaths, arguably many of which may have been preventable. In response, there was evidence of community nursing teams developing training and support packages for residential and nursing care homes, aiming to provide IPC education and support to the many affected homes because of the pandemic (Murphy, 2021).

The placement and transfer of patients between primary and secondary care settings remains a key concern for community nursing teams, requiring rapid risk assessment. Community nurses need to

ensure they are responsive to referrals from other services, to ensure that those patients with active infections or are potentially coming from an environment where infection has been present are assessed to consider a risk to the wider community (Palmer, 2022). This requires a multi-disciplinary approach to risk-assess prior to the patient's discharge being arranged. Often, this may result in adhering to protocols for implementing optimal IPC delivery ready for the patient's discharge and allows a plan to be formulated between the clinically responsible community nursing team and the residence.

Assessments following these considerations should have influence on the correct placing of the patient which is relevant and appropriate to the patient's care needs. Consideration will also need to be given to any vulnerable members residing in the accommodation, either private home or care/nursing home. This can often be problematic for community nursing services if timely handover is not given or they are not involved in the discharge planning for the patient, resulting in reactive measures to reduce risk after the event instead of proactive measures based on planning and collaborative decision making. This is particularly relevant to patients with Norovirus in care homes, which is the leading cause of gastroenteritis with a higher morbidity and mortality rate than those in their own home. Due to the virus's high transmissibility and prolonged shedding of virus particles in previously affected individuals, this can be very difficult to control (Assab and Temime, 2016), an issue evident in current acute hospitals with significant rises in cases (NHS England, 2023a)

Knowledge of the patient's current health status is essential, although this may not always be apparent until the visit itself. Even with the investment in community resources for laptops, iPads and live patient records accessible remotely (Palmer, 2022), acute presentations of infection can appear without warning. This requires community staff to maintain a safe distance from the patient until appropriate protection is worn. Core principles exist regarding the foundations of IPC; Personal Protective Equipment (PPE), hand hygiene and the safe handling and disposal of waste. Each of these will be explored in further detail in this article.

PPE (Personal Protective Equipment)

PPE includes equipment such as disposable aprons, gloves, masks, visors and goggles. These items help protect the healthcare worker from infections and harm to their own health. The use of PPE has received significant focus since the Coronavirus pandemic. Suggestions from Dowding, McDonald and Shan (2020) indicate that the impact of the pandemic has greatly raised the importance of PPE adherence and correct application of appropriate equipment, possibly due to the potential transmission to the care worker who was also potentially at risk of contracting the illness themselves. The selection of PPE is based on an assessment considering the risk of transmission to the patient as well as the risk of contamination of the healthcare workers clothing (NICE, 2017). Further assessment must consider the risk of blood, secretions and/or excretions as well as body fluids.

Disposable aprons should be worn when there is an evident risk of potential contamination from the patient or procedure the healthcare worker is performing (NHS England, 2022). This also applies to those patients with an active infection, as the apron will help prevent cough droplets and secretions from making contact with the healthcare worker's uniform, reducing the chances of spread to the next patient. Once the intended task has been completed, the apron should be removed and disposed of appropriately. These are single use items and not for regular use, although this has been identified as historical practice in community settings (Ward, 2017).

The use of face masks is now not a mandatory requirement when visiting patients at home unless a risk assessment has been completed or the patient has requested visiting staff to wear one (Department of Health and Social Care, 2022). It is worth noting that surgical masks are not formally PPE as per European Directive 89/686 (RCN, 2020). Masks should offer effective and reliable protection to those who wear it, including patients and their carers. If the patient has an airborne transmissible active infection such as tuberculosis or Coronavirus, masks should be fitted to the shape of the face, with minimal contact to the mask once applied and changed as needed as per the

manufacturer's guidelines (RCN, 2020). Community staff should be sensitive to the preferences and needs of both colleagues and patients in the aftermath of the pandemic, with many still likely to be anxious of the ongoing impact of COVID-19 and concerned for the health of themselves and relatives/friends/carers. **Community nurses can promote uptake of the influenza vaccine to their patients to further reduce the amount of respiratory infections and outbreaks experienced by care home providers (Aziz, 2018).**

There are differing ideologies in practice regarding the use of disposable gloves; NICE (2017) recommend gloves must be worn for all invasive procedures including non-intact skin and mucous membranes as well as increased risk exposure to blood or body fluids. Disposable gloves should be put on prior to the nursing intervention and then removed after the event with proper disposal ensured. The RCN (2020) advise that there are problems associated with the incorrect use of gloves, such as causing contact dermatitis or worsening skin prior conditions as well as undermining local hand-hygiene initiatives. Gloves are not an alternative to hand hygiene and their use needs to be risk-assessed. Correct application of 'donning' and 'doffing' is shown in *figure 1*.

Hand Hygiene

Unlike many primary and secondary care facilities, the environment is often unpredictable in patient's homes which causes challenges to performing best hand hygiene measures. Particularly in patient's homes, this could be complicated by a lack of resources such as clean hand towels, warm running water and the availability of soap. The clinician may bring in their own hand towels and soap, however this will often need to be left in the patient's home to reduce the risk of transmission to another patient following the visit. NICE (2017) reinforce the expectations that everyone involved in providing care to a patient needs the proper education and training in IPC standards and hand decontamination. A study from Dowding, McDonald and Shang (2020) found that nurses could demonstrate high compliance with knowledge around infection control practices although the observed hand hygiene

adherence rate was only 45.6%, showing that despite having knowledge, it may not always be reflected in clinical practice.

Community staff also need to provide training to patients and their carers to ensure surfaces are appropriately cleaned, so the environment offers less risk of transference between different patients the nurse may be visiting (Ward, 2022). NICE (2017) states standard principles for hand decontamination in all circumstances, however if suitable hand washing facilities are not available, the community staff will be required to use alcohol hand rub as an alternative. Best practice is provided by the UK Health Security Agency (2022) in *figure 2*. However, guidance from the RCN (2020) and Loveday et al (2014) recommends alcohol rub is not to be used on visibly dirty hands as there is a lack of evidence to support its rationale. Limited evidence is available on how to remove contamination from hands, such as blood or body fluids which is visible on the skin in the absence of water. Even NICE (2017) guidance for infection control measures has not been updated since 2017, although the principles of IPC remain the same despite the pandemic. Alcohol rubs also need to be properly applied following the same principles of hand hygiene as advised by the NHS (2023), ensuring all areas of the hands are covered. If this process is not correctly followed, some microbes and pathogens will continue to live on the hands and may contaminate equipment and colleagues as well as other patients. Furuya-Kanamori et al (2015) discuss the significance that the highly contagious clostridium difficile will not be destroyed by alcohol gel and the only way to avoid contamination is to wash hands properly with soap and water. However, Ward (2022) indicates that not all soaps will kill micro-organisms that community staff may be exposed to, raising priorities for further research into establishing evidenced pathways for effective IPC community management. **If no sinks are available, a hand wipe can be used to physically clean visibly dirty hands followed by a decontaminating rub to remove any outstanding transient microbes (Payne and Peache, 2021), although the hands will require to be properly washed at the next available opportunity.** It is also worth noting that the (US) Centers for Disease Control and Prevention (2019) confirm that hand sanitiser does not contribute to antibiotic resistance, which remains a myth in some areas of clinical practice (Palmer, 2022).

Safe handling and disposal of waste

The removal of clinical waste is heavily regulated by law and requires strict adherence to legislation. Although accumulated in the patient's own home or residence, the production of this waste is the responsibility of the visiting clinician to ensure safe and legal disposal. NHS providers produce approximately 156,000 tonnes of clinical waste every year that requires high temperature incineration or alternative treatment (NHS England, 2023b). The NHS Clinical Waste Strategy has been created to support NHS services and providers to take safe, resource sensitive and sustainable steps to manage waste disposal and create waste only when necessary. This strategy now requires all clinical waste to be reported with a minimum of 95% accuracy by 2024, with the aim by 2030 that the NHS will have an 80% reduction in carbon emissions produced from waste management as well as reducing the net cost by 15%. Waste is infectious or non-infectious and although national legislation provides a regulatory framework, different NHS providers will manage their clinical waste management systems differently. Nurses should ensure they are aware of their employer's clinical waste disposal policy and ensure clinical standards are consistently met across their peers. If this is not currently being implemented in local practice, this should be escalated to employers as a priority due to the potential impact on health, well-being, and financial implications for the NHS provider.

Infectious waste contains one or more of the following: blood, pus or wound exudate that indicates that infection is present (Ward, 2017). The RCN published guidance for nursing staff in 2020, warning of the professional and moral obligation to protect the health of their patients and the wider community. Nurses are a key element when ensuring waste is properly disposed, as they represent the largest proportion of the workforce that purchase and manage the waste generated (RCN, 2020). In *figure 3*, NHS England (2023c) highlight the risks of inappropriate waste disposal, further emphasising the need for clinical guidelines to be followed.

Other Considerations

Community staff are well versed in the challenges of maintaining clinical standards in practice, in the unpredictability and inconsistency of community environments. The RCN (2020) make recommendations for ensuring aseptic technique. Asepsis is a process that aims to both prevent and reduce pathogens and micro-organisms from entering the body through vulnerable areas, such as wounds, catheterisations and intra-vascular devices. This knowledge is essential for community nurses, with a study from Prieto, Wilson and Bak et al (2020) indicating prevalence of patients with catheters in the community may be higher than the estimated 7% estimated by the NHS Safety Thermometer. Community staff are advised to apply the following principles to all clinical interventions:

- Ensure the environment is clean as possible.
- Ensure as little disturbance as possible occurs such as air turbulence, dust and pets.
- Perform hand-hygiene prior to and post the procedure delivered and the appropriate use of disposable gloves.
- Use sterile equipment when making contact with the vulnerable site.

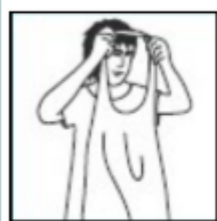
Nurses should try and avoid wound care procedures when domestic cleaning duties such as vacuuming have been performed, due to the risk of dust being disturbed posing an environmental risk (Payne and Peache, 2021). It is a necessity that all staff should be trained to undertake aseptic procedures and should form a part of ongoing development and supervision. Staff need to be trained and deemed competent by an appropriate assessor in line with local and national policies. Where knowledge or skill may be lacking, community staff need to recognise their own limitations and consult support from a colleague to ensure patient safety is not compromised. Training needs should be reviewed regularly and form a key part of appraisal and clinical supervision.

Conclusion

Community staff are exposed to unpredictable environments where the application of clinical standards and policies can be complicated by a myriad of factors. Using the principles of IPC, community staff can ensure high quality of care through appropriate risk-management strategies. Studies have shown that although community nursing staff may have the relevant knowledge and skills, this is not always demonstrated within their clinical practice. Community staff need to advocate for their patients and ensure the needs of the often clinically vulnerable populations they care for are considered a priority. Ongoing asepsis and aseptic technique competency are key, alongside appropriate recognition of PPE usage and sufficient hand-hygiene practices.

Correct order for putting on and removing Personal Protective Equipment (PPE)

Order for putting on PPE



Pull apron over head and fasten at back of waist.



Secure mask ties at back of head and neck. Fit flexible band to nose bridge.



Place eye protection over eyes.



Extend gloves to cover wrists.

Order for removing PPE



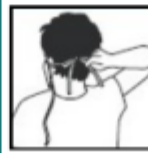
Grasp the outside of the glove with opposite gloved hand, peel off. Hold the removed glove in the gloved hand. Slide the fingers of the ungloved hand under the remaining glove at the wrist and peel off.



Unfasten or break apron ties. Pull apron away from neck and shoulders lifting over head, touching inside of the apron only. Fold or roll into a bundle.



Handle eye protection only by the headband or the sides.



Unfasten the mask ties—first the bottom, then the top. Remove by handling ties only.

Figure 1 Harrogate and District NHS Foundation Trust (2017) Community Infection Prevention and Control Guidance for General Practice. Isolation. Policy document. Harrogate and District NHS Foundation Trust.

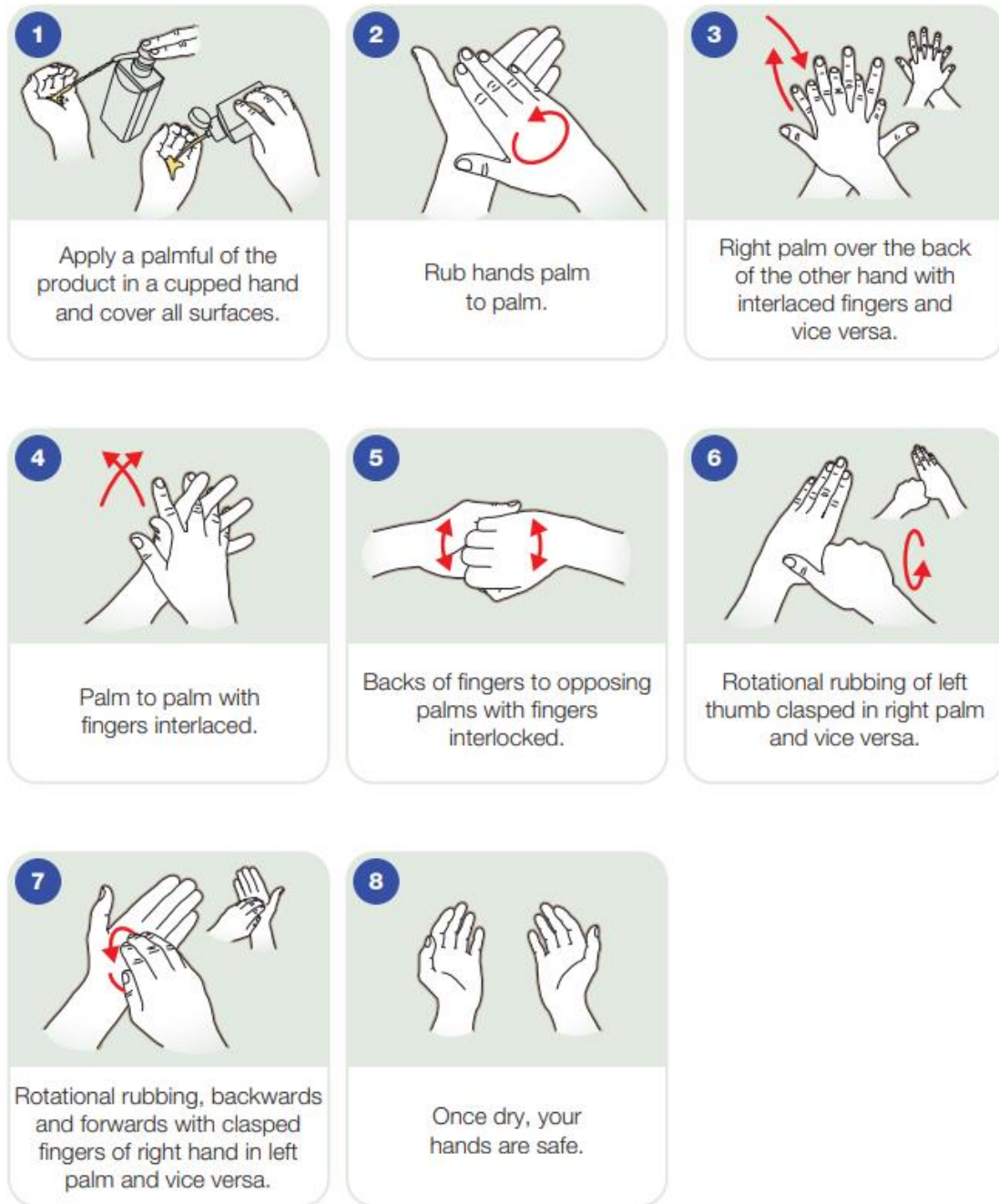


Figure 2 UK Health Security Agency (2022) Best Practice: How to Handrub step by step images. Available at <https://www.england.nhs.uk/wp-content/uploads/2022/09/nipc-manual-appendix-2-handrubbing.pdf>. Last accessed 14th March 2023.

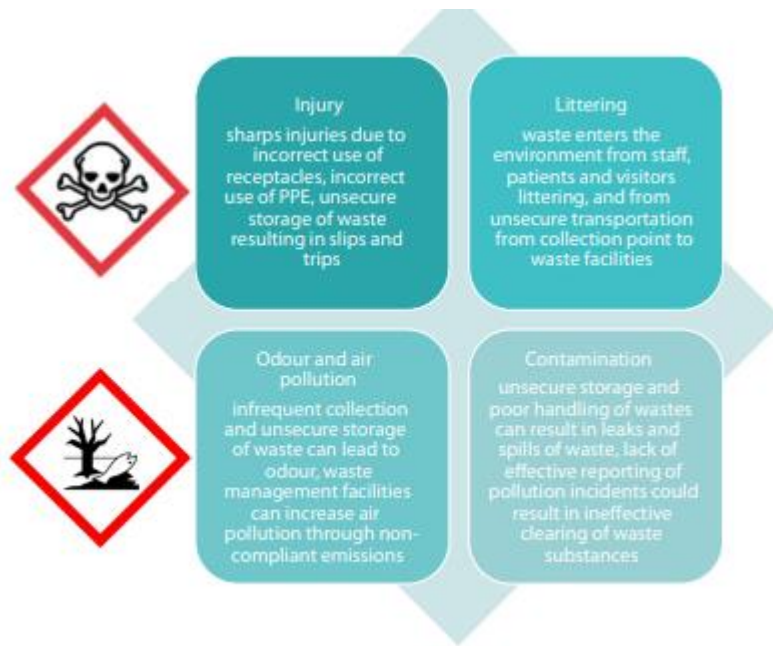


Figure 3 NHS England (2023c) available at <https://www.england.nhs.uk/wp-content/uploads/2021/05/B2159iii-health-technical-memorandum-07-01.pdf>

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