

**Standard Infection Control Precautions Literature Review:
Hand Hygiene:
Indications for Hand Hygiene**

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| Description: | This literature review examines the available professional literature on Hand Hygiene (Indications). |
| Purpose: | To inform the Standard Infection Control Precaution (SICP) section on Hand Hygiene (Indications) in the National Infection Prevention and Control Manual. |
| Target audience: | All NHS staff involved in the prevention and control of infection in NHSScotland. |
| Circulation list: | Infection Control Managers, Infection Prevention and Control Teams, Public Health Teams |
| Update/review schedule: | Updated as new evidence emerges with changes made to recommendations as required |
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Contents:

| | |
|-------------------------------------|----|
| 1. Objectives | 5 |
| 2. Methodology | 5 |
| 3. Recommendations | 6 |
| 4. Discussion | 9 |
| 4.1 Implications for practice..... | 9 |
| 3.2 Implications for research | 12 |
| 5. References | 13 |

1. Objectives

The aim of this review is to examine the extant professional literature regarding indications for hand hygiene for standard infection control purposes. The specific objectives of the review are to determine:

- What are the indications for hand hygiene?
- Are there any additional key moments where hand hygiene (hand washing or alcohol based hand rub (ABHR) use) should be performed?
- Is there any evidence defining the patient environment as one of the five key moments?

N.B. The use of hand washing as protection against either suspected or known specific infectious agents is considered as part of the Transmission Based Precautions (TBPs), and therefore is not within the scope of this review.

Recommendations relating to specific hand hygiene products, i.e. soap types, are outlined in the [hand hygiene products literature review](#).

2. Methodology

This targeted literature review was produced using a defined methodology as described in the [National Infection Prevention and Control Manual: Development Process](#).

3. Recommendations

This review makes the following recommendations based on an assessment of the extant professional literature on the indications for hand hygiene for standard infection control purposes:

What are the indications for hand hygiene?

The World Health Organization's '5 moments for hand hygiene' should be used to highlight the key indications for hand hygiene.

(AGREE rating: recommend)

Hand hygiene using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) should be performed before touching a patient.

(Grade D recommendation)

(AGREE rating: recommend)

Perform hand hygiene using antimicrobial liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) before carrying out a clean/aseptic procedure such as handling an invasive device.

(Grade D recommendation)

(AGREE rating: recommend)

Hand hygiene should be carried out using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) after contact with body fluids, mucous membranes or wound dressings.

If hands are visibly dirty or contaminated with blood, other body fluids or excretions they must be washed with liquid soap and water.

(Grade D recommendation)

(AGREE rating: recommend)

Perform hand hygiene using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) after touching a patient.

(Grade D recommendation)

Are there any additional key moments where hand hygiene (hand washing or alcohol based hand rub (ABHR) use) should be performed?

Perform hand hygiene using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) before handling medication or preparing food and after visiting the toilet.

(AGREE rating: recommend)

Hand hygiene using antimicrobial liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) should be performed before contact with immunocompromised patients.

(AGREE rating: recommend)

Hand hygiene should be performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) after removing personal protective equipment (e.g. sterile or non-sterile gloves).

(AGREE rating: recommend)

Hand hygiene should be performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) between carrying out different care activities on the same patient.

(Grade D recommendation)

(AGREE rating: recommend)

Is there any evidence defining the patient environment as one of the five key moments?

The WHO hand hygiene guidelines define the fifth moment as “after touching patient surroundings” and indicates that hand hygiene must occur after exposure to any surface in the patient zone. In terms of the hospital environment the patient zone encompasses “...all inanimate surfaces that are touched by or in direct physical contact with the patient such as the bed rails, bedside table, bed linen, infusion tubing or other medical equipment” and “...surfaces frequently touched by HCWs while caring for the patient...”¹

Hand hygiene should be carried out using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) following contact with the patient’s immediate surroundings.

(Grade D recommendation)

(AGREE rating: recommend)

4. Discussion

4.1 Implications for practice

What are the indications for hand hygiene?

The World Health Organization's '5 moments for hand hygiene' concept is based on an evidence-based hand transmission model and aims to provide reference points for when hand hygiene should be performed in order to interrupt the transmission of microorganisms during delivery of care.^{1;2}

(AGREE rating: recommend)

There is consensus in the literature that hand hygiene should be performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) before touching a patient.³⁻⁷ Observational studies have demonstrated the risk of transmission to patients following contact with contaminated hands of healthcare workers.⁸⁻¹² In addition, both systematic and non-systematic reviews describe the importance of performing hand hygiene before touching a patient to prevent cross-colonisation of the patient.^{2;13-17}

(Grade D recommendation)

(AGREE rating: recommend)

There is a consensus of evidence that hand hygiene should be performed before carrying out a clean/aseptic procedure such as handling an invasive device.^{2;3;5-7;13;16-18} These procedures are considered high-risk and a maximum reduction in microbial counts on the hands is necessary.⁴ As such it is recommended in guidelines that hand hygiene should be carried out using an antimicrobial liquid soap or an alcohol based hand rub (if hands are not visibly soiled).^{1;4;7;14}

(Grade D recommendation)

(AGREE rating: recommend)

There is a substantial volume of evidence indicating that hand hygiene should be performed using liquid soap or an alcohol based hand rub (if hands are not visibly soiled) immediately after contact with body fluids, mucous membranes or wound dressings.^{2;3;5-7;13;16;17;19} Performing hand hygiene at this indication is necessary to reduce the risk of infection to healthcare workers,

as microorganisms can be isolated from infected wounds, but also to reduce the risk of transfer of microorganisms from a colonised to a clean site during different care activities on the same patient.^{2;5;17} Visibly dirty hands or hands contaminated with blood, other body fluids or excretions must first be washed with liquid soap and water if alcohol based hand rubs are going to be used for hand hygiene subsequently.^{1;3;7}

(Grade D recommendation)

(AGREE rating: recommend)

Healthcare worker hand contamination has been demonstrated following contact with patients in a number of studies.^{8-12;20;21} Therefore hand hygiene should be performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) after touching a patient.^{2;3;5-7;13;15-17}

(Grade D recommendation)

(AGREE rating: recommend)

Are there any additional key moments where hand hygiene should be performed?

The World Health Organization Guidelines on Hand Hygiene in Healthcare and the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force recommend that hand hygiene is performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) before handling medication or preparing food and after visiting the toilet.⁵⁻⁷ This advice is also provided in two non-systematic reviews.^{14;16} A guideline document has recommended that hand hygiene using an antimicrobial liquid soap or an alcohol based hand rub (if hands are not visibly soiled) should be performed before contact with immunocompromised patients.⁴

There is some evidence from an observational study showing the potential for microorganisms to be transferred from sites on patients' skin to clean sites.¹⁰ As such, guidance documents and non-systematic reviews recommend that hand hygiene should be performed using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) between carrying out different care activities on the same patient.^{3;5;6;16;17;19;22} In addition, hand hygiene should be performed after removing sterile or non-sterile gloves.¹

(Grade D recommendation)

(AGREE rating: recommend)

Is there any evidence defining the patient environment as one of the five key moments?

The fifth moment of the WHO hand hygiene guidelines is defined as “after touching patient surroundings” and indicates that hand hygiene must occur after exposure to any surface in the patient zone. In terms of the hospital environment the patient zone encompasses “...all inanimate surfaces that are touched by or in direct physical contact with the patient such as the bed rails, bedside table, bed linen, infusion tubing or other medical equipment” and “...surfaces frequently touched by HCWs while caring for the patient...”.¹ A paper by Sax *et al*² describes the design, rationale and potential practical uses of the five moments. The authors highlight evidence supporting the fifth moment as – “After contact with inanimate objects (including medical equipment in the immediate vicinity of the patient” and grade the recommendation as being “strongly recommended for implementation and supported by some experimental, clinical or epidemiological studies and a strong theoretical rationale.” A number of studies have demonstrated that hands can become contaminated after contact with contaminated surfaces such as the patient’s bed, bedside table or equipment within the patient’s surroundings.^{8-10;12;23-25} A further experimental study has shown the potential for a high level of environmental contamination in rooms housing patients with methicillin resistant *Staphylococcus aureus*.²⁶ A recent study has identified contamination of medical charts as a significant risk for transmission of HAI.²⁷

The increasing use of hand held electronic devices such as tablets and mobile phones in patient care has led to the development of a ‘bundle’ specifically for these devices, the authors recommend that hand hygiene is performed before and after use of these devices.²⁸

Therefore, hand hygiene should be carried out using liquid soap and water or an alcohol based hand rub (if hands are not visibly soiled) following contact with the patient’s immediate surroundings.^{2;3;5-7;12;13;17;29;30}

(Grade D recommendation)

(AGREE rating: recommend)

3.2 Implications for research

There has been some research conducted with the aim of determining how hands become contaminated during patient care and the potential for transmission of microorganisms. However, additional good quality experimental and epidemiological studies are required in order to gain a complete understanding of the various aspects of microbial transmission, colonisation and infection, in particular the role of casual contact and environmental contact in the transmission of microorganisms.

The WHO has provided some detail to further define the patient's immediate surroundings. Despite this there is still some confusion regarding the limits of the patient's immediate environment (patient zone), leading to some lack of clarity about how this key moment is defined. Further work is required to further define the "patient zone" as this generalised definition has the potential to affect compliance in hand hygiene procedures.

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