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Healthcare organization management — Hand hygiene performance

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by the Technical Committee ISO/TC 304, *Healthcare organization management*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Improving hand hygiene remains the most important measure to prevent the spread of infections in healthcare facilities, yet compliance with hand hygiene is globally low. The goal of this document is to provide scientific knowledge, evidence-based implementation guidance for best practices to achieve targeted hand hygiene outcomes that can enhance patient safety.

An essential practice in the prevention or control of the spread of infections in the healthcare environment is the effective and continuous act of hand hygiene. In healthcare facilities, hand hygiene is mainly performed via hand washing or hand rubbing at the points of care, with the purpose of protecting patients and healthcare workers alike from acquiring healthcare-associated infections (HAIs).

Hand hygiene is the process of reducing potentially harmful microorganisms (pathogens) on the hands for the purpose of preventing the spread of infections. Hand hygiene is supported by three pillars:

— behavioural hand hygiene which contains all active behaviours intended to keep hands uncontaminated;

— hand washing which requires water, the cleansing agent, and drying material and is mainly intended to clean hands from visible contaminations and remove microorganisms;

— hand rubbing which requires a disinfecting substance to be absorbed/evaporate until completely dry and is intended to reduce and inactivate microorganisms.

The daily execution of an infection prevention and control system, including hand hygiene, is a responsibility of all healthcare related personnel and stakeholders.

This document builds on the top of existing national and international laws, regulations and recommendations supporting patient safety, and assumes that there are infection prevention and control personnel in each healthcare facility to ensure its implementation.

This document is intended to address specifically all environments that provide healthcare services and can be tailored wherever care is given. Furthermore, fields outside of healthcare can adopt this document or components of it as needed if they provide proper documentation and reasoning behind any modifications.

Adopters of this document may perform an initial assessment of hand hygiene practices as a foundation for the organizational hand hygiene performance and compliance program.

An evaluation and continued assessment of hand hygiene practices is the corner stone of an organization's hand hygiene performance and compliance program.

The key differences between this document and those listed in the bibliography are:

a) increased emphasis on the design and implementation of an institutional-level hand hygiene policy for hospitals and other healthcare facilities – called the "hand hygiene system;

b) extensive, coherent and comprehensible instructions regarding every aspect of a hand hygiene program (requirements, feedback methods, documentation, validation) within the hand hygiene system;

c) aggregation of current evidence-based resources, know-how and best practices to facilitate the implementation and maintenance of an efficient hand hygiene program.

d) customizable and adaptable framework of operation, stretching over national and geographical boundaries.

Healthcare organization management — Hand hygiene performance

1 Scope

This document specifies hand hygiene training, compliance benchmarking, performance/feedback, and facility requirements for healthcare facilities that operate hand hygiene systems. This document covers facility readiness, hand hygiene education and training, monitoring, performance, promotion and identifying key issues that require attention for improvement. Procedures for surgical hand preparation are not addressed in this document.

Furthermore, this document does not take into consideration, surface disinfection, instrument disinfection, ultraviolet irradiation (UV-C), heat sterilization, room fogging or electrostatic spraying devices and any other methods typically not designed or suitable for human hand hygiene purposes.

Excluding surgical hand preparation, this document applies specifically to clinical healthcare workers, patients and visitors.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 22886, *Healthcare organization management — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22886 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
hand hygiene adherence
general act of conforming to the adequate *hand hygiene* (3.2) guidelines and requirements

Note 1 to entry: The term *hand hygiene compliance* (3.19) shall only be used as defined in the context of this document. For all generic use, the word adherence is suitable.

3.2
hand hygiene
HH
act of mechanical and chemical techniques including sustained friction (scrubbing) with clean water or a liquid, gel, or foam chemical formula that effectively reduces, neutralizes and/or inactivates microorganisms on the hands, temporarily removing the transient flora

Note 1 to entry: Hands are considered as the palmar and dorsal surfaces of the human hand, following the anatomy to the line of the ulnar styloid process.

Note 2 to entry: This may include the physical removal of soil and debris from the hand.

Note 3 to entry: Hand hygiene acknowledges two types of *hand hygiene actions* (3.11) which are not mutually interchangeable:

a) hand washing which requires water, product, and drying material;

b) *hand rubbing* (3.20) which requires a cleaning substance to be absorbed/evaporated until completely dry.

Note 4 to entry: Other related but not used terms covering sub-domains of hand hygiene include: hand disinfection, hand cleansing, hand antisepsis, hand decontamination.

Note 5 to entry: This definition overrules the one in ISO 22886.

3.3
alcohol-based hand rub product
ABHR product
chemical formula in liquid, gel, or foam format, containing at least 60 % mass fraction of C2- to C3-alcohols designed to perform *hand hygiene* (3.2) activities when hands are not visibly soiled and do not require subsequent rinsing with water and drying of the hands

Note 1 to entry: C2- to C3-alcohols are ethanol, n-propanol, isopropyl alcohol, or a mixture of these.

Note 2 to entry: ABHR product can also contain other antimicrobial active ingredients with excipients, and humectants.

Note 3 to entry: It is presupposed that users comply with all current local and national requirements.

3.4
handwashing
act of cleaning an individual's hands using water, *handwash product* (3.5) and a drying material

3.5
handwash product
soap in liquid, gel, or foam form, that is designed to perform *hand hygiene* (3.2) activities when hands are visibly soiled, including subsequent rinsing with water and drying of the hands

Note 1 to entry: Such products may contain other antimicrobial active ingredients with humectants and excipients.

Note 2 to entry: In the context of this document solid format soaps are not regarded suitable for *healthcare facilities* (3.6).

3.6
healthcare facility
healthcare setting
physical infrastructure of a healthcare organization

Note 1 to entry: This definition is in line with the definition of "healthcare organization" in ISO 22886:2020, 3.2.2.

3.7
healthcare worker
HCW
healthcare professional (3.16) involved in the direct provision of healthcare

[SOURCE: ISO/TR 19231:2014, 3.11, modified — The abbreviated term "HCW" has been added.]

3.8
dispenser
wall-mounted, bed-mounted, standalone or personnel-attached container able to provide (dose) *ABHR product* (3.3) or *handwash product* (3.5)

3.9
audit
systematic and independent process for obtaining evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Note 1 to entry: An audit can be an internal audit (first party) or an external audit (second party or third party), and it can be a combined audit (combining two or more disciplines)

Note 2 to entry: An internal audit is conducted by the organization itself, or by an external party on its behalf.

Note 3 to entry: "Audit evidence" and "audit criteria" are defined in ISO 19011.

Note 4 to entry: Independence can be demonstrated by the freedom from responsibility for the activity being audited or freedom from bias and conflict of interest.

[SOURCE: ISO 37301:2021, 3.18]

3.10
clinical stakeholder
healthcare worker (3.7), visitor, patient, and other individual potentially interacting with the patient or the patient environment related to *hand hygiene indications* (3.15) and expected to practice *hand hygiene action(s)* (3.11)

3.11
hand hygiene action
hand hygiene event
conscious act of performing *hand washing* (3.4) or *hand rubbing* (3.20)

Note 1 to entry: A hand hygiene action is considered valid from patient safety point of view when it is performed at the correct time, i.e. there is a *hand hygiene indication* (3.15), and regarded as complete when it meets the standard of quality as stated in 4.3.3.

3.12
point of care
area near the patient where stakeholders may encounter communicable pathogens

3.13
continuous improvement
continuous professional development
recurring activity to enhance performance

[SOURCE: ISO 37301:2021, 3.12, modified — The admitted term "continuous professional development" has been added.]

3.14
healthcare-associated infection
HAI
hospital-acquired infection
DEPRECATED: nosocomial infection
infection acquired in the *healthcare facility* (3.6) for which there is no evidence indicating that it was present or incubating during or before the patient's admission

Note 1 to entry: See References [14].

3.15
hand hygiene indication
theoretical point(s) in the workflow of the *clinical stakeholders* (3.10), where there is an increased risk of pathogen transmission for which a *hand hygiene action* (3.11) can be performed to decrease risk

Note 1 to entry: *Hand hygiene* (3.2) moment is a term employed by WHO for hand hygiene indication, as a critical point in care to perform hand hygiene.

Note 2 to entry: WHO's My 5 Moments of Hand Hygiene are considered a widely accepted approach for determining the ideal number of hand hygiene indications in a particular setting.

Note 3 to entry: See Figure 1 for the relationship to this definition.

3.16
healthcare professional
HCP
licensed and unlicensed, clinical, and administrative, remote, and onsite, paid and without compensation, full- and part-time healthcare stakeholders, intermittent healthcare stakeholders, fee basis healthcare stakeholders, contractors, researchers, volunteers and health professions trainees (HPTs)/pre-licensure or certification who are expected to perform any or all of their work at *healthcare facilities* (3.6)

Note 1 to entry: Healthcare professionals are those involved in the direct provision of healthcare, in particular those with patient contact or access to patient near areas.

Note 2 to entry: HPTs may be paid or unpaid and include residents, interns, fellows, and students. HCP also includes personnel providing care to patients and drivers and other personnel whose duties put them in contact with patients.

Note 3 to entry: *Healthcare workers* (3.7) are a key subgroup of the *clinical stakeholders* (3.10) within the scope of this document.

3.17
noncompliance
non-fulfilment of compliance obligations

[SOURCE: ISO 37301:2021, 3.27]

3.18
hand hygiene monitoring system
HHMS
digital technology platform enabling the partial or complete replacement of human *hand hygiene* (3.2) observers, by automatically registering hand hygiene opportunities

Note 1 to entry: The term *hand hygiene compliance* (3.19) monitoring shall only be used in the restricted meaning defined within this document.

3.19
hand hygiene compliance
adherence to *hand hygiene* (3.2) related rules and regulations, particularly in terms of method, frequency, and documentation of *hand hygiene* (3.2)

3.20
hand rubbing
process of using *ABHR product* (3.3) to conduct *hand hygiene action* (3.11)

4 Hand hygiene quality policy and requirements

4.1 General

4.1.1 Conformity

To conform to this document, adopters shall meet all the requirements. Healthcare facilities shall establish policies and procedures for assessing and accomplishing requirements and recommendations. Healthcare facilities should ensure that each clinical stakeholder of the healthcare organization conforms to this document. If the adopter aims to deviate from any of the requirements, peer-reviewed evidence and proof shall be provided in the hand hygiene system document or hand hygiene quality policy regarding that aspect. Deviations shall not compromise patient safety.

4.1.2 Prerequisites for the use of this document

Adopting facilities shall develop, communicate, and enforce their own hand hygiene system in a manner that conforms to the requirements and reflects the guidelines that are stated in this document.

Organizational leadership shall actively support the implementation of this hand hygiene system through hand hygiene program(s) and shall enlist the involvement of key healthcare workers in its development and administration. These healthcare workers shall include, but not be limited to, the organization's risk management, quality management, and infection prevention and control (IPC) staff.

The adopter shall provide capability and resources to develop, implement and evaluate the hand hygiene program guided by this document. The healthcare organization is responsible for resources such as software and products and shall have a set of processes that ensures regulatory requirements are met.

The healthcare organization shall provide a sanitary environment to avoid sources and transmission of infections and communicable diseases. There shall be an active program for the prevention, control, and investigation of infections and communicable diseases.

4.1.3 How to use this document

The description of the hand hygiene system and its application demands the use of a system paradigm to aid the use of this document. As healthcare organizations familiarize themselves with this document and application to their practices and work areas, terms that are more familiar may be substituted.

A hand hygiene system comprises a plurality of hand hygiene programs, preferably one for every healthcare department (e.g. surgery, intensive care, paediatrics), addressing its needs. Hand hygiene thus can be viewed as a component or an element of a larger system for patient safety (Figure 2). This system includes the incorporation of people required to develop, produce, test, distribute, operate, train and support people to accomplish their roles within the healthcare organization. This generic hierarchy represents the necessary components of the system. Figure 1 provides a simple hierarchy of names for the elements that should make up the hand hygiene system. Globally, the hierarchy of leadership and names of leadership may vary, however it is important to recognize necessary components to manage the hand hygiene system. While providing background on the science behind hand hygiene, this document provides practical advice about how to implement this approach.

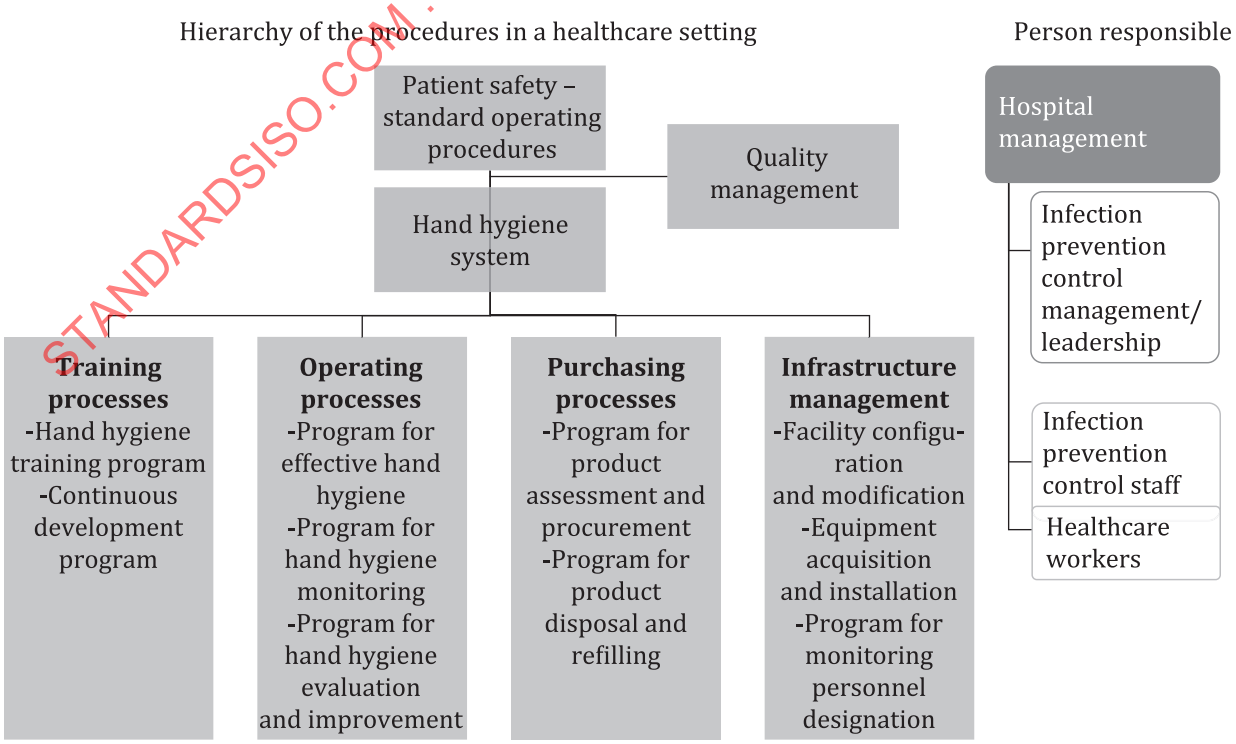

Figure 1 — Breakdown of the key components of a hand hygiene system

Figure 2 provides a general overview of a hand hygiene system from the operational point of view. It depicts the hand hygiene programs implemented to provide an opportunity to collect feedback and improve processes.

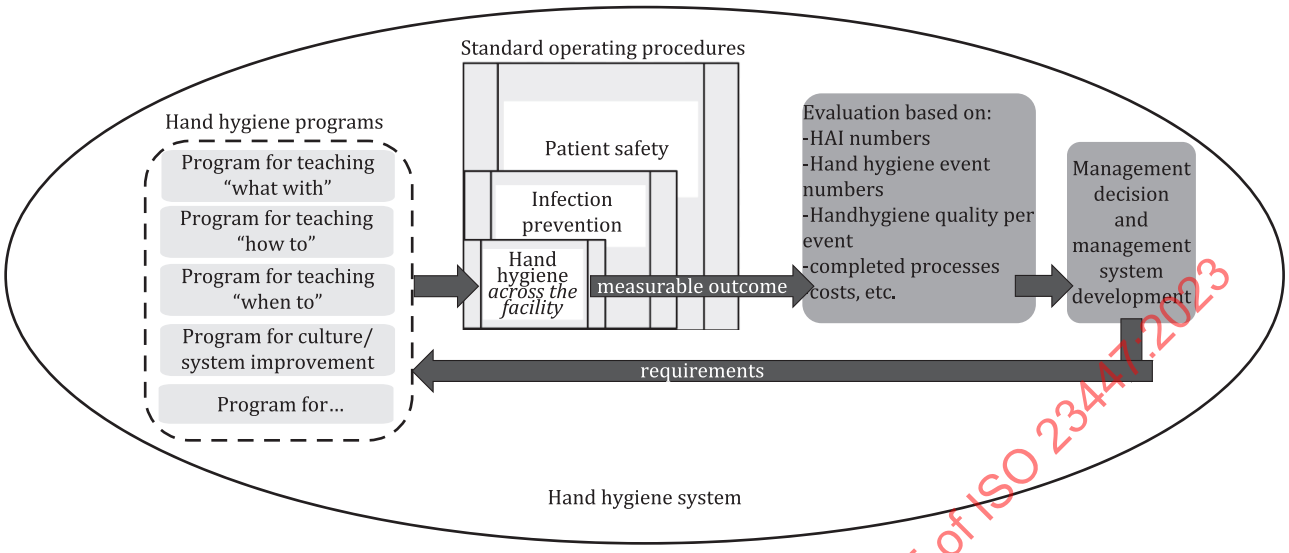

Figure 2 — A hand hygiene system

Hand hygiene systems shall include the hand hygiene programs and procedures targeting the individual elements of patient safety for quality improvement. All procedures applied in line with this document should be based on scientific evidence and target continuous improvement involving in the quality cycle all system components and clinical stakeholders.

4.2 Hand hygiene quality policy

The hand hygiene quality policy is the formalized, documented representation of a healthcare facility's hand hygiene system.

The healthcare facility shall establish and maintain a hand hygiene system (i.e. a quality policy with the objective to provide universal access to hand hygiene with the aim of improving patient safety). A hand hygiene system consists of hand hygiene programs, targeting individual aspects of the quality policy. The quality policy should include, but not be limited to, the following considerations:

a) specific, measurable, actionable, realistic and timely objectives serving the improvement of patient safety;

b) ensuring sufficient resources for the development, implementation, and monitoring of hand hygiene programs;

c) supporting the development and implementation of hand hygiene-related behaviour improvement;

d) facility design, construction, and maintenance requirements of the infrastructure;

e) proper communication within the healthcare organization;

f) periodic review suitable for the purpose of this document;

g) secure sponsorship of the senior management.

The hand hygiene system and quality policy are part of the organization's approach for managing quality.

4.3 Hand hygiene quality policy requirements

4.3.1 Evaluating hand hygiene products for potential use in healthcare facilities

4.3.1.1 General

A risk-based approach should be used to determine the most suitable hand hygiene product.

4.3.1.2 ABHR product - minimal requirements

ABHR product shall contain at least 60 % mass fraction of C2- to C3-alcohols (ethanol, n-propanol, isopropyl alcohol) or a mixture of these, taking international standards and efficacy requirements, such as ASTM E2755 and EN 1500, into consideration.

Administrators or product selection committees shall consider the relative efficacy of antiseptic agents against various pathogens and shall review local guidelines for safety and efficacy before selecting the hand rub products.

4.3.1.3 Handwash product – minimal requirements

Administrators or product selection committees should consider the need to use antimicrobial vs non-antimicrobial handwash products in their healthcare facility based on hygiene risk and review local guidelines for safety before selecting the hand wash products.

For antimicrobial handwash products, administrators and product selection committees should consider the efficacy against various pathogens and take national public policy or regulatory guidelines concerning the efficacy of antimicrobial handwash products into consideration.

The use emollients and hand protection products should be considered for healthcare workers who frequently wash hands in the course of their duties.

4.3.1.4 Other hand hygiene product requirements

Administrators or product selection committees shall provide hand hygiene products that have been tested and shown to have acceptable skin compatibility using internationally recognised standard test methods.

Administrators or product selection committees should consider characteristics of hand hygiene products that can affect personnel acceptance and therefore usage compliance, such as:

— format (i.e. liquid, gel, foam);

— odour;

— colour.

Allergic contact dermatitis due to alcohol-based hand rubs is very uncommon. However, with increasing use of alcohol-based hand rubs by healthcare personnel, it is likely that irritation to such products is occasionally encountered. Healthcare facilities should find alternative solutions to address skin compatibility issues, especially in combination with hand washing, as it is known that increasing hand washing leads more often to skin irritation than hand rubbing.

Healthcare facilities should also consider continuous availability, costs, and a reliable supply that guarantees feasibility and sustainability.

NOTE The effect of antimicrobial active ingredients in hand wash products appears to be negligible.

4.3.1.5 Hand hygiene product dispensing systems

The healthcare organization shall provide systems for dispensing suitable hand hygiene products at dedicated hand hygiene stations located at hospital, clinic and ward entrances and points of care with prompts, publicity, and signage to encourage usage by healthcare workers, patients, visitors and other stakeholders.

The number and positioning of the dispensing system shall be defined according to evidence-based reference data provided by international, national, or intra-institutional guidelines. The number and positioning of dispensing systems shall be clearly stated, periodically evaluated and documented.

4.3.1.6 Hand hygiene product dispenser requirements

Administrators or product selection committees shall provide a sealed system product dispenser that is hygienically intact and shall deliver a hand hygiene product where there is no possibility of direct contact with the product source inside.

The manufacturer should provide information about the effective use of these systems. Usage information may include instructions for cleaning, disinfection, and reprocessing of the dispenser systems.

Dispenser systems shall provide the volume of product per dispense/push, as indicated by the manufacturer, consistently for the lifetime of the dispenser. Reliable and systematic dosage is considered an essential performance of a dispenser.

User-refillable systems shall not be used in healthcare facilities.

Non-sealed systems which contain a fixed soap/sanitiser reservoir that is refilled or topped up from bulk liquid source and is exposed to the air sealed systems that are damaged or faulty should be replaced. Organizations shall document the dispensing system that they are maintaining. Organizations should consider the use of hands-free dispensing systems that eliminate contact and cross contamination.

NOTE 1 The operations and maintenance plan is registered when the solution is opened. Monitoring and refill plans are created as well.

Dispensing systems shall be wall- or stand-mounted, manual and/or battery operated automated (touch-free) and should meet the requirements of the following recognised ISO standards:

a) ISO 20282-1;

b) ISO/TS 20282-2;

d) ISO 26800.

Wall- or stand-mounted, manual, and electronically operated automated (touch-free) dispensing systems should be tested and shown to meet recognised guidelines related to child finger entrapment and accessible design for people with disabilities.

NOTE 2 See Reference [15].

NOTE 3 Regional standards can provide information about the electromagnetic compatibility of electronically operated/automated (touch-free) dispensers. See Reference [24].

The organization shall implement a system to log the checking, maintaining and replacement of all hand hygiene product dispensing systems.

Extensive precaution should be taken regarding dispensers in children wards or paediatric care facilities.

Differentiation should also be made between professional healthcare workers who are adopters of this document and patients/visitors. For the latter, healthcare facilities should decide for the most suitable

dispensing system and the correct location. Finally, healthcare facilities shall ensure proper hand hygiene for all people entering the healthcare facility.

4.3.2 Towel dispensing systems requirements

a) Clean single use towels shall be provided at all designated hand wash stations and shall be made available to all persons within the health facility.

   The healthcare facilities shall provide single-use hand towels in the immediate proximity of the hand washing stations.

b) Storage and handling of single use towels shall follow national infection prevention and control (IPC) and manufacturers guidelines.

c) Organizations shall provide single use hand towels.

d) The organization shall appoint personnel for the checking of stock at stations.

   1) Records of checks and re-stocking shall be maintained.

   2) These appointed personnel shall be responsible for refills, purchasing and resupply.

   NOTE Single use hand towels includes disposable material and reusable, re-processible material which can be adequately reprocessed.

4.3.3 How to perform hand hygiene

A hand hygiene action is considered valid from patient safety point of view when it is performed at the correct time, i.e. there is a hand hygiene indication, and regarded as complete when it meets the standard of quality regarding coverage and efficacy (Figure 3).

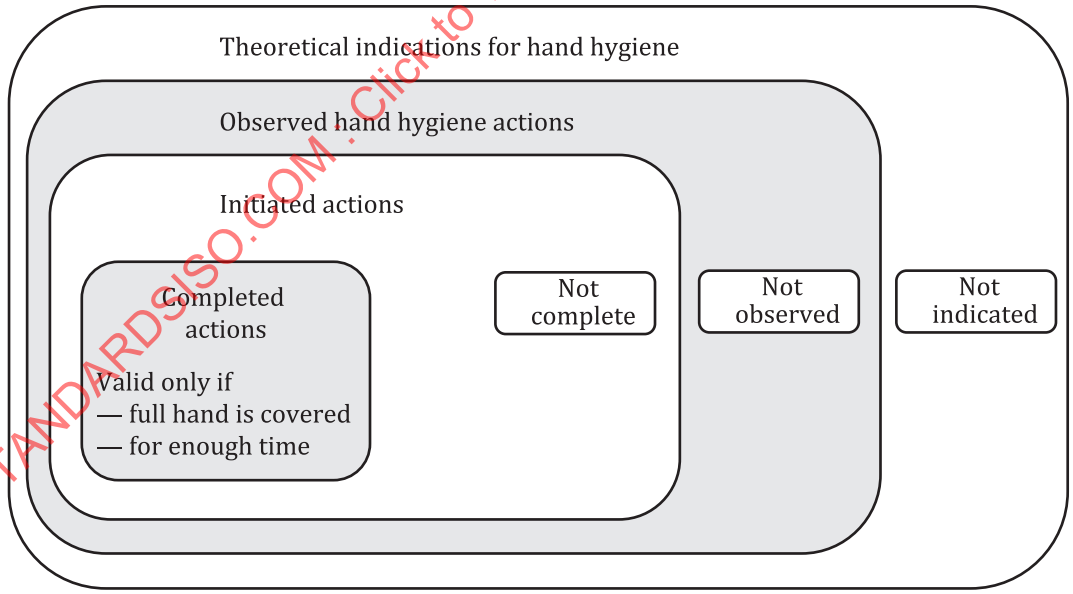

Figure 3 — Hand hygiene indication effectiveness levels

As indicated in Figure 3, complete hand hygiene actions count towards conformity with this document. A hand hygiene action shall be indicated, observed, and initiated to be valid. Validity requires complete coverage of the whole hand surface as well.

Hand rubbing and hand washing techniques should be in accordance with the current World Health Organization (WHO) guidelines or recommendations. In the case of deviation, non-inferiority shall be documented, and the reason shall be stated in the quality policy documentation along with any related

clinical evidence. Table 1 describes the major differences between hand washing and hand rubbing techniques.

Table 1 — Comparison of aspects of hand washing and hand rubbing

Aspect	Hand washing	Hand rubbing
Intention of hand hygiene action	Removing of dirt including microorganisms	Inactivation of microorganisms
Execution (how to)	Wet hands with water, wash all parts of hands 20 s to 30 s with soap, rinse sufficiently with water and dry hands thoroughly	Dispensing of enough agent in hands, thorough rubbing of hands for 20 s to 30 s, avoiding leaving gaps (uncovered areas)
Time needed (total)	1,5 min to 3 min	30 s
Availability (point-of-care)	Low	High
Spectrum of efficacy	High potential of removing, low potential of inactivation (only soap-sensitive microorganisms like enveloped viruses)	High potential of inactivation depending on the composition of the ingredients
Effect on skin health/ skin tolerance	The dirt-removing effect of the soap also removes natural skin protection substances. This can have a negative impact on the skin's protective barrier and skin health. Consideration should be given to skin care creams in such cases. Contact allergies are possible depending on the ingredients.	Low negative effect on skin health / skin tolerance. Irritation can appear if skin protection is interrupted (e.g., wound) Contact allergies are possible depending on the ingredients.
Specialty	Dedicated hand hygiene action to remove particularly resistant microorganisms like bacterial spores. May lead to an increased number of microorganisms on the skin, due to their release from lower skin layers.	No removing of dirt
Hand hygiene technique assessment	e.g. Product with UV-visible or colored ingredient with quality assurance Digital imaging based technology Physical demonstration with human supervision Gesture recognition technology	

NOTE 1 Table 1 states the minimum comparative requirements.

NOTE 2 Information about hand hygiene training is provided in Clause 7.

4.3.4 Indications for hand hygiene performance

All healthcare organization stakeholders are responsible for hand hygiene, including administration who have access to the commonly used areas by healthcare workers, visitors, and patients, plus all others that enter the healthcare facility.

All hospital, clinic and ward entrances, and throughout wards, should have hand hygiene facilities available to patients and their visitors; here, the operator shall also ensure that everyone visiting the healthcare facility has access to hand hygiene facilities in all communal areas. An assessment should be done on all entry/exit points to identify risks and need for hand hygiene. Consider using a risk-based approach for determining where hand hygiene is needed and the type of materials to be used.

Hand washing shall be performed when hands are visibly soiled, after touching patients or environments contaminated with spore-forming bacteria (e.g. Clostridioides difficile) or non-envelope virus (e.g. Norovirus), or when gloves are breeched, and when an ABHR product is not available.

Hand hygiene with ABHR product shall be performed at identified points of care and in particular at the following:

- inside of point of care indications:
  - before entering the patient zone;
  - before contact with the patient;
  - before clean/aseptic procedures are performed;
  - after body fluid exposure, for example after coughing, sneezing, and nose blowing;
  - after touching patients or patient surroundings, in particular, those contaminated with spore-forming bacteria (e.g. Clostridioides difficile) or non-envelope virus (e.g. Norovirus);
  - after exiting the patient zone;
  - after handling potentially contaminated equipment;
  - before doffing personal protective equipment;
- outside of point of care indications:
  - entering the healthcare facility;
  - before and after touching common surfaces (elevator buttons, door handles, chairs, pens etc.);
  - when touching the items of other patients;
  - after coughing, sneezing and nose blowing;
  - before eating food, especially with fingers;
  - entering and exiting a patient's room;
  - after handling potentially contaminated equipment in utility rooms;
  - exiting the healthcare facility;
- patients' indications in healthcare facilities:
  - entering the healthcare facility;
  - before eating/drinking/taking medications;
  - before and after touching common surfaces (e.g. IV poles, call lights, bedside tables, bedrails);
  - after coming into contact with clinical stakeholders;
  - before and after touching wounds or devices;
  - when entering or exiting room;
  - after restroom use;
  - after coughing and sneezing and nose blowing;
  - exiting the healthcare facility;
- general indications in healthcare facilities:
  - entering the healthcare facility;
  - before and after touching common surfaces (e.g. elevator buttons, door handles, chairs, pens);

— when touching the items of other patients;

— after coughing and sneezing and nose blowing;

— before eating food, especially with fingers;

— entering and exiting a patient's room;

— after restroom use;

— exiting the healthcare facility;

— who is in the area being visited (i.e. resident, patient, immunocompromised, etc.).

4.3.5 Assessing hand hygiene performance

When assessing hand hygiene performance of a clinical stakeholder performing care, the validity of the hand hygiene shall be assessed, trained, and validated by hand hygiene observers. When a hand hygiene action is performed and observed by any audit means, the hand hygiene action is only considered being valid, if:

— The hand hygiene action was performed in direct relation to a hand hygiene indication.

NOTE 1 Hand hygiene indications are defined in the hand hygiene quality policy and based on recognized norms or guidelines, such as the WHO's My 5 Moments of Hand Hygiene.

NOTE 2 From the hand hygiene action's validity point of view, the healthcare organization uses WHO's My 5 Moments of Hand Hygiene, or any other norm substantially backed by evidence. All deviations are documented.

NOTE 3 "Entry and exit to the patient room" alone is not considered a suitable proxy for a point of care hand hygiene indication.

— The hand hygiene action was performed in accordance with quality outcomes. Hand hygiene quality shall be defined in the hand hygiene quality policy and based on recognized norms or guidelines, such as the WHO 6 steps.

NOTE 4 From the hand hygiene action's validity point of view, the healthcare organization will use WHO 6 steps, or any other norm substantially backed by evidence. All deviations are documented.

NOTE 5 The ABHR product consumption alone is a surrogate measurement and is not a suitable quality measurement proxy.

Quality can be measured using the following proxies in Table 2.

Table 2 — Hand hygiene performance assessment requirements

No	Proxy	Minimum Requirement
1	Volume of ABHR product used for hand rubbing	Enough to cover the complete hand surface, including the palm and back of the hand.
2	Proper technique of Hand Hygiene Action	WHO 6 step technique or a non-inferior technique
3	Duration of Hand washing	60 s
4	Duration of Hand rubbing	20 s to 30 s or according to manufacturer's instructions
5	ABHR product hand coverage	Complete hand (entire surface), with objective validation

4.3.6 ABHR products and glove use

Examination gloves are primarily used for self-protection, e.g. before contact with patients' body fluids.

a) The use of gloves shall not eliminate the need for hand hygiene.

b) The use of hand hygiene shall not eliminate the need for gloves.

c) ABHR product shall be used before donning and after doffing gloves.

d) The surface of the palm and the back of the hand should be completely covered with ABHR product.

Actions that comprise the safe acquisition and use of gloves shall include:

— obtaining gloves from a known clean/sanitized source;

— inspecting those gloves for contamination before use;

— replacing contaminated or potentially compromised gloves;

— disposing of compromised gloves in designated receptacles; but in special cases, ABHR product may be used to disinfect compromised gloves.

5 Hand hygiene program

5.1 General

The hand hygiene program is a facility-specific collection of plans, milestones and deliverables based on current guidelines on hand hygiene procedures, monitoring and control.

The healthcare organization shall implement one or more multimodal hand hygiene programs that contain the following activities:

a) tailored for the needs of the addressed healthcare facility;

b) mapping and performing the hand hygiene activities;

c) monitoring standardized hand hygiene indicators and providing feedback for continuous improvement;

d) developing and implementing training and education requirements and communication tools for all stakeholders;

e) process monitoring and documentation.

All the activities shall be developed in a risk-based approach.

The hand hygiene program shall implement the hand hygiene quality policy.

The implementation of the hand hygiene program is the responsibility of the hand hygiene program supervisor.

5.2 Hand hygiene quality policy requirements

An organizational hand hygiene quality policy shall:

a) establish policies for financing hand hygiene in healthcare facilities that ensures resources support the hand hygiene practices and the implementation of infection prevention and control strategies and programming;

b) establish policies to support monitoring systems carried out by either direct observation or a validated automatic monitoring system and standardized hand hygiene indicators;

c) establish policies that support the development and implementation of hand hygiene-related behaviour change. For example, these behaviours include all protocols, practices, and etiquette of asepsis-antisepsis as well as the basics of patient safety and infection control; see Reference [26];

d) establish policies that mandate and enforce minimum facility design, construction, and maintenance requirements for healthcare facilities, including hand hygiene stations at critical points;

e) establish policies and set expectations for hand hygiene program conformity of not only those employed (compensated or non-compensated) within the healthcare facility, but also of visitors and those being cared for (i.e. patients, residents, clients) at that facility;

f) require health care workers to avoid wearing artificial nails and keep natural nails short (end with the fingertip) when providing patient care and especially if they care for patients at high risk of acquiring infections (e.g. patients in intensive care units or in transplant units).

5.3 Healthcare organization requirements

5.3.1 General

Organizations shall establish baseline and ongoing evaluation of infrastructure, facility requirements, hand hygiene performance, continuous improvement, adherence, performance/feedback to assess the continuous improvement of their hand hygiene program. The organization shall appoint a hand hygiene program supervisor to lead the program and ensure implementation.

5.3.2 Supplies and infrastructure requirements

Issues to consider for hand hygiene infrastructure and supplies include the following.

a) Develop supply chains for access to effective and low-cost but good quality hand hygiene supplies.

b) Ensure hand hygiene products that prevent the spread of germs (e.g. hand soap or hand rubs) are available and used in healthcare facilities.

c) Ensure access to essential hand hygiene services and maintain hardware (e.g. handwashing stations).

d) Guarantee that facilities are accessible to all adopters, including people with disabilities.

e) Ensure all healthcare facilities have access to basic or advanced supplies based on guidelines of the governing body.

f) Implement the five components of the WHO multimodal approach to hand hygiene improvement based on drivers of hand hygiene adherence:

   1) system change (alcohol-based hand rub product at the point of care);

   2) training and education;

   3) observation and feedback;

   4) reminders in the workplace;

   5) a culture of safety.

   Effective multimodal programs can significantly improve hand hygiene and sustain adherence in healthcare facilities.

   For example, the WHO 5 components or any other evidence-based practice for improved hand hygiene campaign (consisting of system change, training and education, observation and feedback, reminders in the hospital, and a hospital safety climate) was found to improve and sustain hand hygiene adherence.

g) Provide regular, comprehensive training and behaviour change interventions on hand hygiene and infection prevention control to all staff and volunteers working in healthcare facilities. Refer to Clause 6 for information about training requirements.

h) Ensure staff have the competencies needed to prevent, monitor, and recognize healthcare-associated infections.

i) Integrate core hand hygiene adherence as part of a comprehensive infection prevention and control program.

j) Ensure that facility directors and infection prevention and control committees have authority to reinforce infection prevention and control strategies when healthcare facilities face understaffing, overcrowding, limited supply coverage, and health or environmental crises that may cause hand hygiene adherence to waiver lower than appropriate adherence levels.

k) Provide patients with information on their rights to receive care from a healthcare worker with clean hands.

l) Encourage healthcare workers, patients, visitors, and other stakeholders to use effective behaviour change approaches and distribute essential products that can promote healthy hand hygiene behaviour within and beyond health settings.

5.3.3 Healthcare facility assessment

5.3.3.1 Preliminary work

The following activities shall be undertaken and documents shall be published prior to assessment of a healthcare care facility's hand hygiene program.

a) The context of the healthcare environment is considered.

b) A brief description of organizational locations (facilities) is covered under the hand hygiene program.

c) Requirements for hand hygiene are understood by staff and other stakeholders.

5.3.3.2 Consultation with adopters/clinical stakeholders

Adopters of this document should seek guidance and direction from all stakeholders who will be influenced by or compelled to follow this document.

a) The adopters include healthcare workers, environmental services or facilities management.

b) Engage with stakeholders at the initial stage and identify champions, decision-makers that can support the hand hygiene program and determine role.

c) Functional coordination with relevant stakeholders is necessary at the initial stage to avoid any duplicated effort.

5.3.3.3 Timeline and procedures to establish a hand hygiene program for a facility

5.3.3.3.1 General

The following activities provide guidance on how to implement a facility's hand hygiene program that is timely, effective, and responsive or flexible to the unique demands of the adopter healthcare environment.

a) The importance of correct hand hygiene practices and adherence in healthcare facilities should be reiterated.

b) An initial survey and point prevalence survey of available hand hygiene facilities within facility should be carried out.

c) It should be observed whether ABHR product or handwashing stations, or both, are readily available for staff to use to support effective hand hygiene.

NOTE The WHO recommends a one to ten (1:10) sink to bed ratio in healthcare facilities and handwashing stations within 5 m of toilets.

d) Sinks or handwashing stations should be designed to make handwashing user-friendly for all staff, patients, and visitors.

Good hand hygiene requires the presence of functional and well-maintained handwashing stations and hand sanitizer dispensers located in or near sanitation facilities, at main entrances and exits of the healthcare facility, and in all treatment and recovery wards.

5.3.3.3.2 Locations of hand hygiene facilities

Hand hygiene stations shall be available for use at all of the following locations within a healthcare facility:

a) entrance and exit;

b) toilets (within 5 m);

c) at the point of care (as per infection prevention control protocols in-country);

d) where personal protective equipment (PPE) is being put on and taken off;

e) waiting rooms, public areas, and dining/food preparation and other service areas;

f) where healthcare waste is handled.

NOTE The healthcare provider assesses the individual facility based on the workflow of its staff, clients/patients, and family members/visitors to improve hand hygiene at all of these locations.

5.3.3.3.3 Facility adaptations for persons with disabilities

Healthcare providers shall create an opportunity for persons with disabilities to access hand hygiene services.

The path to the handwashing facility should be accessible, obstacle-free, non-slip and include markings to encourage inclusive participation and use such as signage/instructions on how to use the facility.

The hand hygiene location shall have an automated hand hygiene station which is adjustable in height, which allows for easy access by those in wheelchairs or on crutches. The tool should capture multiple parameters and be easily adaptable to various settings in a healthcare facility.

5.3.4 Hand hygiene self-assessment forms and checklists

5.3.4.1 General

Healthcare workers and or administration should be trained to systematically use a checklist that captures relevant data for all clinical units/wards and locations where patients have direct access.

5.3.4.2 Characteristics of a facility assessment tool for implementing hand hygiene

Data collected as checklist items should include:

a) availability of tools/items related to water supply and hand hygiene facilities;

b) presence and location of sinks;

c) functionality of sinks;

d) presence of alcohol-based hand rubs;

e) presence of hand dryers or single use towels;

f) availability of water, soap/handwash;

g) availability of written hand hygiene policies;

h) availability of job aids and/or posters.

NOTE Some handwashing facilities can be operated without using hands to prevent cross-contamination. These are preferred in healthcare facilities.

5.3.4.3 Self-assessment questions

The use of questions as a prompt can be helpful as part of the development of self-assessment tools When developing a checklist, healthcare providers shall include, at minimum, the following subjects.

— What are the design requirements for that unit/ward/location? Requirements for a rehabilitation unit may differ from an ICU- one size does not fit all.

— Are the facilities fitted with alcohol based and liquid soap dispensers using electricity to ensure a hands-free mechanism or lever arm taps for those facilities where users do not have electric power?

— Where can/should hand hygiene facilities be placed to encourage use?

— How many users are expected to use each hand hygiene facility?

— Are there major space limitations? Assess the location.

— Can/should existing hand hygiene facilities be repaired or modified?

— Do suitable hand hygiene facilities already exist that can be used more effectively?

— Is a piped water supply available? Or what alternative sources can be used?

  — Facilities are clean and abundant.

  — Facilities are connected to a water scheme that ensures reliable water supply.

  — Facilities are made of locally available and affordable materials.

  — Wastewater is disposed of safely.

  — Facilities are fitted with liquid soap dispensers and a sensor tap.

  — Basins are suitable for medical facilities and have effective drainage of wastewater.

— Is an alcohol-based hand rub product suitable and available?

— Is it clear who will be responsible for operations and maintenance?

— What are the specific risks associated with a particular location (e.g. general ward, social care facility, nursing home, ICU)?

— Is automated operation of both taps and dispensers required?

— Is there a reporting mechanism for staff to report issues such as dispenser low, issues with sink drainage etc?

NOTE Data can be collected by direct observation and healthcare worker interviews in the various hospital units.

5.4 Establish operations and maintenance plan

5.4.1 General

Table 3 presents the basic elements of a hand hygiene maintenance plan for healthcare providers to use to develop their internal programs.

Table 3 — Hand hygiene maintenance plan

Key components		Factors to consider
Responsibilities		
1	Organization responsibilities	Policy and procedures should clearly identify who is responsible for providing hand hygiene supplies, cleaning, and maintenance of hand hygiene facilities.
2	Individual responsibilities	Detailed operating procedures may be needed for large hospitals/healthcare systems. — Who shall time and date stamp at installation of dispensers? — Who shall provide/refill the soap and water or alcohol-based hand rub? — Who shall clean and disinfect hand hygiene facilities? — How often shall this person check? — What happens if this person is on leave/sick etc? Who are they accountable to? — Who should be contacted if something is broken? — Who will provide/refill the handwash product or ABHR product?
3	Budget	The monthly or annual operating cost shall be estimated for each fiscal year accordingly. — Costs may include the water supply, consumables (soap, dispensers, single-use towels, alcohol-based hand rub product etc.), staff costs, monitoring, repairs and eventually replacement of the hand hygiene units.
Cleaning and disinfection procedures for healthcare facilities		
4	Cleaning and disinfection	Guidance/training should cover: — timing and frequency of cleaning; — correct use of and provision of personal protective equipment needed for cleaning ; — correct use of cleaning and disinfection products.
Monitoring		
5	Post-installation survey	A survey of a sample of hand hygiene facilities post-installation (e.g., 1 to 3 months after) is recommended to collect information on: — functionality; — cleanliness and (if possible) hand hygiene practice; — who shall be responsible for future monitoring? — consider WHO sample template for monitoring.
6	Learning	User feedback should be collected to help inform on: — future improvements to the design; — accessibility; — usability; — document key learning (successes/challenges/failures).

5.4.2 Dispenser maintenance recommendations and requirements

Local requirements can apply regarding the maintenance of dispensers. The healthcare facilities management shall be responsible for hand hygiene dispenser installation, maintenance, cleaning, stocking, repair and/or replacement, taking relevant storage and safety requirements for ABHR products into consideration.

a) Environmental services, commonly known as facilities management, should be responsible for dispenser installation and assures compliance with regulations related to location of ABHR products.

b) For each area/unit a member of staff shall be responsible for reporting any issues with hand hygiene points of access to facilities management.

c) Environmental services or facilities management shall be responsible for ordering and maintaining product availability in all dispensers and other hand hygiene locations.

d) Environmental services or facilities management shall ensure the appropriate storage of ABHR products.

6 Training and education

6.1 General

The healthcare organization is responsible for training and education. Training shall be an institution-wide program and shall be part of a multimodal approach that considers strategies aimed to improve healthcare professional's behaviour in respect a healthcare organization of patient safety.

Hand hygiene training is mandatory for all clinical stakeholders. The healthcare organization administration should guarantee dedicated time for blended learning (e.g., e-learning, hands on training) under the supervision of a registered infection prevention control professional.

The training program should be planned to use theoretical basis and practical sessions that provide sustained improvement in hand hygiene practices.

A successful training program shall include essential elements such as:

— information supported by evidence from the scientific literature, including a regular update of the content and quality of the course;

— regular training (at least annually) offered for the initial training of newly appointed staff and the retraining of previously-trained staff to update their knowledge;

— a facility-wide system for monitoring the competence of all HCPs on hand hygiene training;

— a strong and positive leadership and support;

— assessment of all learning outcomes.

6.2 General hand hygiene training and requirements

The objective of a training program is to ensure that all healthcare stakeholders are competent to fulfil their job roles in a manner that is consistent with the organization's compliance culture and its commitment to compliance.

Professionally designed and executed training can provide an effective way for healthcare stakeholders to communicate previously unidentified compliance risks.

The healthcare facilities shall provide the training and educational resources necessary to conform to the requirements of this document.

At a minimum, hand hygiene training shall include:

— how to perform clinically effective hand hygiene using hand wash and hand rub techniques (according to recommendations or guidelines as provided by the WHO and other responsible parties);

— indications for hand hygiene and the proper form of hand hygiene in the context of patient care;

— context of potential microorganisms present.

Training programs should be provided using a pedagogy that supports the ability of learners to absorb and retain the knowledge. At a minimum, the training program shall be:

a) tailored to the obligations and compliance risks related to the roles and responsibilities of the employee;

b) where appropriate, based on an assessment of gaps in employee knowledge and competence;

c) undertaken at commencement with the organization and be on-going;

d) aligned to the corporate training program and be incorporated into annual training plans;

e) practical and readily understood by healthcare stakeholders;

f) relevant to the day-to-day work of healthcare stakeholders and illustrative of the industry, organization, or sector concerned;

g) reinforced through multiple classroom sessions with demonstrations;

h) sufficiently flexible to account for a range of techniques to accommodate the differing needs of facilities and healthcare stakeholders;

i) assessed for effectiveness;

j) updated as required;

k) recorded and retained.

NOTE Interactive training can be the best form of training if noncompliance can result in serious consequences.

The organization shall ensure that all relevant persons doing work, receiving care, and visiting the institution shall be aware of the hand hygiene policy. Examples of knowledge transfer approaches include training, posters, briefings.

6.3 Concepts that shall be included in the training program

When developing a training program for hand hygiene management, the adopter shall include at least the following concepts:

— healthcare-associated infection (HAI): definition, impact, and burden;

— transmission of healthcare-associated pathogens: major patterns of transmission and focus on hand transmission;

— hand hygiene basic concepts: why, when, and how to perform hand hygiene according to the guidelines on hand hygiene in health care (according to recommendations or guidelines as provided by the WHO and other responsible parties);

— monitoring hand hygiene (frequency and technique separately):

  a) direct observation method;

  b) automated electronic monitoring;

c) alcohol-based hand rub product (ABHR product) consumption (proxy measurement); the ABHR product consumption alone is not considered a suitable quality measurement;

— types of feedback:

a) immediate individual feedback;

b) delayed feedback, aggregated data at the ward, department-level and managers, quality improvement committees and senior management;

c) audits and checks on hand hygiene systems and related processes;

— barriers affecting good practice in hand hygiene: gloves use, nails, and jewellery.

There is a wide range of training modes including face-to-face and online learning training. The healthcare facility shall choose the best mode according to their local situation and needs by covering the concepts mentioned above:

— didactic lectures (presentations), brochures, and leaflets;

— practical sessions for the correct hand hygiene technique and the recognition of the indications where there is a risk of microorganism transmission by the hands providing patient care (e.g. training video discussions, simulation-based training, problem-based learning);

— interactive e-learning modules comprised of webcasts, application simulation tools, mobile applications, and podcasts;

— short sessions at grand rounds;

— bedside training, peer to-peer training, focus groups.

6.4 Objectives of training

At the end of the training course, the health care professional shall be able to:

a) outline burden of HAI, role of hands-on microbial transmission, and the importance of effective hand hygiene for protection of healthcare personnel and patients;

b) recognize hand hygiene indications;

c) recognize the correct techniques for hand rubbing and handwashing and the situations where these techniques shall be used;

d) describe factors that impact effectiveness of hand hygiene and ongoing risk management (e.g. glove use, nails and jewellery);

e) compare different hand hygiene monitoring and feedback methods;

f) encourage intra-institutional hand hygiene culture regarding feedback and error reporting;

g) document inter- and intra-rater reliability of hand hygiene observers;

h) perform hand hygiene correctly and learn optimized technique;

i) learn optimized dosing of ABHR product.

6.5 Follow-up of completion of hand hygiene training

The healthcare facility administration shall designate an appropriate department or individuals responsible for organizing, monitoring, assigning, and recording participation and results of hand hygiene training facility wide.

— For this purpose, several healthcare facilities have designated the following departments or individuals: in-service education department, training directory, human resources (HR), quality department, the education and training officer, an administrative assistant, or the hand hygiene lead.

— Attendance at hand hygiene training events shall be documented and the attendance records should be kept for at least 24 months or in accordance with the organization's record retention policy.

— Following training completion the healthcare facility shall certify of training completion and assessment of competence.

— Demonstrate hand hygiene skills and competencies.

6.6 Specific training for trainers and observers - direct observation method

A professional trained in infection prevention control (e.g. the hand hygiene program supervisor) with dedicated time for training the healthcare professional and a validated trainer for hand hygiene direct observation method should also be provided by the healthcare facility. Education addressed to patients and visitors should also be provided by information factsheets, brochures and posters, along with instructions of when and how to perform hand hygiene.

Dedicated sessions should be included exclusively for future observers, to learn and practice the direct observation (DO) method.

6.7 Selection of trainers and future observers

6.7.1 Trainers

The selection of hand hygiene trainers is performed as follows.

— The healthcare facility shall have a professional trained in infection prevention control with dedicated time for training the healthcare professionals.

— The trainer should have experience in delivering bedside care, basic knowledge of infection prevention control and education. Ideally the trainer should also be an influential leader.

— To ensure the auditing program, courses/workshops for training the trainers should be organized by the facility hand hygiene program coordinator.

— After being validated, these auditors become references on hand hygiene for their facilities and can become trainers.

6.7.2 Trainee hand hygiene observers

The selection of hand hygiene observers is performed as follows.

— The trainee observer should have experience in delivering bedside care.

— They shall complete a workshop on hand hygiene and shall be able to identify the hand hygiene indications (why, when, and how to perform hand hygiene), taking international and national guidelines into consideration.

— They shall be able to complete the hand hygiene observation tool, e.g. WHO's My 5 Moments of Hand Hygiene or local equivalent.

6.7.3 Validation of hand hygiene observers

Validation of hand hygiene trainers can be done through hand hygiene observations performed by peer-to-peer observers (the observer and an expert e.g. infection prevention control member), a simulated real-life scenario, or a video displaying typical hand hygiene scenarios.

Each validation is performed as follows.

— Hand hygiene observer validation is defined as the intra- and inter-rater reliability between the observer and an infection prevention control member.

— The inter-rater reliability measures the rate of congruence between the observer and the gold standard (training video or expert). It can also be used to measure congruence among all the observers of the healthcare facility (e.g. viewing a training video). A minimal congruence (i.e. ≥ 0,6 kappa value) is required.

— The intra-rater reliability measures the degree of agreement for the same observer (e.g. viewing a training video) on at least 2 occasions.

— Validation using a written scenario shall always be complemented with real-life simulations or hand hygiene scenario videos.

— In order to ensure reliable and reproducible monitoring, the healthcare facility administration should organize periodical individual and group validations of the observers, e.g. 12 to 18 months.

6.8 Additional concepts that are required in an observer training program

6.8.1 Minimum requirements for direct observation by HCP

When conducting an optimal hand hygiene observation session, the following apply.

— The “observer” shall be a trained and validated HCP.

— There are two types of hand hygiene observations.

— Secret observers may be added as an additional measure to open observation.

— In the case of an open observation, the observer shall:

  — choose the appropriate observation moment; there can be situations where it is not suitable to perform hand hygiene observations (e.g. emergency situations);

  — introduce themselves and ask whether the observation session bothers the HCP or the patient; in the case of secret observers, they do not introduce themselves;

  — look for the appropriate place within the room, where they shall not interfere with patient care or privacy.

6.8.2 Use of hand hygiene observation tools

6.8.2.1 Preparation of observation forms and checklists

Data available before the observation should be recorded in advance (e.g. date, ward name).

Mandatory recorded data include: observation start time, type of HCP, observation end time, type of hand hygiene action.

Some observation tools also include duration of the hand hygiene action performed, level of hand rubbing technique, presence of jewellery on the hands and nails details (e.g. length, varnished or artificial nails).

Tools and forms can also be digital, apps, and electronic monitoring systems.

6.8.2.2 Data entry

When capturing data in the observation form or checklist, the following apply.

— The support for the hand hygiene tool can be paper or electronic based. If the latter, a special training with instructions on how to fill in data with practical sessions shall be organized in advance.

— All paper-based observation data should be entered into a database, as soon as the observation session finishes.

6.8.2.3 Feedback

There are two levels of feedback.

— Immediate individual feedback is given to the HCP who has just been observed, providing details of the hand hygiene performance. It is essential for improving individual hand hygiene compliance and effective cultural change.

— Delayed feedback is the overall analysis of the data, given to the ward supervisor, management, quality improvement committees.

6.8.3 Data analysis and quality control

The quality control and analysis of data are conducted as follows.

— To obtain reasonable compliance rates and compare two different periods, excluding the influence of chance, the number of observations performed should be large enough, at least 200 hand hygiene opportunities by unit per a pre-defined time period, taking national and local guidelines into consideration.

— In addition to the monitoring of hand hygiene behaviour (either through direct observation or through electronic monitoring systems), the volume of hand disinfectant used can be determined and analysed as a surrogate parameter.

— The overall or sectorial results of the hand hygiene audits (hand hygiene compliance) shall be considered as educational tools that can identify priority sectors for education.

— Data validation shall be checked concerning:

  — the right number of opportunities audited;

  — observers showing higher or lower compliance rates compared to the other auditors;

  — a very high level of compliance either for a particular moment or healthcare provider;

  — keeping a proportion of opportunities observed according to the indications observed.

— Number of opportunities observed should always be relevant to organization's size and level of care.

Comparative benchmarks shall be established by each healthcare facility.

6.8.4 Assessment of the healthcare facility improvements on hand hygiene

A periodical assessment should be carried out to check whether the hand hygiene program is giving the expected results (e.g. Leapfrog hospital survey, Ontario facility-level situation assessment).

6.9 Competence

Healthcare facilities shall:

a) determine the necessary competence of employee(s) doing work under its control that affects its performance in managing compliance;

b) ensure that these healthcare stakeholders are competent based on appropriate education, training and/or work experience;

c) where applicable, take actions to acquire the necessary competence and evaluate the effectiveness of the actions taken;

d) retain appropriate documented information, including evidence of competence.

NOTE 1 Evidence of competence demonstrates full coverage and friction of hand hygiene performed for the appropriate duration. Appraisal systems help adopters evaluate the quality of hand hygiene and not just the action of doing it.

NOTE 2 Applicable actions can include, for example, the provision of training to, the mentoring of, or the reassignment of healthcare stakeholders; or the hiring or contracting of competent persons.

NOTE 3 The governing body, management, and all healthcare stakeholders having compliance obligations are accountable for discharging these effectively. The attainment of competence can be achieved in many ways, including skills and knowledge required through education, training, or work experience.

6.10 Delivery options for education and training

Training should be structured to allow for deliberate practice. Deliberate practice has four dimensions.

a) The training should be provided within a mastery learning framework.

b) The training should be designed to improve skill automation and retention.

c) Learners should overlearn after competence has been demonstrated.

d) The training should provide useful guidance on the instructional design for clinical skills training to deliver maximum impact.

Evidence of maximum impact is likely when:

— early assessment is used to identify gaps in current practice (conscious competency framework);

— training is broken into short digestible blocks;

— new elements are added only after mastery (80 %+ on assessments) has been achieved;

— standardized learning materials are used that postpone complexity until later in the learning process;

— regular short training sessions are used rather than one long training session;

— workplace culture supports demonstration of new skills;

— post-training workplace audits of both the technique for hand hygiene and the WHO's My 5 Moments of Hand Hygiene is used to ensure transfer from training into practice.

All training should use competency validation methods modelled on the objective structure clinical examination. See Reference [16]. In these assessments, skills are demonstrated using practice-based assessments using human evaluators or simulators. Simulators should have demonstrated construct validity (i.e. that the test measures what it claims to measure) before being used for assessment. For example, ultraviolet (UV) gel is a very useful teaching aid for measuring the effective coverage of the

hands with gel, but it does not have construct validity for measuring the reduction in microbiological load on hands.

An example of a competency validation as part of a quality assessment can be seen in the USA's Centers for Medicare and Medicaid Services (CMS) infection control assessment document for nursing homes. See Reference [22].

Hand hygiene technique is based on the WHO hand hygiene guidelines or similar guidelines from national and local bodies. Alternative hand sanitization techniques have been proposed and evaluated in laboratory conditions but to-date none have been evaluated in clinical settings under working conditions.

Duration is not a good proxy for hand hygiene effectiveness. Multiple studies have shown that parts of the hands are frequently missed during hand hygiene, especially the fingertips. See References [25] and [26].

Education is key (amount, length of application, method of application, etc.)

6.11 Training the hand hygiene expert

6.11.1 Validation of written examinations

Written examinations for hand hygiene observers shall be validated by experts. The training shall be practical-theoretical with a workshop modality (e.g. an online course), with a pre-test of baseline knowledge and post-test and practical demonstration of hand hygiene skills to evaluate effectiveness of teaching specific training for hand hygiene observers.

6.11.2 Establishing a hand hygiene monitoring program

Health care providers shall establish a hand hygiene monitoring program to facilitate knowledge transfer based on task-oriented training and problem solving. Table 4 shows a proposed model of content for training for hand hygiene healthcare workers and trainers.