



3-step 15sec hand-rubs reduce infection & improve hygiene compliance



The spread of infectious diseases in hospitals and the increase in hospital deaths due to Health Care Acquired Infections is one of the leading concerns and main focus of clinicians worldwide. Hand hygiene in healthcare has proven to be the single most effective, simple and low-cost health improvement component to increase infection control quality and safety. It is literally the easiest thing healthcare workers can do to minimise the spread of infectious diseases, yet evidence on which technique is most effective remains limited.

New research presented at the [European Congress of Clinical Microbiology](#) and Infectious Disease (ECCMID) finds a **shorter 15-second application time** and **simpler 3-step technique** for use of alcohol-based hand rub is equally effective in reducing harmful bacteria as the [WHO](#) recommended **30-second 6-step application**. This quicker 3-step approach can improve healthcare workers hygiene compliance.

Difficulties to address this emergent issue depend on the diversity of methods used in studies that are available which is reflected in the very different conclusions that can be drawn from systematic reviews on this issue.

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To put this into perspective, in a sample of 40 hospitals in the USA, according to a study cited in the [WHO Guidelines on Hand Hygiene in Health Care](#), researchers found that although most healthcare workers were aware of the hand hygiene guidelines with alcohol-based hand rub available in all facilities, **a multidisciplinary implementation programme was conducted in only 44.2% of the hospitals**. The **impact was very disappointing: mean hand hygiene compliance rates were no higher than 56.6%**, and the correlation of lower infection rates with higher compliance was demonstrated only for bloodstream infections.

[WHO](#) has campaigned a recommended **6-step 'how to hand rub'** technique guide for using **alcohol based hand rubs**. The hard truth is health care workers do not adhere to all six steps and research shows this simplified 3-step hand rub technique is better than the 6-step technique insofar as it will help increase compliance and killing harmful bacteria.

The [WHO](#) recommended application for hand rubs is **30 seconds**. New research shows that hand rubbing for 15 seconds can be as effective at reducing harmful bacteria. In this cross-over randomised trial lead researcher [Dr Sarah Tschudin-Sutter](#) and her colleagues from the University Hospital Basel, Switzerland analysed the effects of combining a quicker simpler 3-step technique with a 15 second application time.

For the study 20 healthy volunteers (aged 18 to 51 years) were randomly assigned to rub their hands by **following 4 different techniques**:

- **the 6-step hand hygiene technique for 30 seconds**
- **the 6-step hand hygiene technique for 15 seconds**
- **the 3-step hand hygiene technique for 30 seconds**
- **the 3-step hand hygiene technique for 15 seconds**

Because this was a randomised crossover trial, each participant was assigned to all four groups.

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Results showed that a **shorter application time of 15-second rubs was as effective at reducing bacterial counts on the hands** of participants compared to the recommended 30-second hand rub, irrespective of the hand hygiene technique.

"The time pressure and heavy workload experienced by healthcare workers reduces compliance with hand hygiene standards. Our findings suggest that shortening hand rubbing time and simplifying the technique for use of hand rub could be a safe alternative that is easier to fit into their busy routine, could enhance the overall quality of hand hygiene performance, and have a positive effect on adherence", says Professor Tschudin-Sutter. "Further studies are needed to validate the performance of the shorter application time in everyday clinical practice."

The authors explain there are several limitations, the most important being that the study assesses the efficacy of the two different hand hygiene techniques and two different application times in an experimental setting, so the results cannot be extrapolated to a clinical setting. They also note that they measured the reduction of bacterial counts, therefore conclusions cannot be made about the impact of different hand hygiene techniques on transmission of pathogens.

WHO: "My five moments for hand hygiene" explained

The correlation between these moments and the indications for hand hygiene according to the present WHO guidelines. To further facilitate ease of recall and expand the ergonomic dimension, the five moments for hand hygiene are numbered according to the habitual care workflow.

Moment 1. Before touching a patient

From the two-zone concept, a major moment for hand hygiene is naturally deduced. It occurs between the last hand-to-surface contact with an object belonging to the health-care area and the first within the patient zone – best visualised by crossing the virtual line constituted by the patient zone. Hand hygiene at this moment will mainly prevent colonisation of the patient with health care-associated microorganisms, resulting from the transfer of organisms from the environment to the patient through unclean hands, and exogenous infections in some cases.

A clear example would be the temporal period between touching the door handle and shaking the patient's hand: the door handle belongs to the health-care area outside the patient zone, and the patient's hand belongs to the patient zone. Therefore hand hygiene must take place after touching the door handle and before shaking the patient's hand. If any objects are touched within the patient zone after opening the door handle, hand hygiene might take place either before or after touching these objects, because the necessity for hand hygiene before touching objects within the patient zone is not supported by evidence; in this case the important point is that hand hygiene must take place before touching the patient.

Moment 2. Before a clean/aseptic procedure

Once within the patient zone, very frequently after a hand exposure to the patient's intact skin, clothes or other

objects, the HCW may engage in a clean/aseptic procedure on a critical site with infectious risk for the patient, such as opening a venous access line, giving an injection, or performing wound care. Importantly, hand hygiene required at this moment aims at preventing HCAI. In line with the predominantly endogenous origin of these infections, hand hygiene is taking place between the last exposure to a surface, even within the patient zone and immediately before access to a critical site with infectious risk for the patient or a critical site with combined infectious risk.

This is important because HCWs customarily touch another surface within the patient zone before contact with a critical site with infectious risk for the patient or a critical site with combined infectious risk. For some tasks on clean sites (lumbar puncture, surgical procedures, tracheal suctioning, etc.), the use of gloves is standard procedure. In this case, hand hygiene is required before donning gloves because gloves alone may not entirely prevent contamination.

Moment 3. After body fluid exposure risk

After a care task associated with a **risk to expose hands to body fluids**, e.g. after accessing a critical site with body fluid exposure risk or a critical site with combined infectious risk (body fluid site), **hand hygiene is required instantly** and must take place **before any next hand-to-surface exposure**, even within the same patient zone. This hand hygiene action has a double objective. First and most importantly, it reduces the risk of colonisation or infection of HCWs with infectious agents that may occur even without visible soiling. Second, it reduces the risk of a transmission of microorganisms from a “**colonised**” to a “**clean**” body site within the same patient. This routine moment for hand hygiene concerns all care actions associated with a risk of body fluid exposure and is not identical to the – hopefully very rare – case of accidental visible soiling calling for immediate hand-washing.

Disposable gloves are meant to be used as a “**second skin**” to prevent exposure of hands to body fluids. However, **hands are not sufficiently protected by gloves**, and **hand hygiene is strongly recommended after glove removal**. Hence, to comply with the hand hygiene indication in Moment 3, gloves must be removed and subsequently cleansed.

Moment 4. After touching a patient

When leaving the patient zone after a care sequence, before touching an object in the area outside the patient zone and before a subsequent hand exposure to any surface in the health-care area, hand hygiene minimises the risk of dissemination to the health-care environment, substantially reduces contamination of HCWs' hands with the flora from patient X, and protects the HCWs themselves.

Moment 5. After touching patient surroundings

The fifth moment for hand hygiene is a variant of Moment 4: it occurs after hand exposure to any surface in the patient zone, and before a subsequent hand exposure to any surface in the health-care area, but without touching the patient. This typically extends to objects contaminated by the patient flora that are extracted from the patient zone to be decontaminated or discarded. Because hand exposure to patient objects, but without physical contact with the patients, is associated with hand contamination, hand hygiene is still required.

Sources: [WHO](#), [EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES](#)

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