



Commentary

Monitoring your institution: the WHO hand hygiene self-assessment framework—is it worth it?

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Introduction

Globally, healthcare-associated infections (HAI) have emerged as one of the most common adverse events jeopardizing patient safety and quality of healthcare [1]. Multidrug-resistant organisms, including methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci and carbapenem-resistant *Enterobacteriaceae*, are a serious cause of HAI and an ever-growing public health threat worldwide that calls for action [2]. Hospital-acquired multidrug-resistant bacterial infections are difficult to treat because of their high levels of antibiotic resistance. The burden of HAIs remains high and may affect more than 1.4 million patients worldwide [3]. It

affects approximately 7% of patients admitted to hospitals in developed countries, with the number increasing up to 15% in low- and middle-income countries, with attributable mortality estimated at 10% [3,4].

The pursuit of preventing HAIs and containment of antimicrobial resistance (AMR) hinges on improving both antimicrobial stewardship and infection prevention and control (IPC) measures [2]. It is well established that hand hygiene as a core element of IPC is the most cost-effective way of reducing HAI through direct reduction in cross-transmission of pathogenic microorganisms [5,6]. Hand hygiene is a simple yet high-impact intervention which, when performed correctly, enhances quality of healthcare delivery. Consequently, by reducing the burden of HAI, hand hygiene lowers antimicrobial consumption in hospitalized patients, thus effectively contributing to contain AMR and considerably reducing hospital expenses as well as morbidity and mortality [2].

To examine where improvements have occurred or progress has stagnated in terms of hand hygiene, the World Health Organization (WHO) in 2019 launched a global survey as part of the annual WHO 'SAVE LIVES: Clean Your Hands' hand hygiene global campaign (<https://www.who.int/infection-prevention/campaigns/ipc-global-survey-2019/en/>). Healthcare facilities (HCF) worldwide are invited to complete the Hand Hygiene Self-Assessment Framework (HSAF), a validated systematic tool designed to obtain a situation analysis of hand hygiene promotion and practices within a HCF structured around the five key components of the WHO multimodal hand hygiene improvement strategy [7]. The big question is, is it worth doing?

The WHO 'SAVE LIVES: Clean Your Hands' campaign

Despite evidence of the effectiveness of hand hygiene, the compliance of healthcare workers (HCWs) with recommended guidelines is suboptimal [6,8,9]. Why have hand hygiene improvements plateaued and compliance rates remained low? Many factors hamper compliance with hand hygiene, including logistical barriers and human behavioural issues [6,9]. Compliance rates have reported to be higher among nurses than other HCWs, including

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physicians, technicians and other allied health personnel. Lower hand hygiene compliance rates have been reported in high-intensity clinical areas, where there are more opportunities for hand hygiene [9]. Other factors that contribute to low compliance include high workload, lack of time, lack of role models, scepticism concerning the usefulness of hand hygiene, lack of necessary infrastructure or simply forgetfulness [6,10]. WHO reported that baseline compliance with hand hygiene among HCWs was averaged 40% (range, 5–89%) [6]. A high level of hand hygiene compliance (range, 90–100%) has been reported as unrealistic, as these are based on clinical wards self-reporting their own compliance rates, which have not translated in equal rates when independent audits from IPC teams were conducted [11]. In addition, observation bias generated by the Hawthorne effect influences the behaviour of observed HCWs towards higher performance of hand hygiene, thereby introducing a measurement bias in the direct observation method [12]. Clearly, hospitals should strive to achieve the highest hand hygiene compliance rates at all times, and they should seek to create an organizational culture that values hand hygiene as a prerogative of patient safety and quality healthcare.

The WHO 'SAVE LIVES: Clean Your Hands' campaign, launched in 2009 and celebrated annually on 5 May, aims to raise awareness and provide tools to improve hand hygiene practices globally, with a unique annual call to action [1]. In 2019, the theme, 'Clean care for all—it's in your hands' (Fig. 1), is centred on universal health coverage and the provision of quality healthcare for all populations. Improving health is not necessarily reflected in the use of complex new and invasive medical technologies; adhering to basic standard practices in terms of hand hygiene contributes to healthcare quality and patient safety. Catalyzing behavioural change in terms of hand hygiene and sustaining improvements over the long term are the ultimate objectives.



Fig. 1. 'Clean care for all—it's in your hands!' The 5 May 2019 World Health Organization 'SAVE LIVES: Clean Your Hands' campaign slogan and main promotional image; 2019 hashtags are #HandHygiene, #InfectionPrevention and #HealthForAll. Campaign participants are invited to submit photos of them holding a board with the slogan and hashtags at <https://cleanhandsavelives.org/>.

WHO multimodal hand hygiene improvement strategy

Sustained behavioural change requires the application of various synergistic measures, such as education, workplace reminders and as performance feedback [4,7]. To advance towards the commitment to reduce HAI and AMR transmission through improved hand hygiene behaviour worldwide, the 'WHO Guidelines on Hand Hygiene in Health Care' introduced the multimodal hand hygiene improvement strategy [6,7]. In brief, the strategy involves the implementation of the following five key components: system change, training and education, evaluation and feedback, reminders in the workplace and institutional safety climate [7,13]. This strategy proved to be effective in achieving successful improvements of hand hygiene promotion and behaviour change in recent years [8,9].

Evaluation and feedback of hand hygiene infrastructure and accurate performance indicators are essential to achieve behavioural change amongst HCWs, and they enable HCF to measure their progress over time [13,14]. Monitoring hand hygiene standards as quality indicators for patient safety has become an increasingly important priority for HCFs, predominantly through the direct or indirect monitoring of HCWs compliance as well as the proxy indicator of alcohol-based handrub consumption [15]. Establishment of an institutional safety climate within the wider healthcare organization is important alongside the implementation of other key components of the multimodal strategy. HAI and AMR transmission are an organization patient safety threat, and as such, preventative measures with hand hygiene improvement require clear commitment, endorsement and active participation from organizational leaders [7,13]. This can occur at an institutional level by setting hand hygiene key performance indicators and having clinical managers take an interest in improving hand hygiene and HAI programmes. In addition, at a higher political level, ministers of health have shown their commitment by signing a pledge to reduce HAI and improve hand hygiene. An equally important aspect of the institutional safety climate has evolved around patient participation, reflecting potential contributions in hand hygiene improvement initiatives [14].

WHO hand hygiene self-assessment framework

To support continuous improvement of hand hygiene promotion, the WHO developed the HHSAF, which provides an evaluation of the different components of hand hygiene programmes in HCFs worldwide [15,16]. The HHSAF is used all over the world and is the only framework to track progress and gaps in hand hygiene in countries over time while providing tailored solutions to HCFs (https://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1).

The HHSAF encompasses 27 indicators categorized in five parts, each one corresponding to one of the five core components of the WHO multimodal hand hygiene improvement strategy consisting of the following: system change, training and education, observation and feedback, reminders in the workplace and hospital safety climate. The 27 indicators are formulated as binary or multiple-choice questions, which are designed to facilitate the assessment process. Answers to these questions are then converted into numerical scores for each of the components, as well as an overall score for the facility as a whole. A HCF's overall score is then further classified into one of four levels of progress with hand hygiene: inadequate, basic, intermediate and advanced. HCFs with particularly outstanding hand hygiene practices can register for the Hand Hygiene Excellence Award (<https://www.hhea.info/en.html>), which is aimed at rewarding innovative approaches to hand hygiene practices.

Table 1
The 5 May 2019 World Health Organization 'SAVE LIVES: Clean Your Hands' campaign calls to action

Target campaign participant	Call to action
Healthcare workers	'Champion clean care—it's in your hands.'
IPC leaders	'Monitor infection prevention and control standards—take action and improve practices.'
Health facility leaders	'Is your facility up to WHO infection control and hand hygiene standards? Take part in the WHO survey 2019 and take action!'
Ministries of health	'Does your country meet infection prevention and control standards? Monitor and act to achieve quality universal health coverage.'
Patient advocacy groups	'Ask for clean care—it's your right.'

IPC, infection prevention and control; WHO, World Health Organization.

Following this assessment process, the information generated from the HHSAF should be converted to action plans, which are crucial to guiding decisions and strategies for future improvement with hand hygiene promotion programmes. To help HCFs in this task, WHO also provides a general template for an action plan with proven methods to improve hand hygiene in the context of the WHO multimodal hand hygiene improvement strategy, which can be adapted for individual facilities [7].

WHO has launched two previous global surveys using the HHSAF, in 2011 and in 2015, inviting HCFs to submit their own self-assessment. In 2011, over 2100 HCFs from 69 countries participated, while in 2015 it was over 800 HCFs from 90 countries, with the majority from acute tertiary-care HCFs and from developed countries for both surveys. The first survey shed light on potential challenges in terms of hand hygiene promotion programmes and identified the need for targeted measures to address these issues. Overall, HHSAF scores increased significantly ($p < 0.001$) in HCFs that participated in both surveys [17]. A marked improvement was reported in the Eastern Mediterranean, Europe and Western Pacific regions, while stark variations were noted in Africa. The HHSAF global surveys offer insights into IPC programmes, which has prompted calls for further improvements. The HHSAF remains the only and most widely used framework to quantify institutional and national levels of hand hygiene implementation that could potentially act as a proxy indicator of the quality of healthcare delivery.

The 2019 WHO global survey

The year 2019 is another turning point in improving patient safety practices around the world. WHO has launched the 2019 WHO Global Survey on Infection Prevention and Control and Hand Hygiene (<https://www.who.int/infection-prevention/campaigns/ipc-global-survey-2019/en/>). This survey is based on the use of the IPC Assessment Framework (IPCAF) (<https://www.who.int/infection-prevention/tools/core-components/IPCAF-facility.PDF>) and the HHSAF, the former for evaluating the core components of IPC programmes (<https://www.who.int/infection-prevention/publications/ipc-components-guidelines/en/>) and the latter to provide a situational analysis of hand hygiene activities in HCFs worldwide.

By participating in these initiatives through the 2019 WHO 'SAVE LIVES: Clean Your Hands' campaign, hospitals can not only improve their own performance and identify challenging areas but also can contribute directly to the global goal of universal health coverage. Clinicians are invited to complete the IPCAF and HHSAF and submit the results between March and July 2019.

After decades of unacceptably low hand hygiene compliance rates, we must work assiduously on a daily basis to improve hand hygiene standards and infection prevention to ultimately achieve quality healthcare, thereby contributing to universal health coverage. As IPC practitioners, we need to enlarge our tool box to include telling stories of patients whose lives have been adversely affected as a result of HAIs while also building ownership and advocacy amongst key stakeholders who aim to 'first do no harm.' Interdisciplinary work with political leaders, hospital

administrators, front-line clinicians and patient support groups is necessary to advance our ability to influence an organizational atmosphere in which adherence to a 100% hand hygiene compliance is an integral part of protecting vulnerable patients from infections and providing safe patient care.

The program's themes and campaign messages are listed in Table 1. All the information needed to guide clinicians through the campaign's key messages and advocacy tools are available at the WHO IPC website (<https://www.who.int/infection-prevention/campaigns/clean-hands/5may2019/en/>). We invite HCFs worldwide to become part of this community and to contribute to universal health coverage by helping to achieve quality healthcare for all people by implementing WHO IPC core components and a multimodal hand hygiene improvement strategy. Clinicians can register online (<https://www.who.int/gpsc/5may/register/en/>).

We urge clinicians to promote and drive focused hand hygiene improvement strategies in their institutions today, so as to ameliorate the quality of healthcare delivery tomorrow: 'Clean care for all—it's in your hands!'

Transparency declaration

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