

Evidence of hand hygiene as the building block for infection prevention and control

An extract from the systematic literature reviews undertaken as the background for the WHO Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level



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1. Acronyms and abbreviations

AMR – antimicrobial resistance
CAUTI - catheter-associated urinary tract infection
CLABSI - catheter line-associated bloodstream infection
EPIC - effective practice and organization of care
HAI – health care-associated infection
ICUs - intensive care units
IPC – infection prevention and control
LMICs - low- and middle-income countries
MDRO - multi-drug resistant organism
MRSA - methicilin-resistant *Staphylococcus aureus*
SDG – sustainable development goals
UHC – universal health coverage
USA – United States of America
WHO – World Health Organization

2. Introduction

Too many of the vulnerable people seeking care develop a health care-associated infection (HAI) resulting in harm and sometimes even death, especially in low- and middle-income countries (LMICs). This could be prevented through simple, low-cost infection prevention and control (IPC) interventions performed at critical moments, such as hand hygiene. Defects in IPC at the health facility level increase the risk of outbreaks of highly transmissible diseases that can spread within and beyond facilities, including across national borders. At the national level, defective IPC impacts on a country's ability to meet the International Health Regulations (IHR) and successfully combat antimicrobial resistance (AMR), together with the potential to adversely impact on the quality of health care delivery required to achieve the health-related United Nations Sustainable Development Goals (SDGs), including universal health coverage (UHC). Absence of or inadequate hand hygiene practices at key moments is one aspect of IPC that is considered to be a critical example of defects in the quality of care.

On the basis of scientific evidence and with input from international experts and IPC colleagues working in countries, WHO recently identified the essential elements that every country should have in place to achieve effective IPC and issued new guidelines on *Core components of IPC programmes at the national and acute health care facility level* (<http://www.who.int/gpsc/ipc-components/en/>). These guidelines include two specific recommendations on hand hygiene as part of the IPC core components. Furthermore, a substantial portion of the evidence underpinning all the recommendations comes from research on hand hygiene.

This document aims to outline the evidence on hand hygiene included in the systematic literature reviews undertaken as the background for the WHO guidelines (<http://www.who.int/gpsc/ipc-components/en/>). It serves to provide a synopsis of the available evidence evaluating hand hygiene as a main intervention (or part of a broader IPC strategy) and where significant improvement in hand hygiene compliance or alcohol-based handrub consumption, and/or a substantial decrease of HAI or multi-drug resistant organism (MDRO) infection and/or colonization rates were achieved (*Table 1*). This evidence is presented according to the eight core components outlined in the WHO guidelines.

Information provided in this document can be useful to discuss the role of hand hygiene as a building block for IPC at national and facility level. Data can be used for motivating policy makers and senior managers to take action to visibly support hand hygiene programmes or for showing health care workers the impact of hand hygiene on patient outcomes, in particular in the context of 5 May (global hand hygiene day) campaigning activities.

The following core component recommendations are specific to hand hygiene.

CORE COMPONENT 6b

The panel recommends that a national IPC monitoring and evaluation programme should be established to assess the extent to which standards are being met and activities are being performed according to the programme's goals and objectives. *Hand hygiene monitoring with feedback should be considered as a key performance indicator at the national level.*

(Strong recommendation, moderate quality of evidence)

CORE COMPONENT 8b

The panel recommends that materials and equipment to perform appropriate hand hygiene should be readily available at the point of care.

(Strong recommendation, very low quality of evidence)

In addition to these specific recommendations, 51 of 116 (44%) high quality papers used as the primary evidence for six of the eight core components investigated hand hygiene as part of IPC interventions. These were: core components 2 (three studies), 3a (eight studies), 5 (30 studies), 6 (two studies), 7 (two studies), and 8b (six studies). As listed within the guidelines, all relevant secondary evidence was also scrutinized, thus lending additional support to the findings indicated by the primary level evidence.

3. Summary of the key messages from this review

- Hand hygiene research drives the evidence on the need for IPC guidelines, which support the reduction of HAI and AMR
- Hand hygiene statements in IPC guidelines should directly address how this action can prevent the spread of MDROs
- The evidence for a range of hand hygiene education activities drives IPC education and training in health facilities
- Education and training should emphasize hand hygiene role in preventing the spread of MDROs in clinical workflow
- There is clear evidence that hand hygiene multimodal improvement strategies are effective in improving practices and preventing microbial transmission and infections
- A hand hygiene multimodal improvement strategy should describe how actions prevent transmission of MDROs including in the context of real life clinical workflow
- Hand hygiene monitoring plays a role in driving IPC standards and is a key performance indicator (national level)
- Using hand hygiene audit data is key to improve IPC and prevent the spread of resistant organisms
- Impact of workload can influence hand hygiene practices. This can be used to influence decisions on staffing levels
- Hand hygiene equipment and products (including at the point of care) are critical to IPC practices. Without hand hygiene resources the spread of resistant organisms will occur

The next section summarizes the evidence on hand hygiene underpinning the WHO *Guidelines on core components for IPC programmes at the national and acute health care facility level*. Studies meeting the Cochrane Effective Practice and Organization of Care (EPOC) Group criteria¹ were considered of sufficient quality to be used as the primary evidence to support the WHO recommendations; non-EPOC studies were also considered as secondary evidence.

¹ Effective practice and organisation of care (EPOC). Suggested risk of bias criteria for EPOC reviews. EPOC resources for review authors. Oslo: Norwegian Knowledge Centre for the Health Services; 2015 (http://epoc.cochrane.org/sites/epoc.cochrane.org/files/uploads/14_Suggested_risk_of_bias_criteria_for_EPOC_reviews_2015_09_02.pdf, accessed 20 April 2017)

4. Summary of the evidence on hand hygiene underpinning the WHO *Guidelines on core components for IPC programmes at the national and acute health care facility level*

Core component 2 – National and facility level IPC guidelines

RECOMMENDATION

The panel recommends that evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. The education and training of relevant health care workers on the guideline recommendations and the monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation.

(Strong recommendation, very low quality of evidence)

Type of evidence	Description of evidence on hand hygiene supporting the recommendation	Key study findings
Primary (EPOC) (1-3)	<ul style="list-style-type: none"> Three of six studies (50%) comprising: <ul style="list-style-type: none"> Two non-controlled before-after (1,2) 	<ul style="list-style-type: none"> Larson and colleagues highlighted the importance of guideline implementation in the field in a survey of health care workers across 40 hospitals in the United States of America (USA). Where health care workers were aware of the importance of hand hygiene, the implementation of hand hygiene was implemented in less than 10% (1). The implementation of hand hygiene as part of a bundle of interventions in settings without standardized protocols helped to reduce rates of health care-associated infection (CAUTI).

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