

Summary Report: Hand Hygiene Self-Assessment Framework Survey 2015/2016

A report from the WHO Infection Prevention and
Control Global Unit



**World Health
Organization**

Contents

Executive Summary	3
Introduction	4
Methods	6
Summary of results of participating facilities	7
Limitations	16
Conclusion	17
References	18
Acknowledgements	20

Executive Summary

From June 2015 to January 2016, health care facilities worldwide were invited to participate in the World Health Organization (WHO) second survey based on completion of the Hand Hygiene Self-Assessment Survey (HHSAF).

A total of 807 health care facilities from 91 countries submitted completed HHSAF surveys to WHO. Among these, 86 facilities completed the HHSAF in 2011 and 2015. The largest number of participating facilities in the 2015-2016 survey were in Malaysia (150), followed by France (65) and Spain (49). Overall 30% of participating facilities were in Europe (the largest number by region).

The overall mean score reflected an *intermediate* level of progress, but very close to the upper limit of the range for this level (score 375) and close to the lower limit of the range for the *advanced* level, as defined by the WHO HHSAF. Most facilities were at *intermediate* or *advanced* levels (87.5%) of progress, with a high proportion qualifying for the leadership level (79%).

The lowest mean score for the HHSAF sections concerning the components of the WHO Multimodal Hand Hygiene Improvement Strategy was recorded in the African Region (280.9 ± 127.3), while the highest was in the South-East Asia region (420.6 ± 77.6), representing 60 and 231 health care facilities, respectively. Among these HHSAF sections, the lowest scores concerned evaluation and feedback on hand hygiene activities and the institutional patient safety climate.

Introduction

The HHSAF is a tool developed by WHO and currently used in many health care facilities worldwide to assess and track progress in hand hygiene improvement. It provides a systematic situational analysis of hand hygiene infrastructure, promotional and training activities, performance monitoring and feedback and institutional safety climate (1). It is designed as a questionnaire and is structured in five sections based on the five components of the WHO Multimodal Hand Hygiene Improvement Strategy (2). It includes 27 indicators reflecting the key elements of each strategy component and was tested in 26 facilities in 19 countries before being issued by WHO (3). Each indicator is assigned a value adding up to a maximum of 100 points within each of the five sections. The maximum overall HHSAF score is therefore 500 points. Based on a facility's score, it is allocated to one of four levels of progress within the hand hygiene improvement continuum.

1. **Inadequate** (overall score 0-125): hand hygiene practices and hand hygiene promotion is deficient. Significant improvement required.
2. **Basic** (overall score 126-250): some measures are in place, but not to a satisfactory standard. Further improvement is required.
3. **Intermediate** (overall score 251-375): an appropriate hand hygiene promotion strategy is in place and hand hygiene practices have improved. It is now crucial to develop long-term plans to ensure sustained improvement and progress.
4. **Advanced** (overall score 376-500): hand hygiene promotion and optimal hand hygiene practices have been sustained and/or improved, thus helping to embed a culture of quality and safety around hand hygiene promotion in the health care setting.

Advanced facilities can undergo further assessment according to 20 additional criteria and can reach the **leadership** level if they satisfy at least 12 of these criteria.

In 2011, a first global survey was conducted by WHO and the results were summarized in a report in 2012 (4). Similar to the 2015 survey, this was part of the *WHO SAVE LIVES: Clean Your Hands* campaign promotional activities.

The objectives of the global survey in 2015/16 were as follows:

- To assess the level of progress in a range of health care facilities in terms of hand hygiene infrastructure, promotional and training activities, performance monitoring and feedback and institutional safety climate, according to a range of indicators relevant to the WHO Multimodal Hand Hygiene Improvement Strategy.
- To motivate health care facilities to continue to track their progress against these indicators as part of their quality and safety agendas, and to provide feedback in support of this through summary results.

Hand hygiene is now recognized as a key quality indicator of health care (5,6). This has been well demonstrated through reports of health care worker compliance with hand hygiene, the development of an organizational culture committed to progressing hand hygiene standards, as well as against outcome, i.e. health care-associated infections (7). Preventing infections is also known to be cost effective, including appropriate hand hygiene actions at the point of care (5). Other WHO reports have acknowledged also that many interventions to improve patient safety start with hand hygiene as a universally relevant intervention. If performed correctly and at the right time, hand hygiene can play a critical role in halting the spread and acquisition of microbes that cause health care-associated infections, including those caused by antimicrobial resistant microorganisms (8,9).

The overall intention of this report is to alert and remind senior health care executives that tracking hand hygiene progress remains a priority, with these summary results acting as a proxy indicator of the global situation of quality of health care delivery.

Methods

Starting from June 2015, health care facilities were invited to submit their HHSAF results to WHO through a dedicated, protected website. They were informed that all data would be kept confidential and anonymised. Data were also submitted by email directly to WHO when difficulties occurred with online submission. Two professionals were allocated to undertake data entry and quality checking under senior WHO staff supervision.

The promotion of survey participation was channelled through the WHO *SAVE LIVES: Clean Your Hands* campaign using the regular newsletter and the website, including multiple mailshots to stakeholders known to the WHO infection prevention and control team, some of whom featured the survey in their own newsletters.

Professionals in charge of infection control or senior managers fully informed about hand hygiene activities within the facility were asked to complete the HHSAF by 31 January 2016. In addition, it was highlighted in communications that any completed HHSAF from any time in 2015 could be submitted in order to capture information from health facilities already using the HHSAF (but potentially unwilling to repeat completion of the survey).

Data quality was ensured through data cleansing, removal of duplicates and further quality cross-checking of manual data entries by two persons following an agreed process. Analyses were performed while keeping individual facilities' identity strictly confidential.

Summary of results of participating facilities

In total, surveys from 807 facilities in 91 countries were received during the survey period of June 2015 to January 2016. This is 47% of all 194 Member States. Table 1 provides an overview of the characteristics of the participating facilities in each WHO region, while Table 2 details the number of participating facilities per country.

Table 1. Characteristics of facilities participating in the WHO Hand Hygiene Self-Assessment Framework global survey according the WHO region

Variables	Total	Region (2015 survey)					
		Africa	Americas	Eastern Medit.	Europe	South East Asia	Western Pacific
Number of countries	91	15	14	13	29	16	4
Number of participating health care facilities	807	60	181	41	246	231	48
Socio-economic level by country, n (%)							
Low income	10 (11.0)	7 (46.7)	0 (0)	0 (0)	0 (0)	3 (18.8)	0 (0)
Middle income	41 (45.1)	8 (53.3)	11 (78.6)	6 (46.2)	5 (17.2)	10 (62.5)	1 (25.0)
High income	40 (43.9)	0 (0)	3 (21.4)	7 (53.8)	24 (82.8)	3 (18.7)	3 (75.0)
Socio-economic level by country, n (%)							
Low income	10 (11.0)	7 (46.7)	0 (0)	0 (0)	0 (0)	3 (18.8)	0 (0)
Lower middle income	12 (13.2)	4 (26.7)	1 (7.1)	2 (15.4)	0 (0)	4 (25.0)	1 (25.0)
Upper middle income	29 (31.9)	4 (26.7)	10 (71.4)	4 (30.8)	5 (17.2)	6 (37.5)	0 (0)
High income	40 (43.9)	0 (0)	3 (21.4)	7 (53.8)	24 (82.8)	3 (18.7)	3 (75.0)
Hospital sector, n (%)							
Public	541 (70.2)	28 (47.5)	100 (58.8)	28 (68.3)	163 (72.8)	187 (81.3)	35 (74.5)
Private	230 (29.8)	31 (52.5)	70 (41.2)	13 (31.7)	61 (27.2)	43 (18.7)	12 (25.5)
Type of hospital involved, n (%)							
Teaching	194 (25.2)	27 (45.8)	54 (31.8)	12 (29.3)	55 (24.7)	32 (13.9)	14 (29.8)

General	576 (74.8)	32 (54.2)	116 (68.2)	29 (70.7)	168 (75.3)	198 (86.1)	33 (70.2)
Type of care, n (%)							
Acute care	501 (62.1)	41 (68.3)	92 (50.8)	18 (43.9)	129 (52.4)	196 (84.9)	25 (52.1)
Long-term care	70 (8.7)	4 (6.7)	25 (13.8)	5 (12.2)	29 (11.8)	5 (2.2)	2 (4.2)
Acute and long-term	104 (12.9)	8 (13.3)	20 (11.1)	12 (29.3)	35 (14.2)	13 (5.6)	16 (33.3)
Other	132 (16.4)	7 (11.7)	44 (24.3)	6 (14.6)	53 (21.5)	17 (7.4)	5 (10.4)
Mean number of infection control nurses per hospital (\pm SD)	2.92 (6.81)	5.06 (10.12)	1.75 (2.87)	2.52 (2.44)	3.47 (9.34)	3.00 (6.05)	2.20 (2.48)
Mean number of infection control physicians per hospital (\pm SD)	1.31 (4.03)	3.26 (6.7)	0.91 (1.3)	1.04 (1.2)	1.98 (6.3)	0.62 (0.90)	1.03 (2.43)
Mean number of bed per hospital (\pm SD)	338.8 (432.7)	288.2 (335.8)	180.7 (192.4)	286.1 (264.6)	460.4 (575.9)	380.8 (430.7)	243.6 (290.3)
Involvement in a national HH campaign, n (%)							
No	176 (22.9)	22 (37.3)	61 (36.1)	9 (22.0)	50 (22.4)	29 (12.6)	5 (10.6)
Yes	593 (77.1)	37 (62.7)	108 (63.9)	32 (78.0)	173 (77.6)	201 (87.4)	42 (89.4)
Involvement in the SL:CYH campaign, n (%)							
No	159 (20.7)	21 (35.6)	38 (22.5)	10 (24.4)	32 (14.3)	39 (17.0)	19 (40.4)
Yes	610 (79.3)	38 (64.4)	131 (77.5)	31 (75.6)	191 (85.7)	191 (83.0)	28 (59.6)

SD: standard deviation; PCI: prevention and control of infection; WHO SL:CYH: *SAVE LIVES: Clean Your Hands*; HH: hand hygiene.

Table 2. Number of health facilities participating in the WHO Hand Hygiene Self-Assessment Framework global survey by country

Country	N° facilities
Algeria	3
Argentina	42
Australia	26
Austria	3
Bahrain	3
Bangladesh	2
Barbados	1
Belarus	1
Belgium	4
Benin	6
Bermuda	1
Bosnia and Herzegovina	1
Brazil	12
Bulgaria	1
Burkina Faso	3
Burundi	3
Cambodia	1
Canada	47
China	4
Colombia	9
Costa Rica	4
Cote d'Ivoire	3
Croatia	16
Czech Republic	3
Dominica	1
Ecuador	5
Egypt	1
Estonia	1
Ethiopia	1
Finland	1
France	65
Gabon	1
Germany	3
Greece	5
Hungary	3
Iceland	1
India	12
Indonesia	9
Iran (Islamic Republic of)	2
Ireland	17
Israel	2

Italy	28
Japan	4
Jordan	1
Kenya	1
Kuwait	2
Malaysia	150
Malta	1
Mexico	13
Mongolia	1
Namibia	2
Nepal	1
Netherlands	1
New Zealand	12
Niger	1
Nigeria	16
Niue	1
Norway	2
Oman	1
Pakistan	2
Palestine	1
Panama	1
Paraguay	2
Philippines	9
Poland	1
Portugal	8
Qatar	1
Republic of Korea	30
Romania	4
Rwanda	1
Saudi Arabia	15
Senegal	1
Singapore	4
Slovakia	1
Slovenia	2
South Africa	17
Spain	49
Sri Lanka	2
Sudan	7
Suriname	1
Sweden	1
Switzerland	4
Thailand	2
Togo	1
Tunisia	2
Turkey	2

United Arab Emirates	3
United Kingdom of Great Britain and Northern Ireland	17
United States of America	42
Uruguay	1
Viet Nam	6
Total	807

It is important to note that some facilities did not complete all fields in the survey, as reflected in the numbers presented in Tables 1 and 3. The dedicated protected website aimed to ensure that all fields were completed, but those who submitted via email did not always provide the information, although asked to provide any missing data on several occasions. Box 1 provides an overall summary of the facility characteristics that were provided.

Box 1. Summary of facility characteristics

Facility characteristics

- The largest number of participating health care facilities were in Malaysia (150), followed by France (65) and Spain (49)
- 30% of facilities were in Europe
- 97.5% of the total number of facilities were closely split between middle (356) - or high-income (431) level countries, with a clear gap in participation from low-income countries
- Most facilities were public (70%), general (75%), acute care (62%) hospitals
- 77% and 79%, respectively, of respondents who answered the questions asking if they were involved in a national hand hygiene campaign and part of the *WHO SAVE LIVES: Clean Your Hands* campaign replied “yes”

Table 3 presents the average HHSAF score calculated in the survey and according to levels of progress, including details of scores by HHSAF component, which reflect the implementation of the WHO Hand Hygiene Multimodal Improvement Strategy.

Table 3. Description of the scores by components of the WHO Multimodal Hand Hygiene Improvement Strategy and overall score

	Values
By components (mean±SD, median: IQR)	
System change	88 (±19.3, 100: 80-100)
Training and education	78 (±22.5, 85: 65-100)
Evaluation and feedback	70 (±25.6, 80: 55-90)
Reminders in the workplace	75 (±21.9, 80: 62.5-95)
Institutional safety climate for hand hygiene	62 (±24.3, 65: 45-80)
Overall score (mean±SD, median: IQR)	373 (±91.6, 392.5: 322.5-445)
Hand hygiene level, n (%)	
Inadequate	15 (2)
Basic	86 (11)
Intermediate (or consolidation)	247 (31)
Advanced (or embedding)	459 (57)
Score for leadership criteria in 459 advanced health care facilities (mean±SD, median: IQR)	13 (±5.5, 14: 12-17)
Proportion of facilities with a leadership score >=12 (%) (n=459)	363 (79)

SD: standard deviation; IQR: interquartile range.

The overall mean score reflected an *intermediate* level of progress, but very close to the upper limit of the range for this level (score 375) and close to the lower limit of the range for the *advanced* level, as defined by the WHO HHSAF. Most facilities were at *intermediate* or *advanced* levels (87.5%) of progress, with a high proportion qualifying for the leadership level (79%).

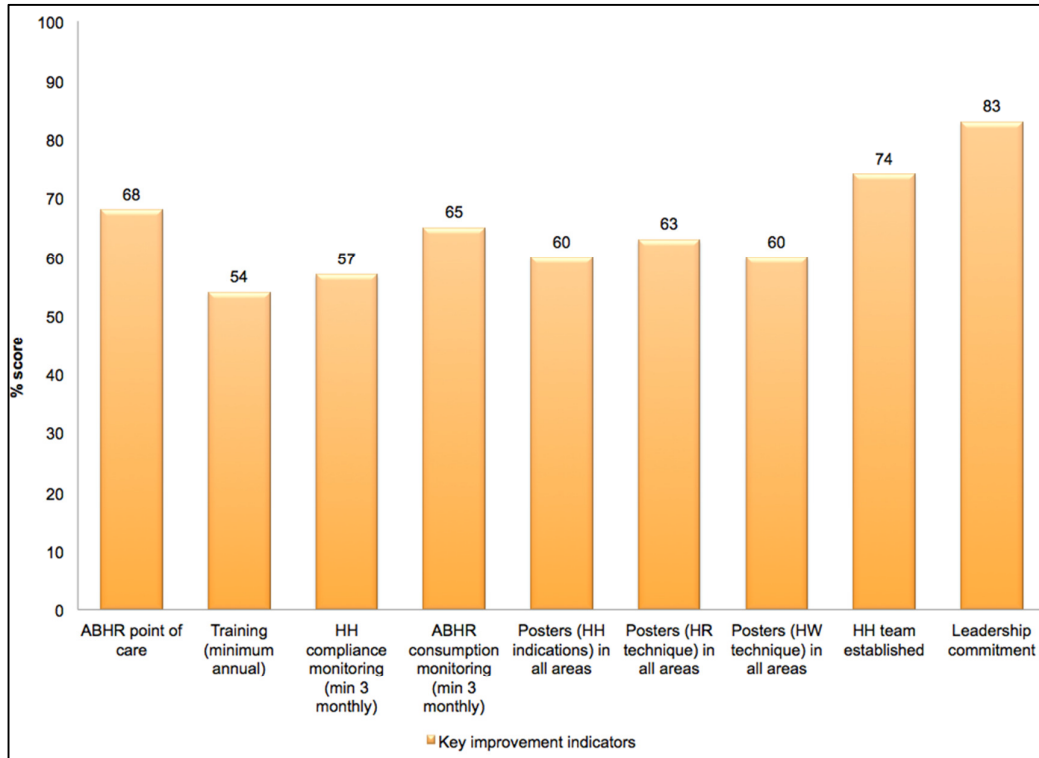
The lowest mean score was recorded in the African Region (280.9 ± 127.3), while the highest was in the South-East Asia Region (420.6 ± 77.6), representing 60 and 231 health care facilities, respectively.

Among the HHSAF sections, the lowest scores concerned evaluation and feedback on hand hygiene activities and the institutional patient safety climate.

Figure 1 represents the percentage of facilities indicating the maximum rating (corresponding to the gold standard) when responding to specific HHSAF

questions related to key indicators which reflect core components of the WHO hand hygiene improvement strategy.

Figure 1. Responses to HHSAF questions related to key indicators of the WHO improvement strategy implementation



We identified 86 facilities that participated in both 2011 and 2015 surveys. Compared to 2011, a significant improvement was recorded across several dimensions. The average score increased from 335.1 (± 97.5) to 374.4 (± 90.5) ($p < 0.001$) and the average score also improved significantly in all components apart from system change, which was already high in the 2011 survey.

Limitations

Due to several potential factors, the number of surveys submitted in 2015 was significantly lower than the previous WHO survey. There may be several explanations for this decrease. For example, it may be related to hand hygiene campaign fatigue and/or the fact that hand hygiene improvement actions are more embedded in infection prevention facility activities than in 2011 when more facilities were just learning about using a new tool such as the HHSAF. Furthermore, results from facilities from low-income countries are very poorly represented in this survey, as participation was very limited. Therefore, the total numbers presented in this report do not necessarily represent a true global picture of action and progress.

Due to the long duration of the survey (eight months), there was potential for a decrease in energy and excitement towards data collection originally proposed as a time-limited WHO survey, as well as increased complacency towards completion and submission.

As some surveys were completed in different languages and/or hand written, and e-mailed to WHO for data entry, there were some challenges in understanding the completed fields. In addition, some surveys were submitted without all fields being completed, mainly demographic data.

Some facilities that achieved the *advanced* level did not complete the leadership level indicators, thus limiting a further understanding of their characteristics related to this level of hand hygiene action and hospital safety climate. Some facilities also completed the leadership score when they had not achieved the *advanced* level.

Although facilities were asked that the HHSAF be completed by professionals in charge of infection control or senior managers fully informed about hand hygiene activities in the institution, WHO cannot guarantee the accuracy of HHSAF completion.

Conclusion

It is clear that many health care facilities are committed to monitoring their hand hygiene progress, either through use of the HHSAF or other methods. This report presents the current status of facilities on the hand hygiene improvement continuum. As observed in the results, facility scores vary, with the majority at intermediate or advanced levels. However, although the comparison of the 2011 and 2015 results relies only on data from a small number of facilities, which makes it not as strong as desired, it indicates a likely improvement of hand hygiene activities. In part, this is probably linked to the repeated use of the HHSAF as a tool to inform new action to achieve more progress.

Overall, this report is valuable in driving ongoing awareness across health systems. WHO recommends that health care facilities use the HHSAF on an annual basis at least. As a tool with proven validity, it continues to provide a way to ensure progress is achieved. In addition, it provides an opportunity to target actions as well as resources, given that the framework suggests other tools to support ongoing progress associated with template action plans (10-12). It is recommended that completion of the HHSAF framework be undertaken in support of health systems' quality and safety agendas, for which infection prevention and control, including hand hygiene, is not only critical but life-saving.

References

1. Hand hygiene self-assessment framework 2010. Geneva: World Health Organization; 2010
(http://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1, accessed 2 May 2016).
2. Guide to implementation. A guide to the implementation of the WHO multimodal hand hygiene improvement strategy. Geneva: World Health Organization; 2009
(http://apps.who.int/iris/bitstream/10665/70030/1/WHO_IER_PSP_2009.02_eng.pdf, accessed 2 May 2016).
3. Stewardson AJ, Allegranzi B, Perneger TV, Attar H, Pittet D. Testing the WHO hand hygiene self-assessment framework for usability and reliability. *J Hosp Infect.* 2013; 83(1):30-5.
4. Hand hygiene self-assessment framework global survey summary report. Geneva: World Health Organization; 2012
(http://www.who.int/gpsc/5may/summary_report_HHSAF_global_survey_May12.pdf?ua=1, accessed 2 May 2016).
5. WHO guidelines on hand hygiene in health care. Geneva: World Health Organization; 2009
(http://apps.who.int/iris/bitstream/10665/44102/1/9789241597906_eng.pdf, accessed 3 May 2016).
6. Shekelle P, Pronovost P, Wachter R, McDonald KM, Schoelles K, Dy SM, et al. The top patient safety strategies that can be encouraged for adoption now. *Ann Int Med.* 2013;5;158(5 Pt2):365-8
7. Luangasanatip N. Hongsuwan M. Limmathurotsakul D. Lubell Y. Lee AS. Harbarth S et al. Comparative efficacy of interventions to promote hand hygiene in hospital: systematic review and network meta-analysis. *BMJ.* 2015; 28;351:h3728
8. Partnership for safer health service delivery: evaluation of WHO African partnerships for patient safety 2009-2014. Geneva: World Health Organization; 2015
(<http://www.who.int/patientsafety/implementation/apps/evaluation-report.pdf>, accessed 2 May 2016).
9. Evidence of hand hygiene to reduce transmission and infections by multi-drug resistant organisms in health-care settings. Geneva: World Health Organization; 2014
(http://www.who.int/gpsc/5may/MDRO_literature-review.pdf?ua=1, accessed 2 May 2016).

10. Template action plan for WHO Framework inadequate/basic results.
Geneva: World Health Organization; 2012
(http://www.who.int/gpsc/5may/PSP_GPSC1_InadequateBasicWeb_Feb-2012.pdf?ua=1, accessed 2 May 2016).
11. Template action plan for WHO Framework intermediate results.
Geneva: World Health Organization; 2012
(http://www.who.int/gpsc/5may/PSP_GPSC1_IntermediateWeb_Feb-2012.pdf?ua=1, accessed 2 May 2016).
12. Template action plan for WHO Framework advanced/leadership results. Geneva: World Health Organization; 2012
(http://www.who.int/gpsc/5may/PSP_GPSC1_AdvancedLeadershipWeb_Feb-2012.pdf?ua=1, accessed 2 May 2016).

Acknowledgements

This report was developed by Claire Kilpatrick and Benedetta Allegranzi at WHO. WHO would like to acknowledge that data collection for this survey was only possible thanks to the tremendous time and energy of health care facilities and individual leaders at national and sub-national levels, including the support of Professor Didier Pittet, WHO Collaborating Centre on Patient Safety, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland. The statistical analysis was performed by Angèle Gayet-Ageron, Clinical Research Service, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland. Technical input for the statistical analysis and support were provided by Ermira Tartari, Amara Ndumele, Yu Yun and Safiah Mai. It was reviewed and revised by Julie Storr and Rosemary Sudan.