



Hand Hygiene Compliance Webinar

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Hand Hygiene Compliance: Why Healthcare Facilities Struggle to Improve and How Technology can Assist

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7 September 2023



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Why Achieving Hand Hygiene Compliance is so Challenging

Connie Steed, MSN, RN, CIC, FAPIC



The Patient Care space

Why achieving hand hygiene (HH) compliance is so challenging?

- Hand hygiene **supplies** not available in space
- **Workflow issues:** Sinks or hand sanitizer dispensers not in convenient location
- **Empty** Soap, sanitizer and paper towel dispensers
- **Crowded space** (too many people, equipment) with no easy route to dispensers even when located close to care



Healthcare Environment Chaos

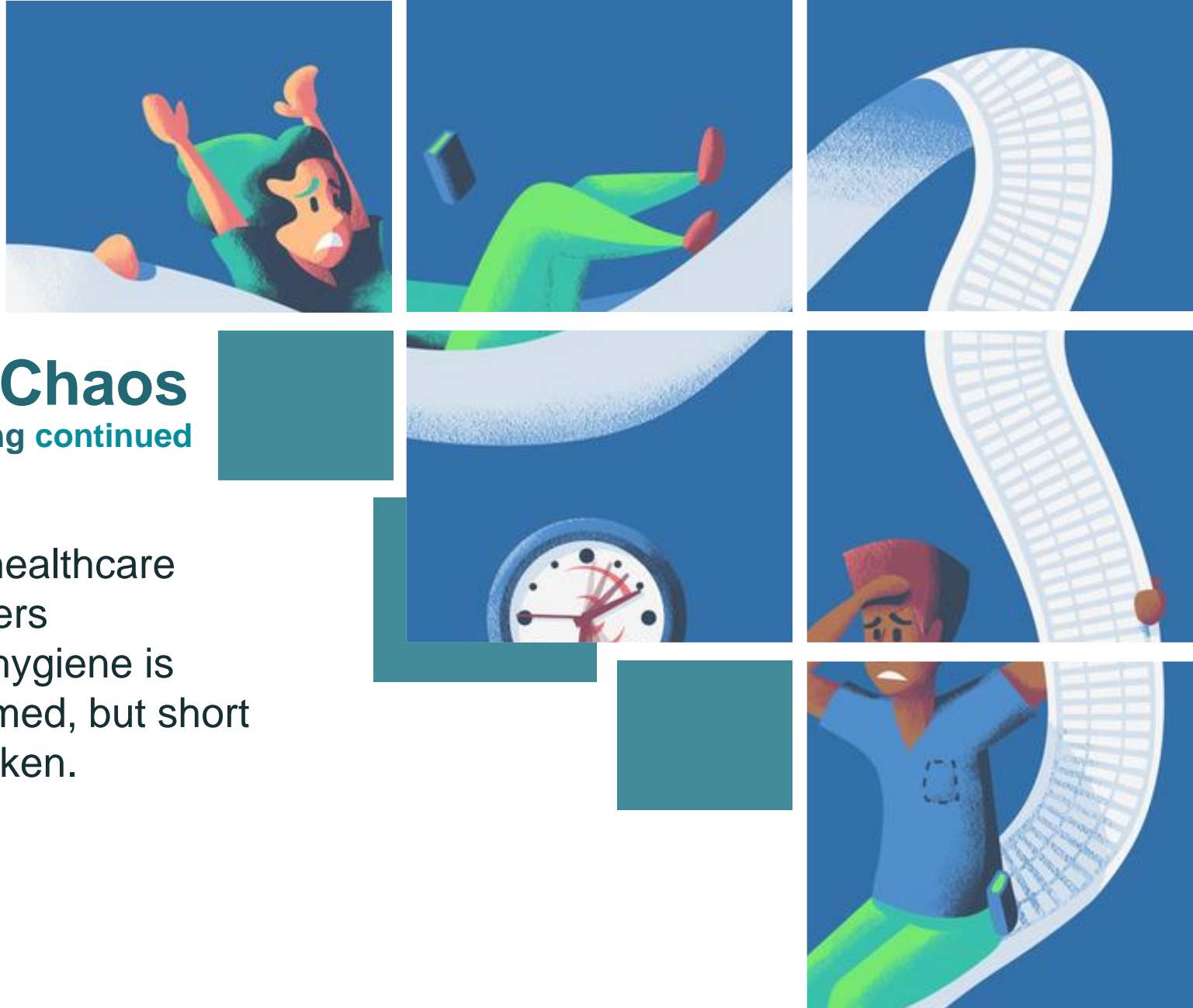
Why achieving HH compliance is so challenging continued

- Too much to do and too little time. Cutting corners.
 - Emergency event where condition of patient is paramount (CPR). Hand hygiene is secondary.
- Tired healthcare providers
 - Hand hygiene is performed, but short cuts taken.

[Hand Hygiene in Healthcare Settings | CDC](#)

[Key facts and figures \(who.int\)](#)

H Dai , KL Milkman, et al. The impact of time at work and time on rule compliance: the case of hand hygiene in healthcare; Jour of Applied Psychology, 2015 . Retrieved 8-20-23 from <https://psycnet.apa.org/record/2014-45053-001>



Healthcare Provider thoughts / behavior

Why achieving HH compliance is so challenging continued

- Hand hygiene agents cause irritation and dryness.
- Lack of belief that hand hygiene reduces infections.
- Understaffing.
- Lack of knowledge of guidelines, protocols, or disagreement procedure(s).
- Low risk of acquiring infection from patients.
- Forgetfulness



Inappropriate Glove Use

Why achieving HH compliance is so challenging continued



Providers replace hand hygiene with glove wearing.

UK Campaign

Gloves. Stop. Think. Make one Change

Do I really need to wear gloves?

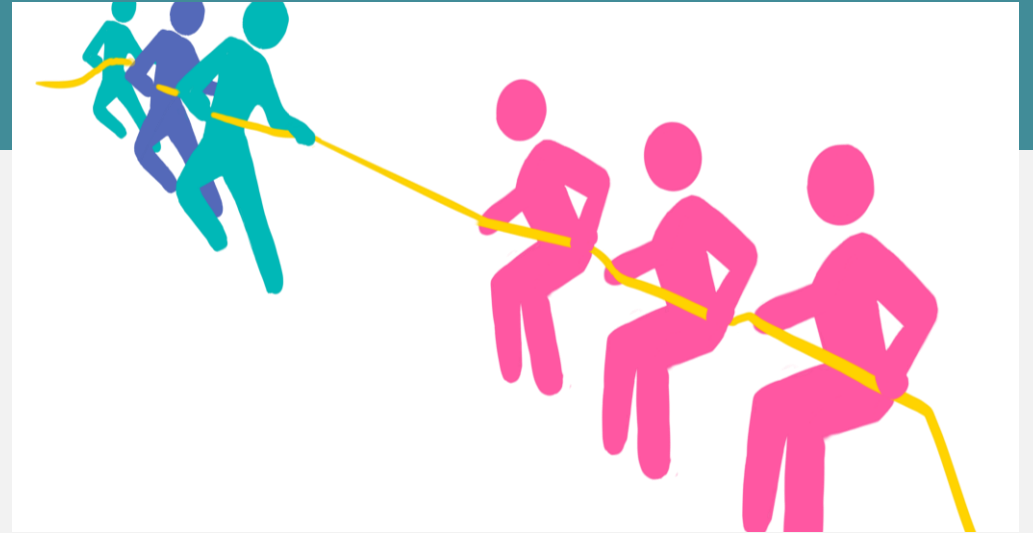
Organizational Culture

Why achieving HH compliance is so challenging continued



- Hand hygiene is not a priority.
- Nursing unit culture- small-group dynamics
“ inertia of the ward routine”

- Lack of accountability.
- Hand hygiene monitoring and feedback is not Consistent - Not reported to leadership & frontline.



Achieving Hand Hygiene Compliance is Challenging - Keys To Sustainable Compliance Improvement

Environment & Supplies

- Supplies must be available.
- Workflow matters
- Patient environment planning: include hand hygiene facilities locations for proper workflow.

Education & Competency

- Effective education, training and competency assessment effective hand hygiene.
- Include frontline staff in evaluating hand hygiene products
- Process to address staff who have skin irritation with available product (s).

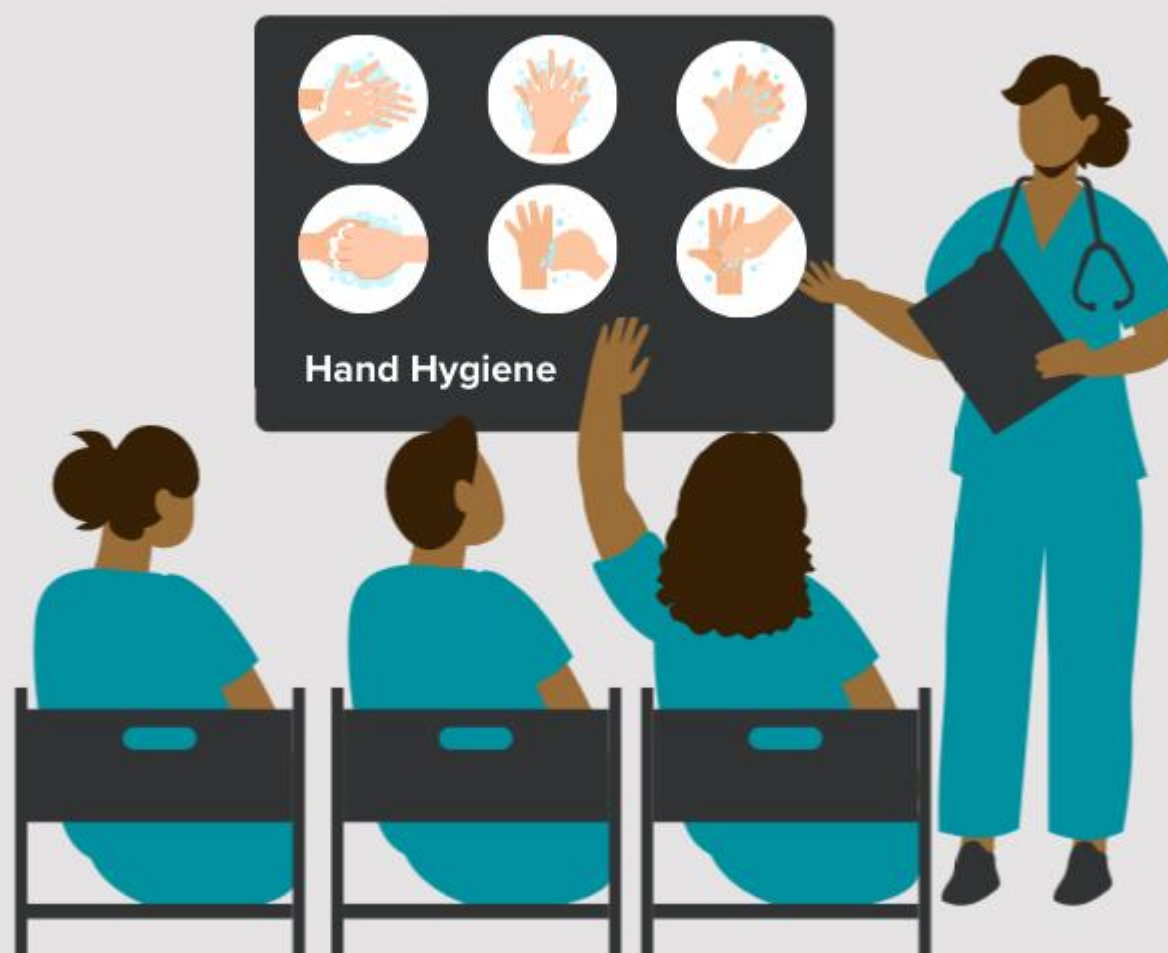
Organizational Culture

- Hand hygiene must be a priority:
 - Hold staff accountable.
 - Be aware of nursing unit culture and impact on compliance.
 - Change is hard. Address the people side of change.

Ongoing Monitor Compliance and Give Feedback

- Address identified opportunities to improve.

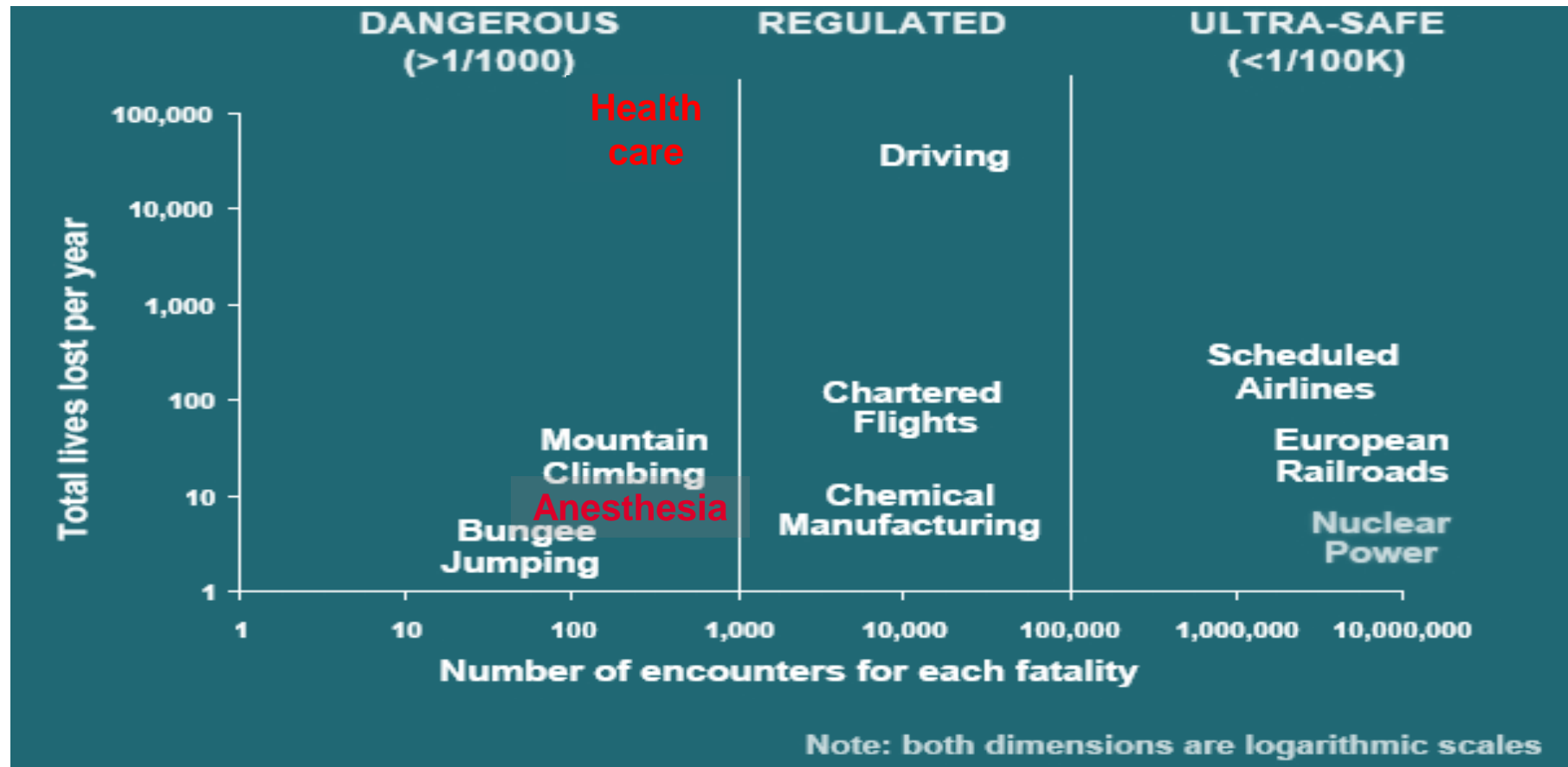




The Components of Hand Hygiene Compliance

Prof Gerry Lacey, Maynooth University

How safe is healthcare?

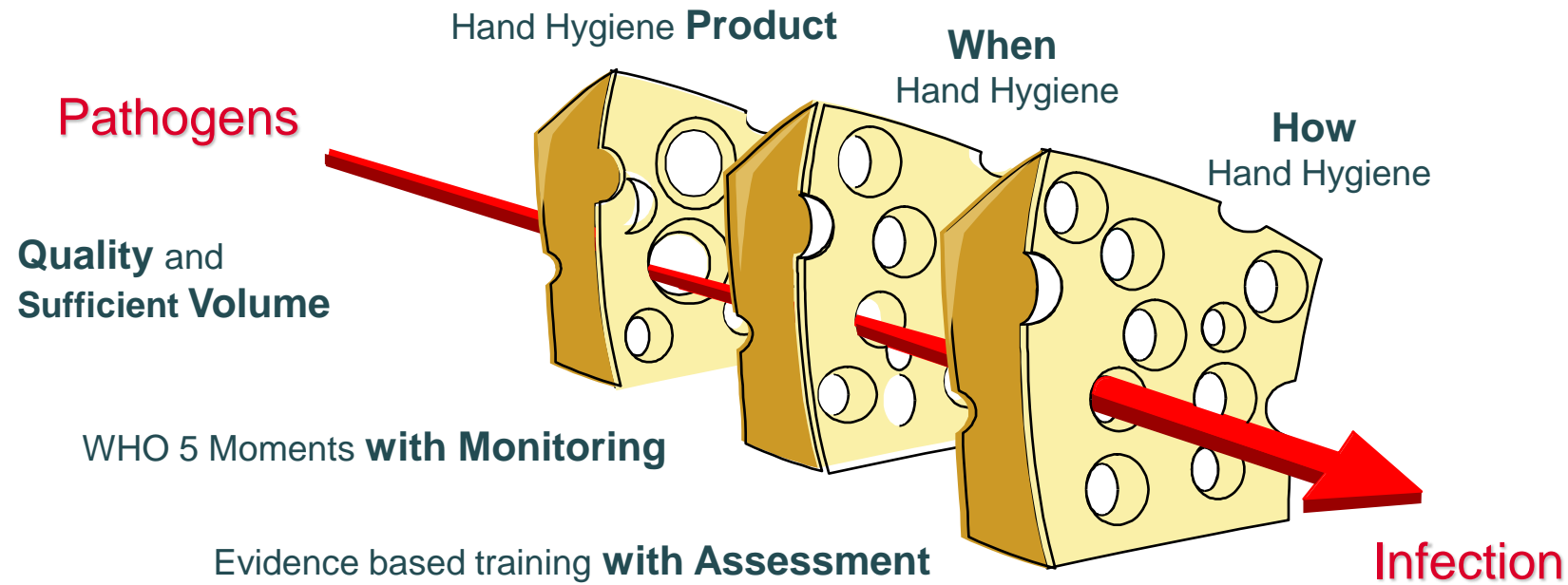


Improvements in Patient Safety - Anesthesiology

- **1940s**
 - mortality rate 1 : 450
 - Best practice guidelines improved rate to 1 : 5,500
- **1980's**
 - LAWSUITS
 - **Guidelines become enforceable standards**
 - **Anesthesia Patient Safety Foundation**
- Extensive training with objective assessment
- Mortality now less than 1 : 200,000



Swiss Cheese Model for Hand Hygiene

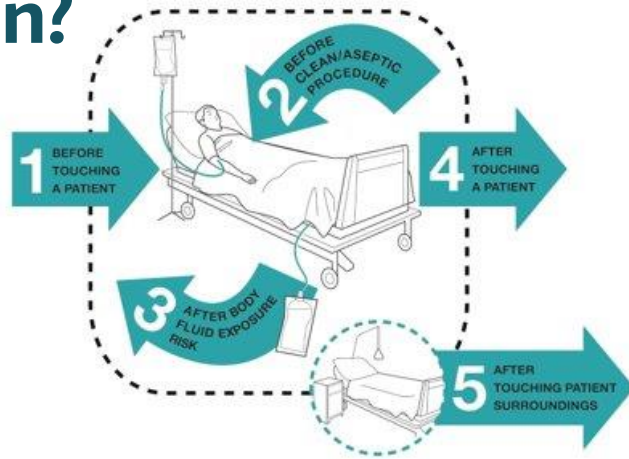


Guidelines become enforceable standards – e.g., Leapfrog, WHO, ISO

Objective evidence using technology – e.g., validated training and measurement

Compliance with all Hand Hygiene Guidelines

When?



X

How?



Quantity

X

Quality

=

Compliance

40% - 80%

X

15% - 18%

=

6% - 14%

The Microbiology

Study 1:

A review¹ of 57 studies conducted between 2014–2020

41%

**Mean baseline compliance
with the 5 Moments**

67%

**Post Intervention mean
compliance level**

- Higher compliance with post patient contact
- Almost all had improved compliance after interventions
- Both individual and multimodal interventions improved compliance

• Contaminated hands

- 5% of fingertips contaminated by MRSA² after hand hygiene!
- 93% of hands were not clinically clean³ on the wards
 - But 60% were confident that their hands were clean

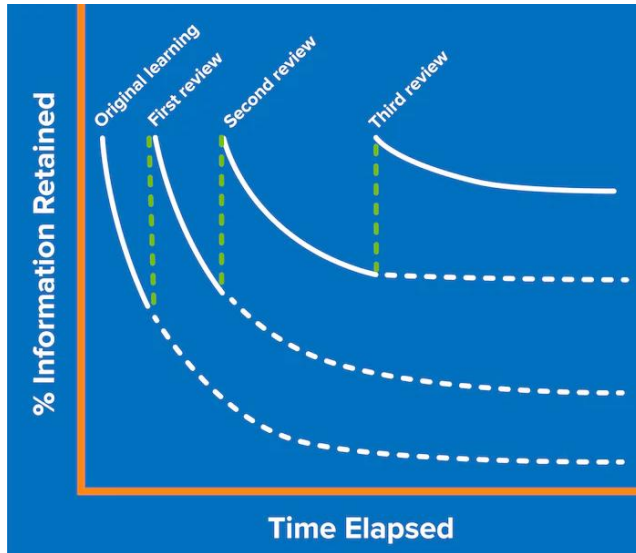
• 2 key issues

- Poor quality hand hygiene technique
- “Unconscious Incompetence”

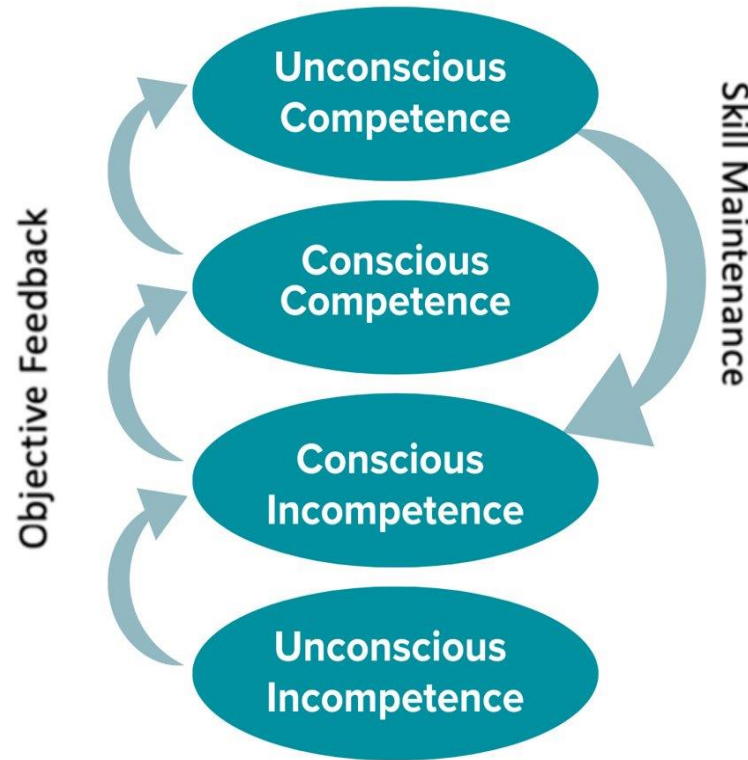
1. Hand hygiene related clinical trials reported between 2014 and 2020: a comprehensive systematic review. Journal of Hosp Infection (2021)

2. When are the hands of healthcare workers positive for methicillin-resistant Staphylococcus aureus? Creamer E et. al. J Hosp Infect. 2010

3. Improvement of Hand Hygiene Quality and Compliance Using Bioburden Measurement and Online Feedback in Germany Frank Günther et.al. ICHE 2017



**Ebbinghaus
Forgetting Curve**



**Burch's
Conscious Competence
Framework**

Key Lessons

- Multiple Learning sessions
- Spaced in Time (sleeps)
- Self-Directed with objective measurement of progress
- Delayed recall test to measure competence
- 20-30 practice sessions with feedback to HH automate skill

The overall pass rates for each of the steps of the WHO protocol.

86%



74%



69%



68%



58%



46%



Training and Monitoring



Current Practice

- One off induction training
- PowerPoint, videos, posters



Problem with current practice

- Subjective assessment
- Rapid skill extinction post training



State of the art technology

- Objective measurement of hand movements
- Realtime feedback on errors drives learning
- Distributed training Vs Massed session

Hand Hygiene Quadrant



SureWash

Assessment-based
Available 24/7
Gamification
Objective, real-time
feedback

HOW
(TECHNIQUE)

Monitoring Systems

More affordable
Actionable Areas
Stand Alone Technology

WHEN
(5 MOMENTS)

REPORTING

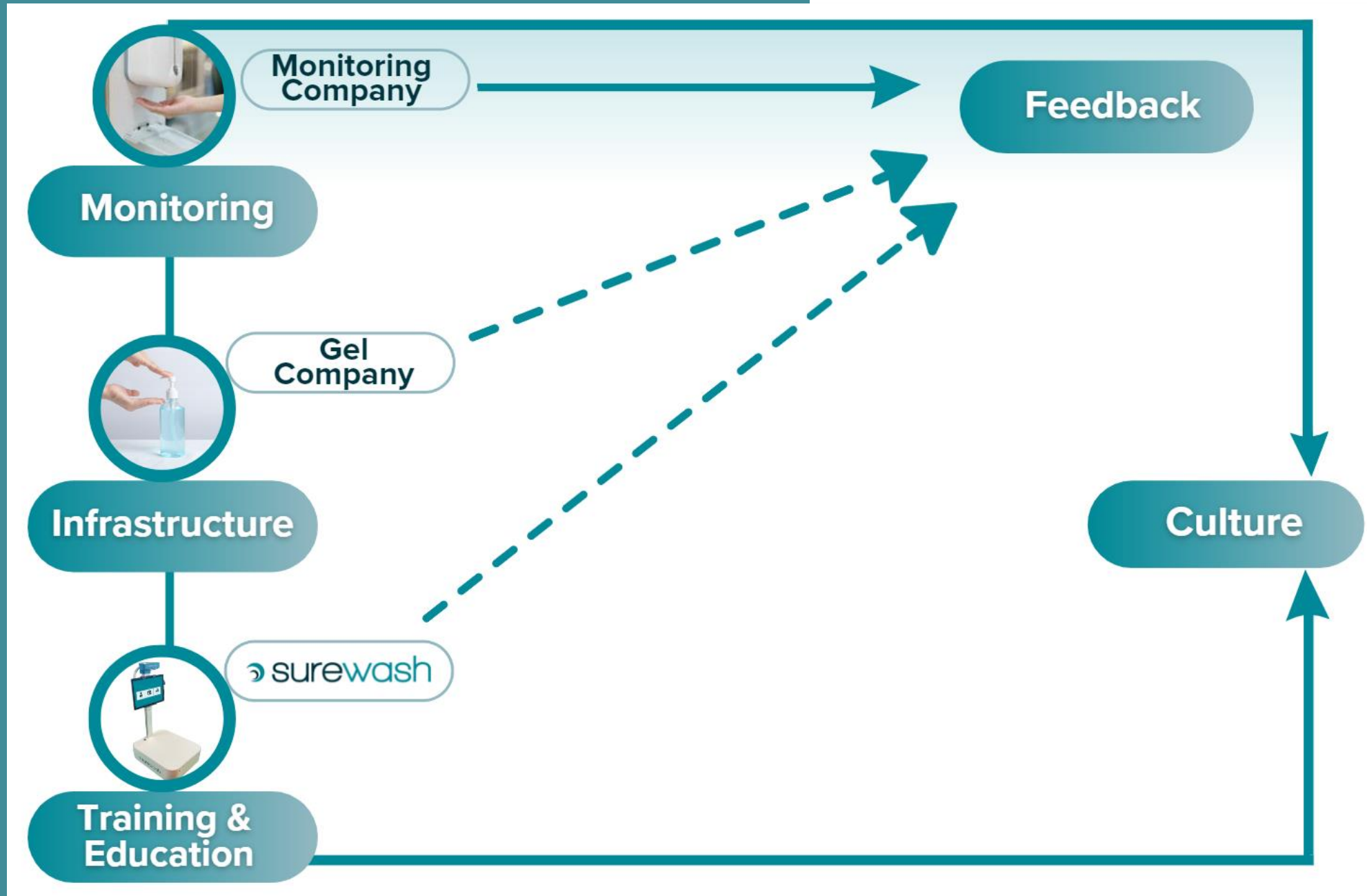
WHAT WITH
(SOAP & GEL
MANUFACTURERS)

Dispenser Technology
Gel & Soap Formulations
Location & Availability

HOW WELL
(UV BOXES ETC)

UV Boxes
Reality check

A COMPLETE SOLUTION



Training to proficiency in the WHO hand hygiene technique

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¹School of Computer Science and Statistics, Trinity College Dublin, The University of Dublin, Dublin, Ireland

²Physician Assistant Online Program, Yale School of Medicine, New Haven, CT, USA

Journal of Medical Education and Curricular Development, August 5, 2019

Objectives:

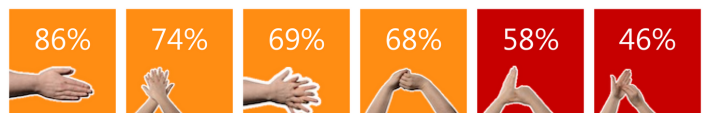
Hand hygiene is critical to patient safety, but low compliance is often reported. Although training-to-proficiency is common for surgical skills, no proficiency-based training program for hand hygiene has been reported in the literature. This study developed a proficiency-based training program for the WHO hand hygiene technique and assessed the amount of training required to reach proficiency. The training was delivered as part of a 5-day induction for Physician's Assistants.

Methods:

42 Students used a hand hygiene training simulator to objectively assess hand hygiene technique over a 5-day period. Proficiency was determined when students demonstrated the WHO hand hygiene technique in under 42 seconds. The students also completed a post-intervention questionnaire.

Results:

The average training episode lasted 2.5 minutes and consisted of 4.5 hand hygiene exercises. The average student completed 5 training episodes (one per day) taking a total of 17 minutes. 40% (17) of the students achieved proficiency within the 5-days. Proficiency was strongly correlated with the number of training exercises completed ($r=0.79$, $p < 0.001$) and the total time spent training ($r=0.75$, $p < 0.001$). Linear regression analysis predicted that the 32 hand hygiene exercises or a total of 23 mins training were required to achieve proficiency.



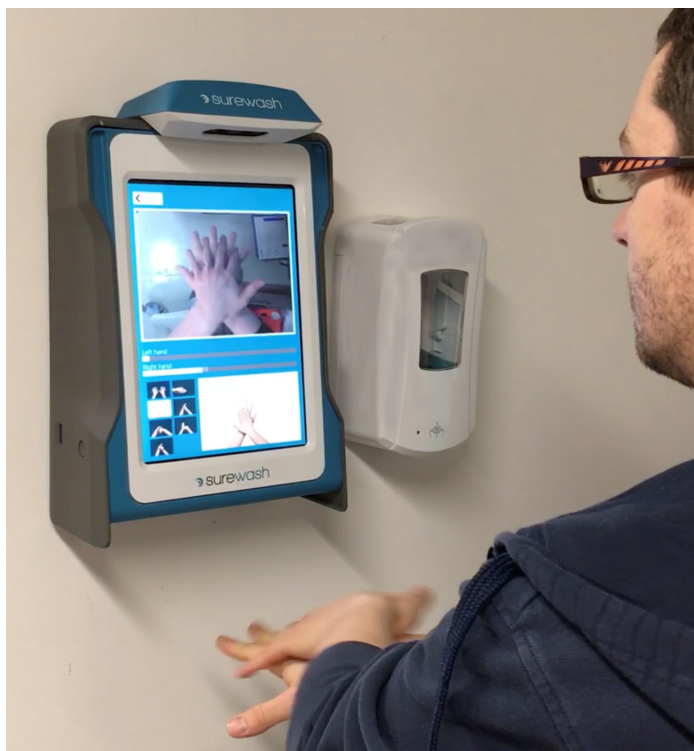
The overall pass rates for each of the steps of the WHO protocol, showing that students took longer to learn the fingertip and thumb technique than the other steps

	Tutorial	Level 1	Level 2	Level 3	Level 4	Level 5
Number passed this level	42	35	30	28	23	17
% Achieving each proficiency level	100%	81%	70%	65%	53%	40%
Number with each proficiency Level	7	5	2	5	6	17
% with this proficiency level	19%	12%	5%	12%	14%	40%
Avg. Minutes spent training	5.49	8.22	17.83	17.90	21.11	22.88
Avg. Number Training sessions	4	6	23	17	24	27

The detailed results in hand hygiene proficiency achieved and the relationships with training time and the number of training sessions, 42 subjects, Yale, 2018

Conclusions:

This is the first study to develop a train-to-proficiency program for hand hygiene and estimate the amount of training required to achieve proficiency. Given its importance to preventing healthcare acquired infections (HAIs) medical education programs should consider making sufficient time and resources available to develop proficiency in hand hygiene technique.



Measure Background

Unclean hands are one of the primary ways pathogens are transmitted throughout the health care environment. Evidence shows that microorganisms can survive on hands for varying lengths of time, some surviving for multiple hours.¹ If those caring for patients do not take the proper steps to clean their hands, these pathogens can easily be transmitted from one patient to another patient. In addition to patient-to-patient transfer of pathogens, contaminated hands can also transfer bacteria to clean surfaces. It is estimated that up to 13% of contact between contaminated hands and clean surfaces can result in cross-contamination.¹ This risk of spreading bacteria in a health care environment makes hand hygiene a pivotal patient safety practice.²

Despite the clear evidence and guidelines for proper hand hygiene procedures, studies have shown that on average, health care providers clean their hands less than half of the times they should.³

Why is Hand Hygiene Important?

While it is difficult to definitively measure the impact of improved hand hygiene on rates of healthcare-associated infections (HAI), evidence does support the notion that improved hand hygiene practices drastically reduce HAIs.⁴ Multiple studies have demonstrated a temporal relationship between improved hand hygiene practices and reduced HAI rates.⁴ For example, a study of hand hygiene compliance for hand washing and the use of alcohol-based hand sanitizer demonstrated that an increase from 48% to 66% compliance over a three-year period was correlated with a reduction in nosocomial infections from 16.9% to 9.9% and a reduction in methicillin-resistant *Staphylococcus aureus* (MRSA) transmission from 2.16 to 0.93 episodes per 10,000 patient-days.⁵ Some have even demonstrated the elimination of MRSA from various care settings solely due to improved hand hygiene practices.⁶

Hand Hygiene Standard

Leapfrog's hand hygiene standard focuses on adherence to "best practice" hand hygiene practices identified by a national [Hand Hygiene Expert Panel](#) and adapted from the World Health Organization's "[Hand Hygiene Self-Assessment Framework](#)."⁷

Leapfrog's hand hygiene standard includes five domains: monitoring, feedback, training and education, infrastructure, and culture. The standard encourages facilities to adopt a multimodal approach to hand hygiene, emphasizing the importance of monitoring and feedback.

Hospitals achieving the Hand Hygiene standard...

- Adhere to the [monitoring domain](#) by:
 - Collecting hand hygiene compliance data on at least **200** hand hygiene opportunities (or a minimum threshold number of hand hygiene opportunities based on unit throughput), **each month, in each patient care unit**;
 - Providing individuals who touch patients or who touch items that will be used by patients with feedback on their hand hygiene compliance; and,
 - Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog's criteria for collecting hand hygiene compliance data
- Adhere to the [feedback domain](#) by:
 - Providing feedback on hand hygiene compliance data to individuals who touch patient or who touch items that will be used by patients for monthly improvement work;
 - Using hand hygiene compliance data for creating action plans; and,
 - Providing feedback on hand hygiene compliance data to hospital or ASC leadership and holding leadership accountable for hand hygiene performance through performance reviews or compensation
- Adhere to two of the other following domains:
 - Training and Education
 - Infrastructure
 - Culture

OR

- Adhere to the [monitoring domain](#) by:
 - Collecting hand hygiene compliance data on at least **100** hand hygiene opportunities (or a minimum threshold number of hand hygiene opportunities based on unit throughput), **each month, in each patient care unit**;
 - Providing individuals who touch patients or who touch items that will be used by patients

- with feedback on their hand hygiene compliance; and,
- Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog's criteria for collecting hand hygiene compliance data
- Adhere to **all** the following domains:
 - Feedback
 - Training and Education
 - Infrastructure
 - Culture

Download the complete Leapfrog Hospital Survey scoring algorithms document at [Hospital Scoring and Results webpage](https://www.leapfroggroup.org/hospital-scoring-algorithms).

Why Purchasers Need to Get Involved

While compliance with proper hand hygiene appears to be an evidence-based method for preventing HAIs, facilities have demonstrated varying levels of adherence to adequate hand hygiene practices.^{8,9} The issue of hand hygiene offers purchasers an opportunity to reinforce to hospitals that patient safety is important. And that by demonstrating compliance with Leapfrog's hand hygiene standard, it will send a clear signal that the facility prioritizes patient safety.

Given the importance of ensuring that those caring for patients are practicing hand hygiene and the limitations of human observers, it is critical that purchasers send the message that they expect hospitals to consider implementing electronic hand hygiene compliance monitoring systems. Facilities that have adopted electronic compliance monitoring systems are better able to determine their actual hand hygiene compliance rate, creating the opportunity for more robust quality improvement initiatives. The potential cost savings to an employer of reducing HAIs are tremendous, though pales in comparison to the potential for reduced harm to employees.

References

1. Pittet D, Allegranzi B, Sax H, et al. Evidence-based model for hand transmission during patient care and the role of improved practices. *Lancet Infect Dis*. 2006;6:641-652.
2. Pittet D, Allegranzi B, Boyce J. The World Health

Organization guidelines on hand hygiene in health care and their consensus recommendations. *Infection Control and Hospital Epidemiology*. 2009;30(7):611-622.

3. Centers for Disease Control and Prevention. Clean hands count for safe healthcare. 2017. Available at <https://www.cdc.gov/features/handhygiene/index.html>
4. Centers for Disease Control and Prevention. Guideline for hand hygiene in health-care settings. *Morbidity and Mortality Weekly Report*. 2002;51(RR-16):1-56.
5. Pittet D, Hugonnet S, Harbarth S, et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *The Lancet*. 2000;356(9238):1307-1312.
6. Webster J, Faoagali J, Cartwright D. Elimination of methicillin-resistant *Staphylococcus aureus* from a neonatal intensive care unit after hand washing with triclosan. *J Paediatr Child Health*. 1994;30:59-64.
7. World Health Organization. Hand hygiene self-assessment framework 2010. Available at https://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1
8. Albright J, White B, Pedersen D, Carlson P, Yost L, Littau C. Use patterns and frequency of hand hygiene in healthcare facilities: Analysis of electronic surveillance data. *American Journal of Infection Control*. 2018 Oct 1;46(10):1104-9
9. Stahmeyer JT, Lutze B, Von Lengerke T, Chaberny IF, Krauth C. Hand hygiene in intensive care units: a matter of time?. *Journal of Hospital Infection*. 2017 Apr 1;95(4):338-43.

For a comprehensive list of references please review the Hand Hygiene Bibliography, available at: <https://ratings.leapfroggroup.org/measure/hospital/handwashing>

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Hand Hygiene Standard

Since 2019, Leapfrog has included the hand hygiene standard on the Leapfrog Ambulatory Surgery Center (ASC) Survey. The standard focuses on adherence to “best practice” hand hygiene practices. These practices were identified by a national [Hand Hygiene Expert Panel](#) and adapted from the World Health Organization’s [“Hand Hygiene Self-Assessment Framework.”](#)⁷

The standard includes five domains: monitoring, feedback, training and education, infrastructure, and culture. The standard encourages facilities to adopt a multimodal approach to hand hygiene, emphasizing the importance of monitoring and feedback.

ASCs can achieve the Hand Hygiene standard in two ways:

Option 1

- Adhere to the monitoring domain by:
 - Collecting hand hygiene compliance data on at least 200 hand hygiene opportunities (or a minimum procedure-adjusted number of hand hygiene opportunities), each month, in the facility;
 - Providing individuals who touch patients or who touch items that will be used by patients with feedback on their hand hygiene compliance; and,
 - Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog’s criteria for collecting hand hygiene compliance data
- Adhere to the feedback domain by:
 - Providing feedback on hand hygiene compliance data to individuals who touch patients or who touch items that will be used by patients for monthly improvement work;
 - Using hand hygiene compliance data for creating action plans; and,
 - Providing feedback on hand hygiene compliance data to ASC leadership and holding leadership accountable for hand hygiene performance through performance reviews or compensation
- Adhere to two of the following other domains:
 - Training and Education
 - Infrastructure
 - Culture

Option 2

- Adhere to the monitoring domain by:
 - Collecting hand hygiene compliance data on at least 100 hand hygiene

- opportunities (or a minimum procedure-adjusted number of hand hygiene opportunities), each month, in the facility;
- Providing individuals who touch patients or who touch items that will be used by patients with feedback on their hand hygiene compliance; and,
- Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog's criteria for collecting hand hygiene compliance data
- Adhere to all other domains:
 - Feedback
 - Training and Education
 - Infrastructure
 - Culture

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References

1. Pittet D, Allegranzi B, Sax H, et al. Evidence-based model for hand transmission during patient care and the role of improved practices. *Lancet Infect Dis*. 2006;6:641-652.
2. Pittet D, Allegranzi B, Boyce J. The World Health Organization guidelines on hand hygiene in health care and their consensus recommendations. *Infection Control and Hospital Epidemiology*. 2009;30(7):611-622.
3. Centers for Disease Control and Prevention. Clean hands count for safe healthcare. 2017. Available at <https://www.cdc.gov/features/handhygiene/index.html>
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7. World Health Organization. Hand hygiene self-assessment framework 2010. Available at https://www.who.int/gpsc/country_work/hhsa_framework_October_2010.pdf?ua=1
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THANK YOU!



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