

**Hand Hygiene: Not Just for Health Care Workers Anymore!**  
**Dr. Jocelyn Srigley, University of British Columbia**  
**A Webber Training Teleclass**

**HAND HYGIENE: NOT JUST  
FOR HEALTH CARE  
WORKERS ANYMORE!**

**JOCELYN SRIGLEY, MD, MSC, FRCPC**

**HOSTED BY DR. HUGO SAX  
HUMANLABZ, SWITZERLAND**



THE UNIVERSITY OF BRITISH COLUMBIA  
Department of Pathology & Laboratory Medicine  
Faculty of Medicine



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March 10, 2022

**DISCLOSURES**

- No conflicts of interest

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**OBJECTIVES**

- Understand the importance of patient and visitor hand hygiene
- Be aware of data on patient and visitor hand hygiene knowledge, attitudes, and practices
- Discuss how to improve patient and visitor hand hygiene

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**INTRODUCTION:  
HAND HYGIENE  
THEN AND NOW**

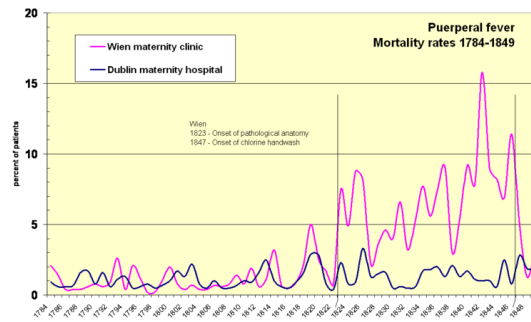
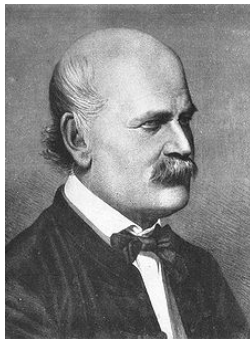
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## HISTORY OF HAND HYGIENE IN HEALTH CARE



<https://www.cbc.ca/player/play/1743449667719>



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## FROM SEMMELWEIS TO NOW

- Hand hygiene among health care workers (HCWs) remains suboptimal despite decades of improvement initiatives
  - Systematic review showed 40% overall compliance (Erasmus, 2010)
  - Systematic review of studies conducted during the COVID-19 pandemic showed 74% compliance (Wang, 2021)
- Changing HCW hand hygiene behaviour is difficult
- Health care-associated infections (HAIs) remain one of the most common adverse events in hospitals (Schwendimann, 2018)
  - Since the beginning of the pandemic, increases in many HAIs have been reported (Fleisher, 2022)

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Journal of Hospital Infection (2005) 61, 183-188  
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REVIEW  
**Could hospital patients' hands constitute a missing link?**  
K.R. Banfield<sup>a,\*</sup>, K.G. Kerr<sup>b</sup>

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**WHY IS  
PATIENT AND  
VISITOR HAND  
HYGIENE  
IMPORTANT?**

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**TRANSMISSION CAN OCCUR VIA PATIENTS' HANDS**

**Istenes, 2013**

- 357 patients admitted to 6 post-acute care facilities
  - Any multi-drug resistant organism 24.1%
  - MRSA 10.9%
  - VRE 13.7%
  - Resistant Gram negative bacilli 2.8%

**Cao, 2016**

- 100 hand samples from patients on medical/surgical units
  - One pathogen 39%
  - Gram negative 34%
  - C. difficile 14%
  - MRSA 14%
  - VRE 9%

**PATIENT HAND HYGIENE HAS BEEN SHOWN TO PREVENT HAIS**

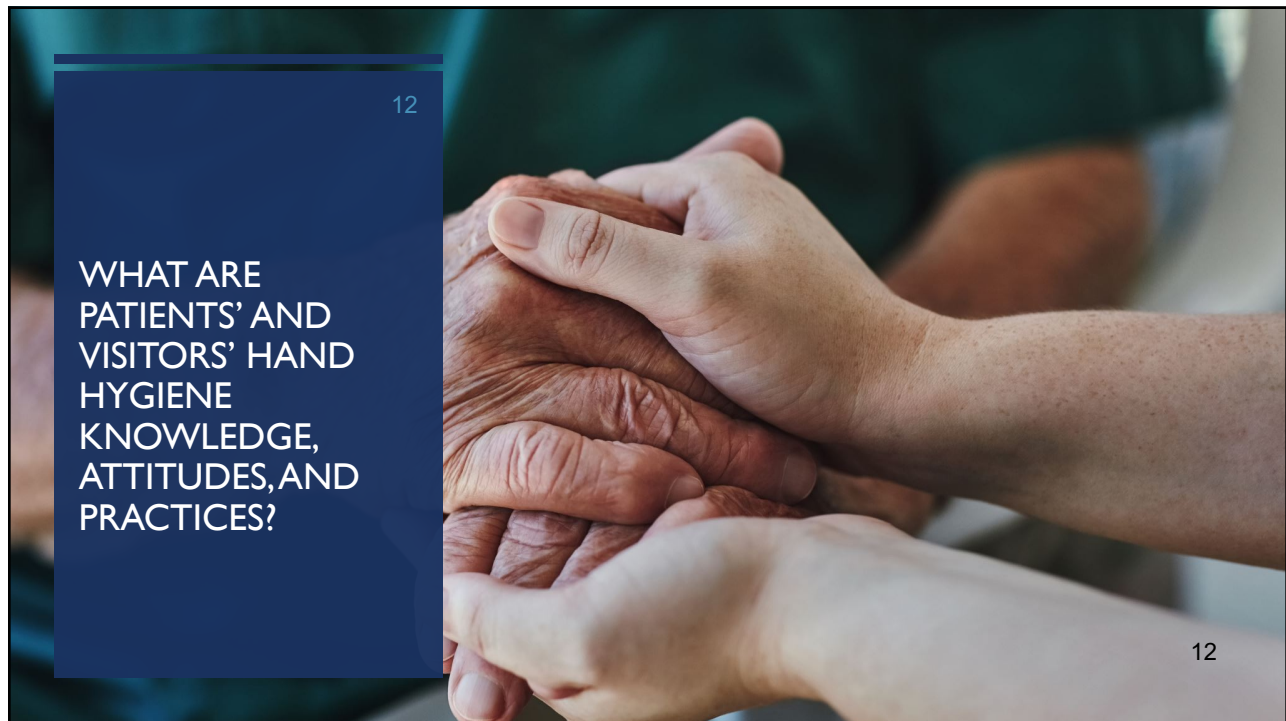
<b>Author, Year</b>	<b>Results</b>
Pokrywka, 2014	CDI rate 10.45/10,000 patient days before to 6.95/10,000 patient days after; p=0.0009
Gagne, 2010	MRSA 10.6/1,000 admissions before to 5.2/1,000 admissions after
Cheng, 2007	6 outbreaks affecting 66 patients (18.2%) before; 4 outbreaks affecting 23 patients (4.4%) after; p=0.005 for total patients involved
Thu, 2007	SSI decreased from 8.3% to 3.8% on intervention unit and increased from 7.2% to 9.2% on control unit; p=0.04 for comparison between units
Hilburn, 2003	Nosocomial infection rate 8.2% before to 5.3% after
Peters, 1992	Puerperal mastitis 2.90% before to 0.66% after; p<0.001

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**PATIENT HAND HYGIENE MAY IMPROVE HCW HAND HYGIENE**

- Cognitive dissonance
  - HCWs who emphasize the importance of hand hygiene to patients may change their behaviour to be consistent
- Study of a patient hand hygiene protocol in an ICU (Fox, 2015)
  - Staff hand hygiene before room entry increased from 35% to 66%
  - After room exit increased from 66% to 79%

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**PATIENT HAND HYGIENE ATTITUDES AND PERCEPTIONS (WU, 2013)**

- Cross-sectional survey of patients and family members in a teaching hospital in Taiwan
  - 859 respondents
- 89.8% considered hand hygiene important
- 78.4% would like more information on hand hygiene
  - More likely if they had experienced an HAI (odds ratio, 2.48; 95% confidence interval, 1.57-3.89; P < .001)

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**PATIENT HAND HYGIENE KNOWLEDGE AND ATTITUDES (SRIGLEY, 2020)**

- Survey and interviews of inpatients at adult acute care (4) and chronic care (1) hospitals
  - 268 surveys and structured interviews with 23 randomly selected patients
- All agreed that patient hand hygiene is important and prevents infection
- Patients know they should perform hand hygiene after toileting, but less awareness of other moments
- 75% said they would not like to receive more information about hand washing while in the hospital
  - "I'm old enough to know these things," "I think I know enough about it"
  - "I know from when you're raised, you're taught to wash your hands and everything, you know? It's only pigs that wouldn't do it."

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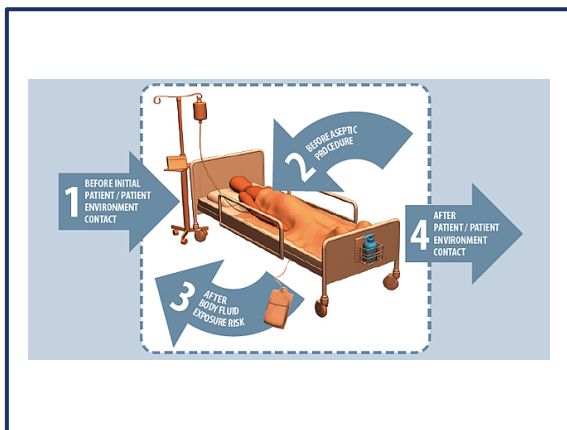
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## KEY FACILITATORS AND BARRIERS

Theoretical Domain	Survey Statement(s)	Representative Quotes
Beliefs about consequences	Washing my hands prevents me from getting sick; washing my hands prevents other people in the hospital from getting sick	“Protect other patients and myself from spread of infection;” “to prevent transmission of infections/diseases, especially to my newborn”
Social influences	By regularly washing my hands, I can be a role model for others to regularly wash their hands	“Seeing other people wash;” “Seeing nurses and doctors wash/sanitize”
Environmental context and resources	Hand cream is not located in convenient areas	“Hands get dry, sore, and cracked with such frequent washing;” “frequent hand washing causes damage to my skin, it will be helpful to provide hand creams too”

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## INDICATIONS FOR PATIENT AND VISITOR HAND HYGIENE



- Before patient/patient environment contact
  - Upon entering their room (or facility/clinic)
  - Before contacting clean supplies
- Before “aseptic procedures”
  - Prior to eating
  - Taking meds, administering injections, wound care, etc.
- After body fluid exposure
  - After toileting/diapering
  - After coughing/sneezing/etc.
- After patient/patient environment contact
  - Upon leaving their room (or facility/clinic)

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## PATIENT HAND HYGIENE RATES

- Emergency department survey (Luz, 2011)
  - Patients reported hand hygiene after 62-88% of bathroom visits and after 13-41% of bedside urinal/bedpan uses
- 24 hours of direct observation in a hospital (Randle, 2010)
  - Patient/visitor HH was 67.5% after body fluid exposures and 50% after contact with patient surroundings
- “Covert observation” by junior doctors (Mattam, 2012)
  - Hand hygiene performed by patients during 73% of meals
- Study on pediatric wards (Randle, 2013)
  - Only found 1 child to observe, who had 100% compliance
- University hospital in Hong Kong (Cheng, 2016)
  - 26.9% before meals/medications, 27.5% after urinal/bedpan use, 89.7% after using toilet facilities

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## HAND HYGIENE RATES AT A PEDIATRIC AND MATERNITY HOSPITAL (LEE, 2021)

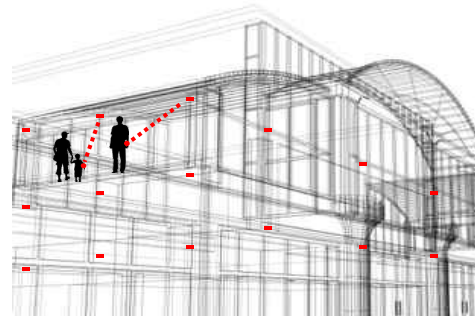
Moment	Self-Report	Direct Observation
Before contact with patient/patient environment	39-74%	10%
Before “aseptic procedure”	32-96%	15%
After blood/body fluid exposure	37-96%	53%
After contact with patient/patient environment	48-62%	3%

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## ELECTRONIC MONITORING OF PATIENTS

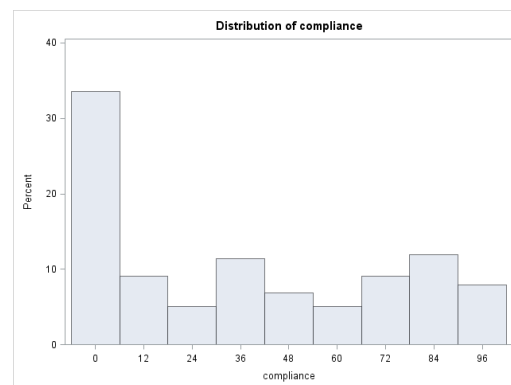
- Hand hygiene on a multi-organ transplant unit measured by a real-time locating system (RTLS) for 9 months (Srigley, 2014)



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## HAND HYGIENE RATES (SRIGLEY, 2014)

- After using the bathroom
  - 29.7% of 12,649 bathroom visits
  - More likely among women and after 12 pm
- Before eating
  - 39.1% of 6,005 meal times
  - Ranged from 32.2% at breakfast to 45.9% at dinner
  - 3.3% of 1,122 kitchen visits
- Room entry and exit
  - 2.9% of 5,786 entries and 6.7% of 5,779 exits
  - More likely in the afternoon and on weekdays



n=176 patient-room stays

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**HOW CAN  
PATIENT AND  
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HYGIENE BE  
IMPROVED?**

## EXAMPLES OF INTERVENTIONS

Author, Year	Intervention
Loveday, 2021	Patients received hand wipe pack and information card; written protocol for staff
Manresa, 2020	Staff either received education on patient hand hygiene or were instructed to clean patients' hands daily with alcohol-based wipes daily
Rai, 2019	Patients received education, posters, and bedside ABHR
Pokrywka, 2014	Education, reminders, and alcohol wipes on meal trays; staff and volunteers encouraged to clean patient hands at mealtimes
Lary, 2013	Pediatric wards randomized to interactive educational activities using "Glo-Yo," mobile learning technology, or control
Ardizzone, 2012	Staff education on surgical units and audits to assess whether they assisted patients with hand hygiene
Hedin, 2012	Patients at a rehab centre received education and ABHR in bathrooms; staff gave out alcohol wipes at mealtimes and were encouraged to remind/assist patients with hand hygiene

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## EXAMPLES OF INTERVENTIONS

Author, Year	Intervention
Whiller, 2000	Hand wipe containers and reminder signs attached to commodes
Gagne, 2010	All inpatients at a community hospital in Quebec received education and ABHR twice daily x ~1 year
Cheng, 2007	Staff gave ABHR to all inpatients in a psychiatric unit every 4 hours during the day x ~1 year
Thu, 2007	Inpatients on a neurosurgical unit in Vietnam received ABHR and education
Hilburn, 2003	Patients received ABHR and education x 10 months; posters reminded staff, patients, and visitors about hand hygiene
Peters, 1992	Maternity patients provided with ABHR at bedside x 10 months, then withdrawn x 2 months and reinstated x 2 months

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## SYSTEMATIC REVIEW (SRIGLEY, 2016)

- Objective: to determine the efficacy of patient hand hygiene interventions in reducing infections and improving patient hand hygiene compliance
- 10 studies met inclusion criteria
- Targets of the interventions
  - Patients (5/10)
  - Healthcare workers (HCWs) (3/10)
  - Both (2/10)
- Components of the interventions were similar to the WHO multimodal approach
  - Provision of product (8/10)
  - Education (7/10)
  - Reminders (3/10)
  - Audits (1/10)

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## MULTIMODAL HAND HYGIENE STRATEGIES

- System change
- Training and education
- Evaluation and feedback
- Reminders in the workplace
- Institutional safety climate

Cochrane Database of Systematic Reviews | Review - Intervention

New search Conclusions changed

### Interventions to improve hand hygiene compliance in patient care

✉ Dinah J Gould, Donna Moralejo, Nicholas Drey, Jane H Chudleigh, Monica Taljaard Authors' declarations of interest  
Version published: 01 September 2017 Version history  
<https://doi.org/10.1002/14651858.CD005186.pub4>

- “A variety of single intervention strategies and combinations of strategies...led to increased hand hygiene compliance in most studies, regardless of setting. However, the **certainty of the evidence varied from very low to moderate**, depending on the strategy. What remains unclear is which strategy or combination of strategies is most effective in a given context.”

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## GOING BEYOND THE MULTIMODAL STRATEGY

### Behaviour Change

- Individual level
- Based on psychological theories

### Culture Change

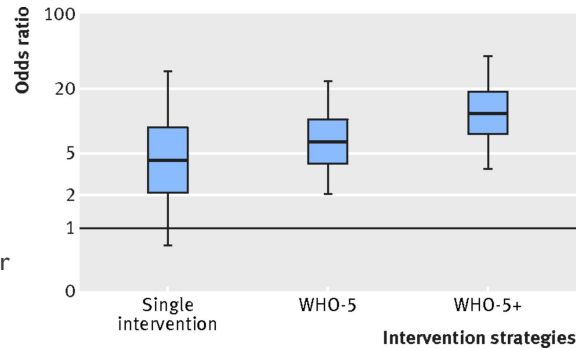
- “The way we do things around here”
- Group interactions
- Based on sociological theories

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**ADDING BEHAVIOUR CHANGE STRATEGIES (LUANGASANATIP, 2015)**

- Systematic review and network meta-analysis
- Compared 3 types of studies:
  - Single interventions
  - WHO approach
  - WHO approach + goal setting, incentives, or accountability

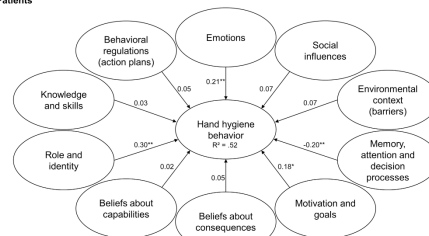


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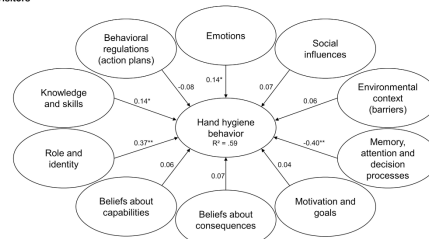
**BEHAVIOUR CHANGE FOR PATIENTS/VISITORS (GAUBE, 2021)**

- Survey of 1605 patients and visitors to find a theoretical model to explain hand hygiene practice and identify predictors for hand hygiene behaviour
- Most suitable model was Theoretical Domains Framework
- Key determinants included:
  - Role and identity
  - Motivation and goals
  - Memory, attention and decision processes
  - Emotions
  - Knowledge and skills

A) Patients



B) Visitors



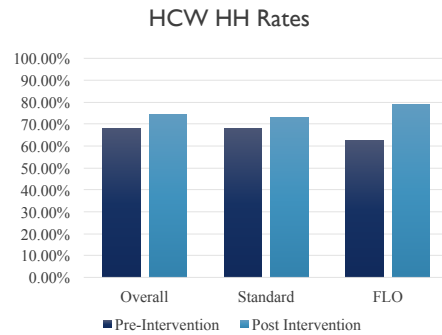
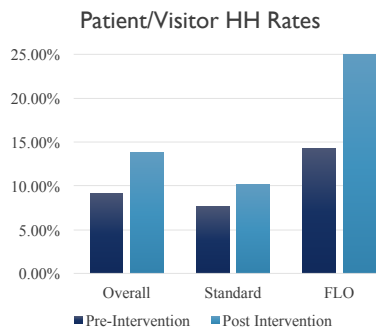
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## CULTURE CHANGE (WONG, 2020)

- Compared a standard intervention (education and reminders) to a front-line ownership intervention (“positive deviance”)
- Stepped wedge cluster randomized controlled design



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## #HANDHYGIENEHEROES CAMPAIGN



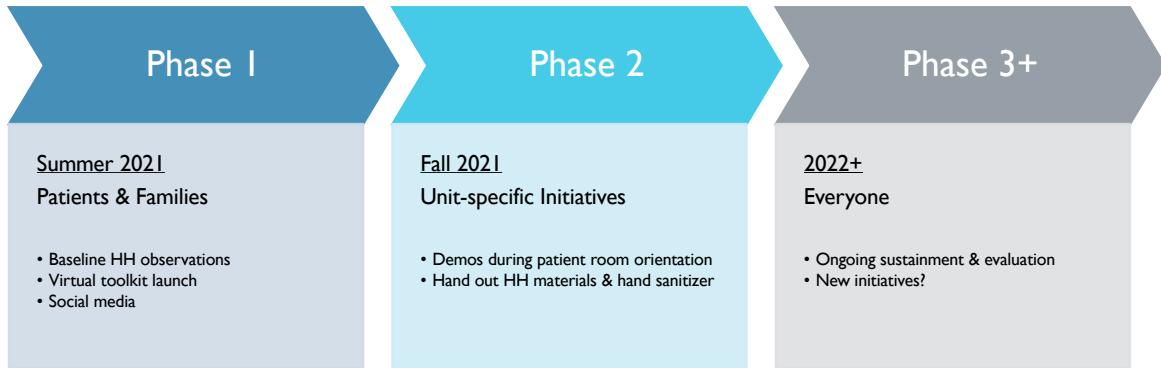
- Background and rationale
  - Building on survey findings (e.g. beliefs about consequences; focus on ABHR)
  - Use momentum of COVID-19
  - Front-line ownership approach
- Vision
  - To create a culture where hand hygiene is “just what we do around here”
- Goal
  - Improve patient/family hand hygiene rates to  $\geq 60\%$  in one year

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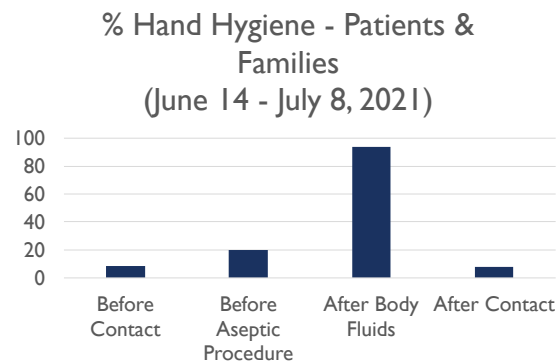
## TIMELINE



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## BASELINE HAND HYGIENE OBSERVATIONS


Overall patient & family  
hand hygiene:  
**14.3%**



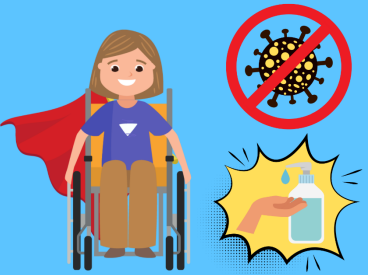
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TOOLKIT




**BE A HAND HYGIENE HERO!**  
 PROTECT EVERYONE AGAINST INFECTION.




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**BE A HAND HYGIENE HERO!**



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**BE A HAND HYGIENE HERO.**  
 PROTECT YOUR FAMILY AGAINST INFECTION.




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TOOLKIT

**Patient and Visitor Hand Hygiene Education Checklist on Admission:**


Intervention	Completed
<p>Review important moments for hand hygiene in the hospital:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Before entering and after exiting patient rooms or clinic areas</li> <li><input type="checkbox"/> Before eating or feeding (including breastfeeding)</li> <li><input type="checkbox"/> Before taking or giving medication</li> <li><input type="checkbox"/> Before entering the kitchen, playroom, or other shared areas</li> <li><input type="checkbox"/> After using the toilet or commode</li> <li><input type="checkbox"/> After changing a diaper</li> </ul> <p>Teach patients/visitors when to use Alcohol-Based Hand Rub (ABHR) and when to use Soap &amp; Water:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ABHR for when your hands are NOT visibly dirty</li> <li><input type="checkbox"/> Soap &amp; Water for when your hands are visibly dirty and/or you are on Contact Plus precautions</li> <li><input type="checkbox"/> Emphasize that ABHR is the gold standard because it kills infectious organisms on contact and contains moisturizers to protect your skin</li> </ul> <p>Demonstrate hand hygiene technique with ABHR or Soap &amp; Water to patients/visitors (see "How to Rub" posters)</p> <p>If your patient is on additional precautions, explain that they are not allowed to use shared spaces on the unit (e.g., kitchen, playroom). If the patient is on Contact Plus or Airborne precautions, family members also should not use shared spaces.</p> <p>Activity sheets printed and given to patients (preschool and school-aged children)</p> <p>Hand hygiene pamphlet given to and reviewed with patients, families, and visitors</p> <p>Patient/Guardian Signature: _____</p>	

**HAND HYGIENE HEROES**

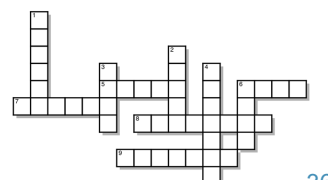


**Hand Hygiene Activity Sheet**

Complete the puzzles to learn about clean needs and why a germ!  
 Color each of the things that are kept germs out of your body!



**Hand Washing Crossword**



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## UNIT-SPECIFIC INITIATIVES

### HH Demo



### UV Light Activity



## CONCLUSIONS

- Patient and visitor hand hygiene is important
- Patients and visitors do not perform adequate hand hygiene
- Interventions to improve patient hand hygiene reduce HAIs, but quality of evidence is low
- Interventions have been multifactorial with components similar to healthcare worker HH programs
- Encouraging use of ABHR is important
- Tailor components to your setting
- Need to go beyond the basics and look at behaviour and culture change strategies

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## QUESTIONS?

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