

Hand Hygiene: A Patient Safety Imperative

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Hand Hygiene: A Resident Safety Imperative

- **Background**
 - High prevalence of colonization and infection by multidrug-resistant organisms (MDROs) in long-term care facilities (LTCFs)
 - Current and emerging pathogens that warrant improved infection prevention and control
- **Role of hands in transmission of pathogens**
 - What are the sources of healthcare personnel hand contamination
 - Hand contamination among healthcare personnel (HCP) & LTCF residents
- **Current status of hand hygiene compliance in LTCFs**
- **Evidence supporting alcohol-based hand rubs (ABHRs) as the preferred method of hand hygiene**
- **Evidence that hand hygiene reduces healthcare-associated infections**

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LTCF Residents Are at High Risk of Developing Healthcare-Associated Infections

- **More than 4 million Americans reside in or are admitted to LTCFs annually**
- **About 1 million individuals reside in assisted living facilities**
- **1 to 3 million infections occur each year in such facilities**
 - Most common types of infection include:
 - Gastrointestinal tract
 - Skin, soft tissue, and mucosa
 - Respiratory tract
 - Urinary tract
- **Up to 380,000 people die of infections each year in LTCFs**

CDC <https://www.cdc.gov/longtermcare/index.html>
La Place L et al. CDC Emerging Infections Program, 2015

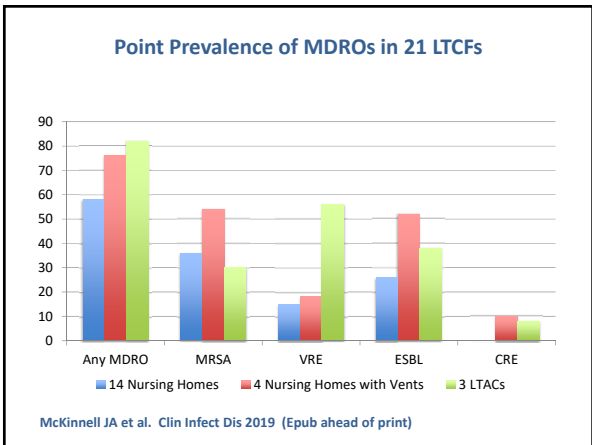
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Colonization and Infections Due to Multidrug-Resistant Organisms (MDROs) Are Common Among LTCF Residents

- **LTCF residents are disproportionately affected by multidrug-resistant organisms (MDROs)**
- **> 50% of LTCF residents are colonized with a MDRO, without having any signs of infection**
 - Higher than patients in acute care hospitals, including ICU patients
- **Recent study of 1050 LTCF residents in California revealed:**
 - Prevalence of MDROs was 65% in NH residents, 80% in LTAC patients

Mody L. J Amer Geriatr Soc 2017;65:472
McKinnell JA et al. Clin Infect Dis 2019 (Epub ahead of print)

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Burden of Invasive MRSA Infections Among Nursing Home Residents

- **2013 CDC study of 777 nursing homes revealed**
 - Total of 806 invasive MRSA infections in nursing home residents
 - 91% were bloodstream infections
 - 2.8 Infections/100,000 resident-days
 - Average of 1 invasive MRSA infection/nursing home/year
 - 92% of cases required hospitalization
 - In-hospital mortality rate was 19%

Grigg C et al. J Am Geriatric Soc 2018;66:1581

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Emergence of *Candida auris* in vSNFs and LTACs



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Emergence of *Candida auris*

- *Candida auris* has spread to more than 30 countries since it was first reported in Japan in 2009
- More than 800 clinical cases have been reported in USA
- Causes serious invasive infections with a mortality rate of 30% - 60%
- Organism is multidrug-resistant
- Affected patients/residents remain colonized for long time periods
- Organism can survive on surfaces for > month

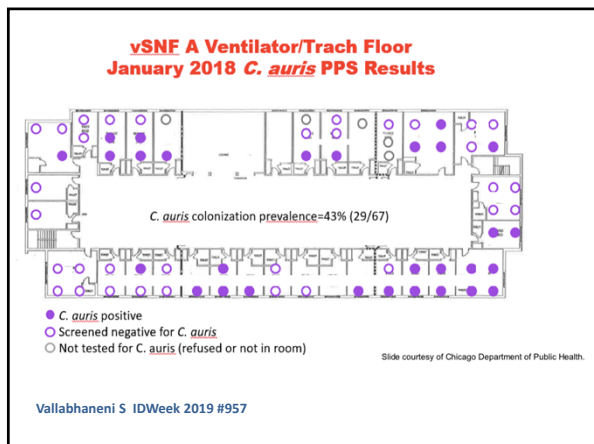
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Outbreak of *Candida auris* in New York City Healthcare Facilities

- From July 2016 – April 2017, an outbreak of 51 clinical cases of *Candida auris* infection occurred in New York City facilities
- 31 (61%) of cases had resided in LTCFs immediately before being hospitalized
- 45% of case-patients died within 90 days
- Suboptimal availability of ABHRs and poor environmental cleaning contributed to transmission
 - ABHRs were completely absent in 1 LTCF

Adams E et al. Emerg Infect Dis 2018;24:1816

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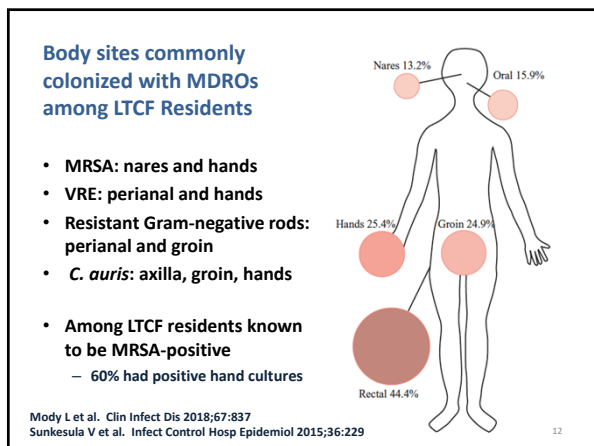
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Importance of Hand Hygiene in Ensuring Patient Safety

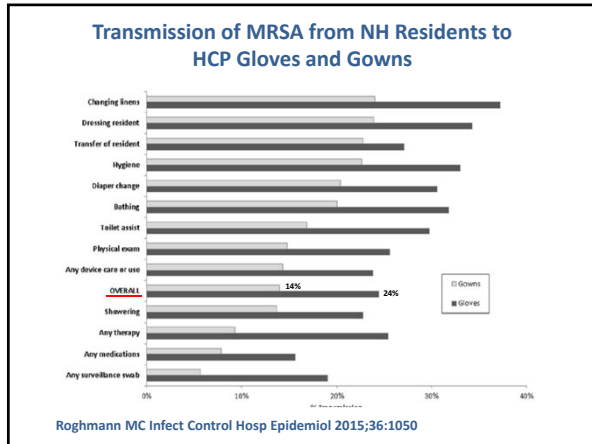
- MDROs and other pathogens are most frequently spread from one resident to another via the hands of HCP
- As a result, hand hygiene is considered one of the most important measures for reducing transmission of MDROs and improving patient safety
- Contamination of HCP hands can occur following:
 - Direct Contact with colonized/infected residents
 - Contact with contaminated objects in the vicinity of affected residents

CDC Guideline for Hand Hygiene in Healthcare Settings 2002
World Health Organization Guideline for Hand Hygiene in Health Care, 2009

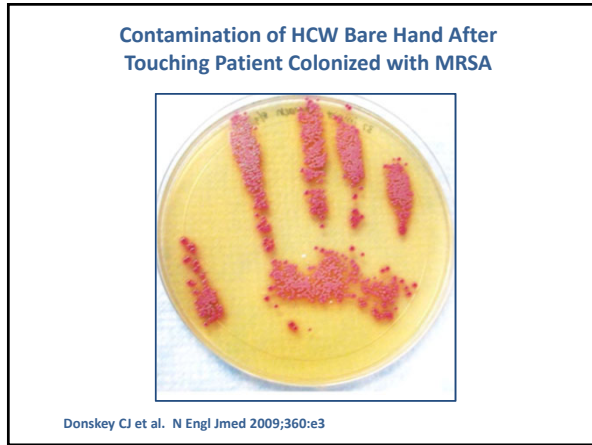
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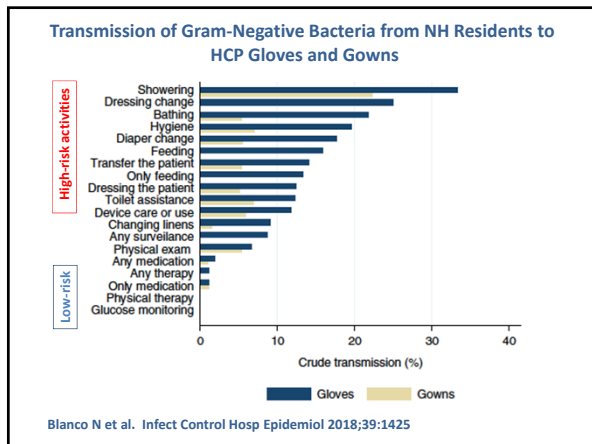
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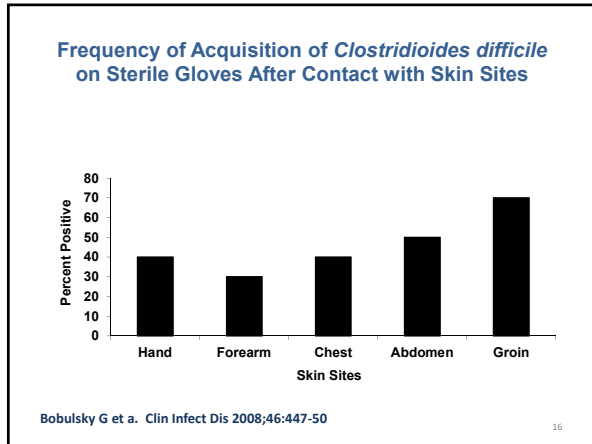
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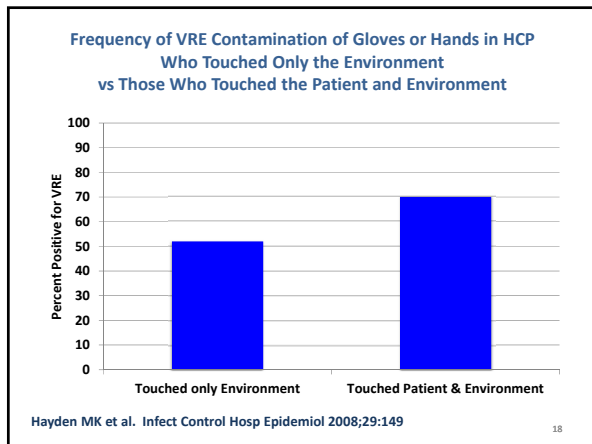
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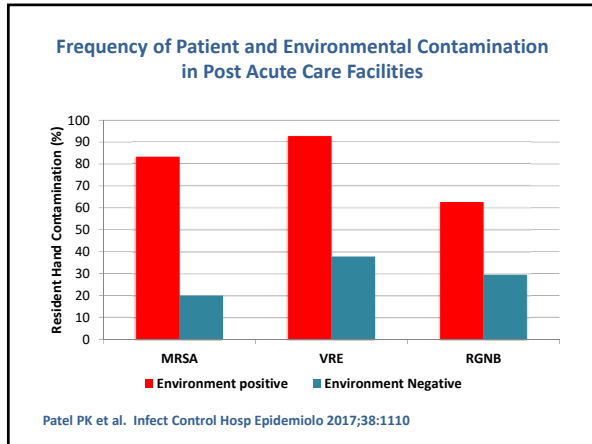
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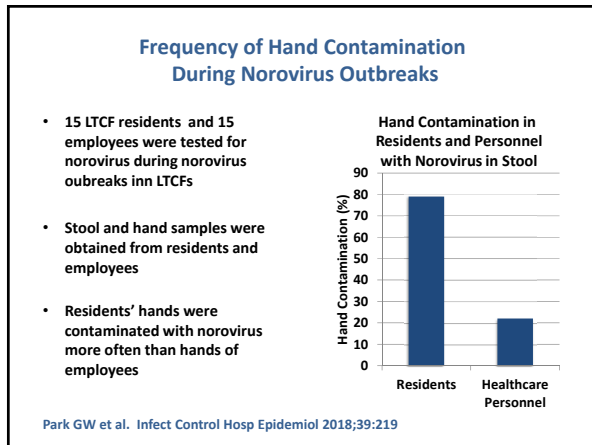
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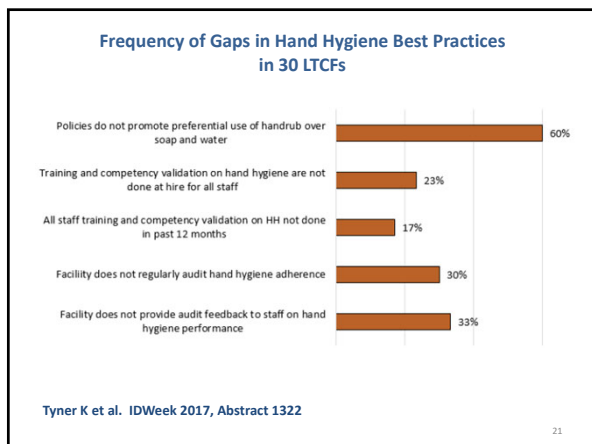
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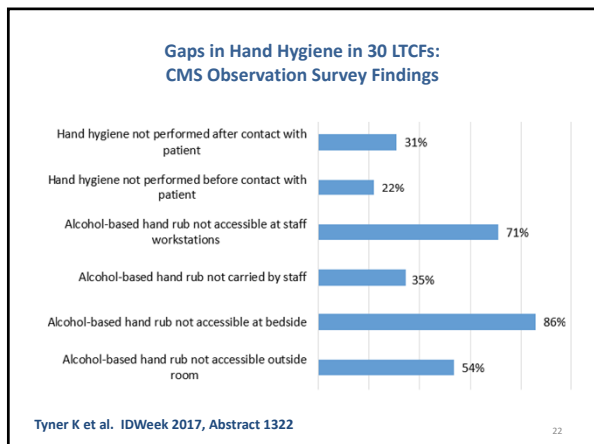
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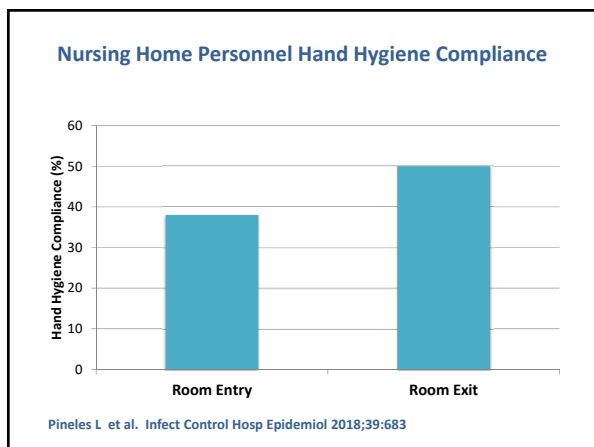
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Poor Hand Hygiene Can Lead to Serious Outbreaks of Infection

- **Example of an outbreak due to poor hand hygiene**
 - 28-month outbreak of serious invasive group A *Streptococcus* infections occurred in a nursing home
 - 19 invasive and 60 noninvasive infections occurred
 - In 2015, 57 cases, and 4 deaths among residents occurred
 - Both residents and employees were affected
 - Genetic typing of isolates showed that all were the same strain
- **Factors contributing to the outbreak:**
 - Poor hand hygiene (compliance rates of 14% to 25%)
 - Deficient wound care
 - Employees likely did NOT perform hand hygiene before & after using gloves during wound care

Nanduri SA et al. Clin Microbiol Infect 2019;25:248

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CMS Commitment to Reducing Healthcare-Associated Infections in Nursing Homes

- In September 2019, head of CMS reiterated the agency’s commitment to ensuring the safety and quality of care in nursing homes
- CMS worked with CDC to develop a free online training course regarding infection prevention and control in LTCFs
 - Includes a separate module dedicated to the topic of hand hygiene (Module 7)
- Provides support for hand hygiene as an essential component of improving resident safety in LTCFs

<https://www.cms.gov/blog/ensuring-safety-and-quality-americas-nursing-homes>

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Evidence Supporting Alcohol-Based Hand Rubs as the Preferred Method of Hand Hygiene

- Some healthcare personnel still believe that soap & water handwashing is the best form of hand hygiene
 - Includes some nurses, physicians, nursing assistants, others
 - Such individuals work in hospitals and in LTCFs
- In the last 20 years, multiple studies have shown that this opinion is no longer correct

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Are Recommended Handwashing Policies Practical?

- Time required for soap & water handwashing:
 - 62 seconds to get to sink, wash, dry and return
- ICU with 12 nurses
- 40% compliance: 2 to 6.4 hrs/8-hr shift
- 100% compliance: [16 hrs/shift](#)
- Time required for alcoholic hand disinfection:
 - 15-second contact time · bedside dispenser
- 40% compliance: 1 to 1.6 hrs/8-hr shift
- 100% compliance: [4 hrs/shift](#)

Voss A & Widmer AF Infect Control Hosp Epidemiol 1997;18:205-8

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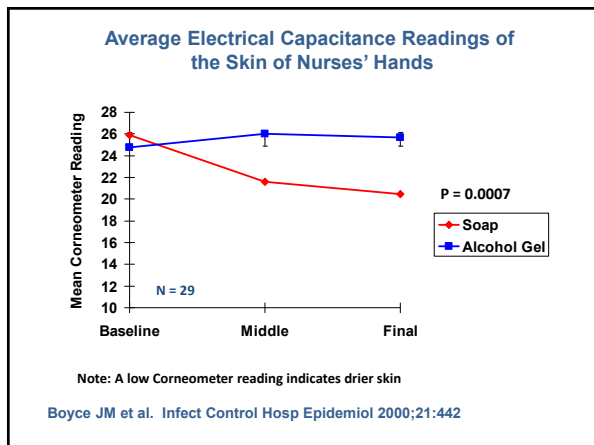
Alcohol-Based Hand Rubs Cause Less Skin Irritation and Dryness than Soap & Water Handwashing

- In 1998, a 6-week prospective randomized trial with crossover design
 - Funded by GOJO Industries
- 29 nurses on 3 wards participated
- The study compared:
 - a non-medicated, "mild" soap
 - an alcohol hand gel
- Skin irritation/dryness of nurses hands were assessed:
 - self-assessment by participants
 - visual assessment by study nurse
 - measuring electrical capacitance of skin on hands

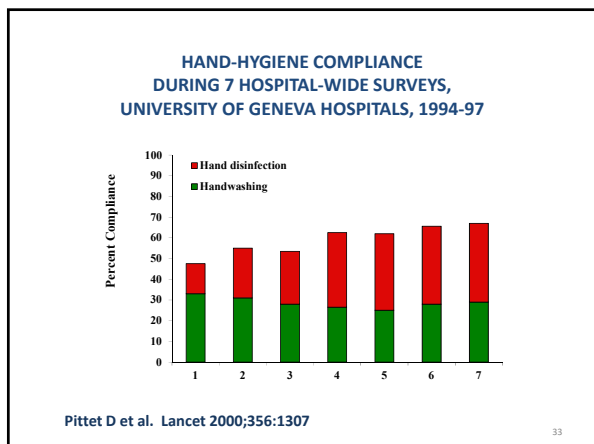


Boyce JM et al. Infect Control Hosp Epidemiol 2000;21:442

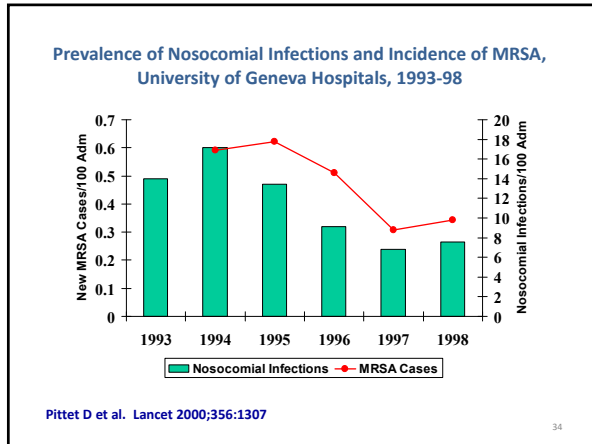
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CDC and WHO Hand Hygiene Guidelines

- CDC and WHO guidelines and SHEA Compendium all recommend the use of alcohol-based hand rubs (ABHRs) for routine hand hygiene
- ABHRs:
 - ◆ Faster to use and more convenient
 - ◆ Are more effective than soap & water handwashing at reducing bacteria on hands
 - ◆ Cause less skin irritation and dryness than handwashing
 - ◆ Can promote increased hand hygiene compliance and reduction of healthcare-associated infections

CDC Guideline for Hand Hygiene in Healthcare Settings 2002
WHO Guidelines for Hand Hygiene in Health Care 2009
SHEA Compendium on Hand Hygiene 2014

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Recommendations from CDC Guideline

- **Wash hands with soap and water**
 - When visibly dirty or visibly soiled with proteinaceous material, blood or other body fluids
 - Before eating and after using a restroom
 - If exposure to *Bacillus anthracis* (spore-forming pathogen) is suspected or proven
 - Wash with either non-antimicrobial soap or antimicrobial soap & water
- **Use alcohol-based handrub as the preferred means for routine hand antisepsis in all other clinical situations, if hands are not visibly soiled. If alcohol-based handrub is not available, wash hands with soap & water**

CDC Guideline for Hand Hygiene in Health Care, 2002
CDC Training Course on Infection Prevention in Nursing Homes, 2019

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The Five Components of the WHO multimodal hand hygiene improvement strategy

1a. System change –
Alcohol-based handrub at point of care

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1b. System change – access to safe,
Continuous water supply, soap and towels

+

2. Training and education

+

3. Evaluation and feedback

+

4. Reminders in the workplace

+

5. Institutional safety climate

www.who.int/gpsc/5may/tools/training_education/en/ 37

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Impact of Improving Hand Hygiene on HAI Rates

- In the systematic review of hand hygiene compliance by Luangasanatip, 19 of 41 studies reported clinical outcomes
 - All reported that improvements in hand hygiene were associated with reductions in at least one measure of HAIs and/or resistance rates
 - Pathogen most frequently reduced was MRSA; less frequently *C. difficile*
 - Reductions were not seen with all pathogens analyzed

Intervention Strategy	Median Odds Ratio	Q1	Q3	Min	Max
Single Intervention	~4	~2	~8	~1	~25
WHO-5	~6	~4	~10	~2	~20
WHO-5+	~8	~5	~15	~3	~30

Luangasanatip N et al. BMJ 2015;351:h3728 38

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Impact of Improving Hand Hygiene on HAI Rates

- Allegranzi et al. performed literature review of impact of hand hygiene on preventing transmission of healthcare pathogens and reduction of healthcare-associated infections
- 36/40 published studies reviewed by Allegranzi et al. found that hand hygiene reduced transmission of healthcare pathogens and healthcare-associated infections
 - Most studies were performed in hospital settings
- Due to limited resources, few prospective studies have evaluated the impact of hand hygiene infection rates in LTCFs

Allegranzi B et al. Hand Hygiene: A Handbook for Medical Professionals, chapter 41

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CDC Recommendations for Enhanced Barrier Precautions When Caring for NH Residents with MDROs*

- Place sign on door or wall outside resident's room
 - Include list of high-contact activities
- Make gowns and gloves available outside resident's room
- Ensure access to alcohol-based hand rub in every resident room
 - Ideally, both inside and outside room
- Perform periodic monitoring and assessment of adherence to determine need for training and education
- Provide education to residents and visitors

* Does not include *Clostridioides difficile* or norovirus
<https://www.cdc.gov/hai/pdfs/containment/PPE-Nursing-Homes-H.pdf>

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Summary

- LTCF residents are at increased risk of infections, which are often caused by MDROs
- MDROs and other healthcare pathogens are most commonly spread from one resident to another by the hands of HCP
- Hand hygiene is one of the most effective measures for preventing the spread of healthcare-associated pathogens and reducing healthcare-associated infections
- Improving hand hygiene is a patient safety imperative
- Alcohol-based hand rubs are the preferred method of hand hygiene in healthcare facilities, including LTCFs

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Thank you for your attention!

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