Learning Objectives

- Awareness of effects of different hand hygiene interventions (e.g., plain soap and water; antibacterial soap and water; soap and water plus hand sanitizer, etc.).
- Awareness of recent research on hand hygiene and what it might mean in your work to communicate with consumers on hand hygiene as critical to disease prevention.
- Understanding of antibacterial products and the view of leading experts on whether these products lead to antibiotic resistance.
- Available evidence-based, free consumer education resources.

Recent Observational Research – 1

- Bruhn (2014) observed chicken preparation in the home and found that:
  - 65% did not wash hands prior to meal preparation
  - 40% did not wash hands after handling raw chicken
  - Just 10% washed hands for at least 20 seconds
  - 1/3 did not use soap to wash hands


Recent Observational Research – 2

- Sneed et al. (2015) observed meal preparation in the home and found that:
  - Participants who received education on food safety messages (clean and separate) had higher handwashing scores than control group
  - However, most participants in all groups engaged in actions that led to cross-contamination

Is your organization developing initiatives intended to improve hand hygiene practices at home or at work?

Laura Brown, PhD
Acting Team Lead
Natl. Ctr. for Environmental Health
Safe Food Team
US Centers for Disease Control and Prevention

Hand Hygiene and Foodborne Illness
Laura G. Brown, Ph.D
February 11, 2016

Importance of hand hygiene
CDC says:
- Regular handwashing, particularly before and after certain activities, is one of the most important steps we can take to:
  - avoid getting sick, and
  - avoid spreading germs to others.
- Many diseases and conditions are spread by not washing hands with soap and clean, running water.
- A body of evidence shows that improved hand hygiene leads to gastrointestinal and respiratory illness reduction.

How should you wash your hands?
- Wet your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
- Lather your hands by rubbing them together with the soap. Lather the backs of hands, between fingers and under nails.
- Scrub your hands for at least 20 seconds. Need a timer? Hum the "Happy Birthday" song beginning to end 2x.
- Rinse your hands well under clean, running water.
- Dry your hands using a clean towel or air dry them.

When should you wash your hands?
- Before, during, and after preparing food
- Before eating food
- Before and after caring for someone who is sick
- Before and after treating a cut or wound
- After using the toilet
- After changing diapers or cleaning up a child who has used the toilet
- After blowing your nose, coughing, or sneezing
- After touching an animal, animal feed, or animal waste
- After handling pet food or pet treats
- After touching garbage
Hand hygiene and foodborne illness outbreaks

64% of foodborne illness outbreaks in restaurants are caused by failures in food worker health and hygiene

64% Outbreaks linked with health...
36% Outbreaks not linked with health...

Foodborne germs commonly transmitted by food worker hands

- **Viruses**
  - Norovirus
  - Hepatitis A
- **Bacteria**
  - Salmonella
  - Shigella
  - Staphylococcus aureus
- **Parasites**
  - Cyclospora
  - Giardia
  - Cryptosporidium

How does it happen?

Food workers can cause foodborne illness outbreaks when:

- their hands are contaminated with germs
  - obtained from their environment or other foods (e.g., raw meat)
  - they are infected with
- they fail to adequately wash their hands
- they handle food

How does it happen? Examples

- A worker infected with Giardia used her bare hands to slice raw vegetables for salads; 27 customers became ill
- A catering worker infected with Salmonella prepared cold dishes, which were then improperly stored over several days; 290 airline passengers and crew became ill
- Two catering workers infected with norovirus mixed pasta salads by immersing their arms in the salad; 333 customers became ill

How does it happen? Recommendations for improving hand hygiene in food service / restaurants

CDC research suggests that management should:

- Emphasize the importance of hand hygiene
- Ensure that staffing is adequate
- Ensure that workers are food safety trained
- Ensure that sinks and hand washing supplies are available and accessible to workers
- Organize food preparation activities to reduce the number of needed hand washings
References


Thank you!

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lrg0@cdc.gov
http://www.cdc.gov/handwashing/

For more information please contact Centers for Disease Control and Prevention
4770 Buford Hwy, NE, Atlanta, GA 30341
Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of CDC. References:


POLL #2

Please rate your satisfaction with the materials for hand hygiene outreach currently used in your organization.

Handwashing Efficacy, Antimicrobials, Sanitizers and Bulk Soap

Donald W. Schaffner
Distinguished Professor and Extension Specialist
Rutgers University

Intervention Efficacy, JFP 2015, 4: 685–90

Don Schaffner, PhD
Extension Specialist in Food Science
Rutgers University

www.fightbac.org
SaniTwice, JFP 2010, 2296–2300

- SaniTwice (a registered trademark with James Mann, Handwashing for Life, Libertyville, IL) is a two-stage hand cleansing protocol that is performed using ABHS when water is not available.

FDA monograph, antibacterial soaps

- FDA CFSAN (Center for Food Safety and Applied Nutrition)
  - Food safety, FDA model code
- FDA CDER (Center for Drug Evaluation and Research)
  - Antibacterial soaps
  - December 2013 CDER issues a proposed rule to require manufacturers of antibacterial hand soaps to demonstrate that their products are safe for long-term daily use and more effective than plain soap and water in preventing illness and the spread of certain infections.

Antibacterial Soap, JFP 2011, 11: 1875-82

- Difference is small but real and significant
- Difference is greater when transient organisms are examined

Antibacterial Soap, JFP 2014, 4:574-82

Hand Sanitizers

- CDC guidelines hand hygiene in health care (not food service settings).
  - Alcohol-based products are more effective than plain soap or antimicrobial soaps (health care workers)
- FDA: hand sanitizers may not be effective against some pathogens that are transmitted in food service settings, level and types of soils in food service and health care are different.
  - http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/IndustryandRegulatoryAssistanceandTrainingResources/ucm135577.htm

Hand Sanitizer, JFP 2007, 1: 109-113

- More than half of the participants (66%, 21 of 32) indicated that their hands felt dirtier than normal after handling frozen burgers.
- Investigators also noted that most (56%, 18 of 32) of the participants had visible debris on their hands after handling the frozen burgers.
Viruses and Hand Sanitizers, AEM 2008, 5047–52

- Mechanism by which organic acid and polyquaterniums potentiate activity ethanol unclear; charge density may play a role
- Science vs. label claims

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Bulk Soap Study – IAFP 2015 poster

- Soap in open, refillable bulk soap dispensers in public restrooms may become colonized with high levels of bacteria
- Survey microbial quality of open refillable bulk soap sampled in three different states and four different food establishment types, and to determine the influence of formulation factors on the degree of contamination
- More than 12% of samples contained high level of bacteria (typically <10^7 CFU/ml)
- Samples with high TPC tended to have higher coliform counts
- Solids content was correlated with high TPC and all samples with <4% solids had detectable TPC
- Bacteria were more prevalent in bulk soaps in grocery stores (16.7%) and fast food locations (15.6%) than in sit down restaurants (9.7%) or convenience stores (3.6%)

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Bulk Soap

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Summary

- Hand washing is not magic, it’s risk reduction (not elimination) and variability is important
- Antibacterial soaps for consumers may disappear (not cost effective for manufacturer)
  - Status for foodservice use TBD
- Data from our lab shows that antibacterial soaps are more effective
- Hand sanitizer works, and can work in the presence of food debris
- Hand sanitizer can be formulated to work better against viruses
- Bulk soaps may be contaminated

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POLL #3

What do you think?
Must proper hand hygiene ALWAYS include washing hands with soap and water?

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Dave Shumaker
Microbiology Scientist
GOJO Industries

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Methods, Claims, Opportunities

ASTM E2783
“Time-Kill”

- In vitro assay
- Measures rapid antimicrobial (killing) action of products
- Can test almost any microorganism by this method

**In vitro results do not necessarily predict antimicrobial performance on hands**

ASTM E1174
“Healthcare Personnel Handwash”

- In vivo assay
- Hands are contaminated with 4.5 mL S. marcescens or E. coli
- Bacterial reduction is measured after “Wash 1” and “Wash 10”

≥ 2 log reduction (99%) required after Wash 1 and ≥ 3 log reduction (99.9%) required after Wash 10

Method most appropriate for waterless hand hygiene products

ASTM E2755
“Healthcare Personnel Hand Rub”

- In vivo assay
- Hands are contaminated with 200 µL S. marcescens, S. aureus, or MRSA
- Bacterial reduction is measured after “Application 1” and “Application 10”

Method most appropriate for waterless hand hygiene products

ASTM E2946
“Food-Handler Method”

- In vivo assay
- Contaminate hands with beef broth or ground beef (knead for 2 min) containing E. coli
- Bacterial reduction is measured after 1 use

Method most appropriate for food handling where hands may be “soiled”

Hand Hygiene Product Claims

<table>
<thead>
<tr>
<th>Acceptable</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Kills germs that can cause illness or infection”</td>
<td>Claims against viruses such as “kills cold and flu viruses” or “effective against norovirus”</td>
</tr>
<tr>
<td>“Effective against a broad spectrum of germs or bacteria”</td>
<td>Promotions to treat or prevent illness from a specific organism such as “kills MRSA” or “kills E. coli”</td>
</tr>
<tr>
<td>“Reduces bacteria that can cause disease”</td>
<td>“Prevents illness”</td>
</tr>
<tr>
<td>Long lasting barrier type efficacy such as “protects for 6 hours”</td>
<td></td>
</tr>
</tbody>
</table>
Factors Influencing Hand Hygiene Product Efficacy:

Opportunities for Industry

- Risk-based approach
- Understand motivations
- Risk-benefit of alternatives
- Antiviral testing capabilities / regulatory approval
- Revise education and training materials
- Improve Policy & Practices

Question for Panelists

Name one area of research in hand hygiene that you think is critical be explored.

Hand Hygiene Resources for Consumers

Fight BAC! Resources:
- Clean Factsheet (Core Four Practice of Clean, Separate, Cook, Chill)
- Kids' Coloring Page
- Handwashing Song for Kids
- Crib Sheet: Hand Hygiene with Young Children
- Factsheet: Getting Children to Wash Their Hands

CDC Resources:
- Handwashing Factsheets
- Handwashing Posters
- Handwashing Videos
- Handwashing Social Media Messages
- More handwashing materials (buttons, stickers, podcasts)
Hand Hygiene Resources for Consumers

- Scrub Club – play webisodes, including the Good, the BAC and the Ugly

http://www.scrubclub.org/home.aspx

Show Me the Science

CDC science behind handwashing info

- http://www.cdc.gov/handwashing/show-me-the-science.html

Questions?

Upcoming Events!

Mark your calendars!

Thurs. March 24 at 1 pm EST
All Things Egg – Knowledge Exchange

Thurs. June 16 at 1 pm EST
Nutrition Education and Food Safety Integration Webinar

Join our E-list at bottom of page www.fightbac.org

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