Hand Washing

TO PROTECT THE CUSTOMER'S HEALTH

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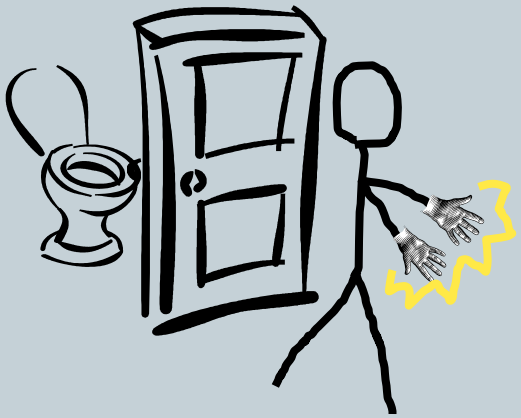
The Ugly Truth

- 76 million foodborne illnesses occur every year.
- 70% of these are caused by improper hand washing.
- Only 40% of people who shed fecal pathogens have vomit and diarrhea symptoms (Todd).
- The FDA 20-second wash is not validated as reducing fecal pathogens to a safe level.
  So, the FDA requires gloves to cover feces.

The Sources of Pathogens on Fingertips

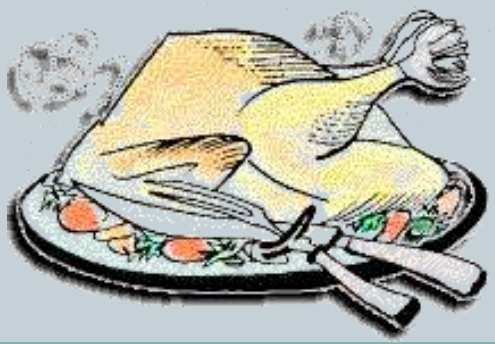
Toilet

- Hepatitis A, norovirus, *Shigella, Giardia*
- Source: Human feces has 10^7 pathogens per gram



Food

- *Salmonella, E. coli, Campylobacter, Vibrio*
- The food surface has at most 20,000 pathogens per ml



What You Need to Know

- Cooking will kill bacteria and parasites, but not viruses – viruses survive cooking temperatures of 150 to 165°F.
- Many foods (e.g., salads) aren't cooked and fingertips are used in preparation – a significant risk.

Risk Is Never Zero

- One foodborne illness in 100,000 people annually is often considered an Appropriate Level of Protection (ALOP).
- To be a significant risk, there must be evidence of a risk (sick people) and enough pathogen transfer.

Item	Risk
Faucet handles, door knobs	No evidence. Not enough transfer to food, less than 1 per gram of food. A portion is 100 grams.
Garbage bags, garbage	No evidence. Less than 10 pathogens per gram of contaminated raw food.
Skin, nose, hair	No evidence. Probably less than 10 pathogens per gram transferred to food.
Cough on food without incubation	No evidence. The initial contamination is too low without incubation such as inadequate refrigeration of fresh prepared food.
Dish machine	No evidence that touching a dirty dish and then a clean dish transfers enough pathogens to cause illness.

Germicidal Soaps and Alcohol Rubs

- Do not remove pathogens.
  Only reduce bacteria 2 log.
- Not reliable.
  Do little to viruses and parasites.
- Organics on hands interfere with action.
  Must be clean hands.
- Take 20-second contact time or more.

Fingertip Rinse vs. Sanitizer Bucket

- 1 gallon (4 liters) room temperature water for dilution and cloth for friction and enough vinegar (about 3 Tbsp) for pH 3.5 water. Wipe fingers 5 seconds on cloth

- RESULTS: 1,000 *E. coli* on fingertips were reduced to less than 6 per 10 ml rinse. Not an infective dose. The *E. coli* in the rinse water was less than 5 CFU per 10 ml rinse water. In 4 hours, there was less than 1 per 10 ml (Snyder).

Two Types of Bacteria on Your Hands

Resident Bacteria

- Live in the skin (*Staphylococcus*, yeast, etc.)
- Keep your hands healthy
- Unless you are doing surgery, you don't want to remove them

Transient Bacteria

- Survive on the surface of the skin
- Are easily transferred onto food, especially wet foods
- Need to be removed by hand washing
- A 10% transfer rate is common

Staphylococcus aureus:
Naturally resides on the skin

- Grows between 50 and 115°F
- Produces a toxin and when level reaches 1,000,000 per gram of food, there is significant toxin risk
- Grows on **ready-to-eat foods** (sliced meat, cheese, salads, hors d'oeuvres, etc.)
- If this food sits at 95°F for more than 4 hours, this bacteria will have multiplied 12 times and can cause illness
- You can mix salads with bare (ungloved) hands if the ingredients are less than 50°F, because toxin can't be produced – **don't add fresh to old**

When to Wash Fingertips

Double Wash:

WITH NAIL BRUSH; removes human feces

- When you enter the kitchen for the first time (removes home pathogens)
- After using the toilet
- Even if you are feeling well, double wash and be safe!

Single Wash:

removes animal feces & general hygiene

- When you sneeze, cough, or blow your nose
- Handling raw foods (e.g., raw chicken, salad greens)
- Not a risk, but it looks good to the customer to wash after touching garbage, dirty dishes, hair, etc.

Designing a Hand Wash Process

H_o →	ΣI -	ΣR →	FSO / ALOP
(Level) of hazard on fingertips into process)	*(Increase of hazard in process)*	*(Reduction of hazard in process)*	*(Output hazard level that provides an Appropriate level of Protection)*
Human feces 1,000,000 (10^6) on fingertips	None	10^{-6}	10^0 (1 *Shigella* on fingertips)
Animal feces 1,000 (10^3) after touching chicken	None	10^{-2}	10^1 (10 *Campylobacter* / 1 per 100 grams of food) transferred

The Double Wash

Step 1:

- Use aerated water with a strong flow (2 gallons per minute) and splash prevention.
- Water temperature is not a necessary control (Paulson).
- Use enough plain (not antibacterial) soap (1/2 tsp) to build lather on nail brush and fingers. Don't refill soap dispenser bottle.

Double Wash Continued

Step 2:

- Brush and lather (about 5 seconds). Pathogens don't grow on brush and they are washed off.
- Pay close attention to fingertips and fingernails.
- The friction of nail brush against your fingers knocks bacteria off and water flushes them away. Lather fingertips.

This step has been shown to reduce pathogen levels 1,000 to 1!

Second Wash (AKA Single Wash)

Step 3:

- This step does not use the nail brush. Friction and dilution are all you need to reduce food pathogens on fingers to a safe level.
- Apply more soap for second wash to the palm of your hand.
- Lather and rinse under flowing water and pathogens will go down the drain.

This step has been shown to reduce pathogen levels 100 to 1!

Importance of Being Dry

Step 4:

- Dry your hands thoroughly with clean paper towels.
- Bacteria live longer and thrives on moist surfaces.
- Air dryers, while approved, do not pull pathogens off like paper towels and are slower to fully dry the hands. Hands must be dry.
- Don't worry about door knobs and faucet handles. There is no apparent risk.

This step has been shown to reduce pathogen levels 10 to 1!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1. Wet Hands and Brush
2. Soap Brush
3. Brush & Lather
4. Rinse
5. Soap Hands
6. Lather
7. Rinse
8. Towel Dry
SAFE HAND WASHING
HAZARDS:
Cross-contamination from human body bacterial pools, dirty containers, utensils, packages, and raw food.

Glove Myths Uncovered

- Gloves are only effective to cover up feces on fingers if you haven't washed your hands after using the toilet
- When you put on gloves you can transfer bacteria to the outside of the glove if your hands are dirty
- You cannot feel if a glove gets dirty, and contaminated gloves transfer bacteria better than hands
- Bacteria grows faster on gloves and on skin covered by gloves than on bare hands

When Gloves Reduce the Risk

OK: To hold bandages covering cuts on the hand

OK: To protect against skin irritants (citrus fruits, cleaning chemicals)

OK: When touching bodily fluids from another person

Implementing a Hand Wash AMC Plan

1. All managers wash hands when entering food preparation area to set an example.
2. Post a policy: Double wash coming from toilet.
   Single wash touching contaminated surfaces.
   When sick with vomit / diarrhea, call your supervisor and stay home.
3. Train and certify all new employees. Every 6 months, do refresher training and re-certify all employees. Keep a record.
4. When managers are in the kitchen, always check the hand sink(s) and compliment employees using the hand sink.

Summary

- The FDA hand wash is not validated to make hands safe.
- Friction and water dilution are the critical controls.
- The skin is a perfect glove. *Staphylococcus* on skin is not a significant risk. Make salads with ingredients less than 50°F.
- The double wash with nail brush is widely used, is approved by the FDA Food Code, and gives a 6-log reduction of fecal pathogens on fingertips.
- The single wash (the FDA wash) gives a 2-log reduction of food pathogens. Water temperature is not a critical factor.