

# BREAKING THE CHAIN OF NOROVIRUS - CLEAN HANDS AND CLEAN SURFACES

North Carolina Environmental Health Symposium

Clyde “Chip” Manuel, PhD – 2 August 2019

## AGENDA

- GOJO Introduction
- Norovirus Science
- Cross-contamination – Best Practices for Reducing Risk of Norovirus contamination
- Hygiene Science Principles + Myths / Misinformation
- Conclusions

## PERSONAL DISCLOSURES



- I work for Industry (employed by GOJO, formerly Diversey)
  - Industry is not necessarily bad / biased
- Motivation is good Science & improved Public Health
  - ✓ advance the science in meaningful ways to public health, that are aligned with GOJO commercial interests
  - ✓ I try to stay objective at all times
  - ✓ be evidence based in my communications
  - ✓ collaborate with external thought leaders (academic and public health)
  - ✓ publish in peer-reviewed literature & present at conferences
- Regulators have difficult challenges
- Collaboration is critical to advancement

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# PERSONAL DISCLOSURES



GO PACK! (Sorry UNC fans)

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# WHY ARE WE EVEN DISCUSSING THIS?

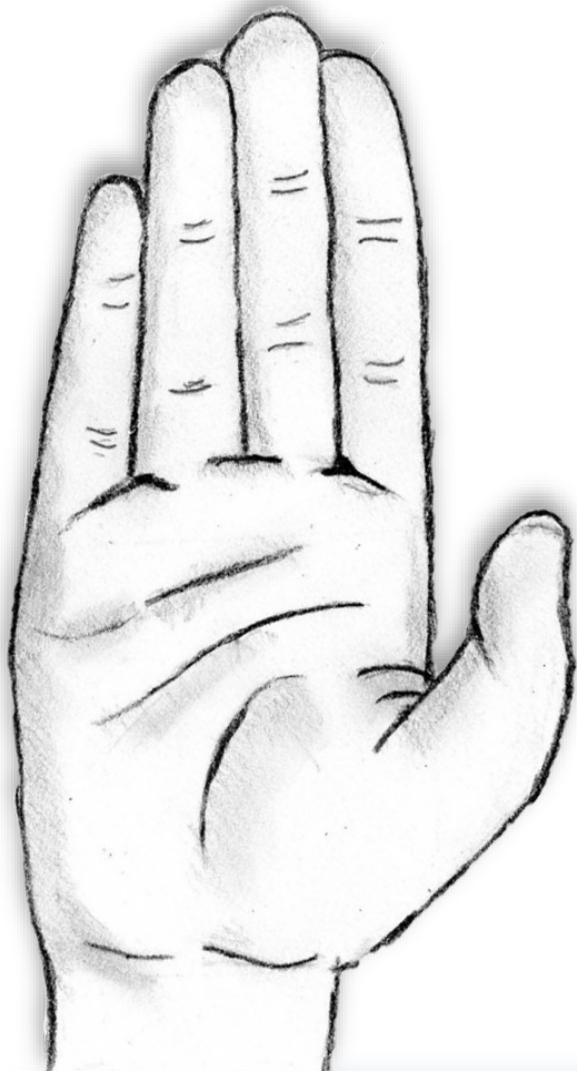


## PATHOGENS SURVIVE ON SURFACES

Type of Pathogen	Duration of Persistence
<i>Escherichia coli</i>	1.5 hours - 16 months
<b>Norovirus</b>	<b>4 - 6 weeks</b>
<i>Hepatitis A</i>	3 weeks
<i>Listeria spp.</i>	1 day - months
<i>Salmonella typhi</i>	6 hours - 4 weeks
<i>Staphylococcus aureus</i> , incl. MRSA	7 days - 7 months
<i>Shigella</i>	2 - 28 days
<i>Campylobacter</i>	1- 4 hours



# PATHOGENS SURVIVE ON SKIN



Pathogen	Duration of Persistence
<i>Norovirus</i>	Up to 2 hours
<i>Hepatitis A</i>	5.50 to 7.70 hours
<i>Influenza A</i>	1/2 hour to 1 hour
<i>Escherichia coli</i>	Up to 1 ½ hour
<i>Klebsiella pneumoniae</i>	Up to 1 ½ hour
<i>Shigella</i>	Up to 3 hours
<i>Serratia marcescens</i>	Up to 1 ½ hour
<i>Staphylococcus aureus</i>	Up to 1 ½ hour

Kramer A. BMC Infectious Diseases 2006;6:130

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## Next Sick Person

### Susceptible Host

- Babies
- Children
- Elderly
- Weakened immune system
- Unimmunized people
- Anyone



## Germ

### Agent

- Bacteria
- Viruses
- Parasites

## How Germs Get In

### Portal of Entry

- Mouth
- Cuts in skin
- Eyes



# CHAIN OF INFECTION

## Where Germs Live

### Reservoir

- People
- Animals: Pets
- Animals: Wild
- Food
- Soil
- Water



## Germ Get Around

### Mode of Transmission

- Contact: Hands, toys, sand
- Droplets: Speaking, sneezing, coughing



## How Germ Get Out

### Portal of Exit

- Mouth
- Cuts in skin
- Stool: During diapering and toileting

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# A BIT ABOUT GOJO...



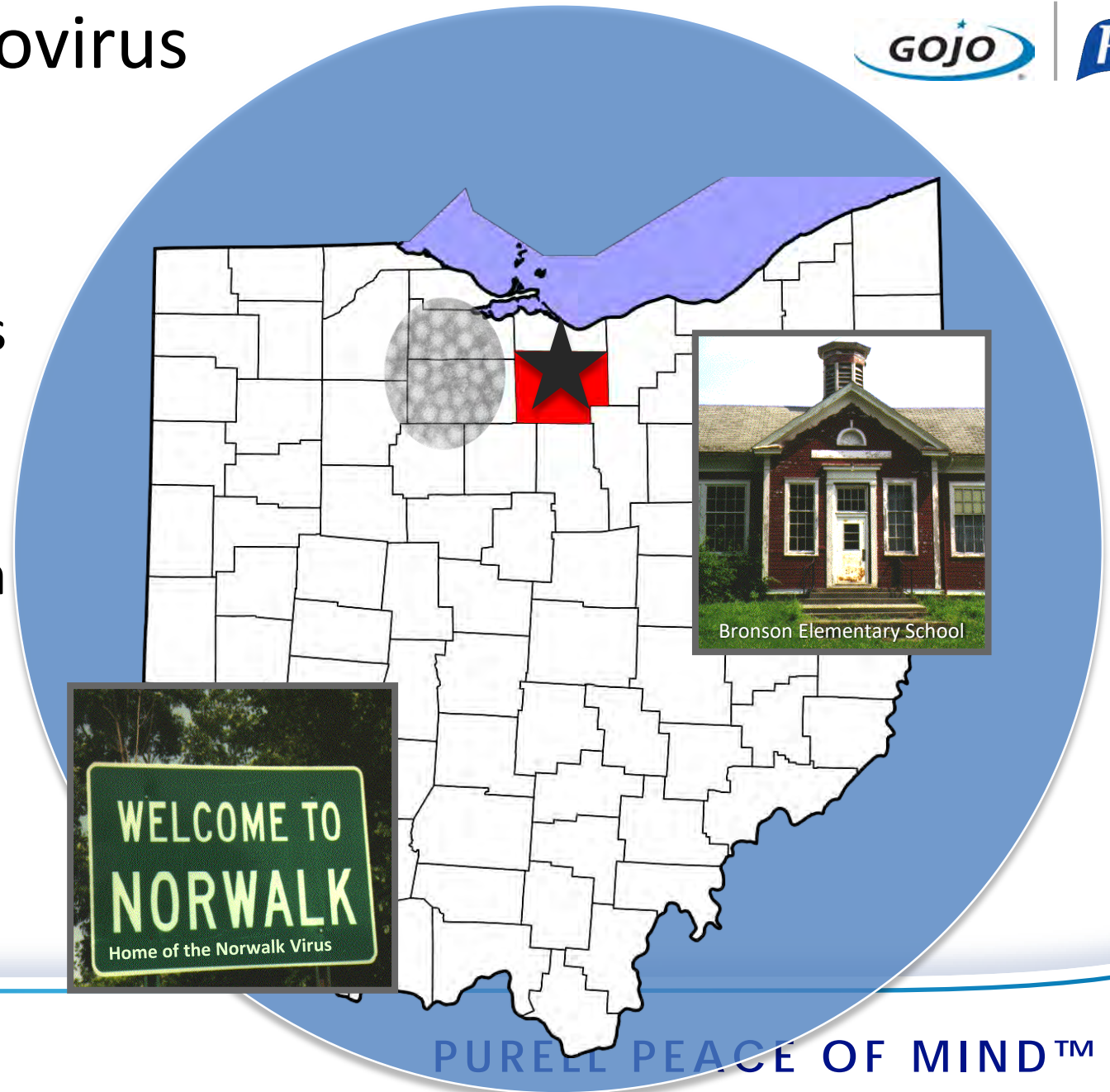


# Ohio: Home of the Norovirus

“Norwalk virus” (NoV)

The first Norovirus identified as a cause of gastroenteritis following an outbreak of “winter vomiting disease” at an elementary school in Norwalk, Ohio in 1968.

## Nor-OH-Virus





## OHIO IS ALSO HOME OF GOJO, A GLOBAL LEADER IN HYGIENE SOLUTIONS SINCE 1946



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# GOJO Mission



To bring well-being to one billion people every day while embedding sustainability in every aspect of its business.

**"Everything I know, I learned from someone else."**

*- Jerry Lippman on the importance of lifelong learning*



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# THE GOJO PURPOSE



“Saving Lives and Making Life Better Through Well-Being Solutions”

Drives us every day to develop truly innovative, lifesaving products



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Food Environ Virol (2014) 6:140–144  
DOI 10.1007/s12560-014-9141-9  
ORIGINAL PAPER

# Impact of an Alcohol-Based Hand Sanitizer Intervention on the Spread of Viruses in Homes

Akram H. Tamimi • Sheri Carlino •  
Sarah Edmonds • Charles P. Gerbu

MS 12-532; Received 28 November 2012/Accepted 15 February 2013

## ABSTRACT

Received: 24 October 2013 / Accepted: 1 April 2014 / Published online: 13 April 2014  
The author(s) 2014. This article is published with open access at Springerlink.com

The objectives of this study were to determine the  
of a virus throughout a household and to  
based hand sanitizer, *etc.*  
ad exposure

Environ Virol (2014) 3:35–42  
10.1007/s12560-011-9053-x

CONCISE COMMUNICATION

## High Hand Contamination Rates During Norovirus Outbreaks in Long-Term Care Facilities

Care Facilities

Geun Woo Park;<sup>1</sup> Keenan J. Williamson;<sup>2</sup> Emilio DeBess;<sup>2</sup>  
Paul R. Cieslak;<sup>2</sup> Nicole Gregoricus;<sup>3</sup> Elizabeth De Nardo;<sup>3</sup>  
Christopher Fricker;<sup>3</sup> Verónica Costantini;<sup>1</sup> Jan Vinjé<sup>1</sup>

glycol to 0.4 mL (Figure S1). Viral RNA was then extracted from the hand concentrates and clarified stool suspensions and was analyzed using real-time reverse-transcription polymerase chain reaction (RT-PCR) for GI and GII norovirus, as described previously.<sup>5</sup> Norovirus-positive samples were reamplified using hemi-nested polymerase chain reaction (PCR) for sequence-based genotyping (Figure S1).<sup>5</sup> Norovirus hand contamination rates of residents and HCWs were analyzed using the Fisher exact test. SPSS software version 21 (IBM, Armonk, NY) was used for statistical calculations. *P* values  $\leq 0.05$  were considered statistically significant.

## RESULTS

**RESULTS**

Of the 35 patients initially recruited, 4 patients (3 HCWs and 1 resident) were excluded from analysis because no stool sample was collected, and 1 resident withdrew voluntarily from the study. Data from 30 ill volunteer patients (7 direct-care HCWs, 8 non-direct-care HCWs, and 15 residents) were analyzed. Clinical symptoms included diarrhea (90%), vomiting (97%), nausea (90%), abdominal pain (87%), and fever (68%) (Table S1). 23 of 30 stool samples detected in 23 of 30 stool samples were positive for

ORIGINAL PAPER

# Comparison of the Activity of Alcohol-Based Handrubs Against Human Noroviruses Using the Fingerpad Method and Quantitative Real-Time PCR

Pengbo Liu • David R. Macinga • Marina L. Fernandez  
Carrie Zapka • Hui-Mien Hsiao • Brynn Berger •  
James W. Arbogast • Christine L. Moe

Received: 22 July 2010 / Accepted: 1 February 2011 / Published online: 16 February 2011  
© Springer Science + Business Media, LLC 2011

**Abstract** Noroviruses (NoV) are the most common cause of acute nonbacterial gastroenteritis in the United States. Human hands play an important role in their transmission. Little is known about the efficacy of hand hygiene against these highly infectious pathogens. We investigated the activity of seven commercially available hygiene products against human noroviruses by in vitro and in vivo fingerpad tests. The in vivo activity of alcohol-based products ranged from 0.10 to 3.74 log reduction and was highly dependent on alcohol concentration. A handrub based on 70% ethanol and a blend of other skin conditioners reduced Norwalk virus (NV) by 3.74 log in vitro and provided significantly greater NV reduction than other products tested ( $P < 0.001$ ). Furthermore,

VF481 was the most effective product tested against NoV genogroup II strains Snow Mountain virus (C) and GIL4 strain. These results demonstrate that alcohol itself is not effective against NoV, but effective disinfectants can achieve a significant reduction of norovirus RNA on fingers.

**Keywords** Norovirus · Quantitative RT-PCR · H  
Fingerpad · ASTM

## Introduction

Nonviral gastroenteritis (NoV) is the major cause of acute bacterial gastroenteritis in humans worldwide (Wid et al. 2005; Blanton et al. 2006; Lopman et al. 2002). In the United States, NoV accounts for 59% of the estimated 1 million food-related infections (M...).

Human norovirus (NoV) outbreak investigations suggest that the hands transmission. However, there is no experimental evidence documenting hands. As part of a clinical trial designed to evaluate the efficacy of high-p in oysters, 159 hand rinse samples were collected from 6 infected and 6 un- ples by polyethylene glycol precipitation, followed by RNA extraction using method. NV RNA was detected and quantified using multiple NV-specific assays. A total of 25.4% (18/71) of the hand rinse samples collected from 6 i NV, with an average of 3.86 log<sub>10</sub> genomic equivalent copies (GEC) per hand using a different primer set, and DNA sequencing of selected amplicons, pre the hand rinses. NV contamination was also detected in two hand rinse sam findings provide definitive evidence of NV contamination on the hands of ind research conditions. Such data support the need for better hand hygiene strat

Human noroviruses (NoVs) are the most common cause of acute viral gastroenteritis worldwide (1) and a leading cause of food-borne disease (2, 3). They are spread primarily by the fecal-oral route but are also shed in vomitus. As such, NoV can be transmitted via consumption of fecally contaminated food or water or by contact with contaminated fomites and hands. The relative importance of each of these transmission routes is not well studied, but the potential for human hands to facilitate NoV transmission is widely recognized.

A recent epidemiological study by the CDC (4) identified NoV as the predominant etiology of food-borne disease outbreaks, and the largest proportion of these outbreaks were associated with food handlers implicated as the source of contamination. Food handlers are of particular concern (5) because they may shed NoV at extremely high titers for days or weeks during a symptomatic or asymptomatic NoV infection and subsequently transfer viruses from their hands to food. Furthermore, both laboratory and epi-

NoV on con  
laboratory ev  
man subjects  
genogroup I |

**MATERIALS AND METHODS**  
Volunteer study  
lected in conjunc  
hydrostatic-pres  
ters. Forty-four  
[defined as indivi  
thus expressing a  
each received a tot  
(8FIIb) in artificia  
study was conduc  
have been previou

Before challenge (when infection and sy-

We examined norovirus contamination on hands of ill patients during 12 norovirus outbreaks in 12 long-term care facilities (LTCFs). The higher frequency and norovirus titers on hands of residents compared to hands of healthcare workers highlights the importance of adhering to appropriate hand hygiene practices during norovirus outbreaks in LTCFs.

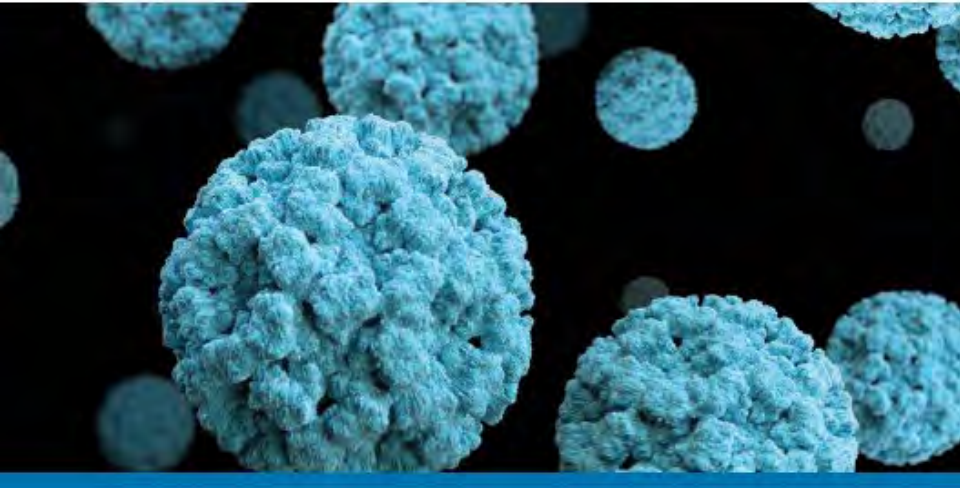
*Infect Control Hosp Epidemiol* 2018;1-3

... outbreaks are common among vulnerable, elderly  
... facilities (LTCFs), and they are  
... hospitalizations and



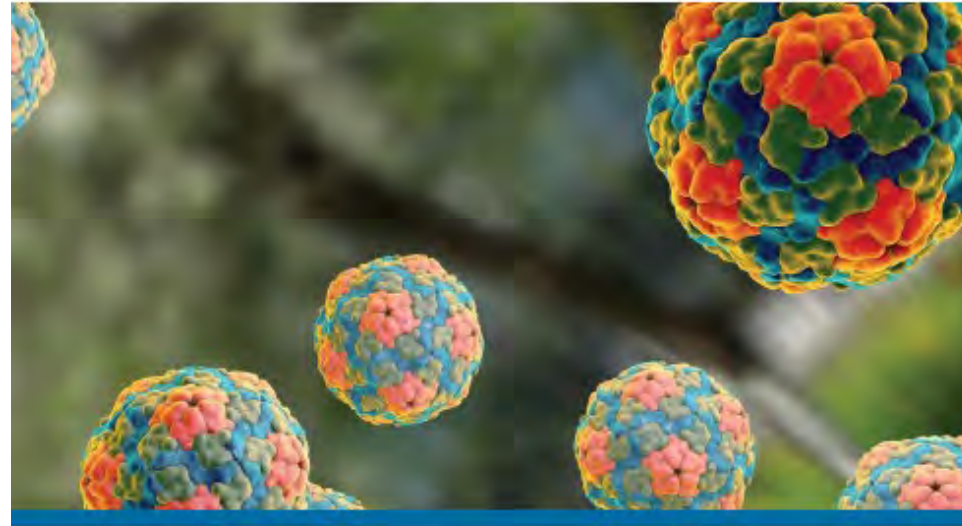
# THE IMPORTANCE OF NOROVIRUS

Why you should have a good food safety program to control its spread



# HEPATITIS A VIRUS: A SIGNIFICANT FOODBORNE PATHOGEN

What you should know to protect your establishment, customers and staff from the virus.



**Elizabeth Bradshaw**, DVM, Extension Associate,  
NoroCORE

**Lee-Ann Jaykus**, Ph.D., Scientific Director  
NoroCORE, William Neal Reynolds Distinguished  
Professor Food Science, North Carolina State University

**Dave Shumaker**, B.S., Microbiologist  
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Professor Emeritus of Microbiology,  
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Chief Scientific Officer, CREM Co Labs, Mississauga, Ontario, Canada

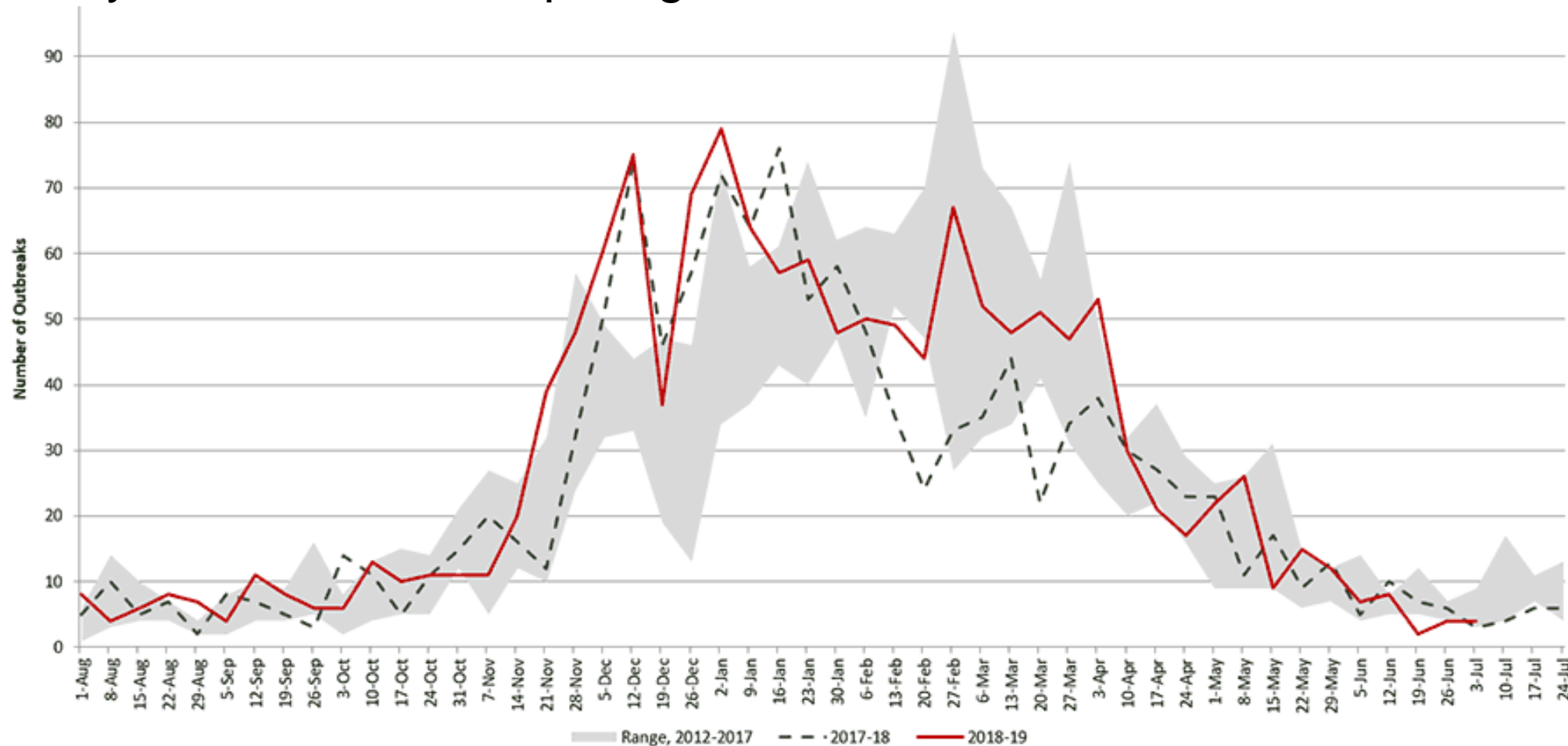
**James Arbogast**, PhD  
GOJO Industries, Inc., Akron, OH

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# NOROVIRUS SCIENCE + CROSS CONTAMINATION



# Number of Suspected or Confirmed Norovirus Outbreaks Reported by NoroSTAT-Participating States Per Week, 2012-2019



- August 1, 2018 – July 9, 2019: 1,418 norovirus outbreaks. This is slightly above the range reported during the same period over the previous 5 years.

Source: CDC, <https://www.cdc.gov/norovirus/reporting/norostat/data.html>

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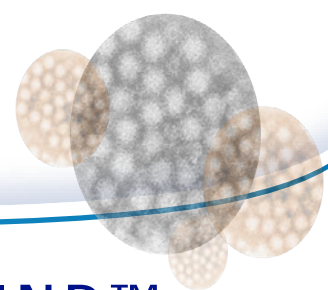


## Noroviruses: The Perfect Human Pathogens?

Aron J. Hall Division of Viral Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia

**Aron J. Hall**

**J Infect Dis (2012) 205 (11): 1622-1624**



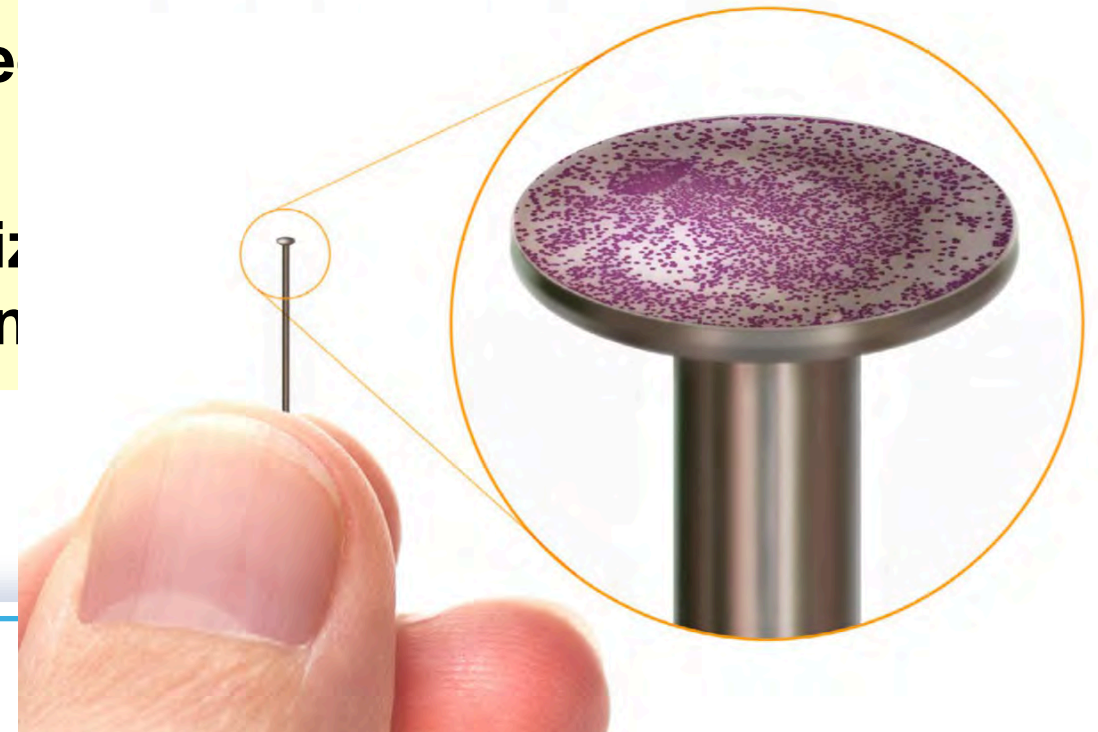
# WHAT MAKES NOROVIRUSES SO SUCCESSFUL AS A PATHOGEN?

## Highly Contagious: extremely low infectious dose

- 18 –1,000 virus particles
  - Handling of contaminate
  - hand-to-mouth contact
  - Via ingestion of aerosoliz
  - toilet flush (unique among

*This is all it takes to start a Norovirus outbreak that could spread and infect over 1,000 people.*

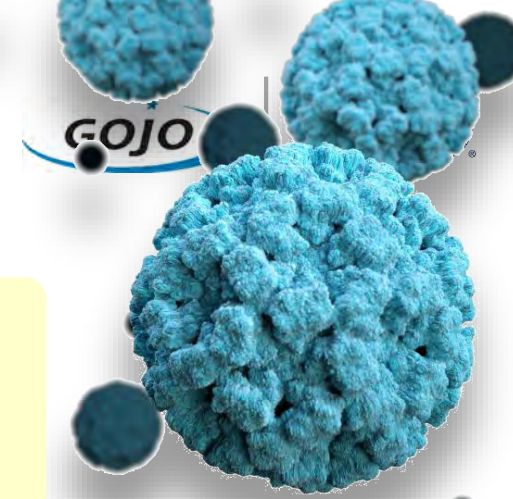
*Source: Journal of Medical Virology, August, 2008*



# WHAT MAKES NOROVIRUSES SO SUCCESSFUL AS A PATHOGEN?

## High environmental stability

- **Resists:** Gut environment – very low pH, freezing and heat temperatures up to 140° F, several disinfectants
- **Persists:** On human hands for at least two hours, on common surfaces for at least 3 to 6 weeks
- **Remains:** Infectious in water for at least 60 days, stable on foods for hours – weeks





# BURDEN OF FOODBORNE NOROVIRUS UNITED STATES



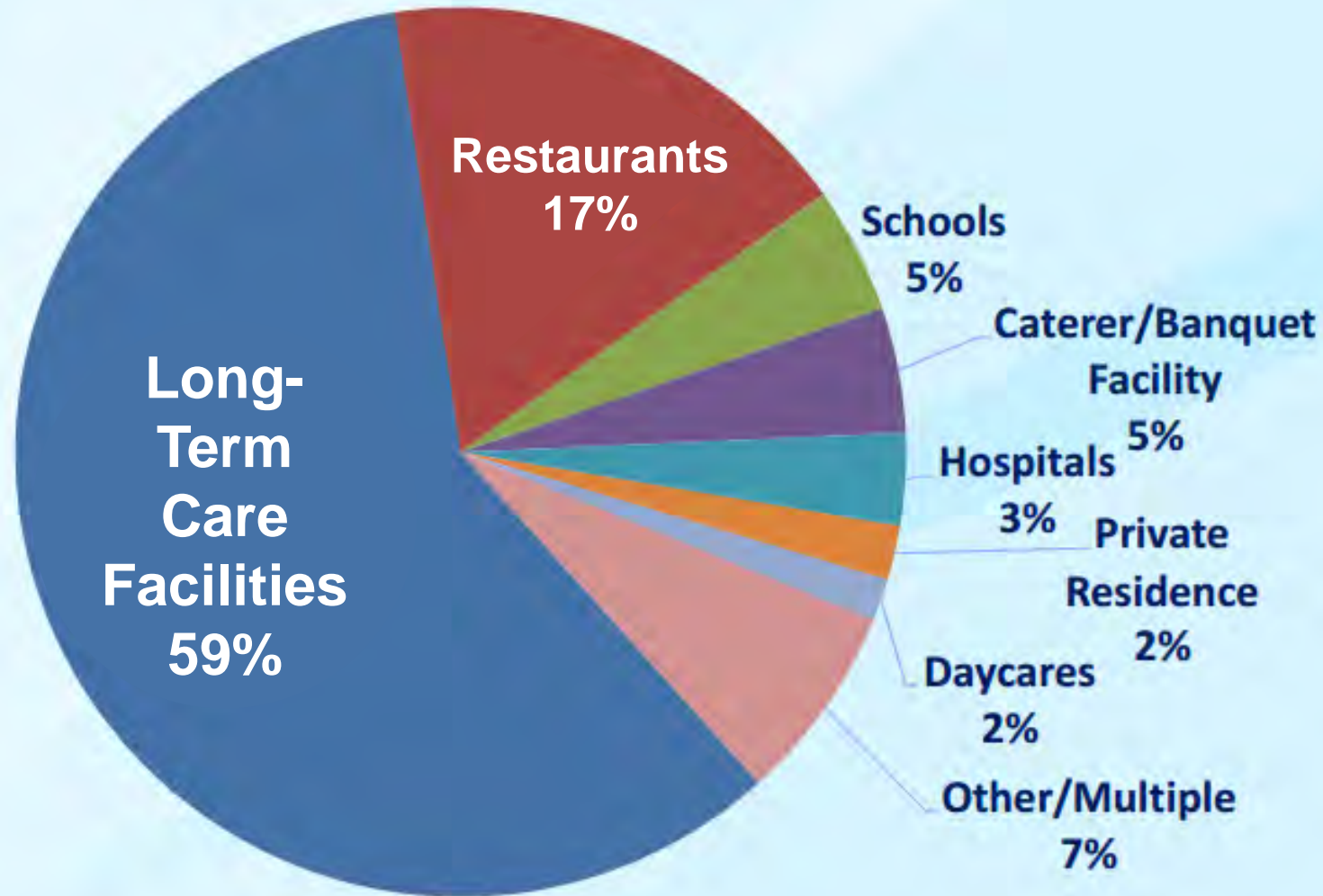
	Illnesses	Hospitalization	Death
1st	Norovirus (58%)	Nontyphoidal Salmonella spp. (35%)	Nontyphoidal Salmonella spp. (28%)
2nd	Nontyphoidal Salmonella spp. (11%)	Norovirus (26%)	Toxoplasma gondii (24%)
3rd	Clostridium perfringens (10%)	Campylobacter spp. (15%)	Listeria monocytogenes (19%)
4th	Campylobacter spp. (9%)	Toxoplasma gondii (8%)	Norovirus (11%)

**Costs \$2 billion per year in medical care services and lost productivity**

Scallan 2011 EID Hoffmann 2012 slide  
courtesy Dr. Wang –OSU-OARDC



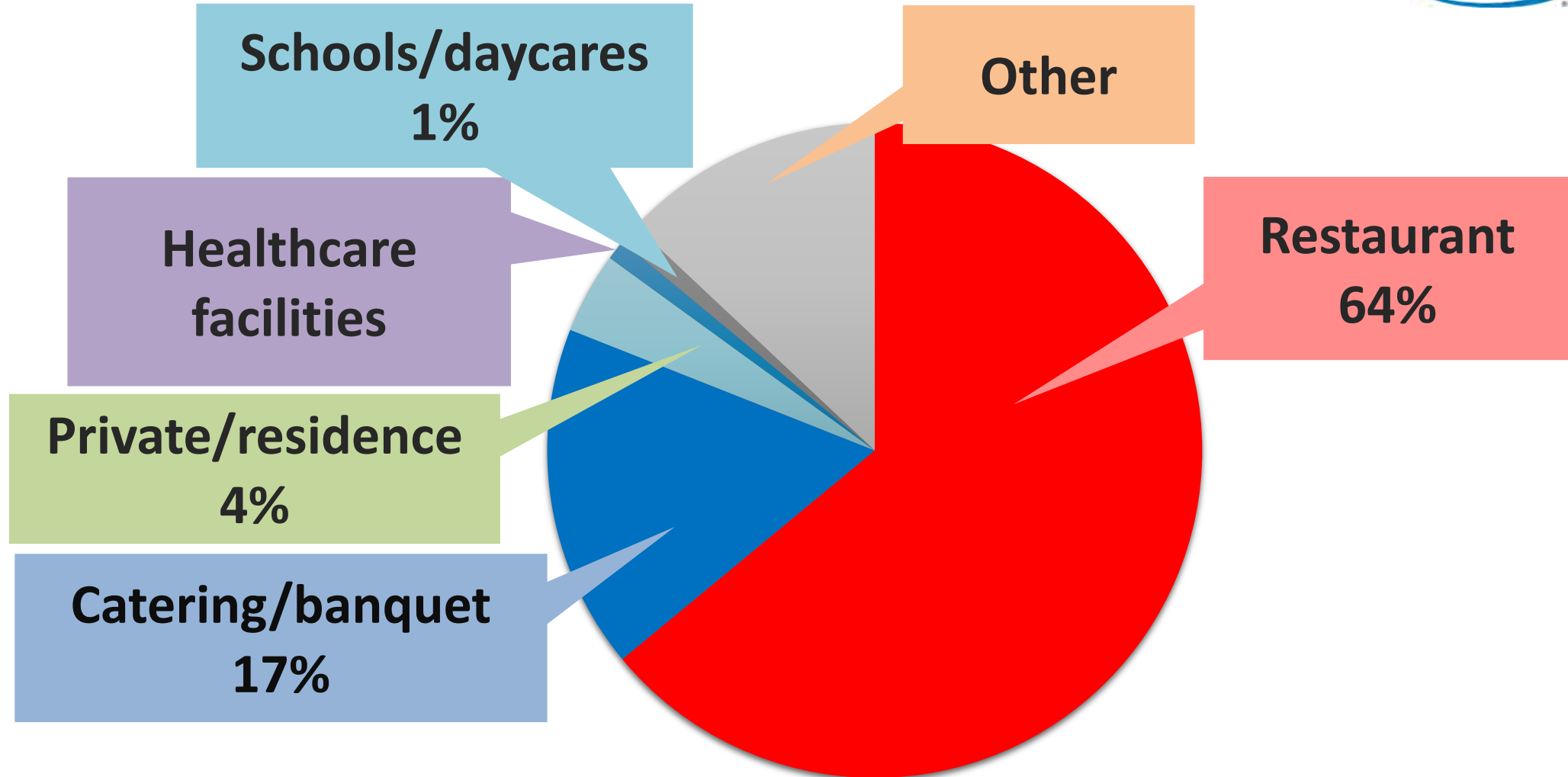
# MAIN SETTINGS FOR NOROVIRUS OUTBREAKS



vicnetwork.org, 2016

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# WHERE DO NOROVIRUS OUTBREAKS FROM FOOD CONTAMINATION HAPPEN?

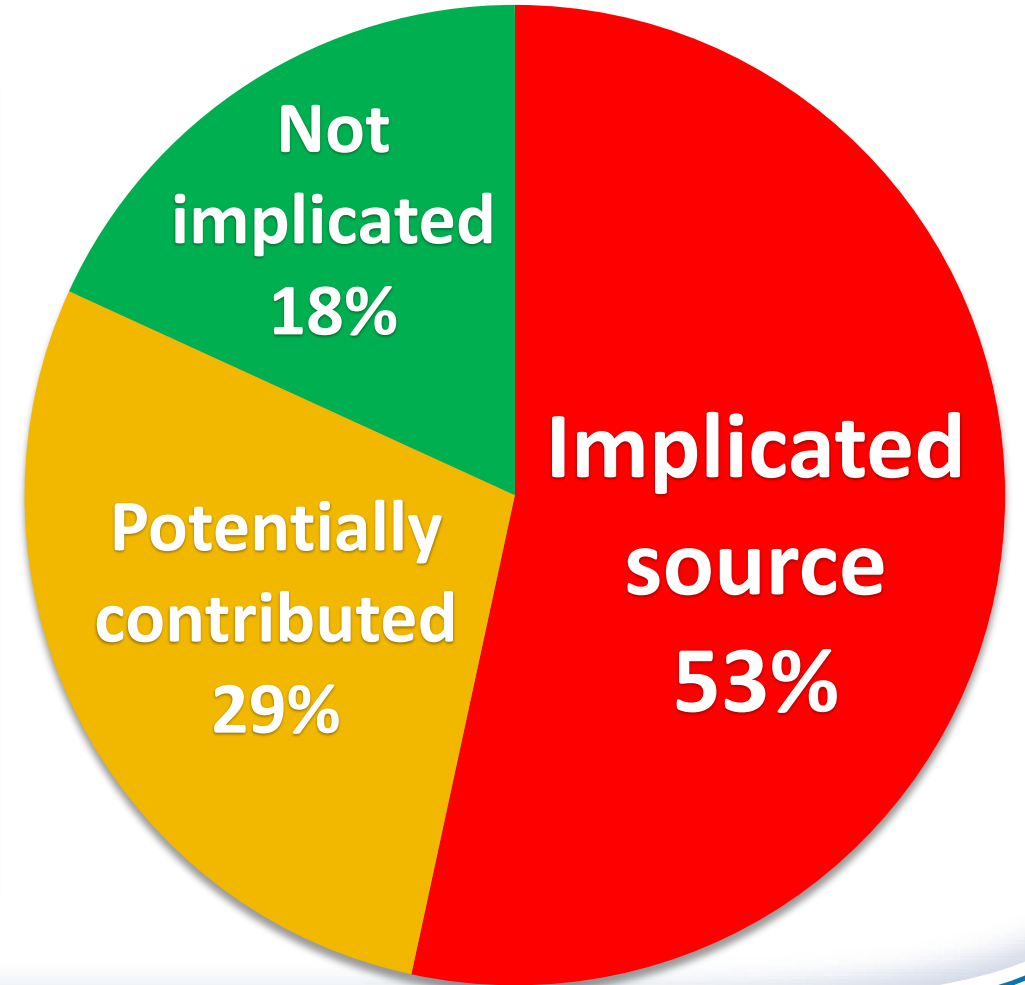


SOURCE: CDC National Outbreak Reporting System, 2009-2012

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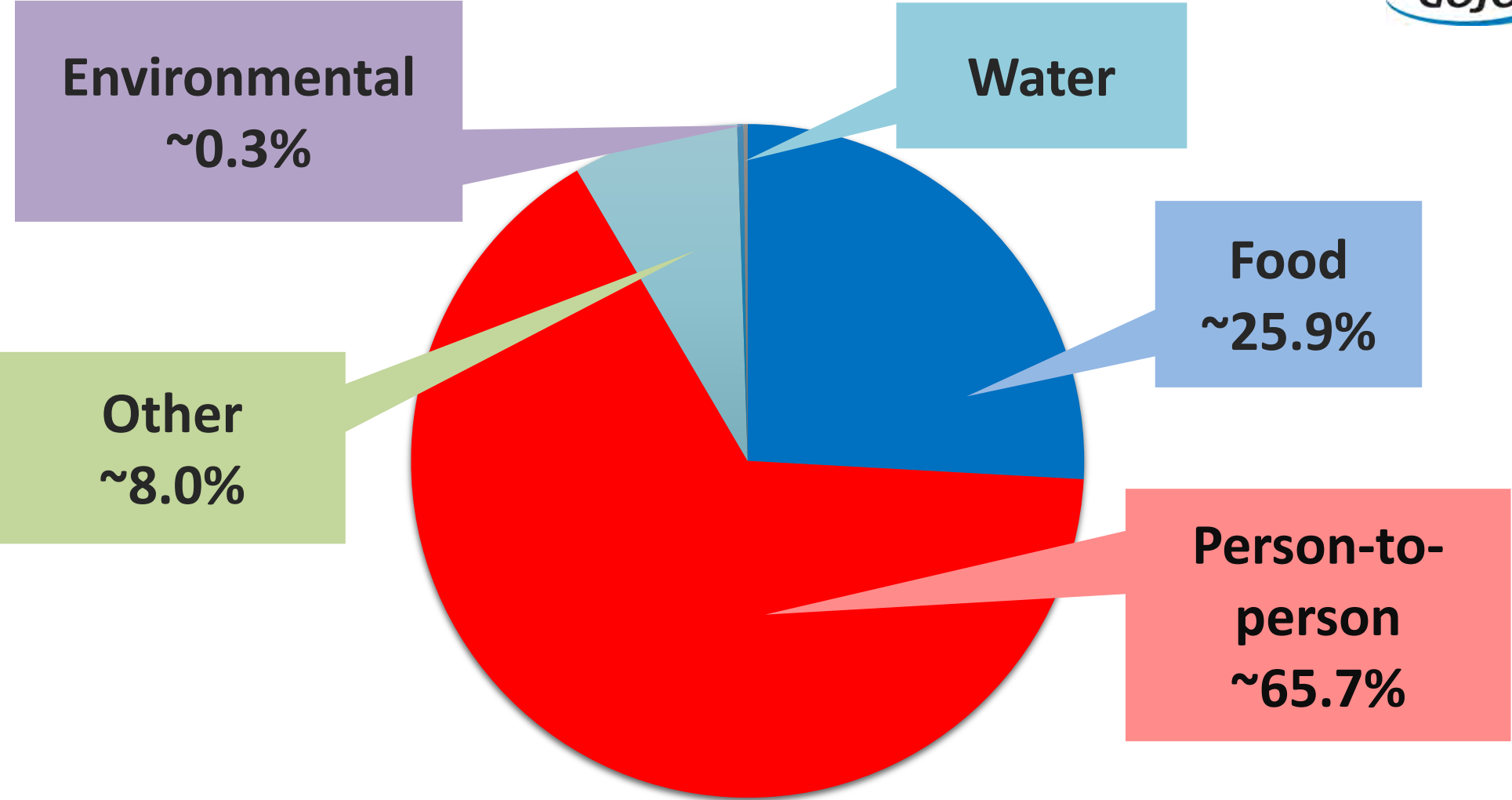
# THE ROLE OF FOOD WORKERS IN FOODBORNE NOROVIRUS OUTBREAKS = 80%!!



MMWR website (<http://www.cdc.gov/mmwr>), Hall et al, 2012 .



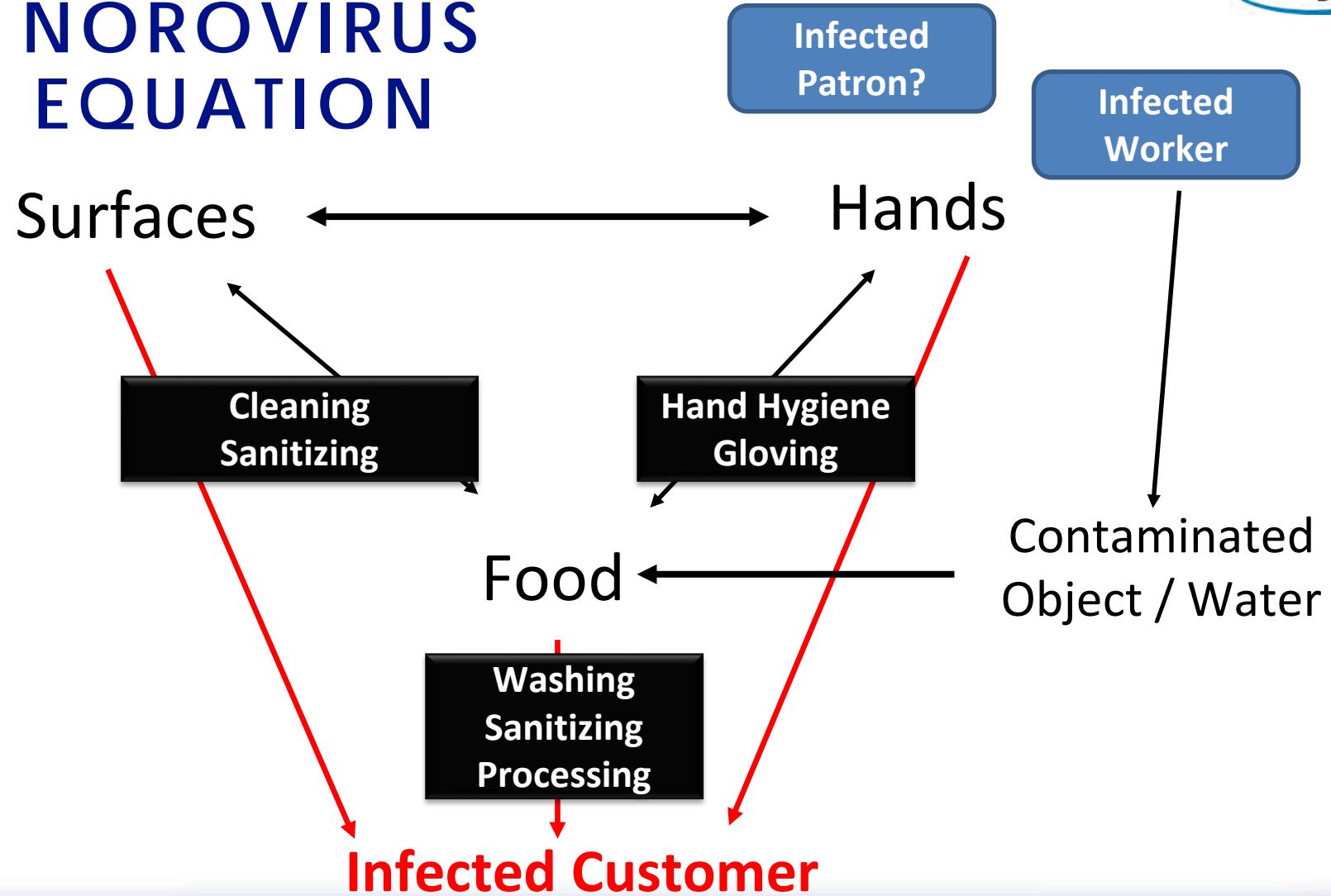
# HOW NOROVIRUS IS TRANSMITTED



Wikswow et al. Surveillance Summaries, December 11, 2015 / 64(SS12);1-16

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# HANDS & SURFACES ARE PART OF A NOROVIRUS TRANSFER EQUATION



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*Risk Analysis*

DOI: 10.1111/risa.12758

# **Quantitative Risk Assessment of Norovirus Transmission in Food Establishments: Evaluating the Impact of Intervention Strategies and Food Employee Behavior on the Risk Associated with Norovirus in Foods**

**Steven Duret, Régis Pouillot, Wendy Fanaselle,\* Efstathia Papafragkou, Girvin Liggans, Laurie Williams, and Jane M. Van Doren**

1 MAR 2017 DOI: 10.1111/risa.12758 <http://onlinelibrary.wiley.com/doi/10.1111/risa.12758/full#risa12758-fig-0001>

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# NOROVIRUS RISK FACTORS & PREVENTION SCENARIOS IN RETAIL FOOD ESTABLISHMENTS



## Approach:

Create a mathematical model to predict number of NoV illnesses on a daily basis from a typical retail food establishment

### **BASELINE**

Using scientific evidence, determine impact of various factors (e.g., handwashing, touch points, disinfectants, etc.) on reduction of NoV as compared to baseline

### **SCENARIOS**

Determine which factors have highest contribution to NoV illness.  
Make recommendations on best practices

### **OUTPUT**

[Risk Analysis.](#) 2017 Nov;37(11):2080-2106

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# THE IMPACT OF DIFFERENT INTERVENTIONS ON THE REDUCTION OF NOROVIRUS OUTBREAKS



## Exclusion from work of symptomatic food employee

- Full Compliance: 75% of baseline illnesses
- No Exclusion: 226% of baseline illnesses



## Efficient Hand Washing

58% of baseline illnesses



## Handwashing frequency associated with gloving compliance

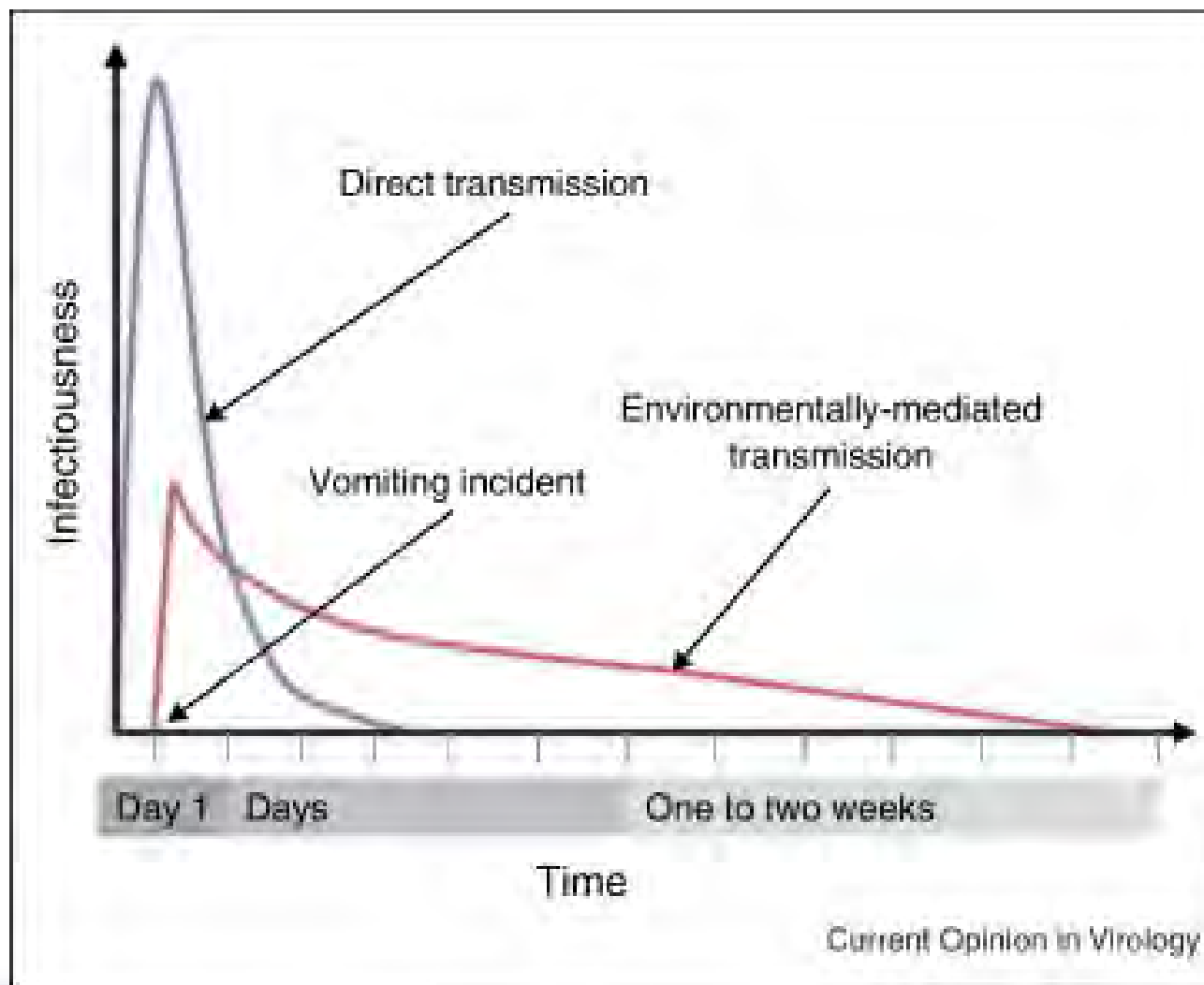
62% of baseline illnesses



## Elimination of contact between hands, faucets, doors handles

75% of baseline illnesses

# WHAT HAPPENS IF YOU DON'T DISINFECT SURFACES?



Curr Opin Virol. 2012 Feb;2(1):96-102.

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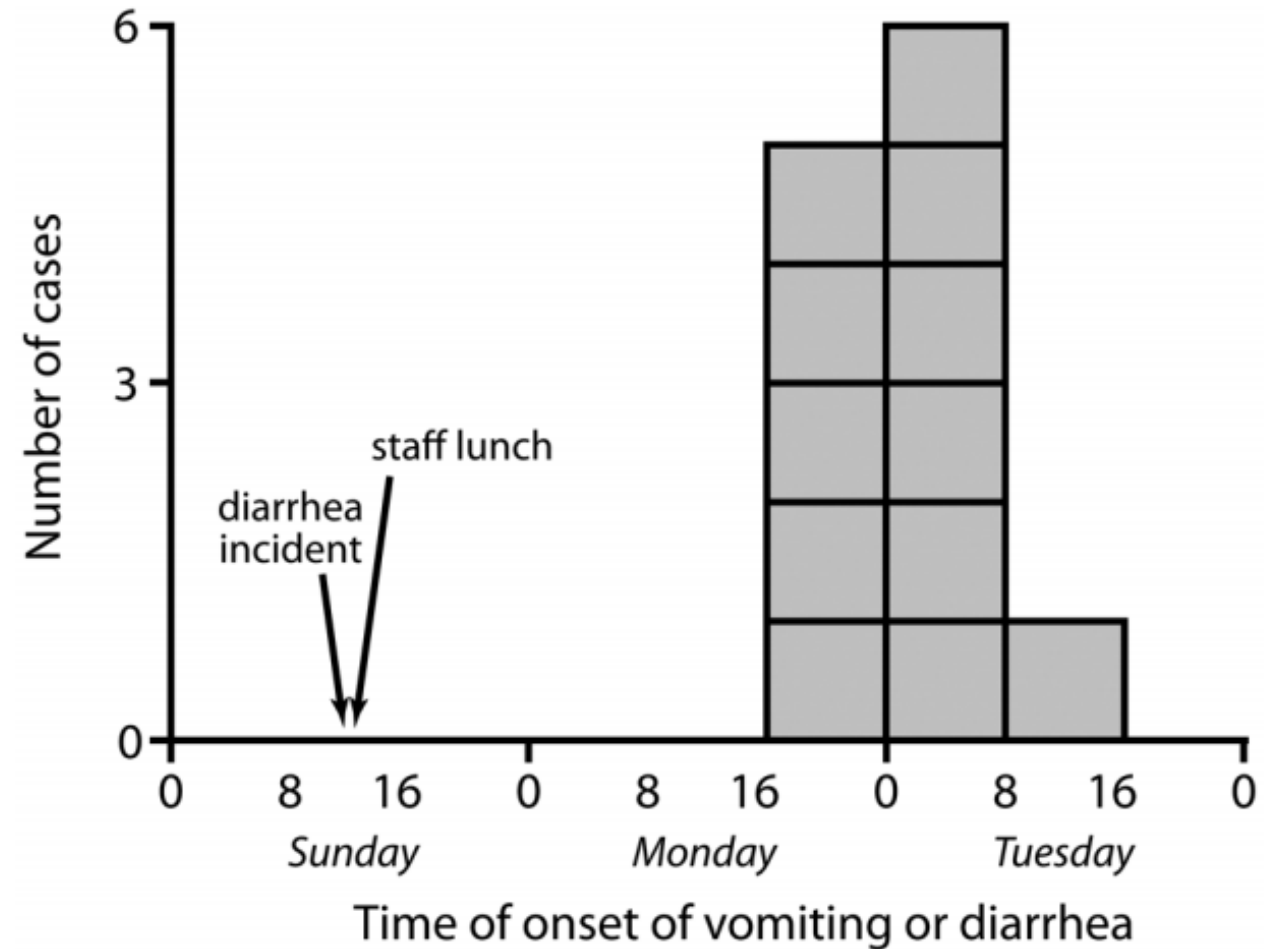
# A Norovirus Outbreak Related to Contaminated Surfaces



**Kimberly K. Repp,<sup>1</sup> Trevor P. Hostetler,<sup>1</sup> and William E. Keene<sup>2</sup>**

<sup>1</sup>Washington County Department Health and Human Services, Hillsboro; and

<sup>2</sup>Oregon Public Health Division, Portland, Oregon



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## ADDITIONAL LISTENING



10:39

+ PLAYLIST

DOWNLOAD

EMBED

TRANSCRIPT

HEALTH

# Tracking The Spread Of A Nasty Virus

May 11, 2012 · 1:00 PM ET

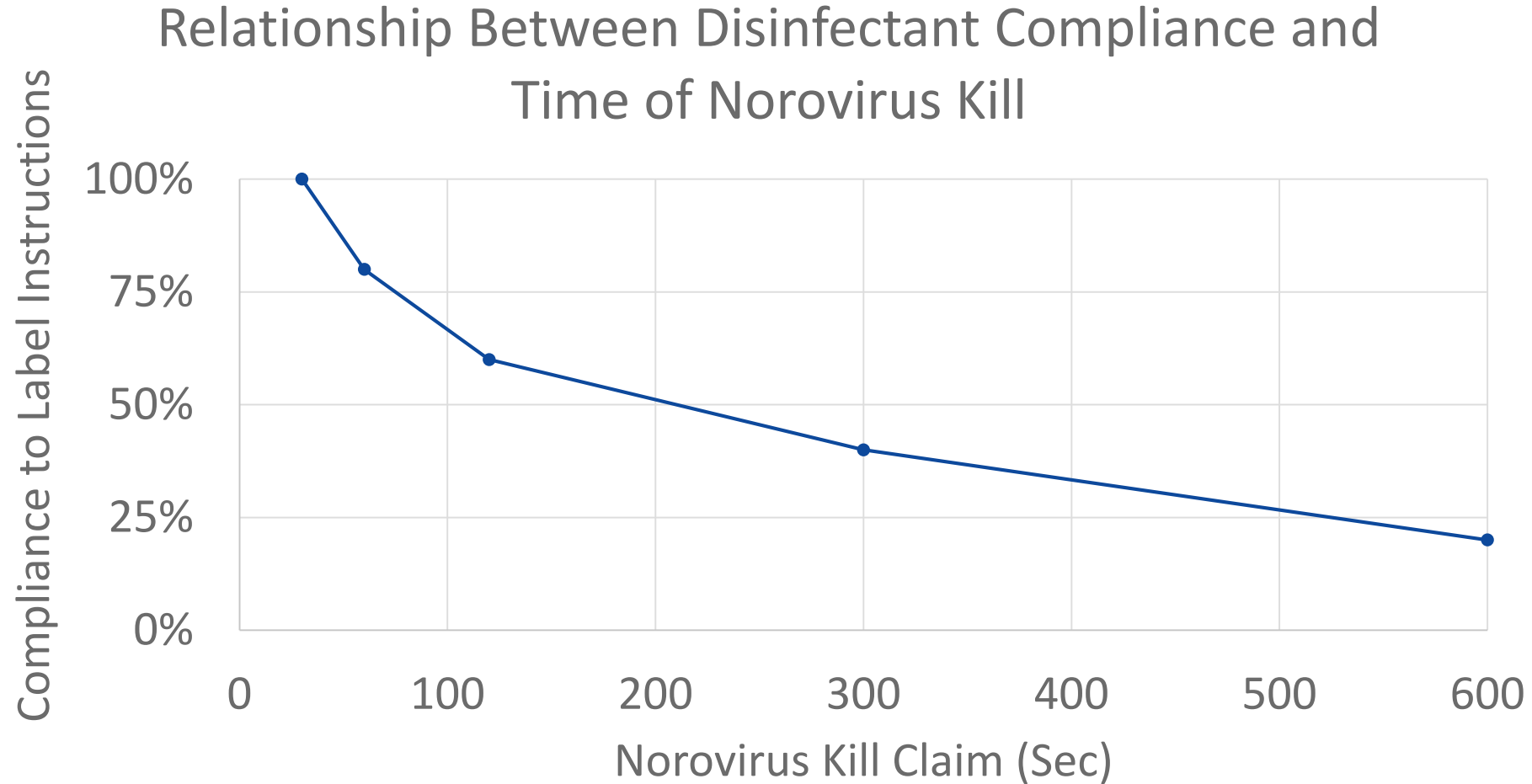
Heard on [Talk of the Nation](#)

When members of a travel soccer team in Oregon fell ill last year, the details of how the disease spread through the team were mysterious. Kimberly Repp, an epidemiologist in Washington County, Oregon, describes the medical detective work that led epidemiologists through the chain of transmission of the norovirus.

<https://www.npr.org/2012/05/11/152508362/tracking-the-spread-of-a-nasty-virus>

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# EFFICACY AND TIME OF KILL IS CRUCIAL



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# RECENT NOROVIRUS SPILL KIT ADVANCEMENTS



- It helps to have a written procedure + proper steps to clean up body fluid spills
- Use a disinfectant effective at killing Norovirus rapidly (30 seconds) and is safe to use on hard and soft surfaces

Norovirus is a serious issue for food safety managers. Reports of norovirus outbreaks in restaurants, schools and cruise ships drive national headlines and serve as warnings for the foodservice industry. Outbreaks can happen anywhere. The best defense is a good response plan for vomit and diarrhea events. Body fluid spill kits are a key part of risk management programs and include surface disinfectants that kill and prevent the spread of norovirus. Investing in PURELL™ Body Fluid Spill Kits can be a cost saving decision.

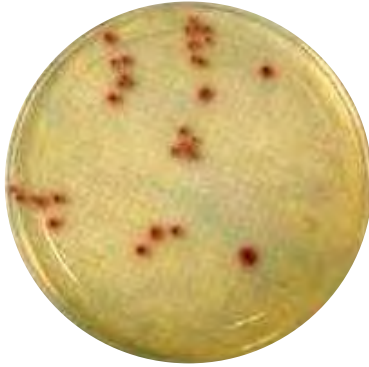


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# HYGIENE SCIENCE PRINCIPLES + MYTHS / MISINFORMATION



# HANDS: MOST COMMON MEANS OF MICROBIAL SPREAD



Acquisition of MRSA on hands after touching the bedrail of a colonized patient<sup>1</sup>



Acquisition of MRSA on hands after examination of a colonized patient<sup>1</sup>

~80% of infectious diseases are transmitted by hands<sup>2</sup>

<sup>1</sup>Donskey and Eckstein. *N Engl J Med* 2009; 360.

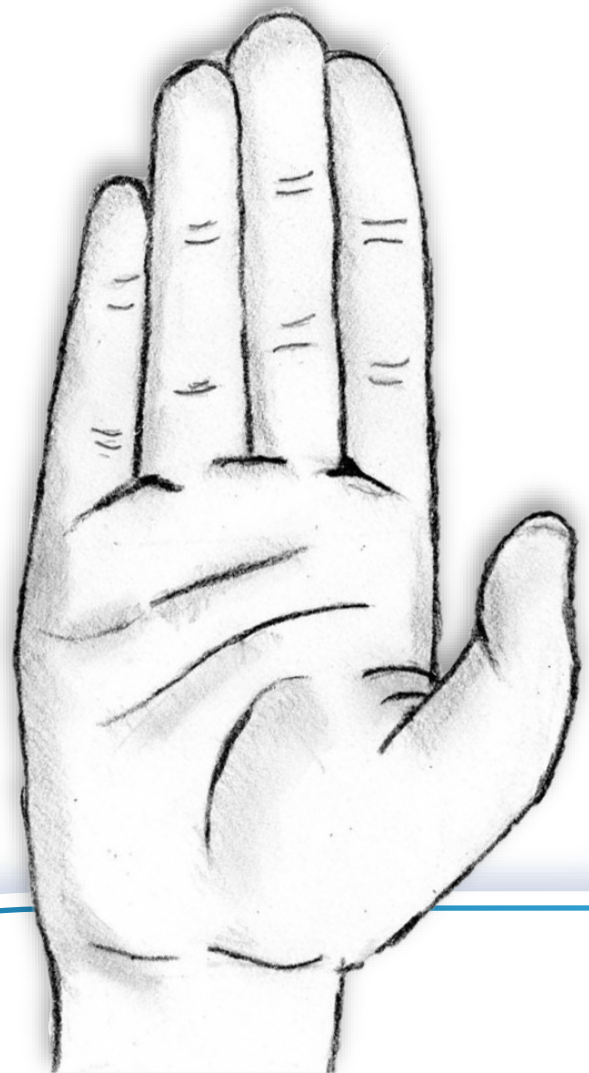
<sup>2</sup>CDC Guideline (2002) & WHO Guideline (2009) on Hand Hygiene in Healthcare.





# THE NEED FOR HAND HYGIENE

## PATHOGENS CAN SURVIVE ON HANDS / FINGERS FOR HOURS



Pathogen	Duration of Persistence
<b>Norovirus</b>	<b>Up to 2 hours</b>
<i>Hepatitis A</i>	5.50 to 7.70 hours
<i>Influenza A</i>	1/2 hour to 1 hour
<i>Escherichia coli</i>	Up to 1 ½ hour
<i>Klebsiella pneumoniae</i>	Up to 1 ½ hour
<i>Shigella</i>	Up to 3 hours
<i>Serratia marcescens</i>	Up to 1 ½ hour
<i>Staphylococcus aureus</i>	Up to 1 ½ hour



# Targeted Hygiene at Key Moments is Critical



According to the CDC, “Keeping hands clean is one of the most important steps we can take to avoid getting sick and spreading germs to others.” The agency recommends these important times to wash or sanitize your hands:

1. Before, during and after preparing food
2. Before eating food
3. Before and after caring for someone who is sick
4. After using the bathroom
5. After sneezing and coughing



- CDC Foundation partnership led to the launch of the CDC Clean Hands Count Campaign (May, 2016), a national educational campaign with the following objectives:
  - Improve hand hygiene knowledge and compliance
  - Address the myths and misperceptions surrounding hand hygiene
  - Empower patients, their families and visitors to act as patient advocates and to work together with their healthcare providers
- Updated materials released May 2019 (including Spanish translation) and under development for community settings (targeted for October 2019)

Resources are available to you and the public at <https://www.cdc.gov/handhygiene/campaign/index.html>

# Have you heard these myths?



## General Categories:

- Formulation
- Delivery Systems
- Microbial
- Monitoring / Compliance
- Technique
- Human Health

PURELL Hand Sanitizer causes antibiotic resistance.

Hand sanitizers create supergerms.

All germs are the same.

Using hand sanitizer kills all the germs, even the good ones.

All hand sanitizers, soaps, surface products are the same.

Hand sanitizers contain Triclosan.

Frequent use of hand sanitizer dries out my hands.

Are we too clean?

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# Have you heard these myths?

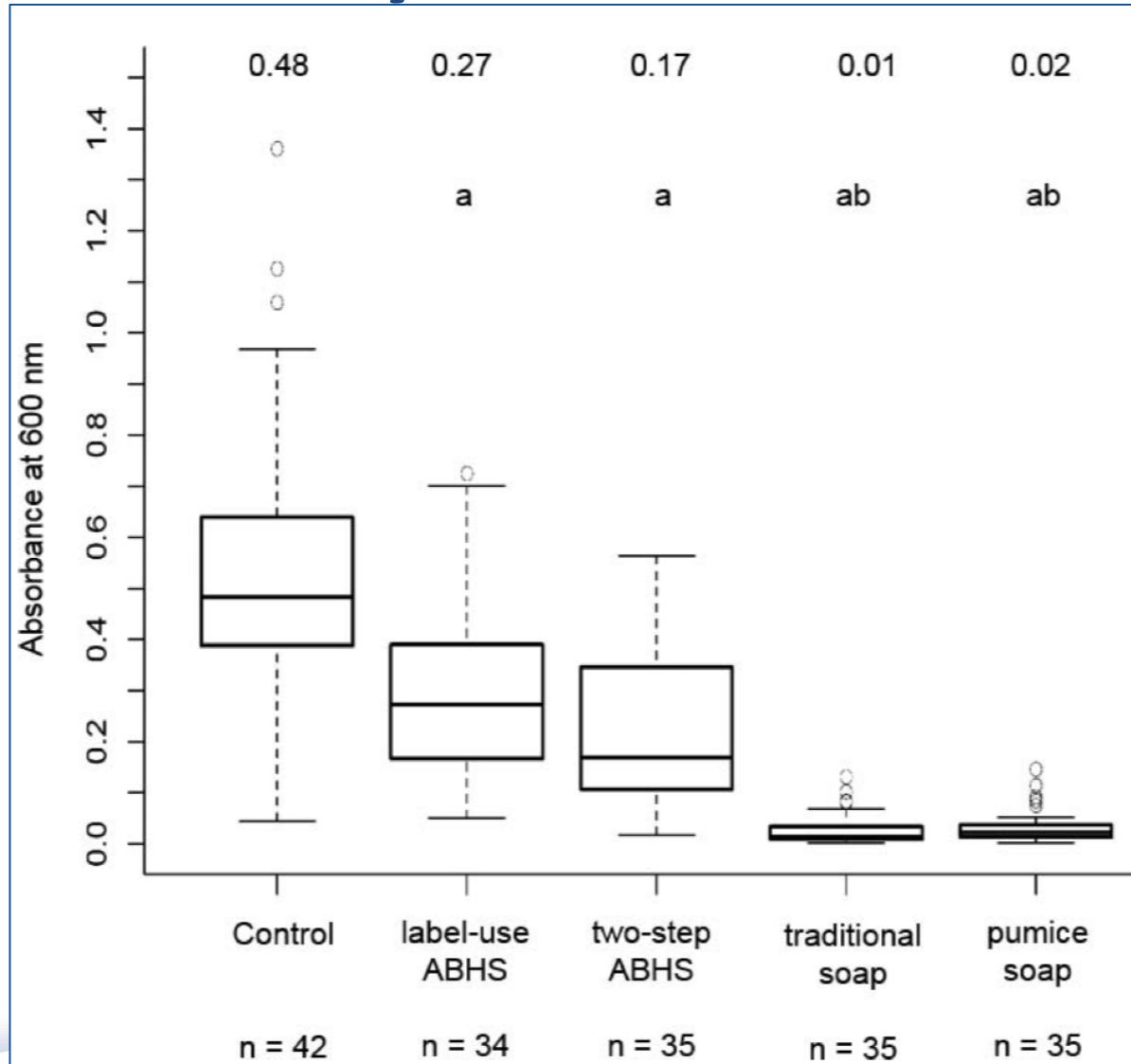


Hand sanitizers aren't  
as good as soap and  
water at removing  
germs

If hands are soiled, they  
must be contaminated  
with germs

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# Have you heard these myths?



Hand sanitizers aren't as good as soap and water at removing germs

[J Food Prot.](#) 2015 Nov;78(11):2024-32

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Before Intervention



After Intervention



Intervention

label-use ABHS

two-step ABHS

traditional soap

pumice soap

Absorbance  
After Intervention

0.264

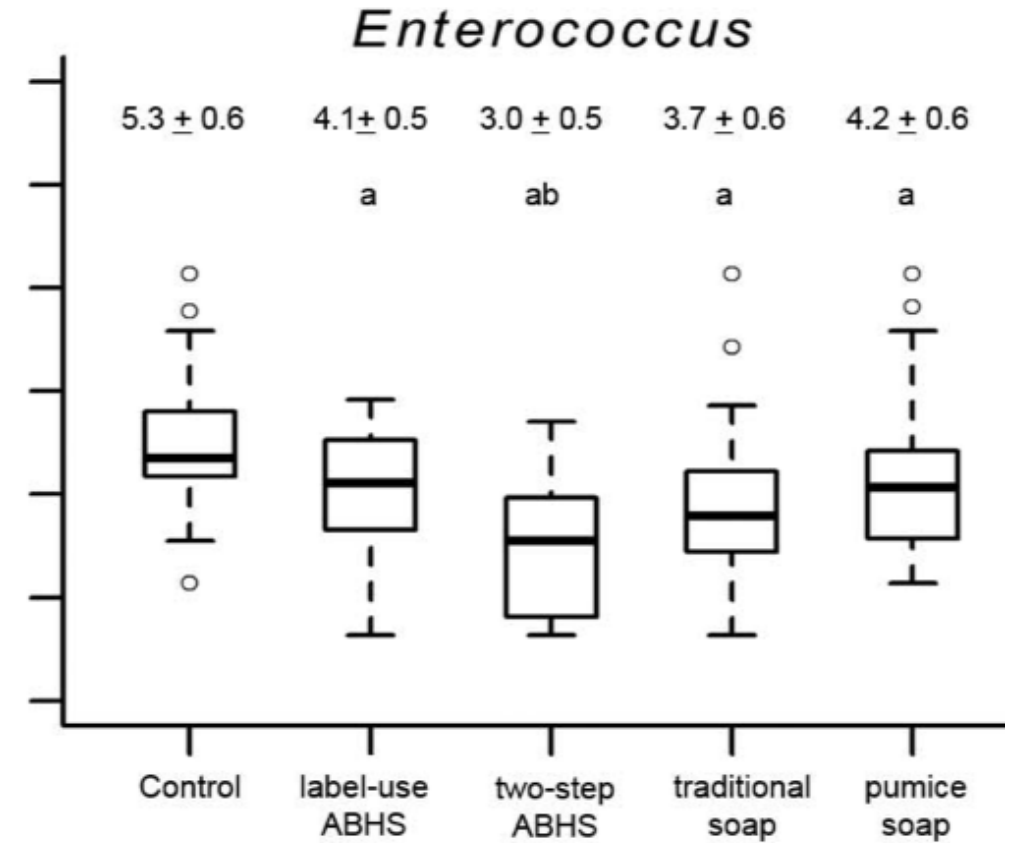
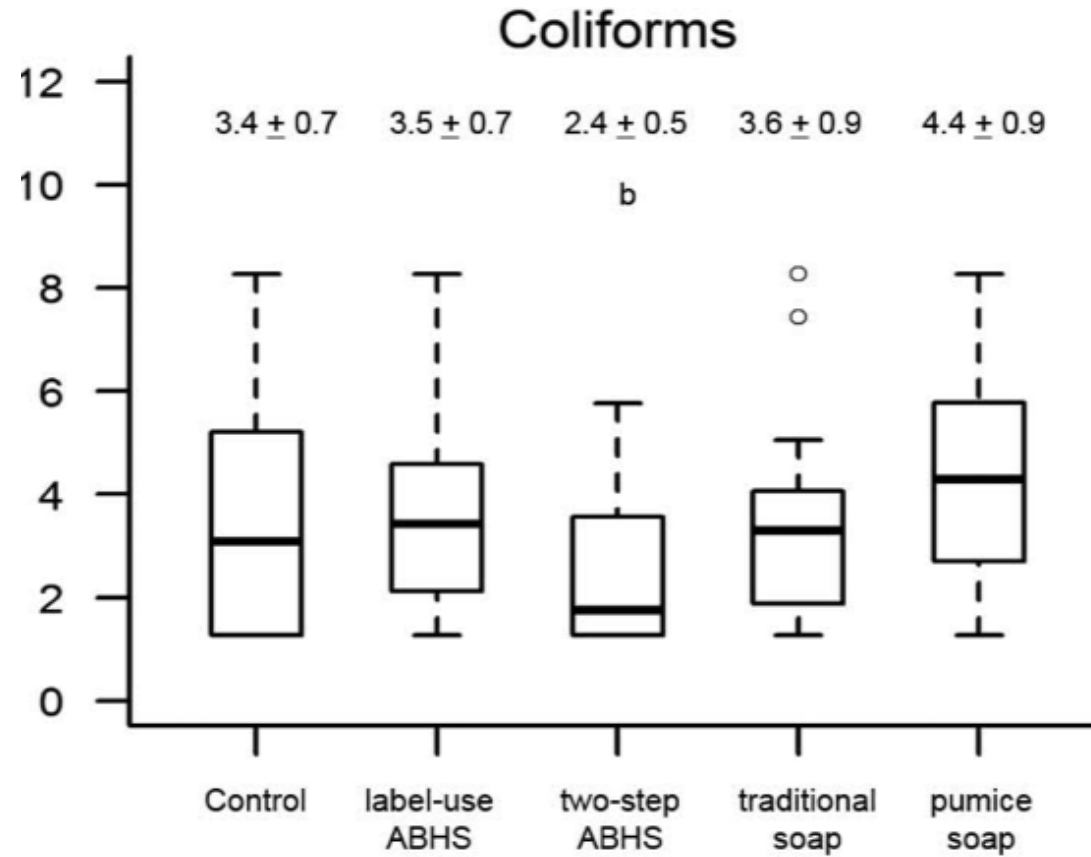
0.045

0.012

0.020



# Have you heard these myths?



[J Food Prot.](#) 2015 Nov;78(11):2024-32

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# Have you heard these myths?



Handwashing with soap  
and water removes all  
germs

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# HANDWASHING & NOROVIRUS REMOVAL – NOT A LOT OF EVIDENCE EXISTS!



Antimicrobial handwash actives are not virucidal

Nov  
Surrogates  
Tested

Log<sub>10</sub> Reduction  
by Soap

Log<sub>10</sub> Reduction  
by Water only

- ✓ Do not assume handwashing gives complete removal
- ✓ Do not assume some “actives” are better than others
- ✓ More research needed on handwashing

1. Lages, 2008, *J Hosp. Infect.* 68:159.

2. Liu et. al., 2010 *Appl. Environ. Microbiol.* vol. 76 2 394-399

3. Conover & Gibson, 2016 *Food Control* 69: 141-146

# Have you heard these myths?



Alcohol based hand  
sanitizers are not  
effective against  
norovirus

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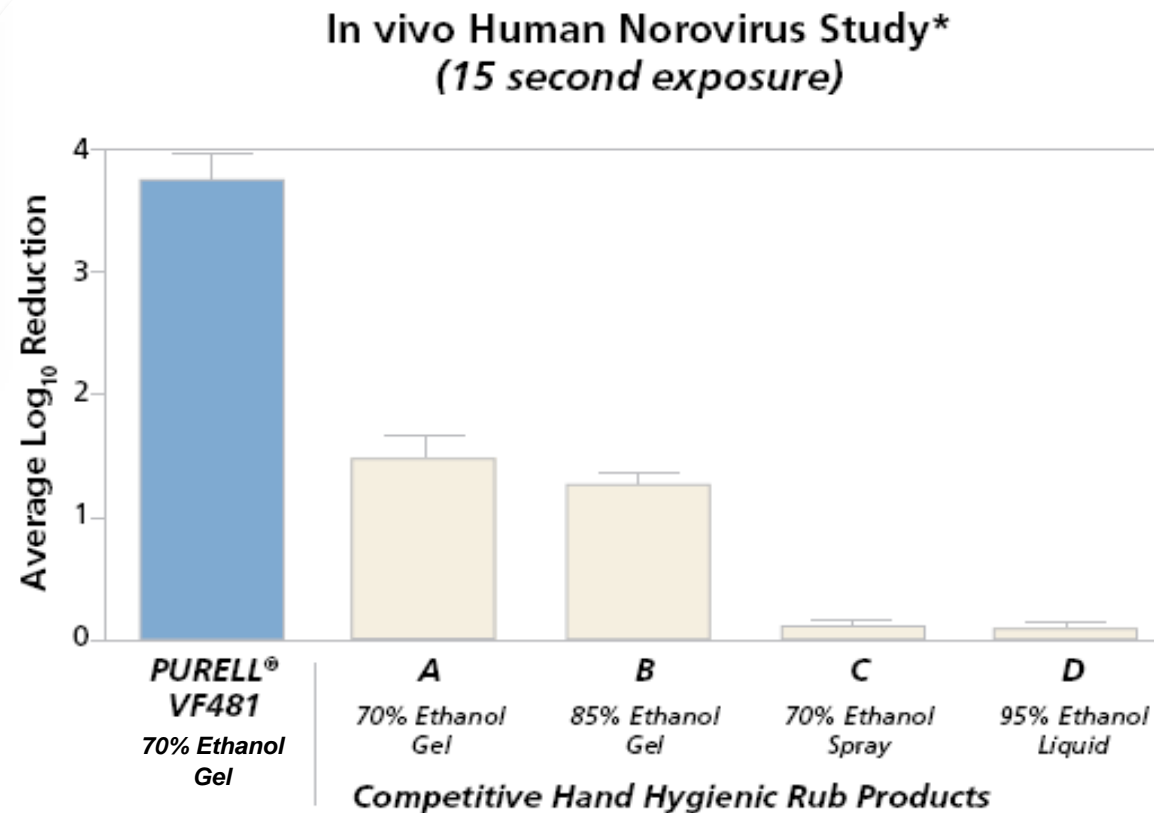
# HUMAN NOROVIRUS EFFICACY OF HAND SANITIZERS



**Lab:** Dr. Moe (Emory University)

**Method:** Fingerpad, Quantitative real-time PCR to measure viral RNA

**Soil Load:** Human Feces



\*Fingerpad method (ASTM E1838-02) using quantitative real-time PCR to detect Human Norovirus, strain Norwalk viral RNA. *N* = 12 fingerpads for PURELL VF481 and Products A, C, D; *N* = 6 fingerpads for product B.

- ✓ VF481 is Statistically Superior to other test articles ( $p < 0.001$ )
- ✓ Alcohol content does not dictate the efficacy: more alcohol does not always mean better efficacy.
- ✓ **Again, Formulation Matters!**

**Ref:** Liu *et.al.* "Comparison of the Activity of Alcohol-Based Handrubs against Human Noroviruses Using the Fingerpad Method and Quantitative Real-Time PCR." Food and Environmental Virology, 2010.

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# Have you heard these myths?



Washing hands with  
warm water removes  
more germs than cold  
water

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# Have you heard these myths?



## Research Paper

### Quantifying the Effects of Water Temperature, Soap Volume, Lather Time, and Antimicrobial Soap as Variables in the Removal of *Escherichia coli* ATCC 11229 from Hands

DANE A. JENSEN,<sup>1</sup> DAVID R. MACINGA,<sup>2</sup> DAVID J. SHUMAKER,<sup>2</sup> ROBERTO BELLINO,<sup>2</sup> JAMES W. ARBOGAST,<sup>2</sup> AND DONALD W. SCHAFFNER<sup>1\*</sup>

<sup>1</sup>Department of Food Science, Rutgers University, 65 Dudley Road, New Brunswick, New Jersey 08901-8520; and <sup>2</sup>GOJO Industries, Inc., 1 GOJO Plaza #500, Akron, Ohio 44311, USA

- Water temperature had no impact on bacteria removal
- Time (10 vs 20 sec) had a small bit statistically significant impact on bacteria removal

[J Food Prot.](#) 2017 Jun;80(6):1022-1031

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# SURFACE SANITIZING IN RESTAURANTS

## EXAMPLE - THE RAG & BUCKET PARADIGM

# SITUATION ANALYSIS

Customers using ready-to-use surface cleaners and sanitizers have asked how to store cleaning cloths between uses while maintaining compliance (no citations / violations during inspections).

Requirements in the current Food Code:

## 3-304.14 Wiping Cloths, Use Limitation.

(A) Cloths in-use for wiping FOOD spills from TABLEWARE and carry-out containers that occur as FOOD is being served shall be:

- (1) Maintained dry; and
- (2) Used for no other purpose.

(B) Cloths in-use for wiping counters and other EQUIPMENT surfaces shall be:

- (1) Held between uses in a chemical sanitizer solution at a concentration specified under § 4-501.114; and



## Food Code

U.S. Public Health Service



2013

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service • Food and Drug Administration

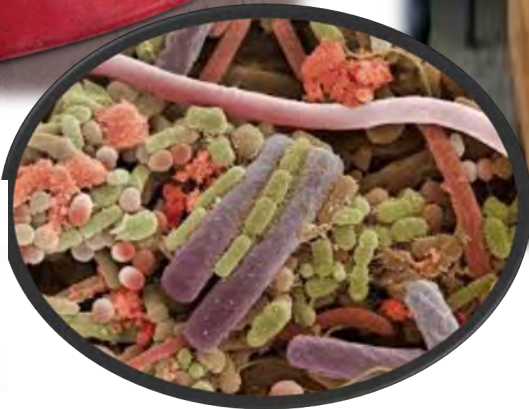
College Park, MD 20740

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# CURRENT CLEANING AND SANITATION

*Dirty, reusable cloth towels can be a source of cross-contamination...  
and create a poor guest experience*



From **table** to **table**

From **"?"** to **table**

*--- Reproduced with permission from Dr. Hal King*





# CURRENT CLEANING AND SANITATION

- From Bucket to Ready-to-eat food prep surfaces
- Sanitizer strength impossible to maintain in the presence of food soils (e.g., oils, fats, grease on reusable towels)

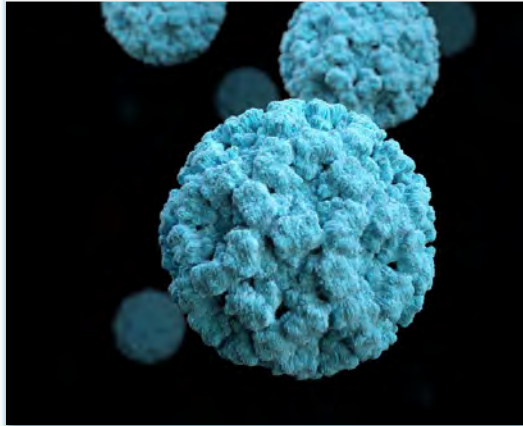


--- Reproduced with permission from Dr. Hal King

# KEY CONSIDERATIONS FOR SELECTING SANITIZERS AND DISINFECTANTS FOR SURFACES



## 1-Kill Claims



**Does it kill  
the most  
prevalent  
pathogens for  
your market?**

**2- How  
quickly does  
it kill  
prevalent  
pathogens?**



**Kill Times**

## 4-Other Factors



- Safe, nontoxic
- Compatible with surfaces and equipment
- Acceptable aesthetics
- Good cleaner
- Easy to use
- Environmentally sustainable
- Economical, Etc...

**3- Does the product  
remain wet long  
enough to kill the  
pathogen?**

- Is reapplication  
necessary?



**Wet Times / Dwell Times**





# CONCLUSIONS

# TAKE HOME MESSAGES



- Hands and contaminated surfaces play a significant role in the chain of infection of several diseases
- Hand hygiene and surface sanitization / disinfection are important preventive measures to break the chain of infection
- Not all hand antiseptics and surface disinfectants are equal: formulation matters for efficacy and outcome performance
- Learning how to wisely select Hand Hygiene and Surface Sanitizers/ Disinfectants is an important step in reducing infectious disease
- Newly developed interventions have shown improved virucidal efficacy against several hard to kill viruses (including Norovirus)
- Solutions Exist – Seek the Evidence and Experts for Recommendations

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# THANK YOU

## QUESTIONS AND SUGGESTIONS



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