Partnership for Food Safety Education

Together: A Food Safe America

C L E A N

The BAC Fighter

CLEAN SUMMIT 2019

Part I: Handwashing and Kitchen Towels

Part II: Cleaning vs. Sanitizing; Surface Cleaning

Welcome to the BAC Fighter Clean Summit!

Part I: Handwashing and Kitchen Towels

Part II: Cleaning vs. Sanitizing; Surface Cleaning

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Partnership for Food Safety Education

Welcome!

The Partnership for Food Safety Education develops and promotes effective education programs to reduce foodborne illness risk for consumers.

We are a non-profit organization that relies on grants and contributions.

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To ask a question, please use the question box on the right of the screen.

After the webinar, you will receive a brief survey. Please fill it out.
Help us improve!

Continuing Education Units

One hour CEU available from ANFP, CDR & NEHA

- Download certificate from sidebar
- Follow-up email
- Download at fightbac.org under “Events” tab and “Webinar Recordings”

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Review of Last Webinar

- Handwashing is important
  - Helps prevent illness and spread of germs
  - Helps battle rise in antibiotic resistance
- Steps of proper handwashing
- Hand sanitizers designed to kill germs (damaging them), but not true “cleaning”
- Results of the study *Bacterial Occurrence in Kitchen Hand Towels*

What We Will Cover Today

- Improve knowledge and practice of surface cleaning and surface sanitizing in the home
- Understand the difference between cleaning, sanitizing and disinfecting, and known effective products for these processes
- Learn about interventions and resources that can help the consumer reduce risk from common pathogens in the home

Speakers

Mindy Costello, RS, MS
Consumer Information
NSF International

Dr. Akrum Tamimi
Professor of Practice
Department of Biosystems Engineering
The University of Arizona

HOST
Dr. Shauna Henley
FCS Agent, University of Maryland Extension
Board Member, Partnership for Food Safety Education

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Cleaning & Sanitizing

Mindy Costello, RS, MS
Consumer Information
NSF International
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Agenda

- Cleaning vs. Sanitizing
- Basic home surface cleaning tips
- Surfaces of greatest concern at home

Poll Question #1

Have you ever used a sanitizing product or made your own sanitizing solution?

1. I make my own sanitizer.
2. I have bought a sanitizing product.
3. I've made and bought sanitizing products.
4. Neither!

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Cleaning vs. Sanitizing

- Comparison
- How to sanitize
- Storage of utensils
- Tablet/cell phone
- Kids' and pet toys

When to Clean & When to Sanitize

CLEANING

- Dried food
- Spills
- Shine/buff
- Baked-in food
- Dirt/dust

SANITIZING

- Raw meat juice
- Sneeze
- Spit
- Sickness
- Germs

Cleaning

- Warm/hot water with soap
- Vinegar & water solution
- Soaps or vinegar solutions are not sanitizers
- EPA also has Safer Choice cleaning products

Sanitizing by Submersion

- One gallon of water with 1 tablespoon of bleach (unscented)
- Submerge into solution for one to three minutes
- Rinse thoroughly
- Air dry

Sanitizing by Dishwasher

- Any dishwasher-safe item
- Sanitizing cycle
- Sanitizing dish detergent
- Follow directions
- NSF/ANSI 184 certified dishwashers

Sanitizing with Spray or Wipes

- Read the directions
- Rinse required?
- Wait time required?
- Safe for surface?

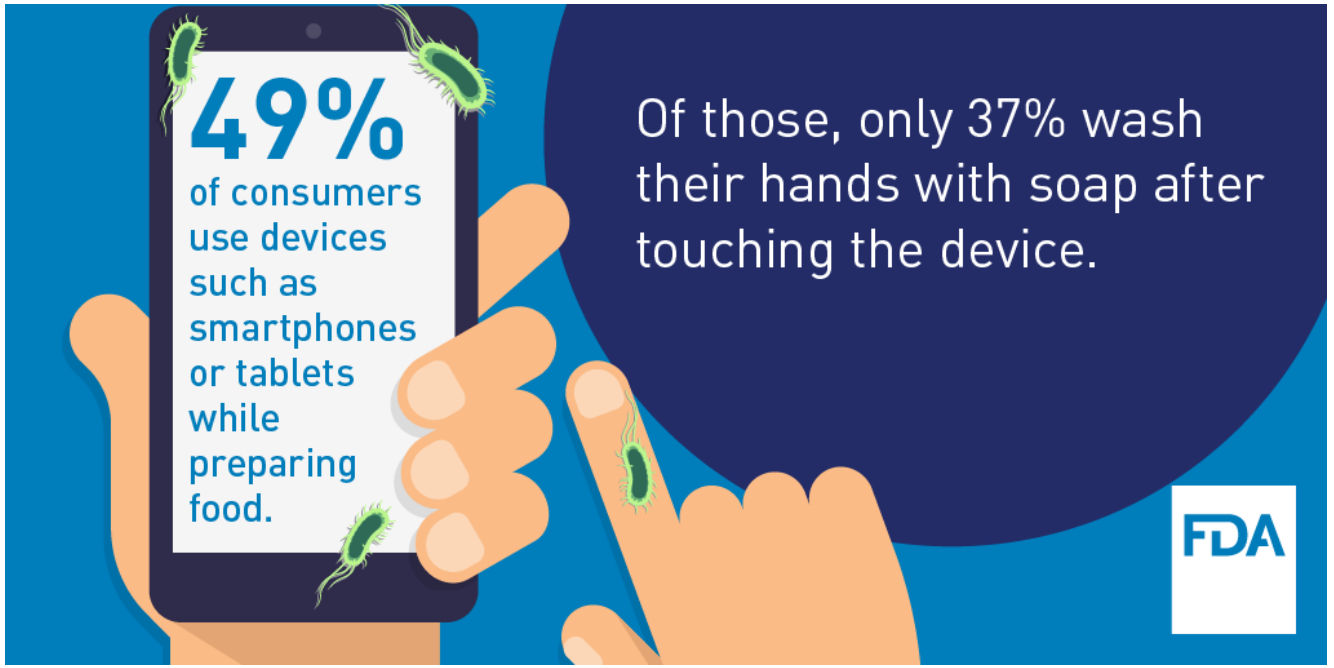
Storage of Utensils & Kitchen Items

- Handle out
- Handles in same direction
- Hang away from dust/germs
- Not under the sink

Tablet & Cell Phone

FDA study by Amy Lando and Michael Bazaco

https://www.ncbi.nlm.nih.gov/pubmed/29474153



Poll Question #2

Do you read the labels on your cleaning products and follow the directions?

1. Always read and follow
2. Sometimes read and follow
3. Never read! I do my own thing.

Cleaning & Sanitizing Toys

- Soft, absorbent
- Hard surface/plastic
- Read the label
- Read the tag
- Frequency depends on use

Cleaning Pet Toys & Bowls

- Important
- Submerge or spray
- Clean first, then sanitize
- Read tags/labels
- Air dry

Cleaning Tips Summary

- Read the label
- Take items apart
- Sanitizing solution/chemical
- Rinse and air dry
- Sanitizing dishwasher

Surfaces of Greatest Concern

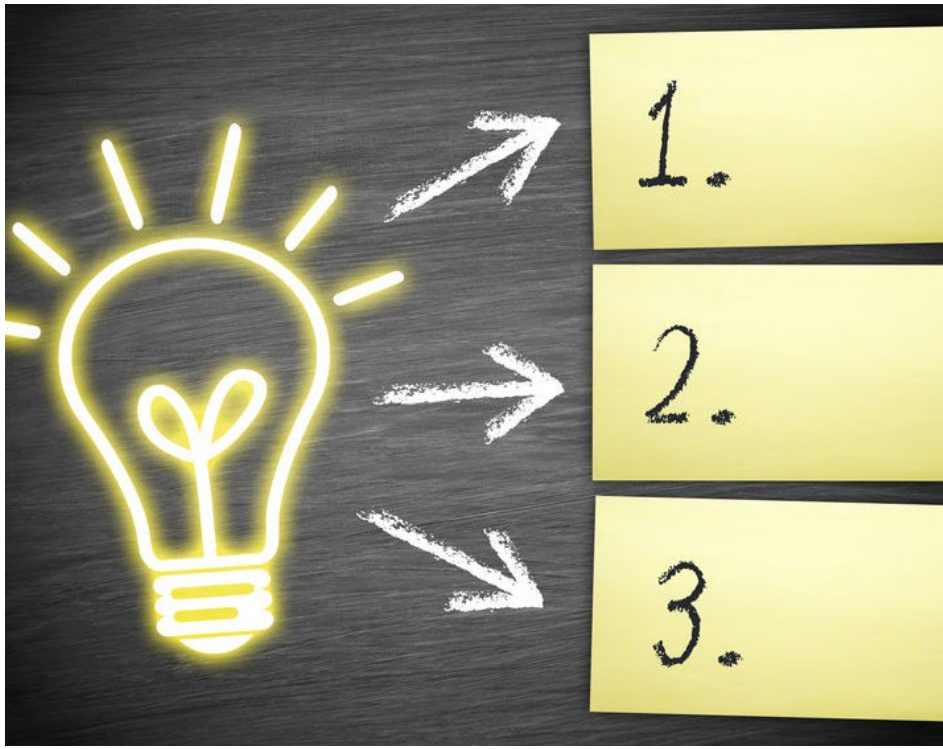
Germiest areas in the home and kitchen

Where Germs Lurk

- Warm moist environments are breeding grounds for germs
- Hard-to-clean areas of utensils and appliances

Resources

- FightBac.org
  http://www.fightbac.org/wp-content/uploads/2017/06/Crib_Sheet_Cleaning_and_Sanitizing_Surfaces_and_Toys.pdf
- NSF International
  http://www.nsf.org/consumer-resources/cooking-cleaning-food-safety/cleaning
- EPA Safer Choice
  https://www.epa.gov/saferchoice
- FoodSafety.gov
  https://www.foodsafety.gov/keep/basics/clean/index.html



Impact of Hand Sanitizer Intervention on the Spread of Viruses in Homes

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The University of Arizona

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THE UNIVERSITY OF ARIZONA

Study Objectives

- The objectives of this study were to study the movement of a virus throughout a household and the impact of an alcohol-based hand sanitizer on reducing the movement and exposure of the virus to household members

Background

- Bacteriophage MS-2 was selected as a surrogate in this study
  - Similar to many human disease causing enteric and respiratory illnesses likely to be spread in a home setting
- Bacteriophage MS-2 is very similar in shape and size (23 µm) to
  - Rhinovirus (common cold)
  - Norovirus (most common cause of adult gastroenteritis – Diarrhea)
  - Many other enteric viruses
- In the following slides, MS-2 will be referred to as the virus
- Bacteriophage MS-2 infects the bacteria *Escherichia coli* when assayed using the double layer agar technique

Methods & Materials

- Bacteriophage MS-2 (ATCC 15597-B1) was propagated in the Lab and stored at 4°C until used
- Virus was added to the hands of one adult in the household
- All individuals received one mL of a physiological saline suspension onto the palm of their hand
  - The virus was only applied to the hands of one adult member of the household
  - Each individual was then asked to gently rub the palm of one hand to the other hand to disperse the virus onto the fingertips
  - The contamination of the adult hand occurred in the morning
  - The family was asked to stay at home during the day and go about normal daily activities in between the sampling times
  - Studies were done on weekend days when families spent most of the day at home.

Methods & Materials: Control

- Seven households with families having at least 2 children ages 2-18 living in the home were selected randomly from a pool of available houses recruited
- The hands of one adult family member were contaminated with 1×10^8 MS-2 bacteriophage in each home
- At specific times during the day (8 Hours) hands of each family member (10 fingers) and 20 frequently touched fomites were sampled to determine baseline contamination (Control)

Methods & Materials: Selected Fomites

Room	Fomite
Kitchen	Fridge handle
	Kitchen counter
	Kitchen table
	Microwave handle
	Stove knobs
	Kitchen knobs
	Kitchen faucet
	Dishwasher
	Kitchen light switch
Bathrooms	Counters
	Faucets
	Door knobs
	Light switches
	Toilet flushers
Living rooms	TV Remote Controls
	Light switches
Bedrooms	Light switches
	Doors
Phones	Cell phones
Entry Way	Front door knobs

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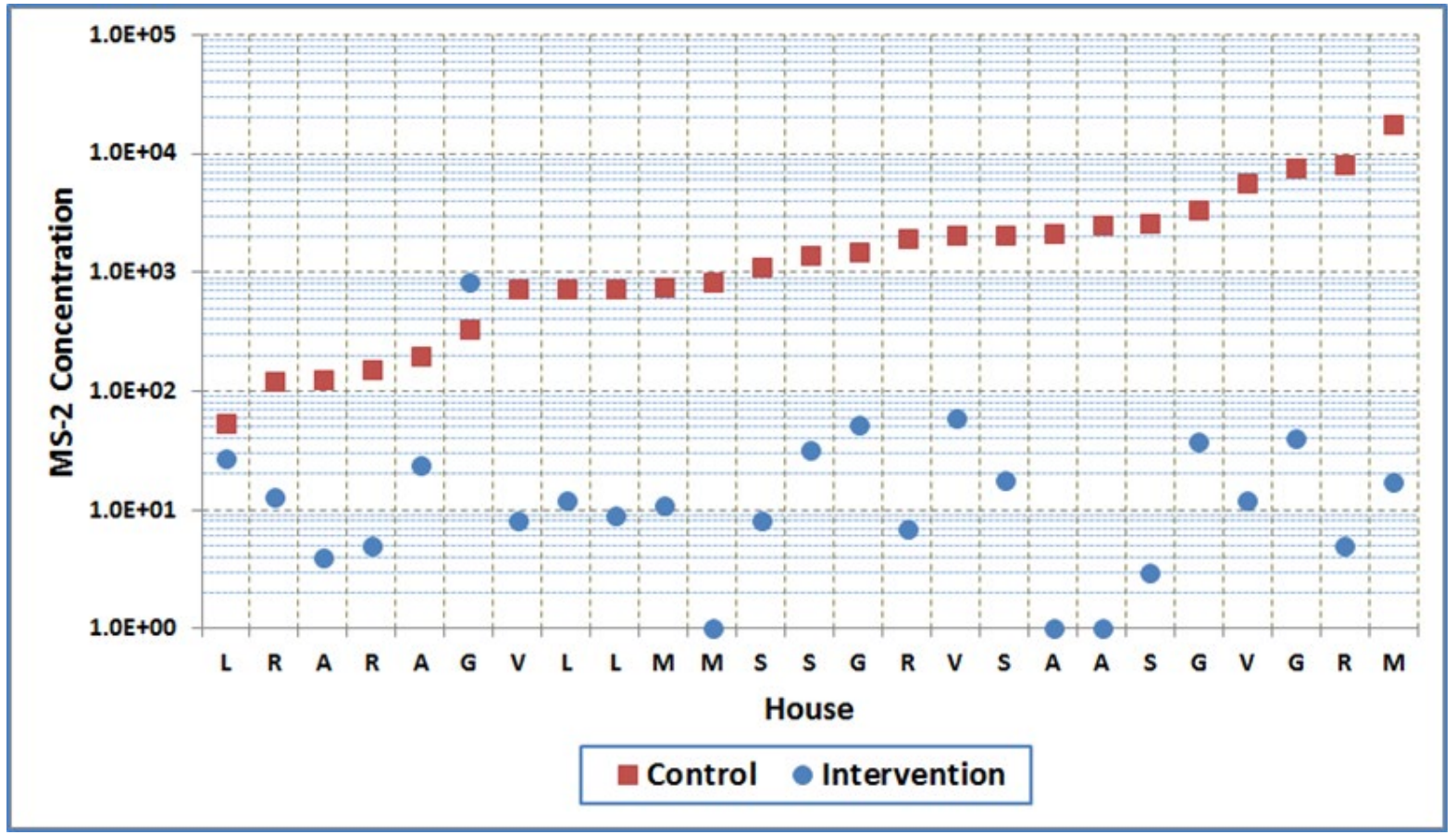
Methods & Materials: Intervention

- The same seven households were selected again
- The hands of one adult family member were contaminated with 1×10^8 MS-2 bacteriophage in each home
- Families in all selected houses were given 354 ml bottles of 70% alcohol-based hand sanitizer to place in kitchen, bathrooms and nurseries
- Individual bottles (56 ml) for each family member over 12 years old were provided to place in purses, pockets, backpacks, etc.
- Instructions on when and how to use sanitizers:
  - Use the hand sanitizer specific times per 8 hour day
  - Apply enough sanitizer to keep hands wet for 15-20 seconds
  - Rub sanitizer in thoroughly until dry
- At specific times during the day hands of each family member (10 fingers) and the 20 fomites were sampled

Results: Hands

Phase 1: Sampling of Hands after **4** Hours with **3** Uses of Hand Sanitizer Per Day



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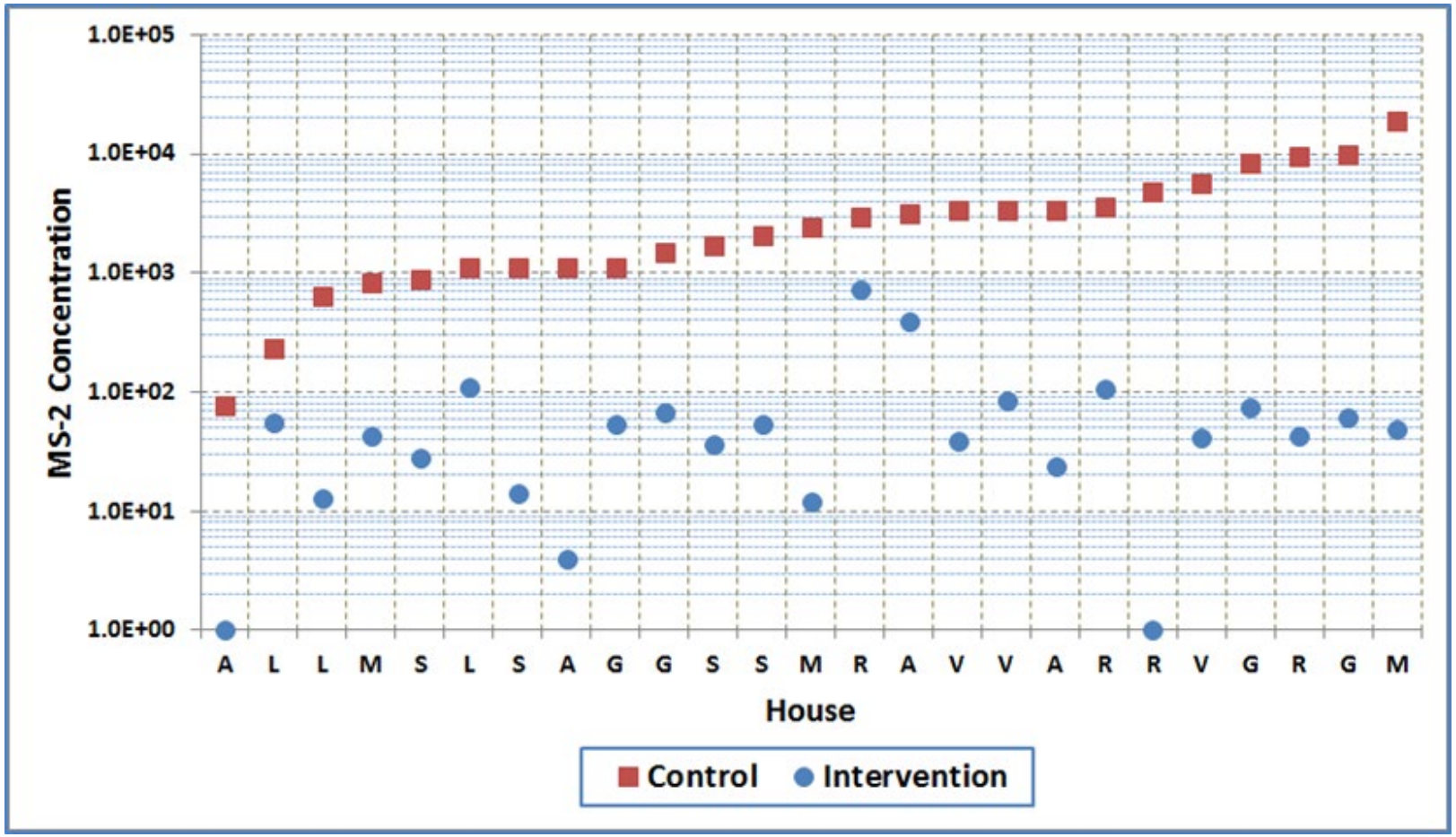
Phase 2: Sampling of Hands after **8** Hours with **3** Uses of Hand Sanitizer Per Day



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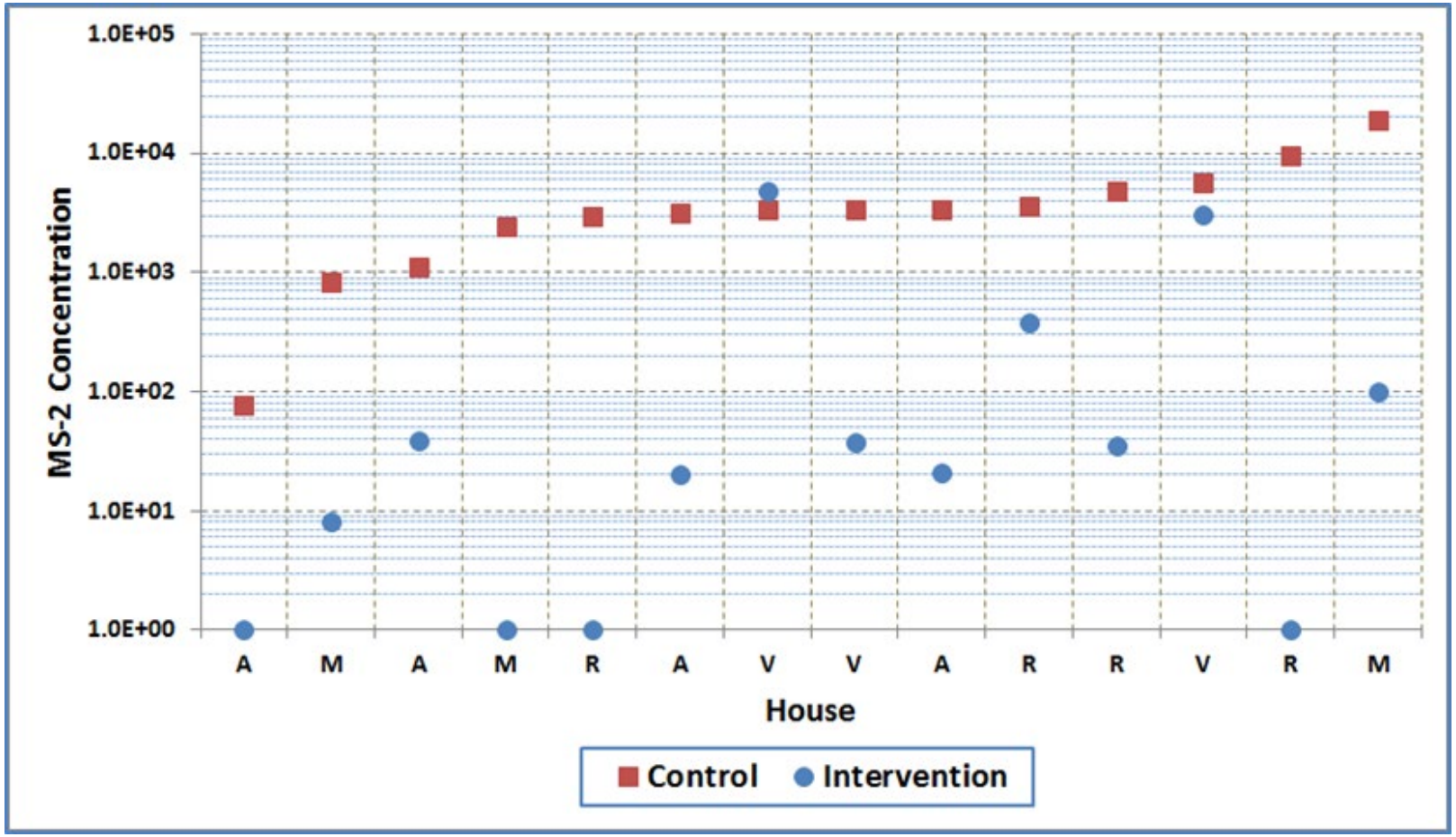
Phase 3: Sampling of Hands after 4 Hours with 1 Use of Hand Sanitizer Per Day



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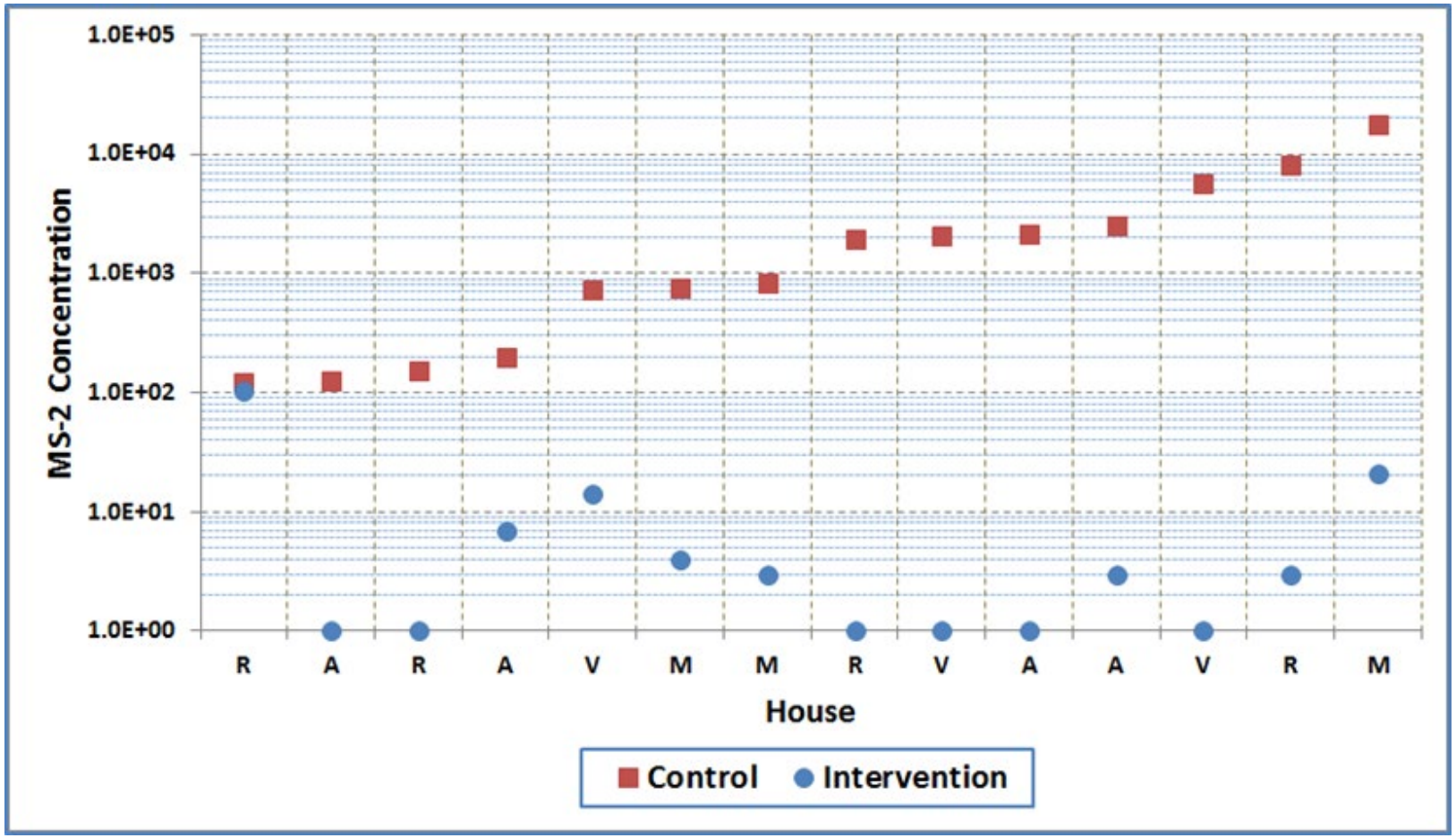
Phase 4: Sampling of Hands after 8 Hours with 1 Use of Hand Sanitizer Per Day



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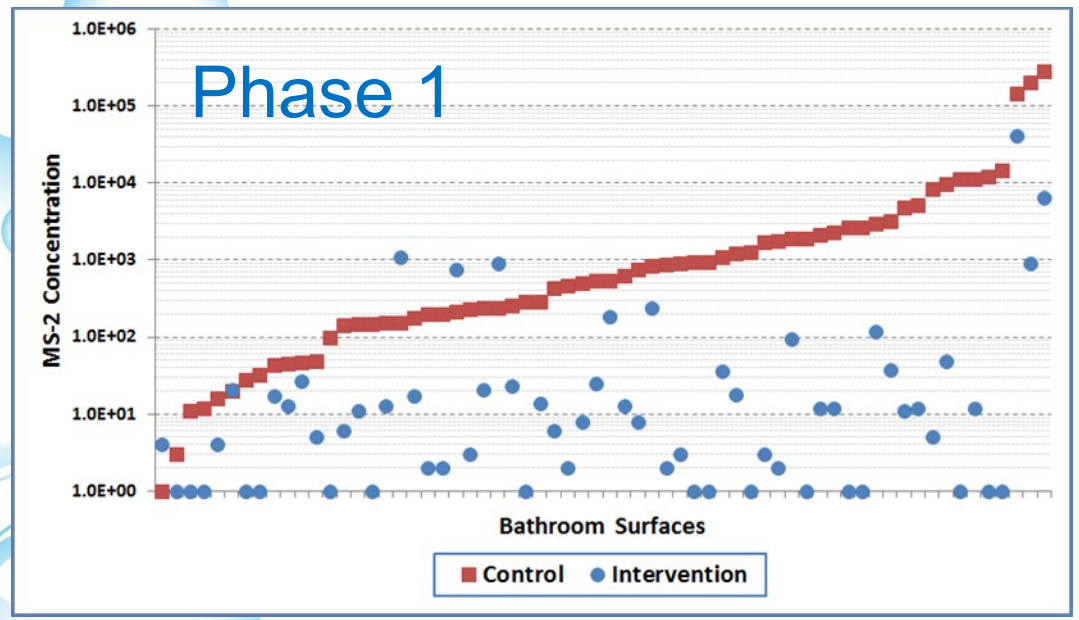
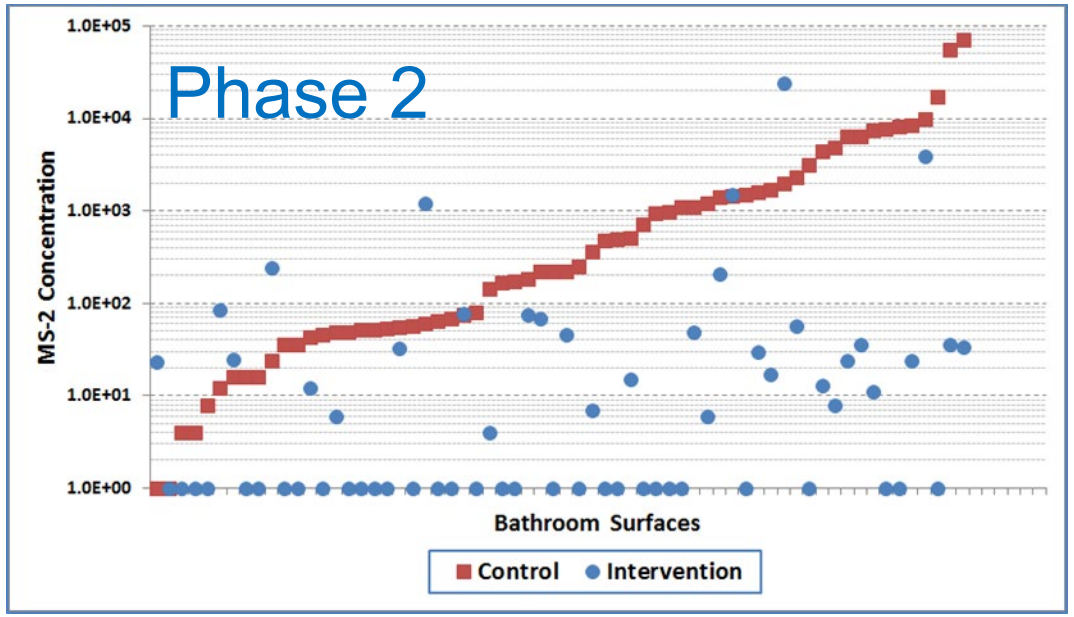
Phase	MS-2 Geometric Mean		Number of Observations	Log_{10} Reduction				% Reduction
	Control	Intervention		Average	Standard Deviation	95% CI Upper Limit	95% CI Lower Limit	
1	2073	35	25	1.77	0.67	2.05	1.49	98.31
2	1102	12	25	1.97	0.93	2.36	1.59	98.93
3	2694	27	14	2.00	1.15	2.67	1.34	99.01
4	1097	3	14	2.51	0.99	3.09	1.94	99.69

Phase	MS-2 Geometric Mean		Number of Observations	Is There Significant Difference Between Sanitizer Use and Lack of Use?	*p*-value
	Control	Intervention			
1	2073	35	25	**Yes**	**< 0.0005**
2	1102	12	25	**Yes**	**< 0.0005**
3	2694	27	14	**Yes**	**< 0.0005**
4	1097	3	14	**Yes**	**< 0.0005**

Results: Bathroom Surfaces

Bathrooms	Counters
	Faucets
	Door knobs
	Light switches
	Toilet flushers


Phase 1
MS-2 Concentration
1.0E+06
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Bathroom Surfaces
Control
Intervention


Phase 2
MS-2 Concentration
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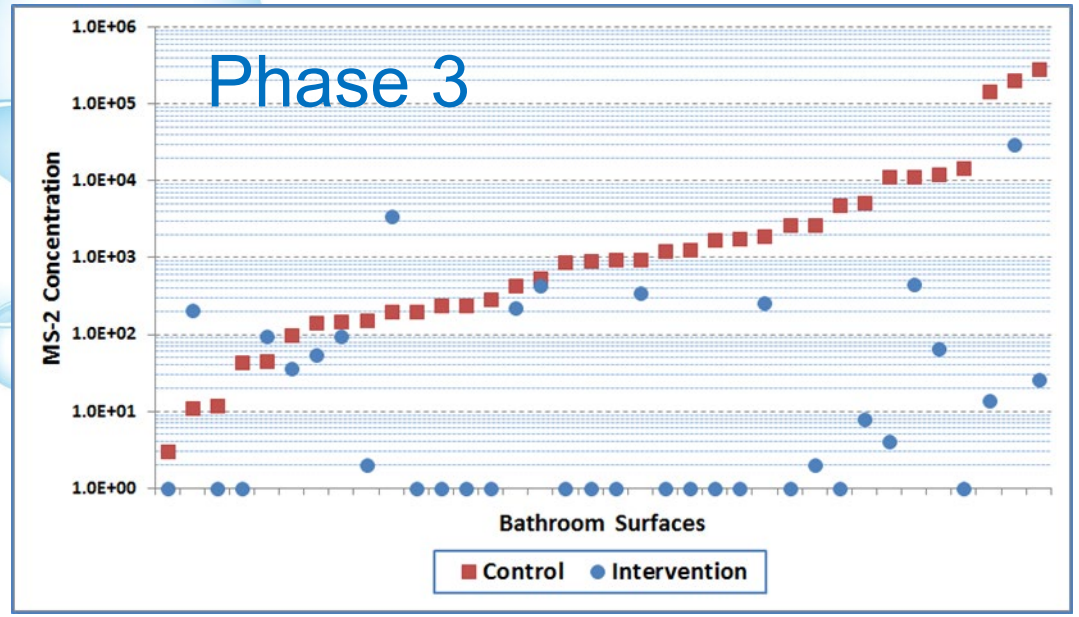
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Bathroom Surfaces
Control
Intervention


Phase 3
MS-2 Concentration
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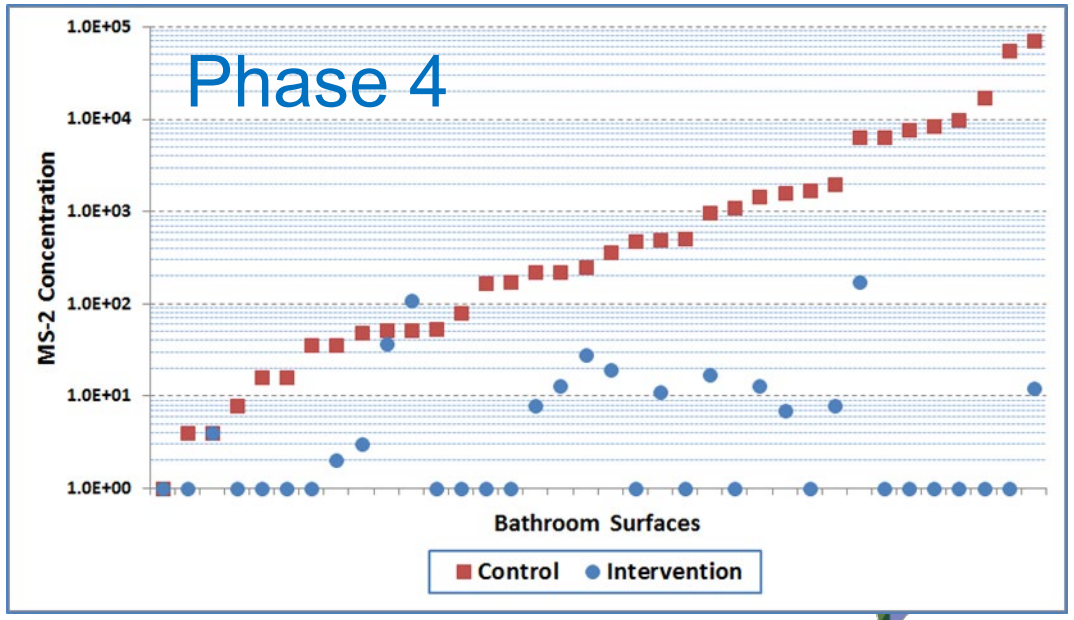
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Bathroom Surfaces
Control
Intervention

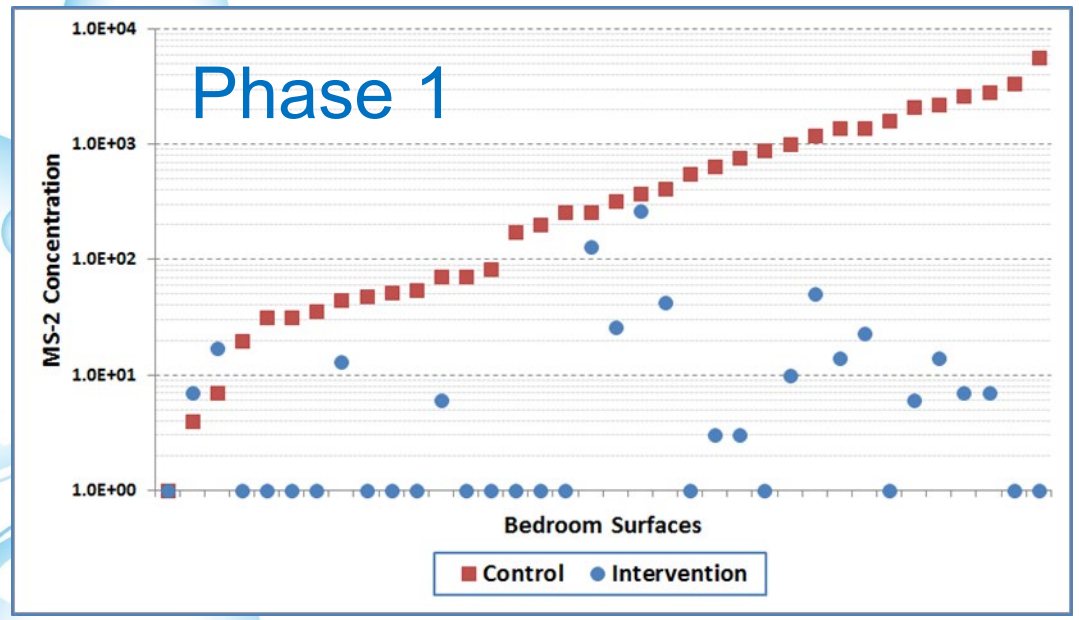

Phase 4
MS-2 Concentration
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Bathroom Surfaces
Control
Intervention

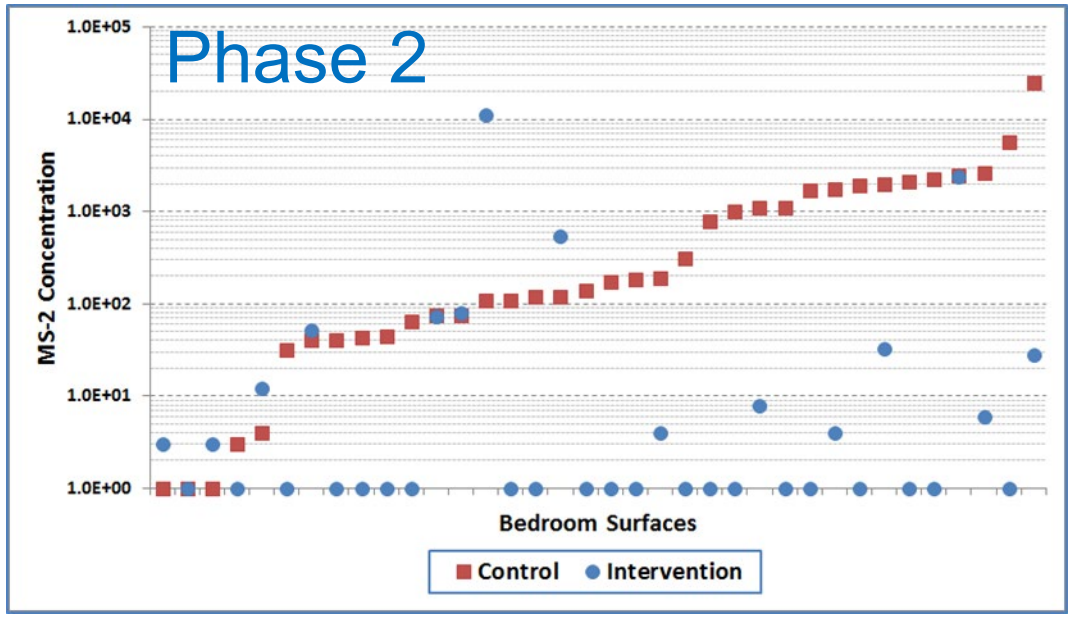
Phase	MS-2 Geometric Mean		Number of Observations	Log_{10} Reduction				% Reduction
	Control	Intervention		Average	Standard Deviation	95% CI Upper Limit	95% CI Lower Limit	Average
1	553	10	64	1.74	1.16	2.03	1.45	98.18
2	285	7	64	1.61	1.31	1.93	1.28	97.53
3	876	10	36	1.92	1.52	2.44	1.41	98.81
4	331	3	36	2.02	1.31	2.46	1.57	99.03

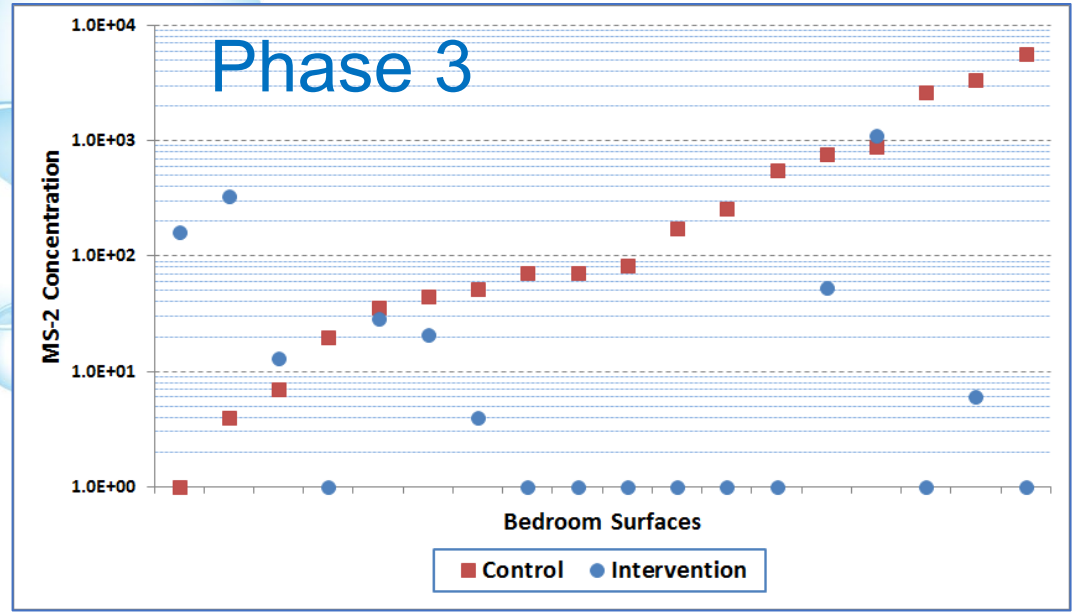
Phase	MS-2 Geometric Mean		Number of Observations	Is There Significant Difference Between Purell Use and Lack of Use?	*p*-value
	Control	Intervention			
1	553	10	64	**Yes**	**< 0.0005**
2	285	7	64	**Yes**	**< 0.0005**
3	876	10	36	**Yes**	**< 0.0005**
4	331	3	36	**Yes**	**< 0.0005**

Results: Bedrooms' Surfaces

Bedrooms	Light switches
	Doors


Phase 1
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
MS-2 Concentration
Bedroom Surfaces
Control
Intervention


Phase 2
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
MS-2 Concentration
Bedroom Surfaces
Control
Intervention


Phase 3
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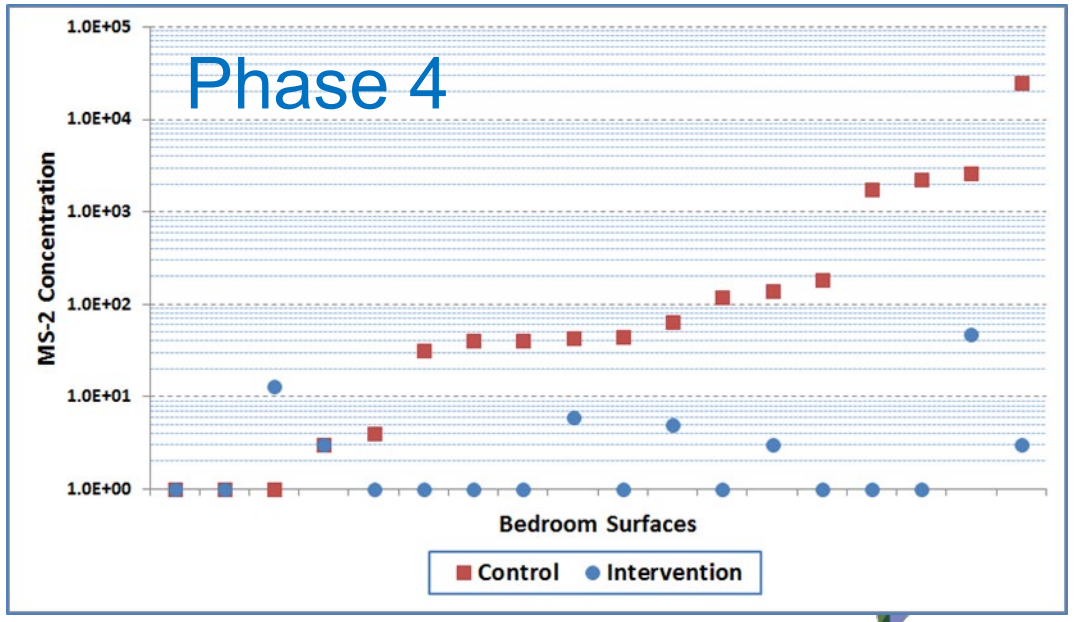
1.0E+03
1.0E+02
1.0E+01
1.0E+00
MS-2 Concentration
Bedroom Surfaces
Control
Intervention

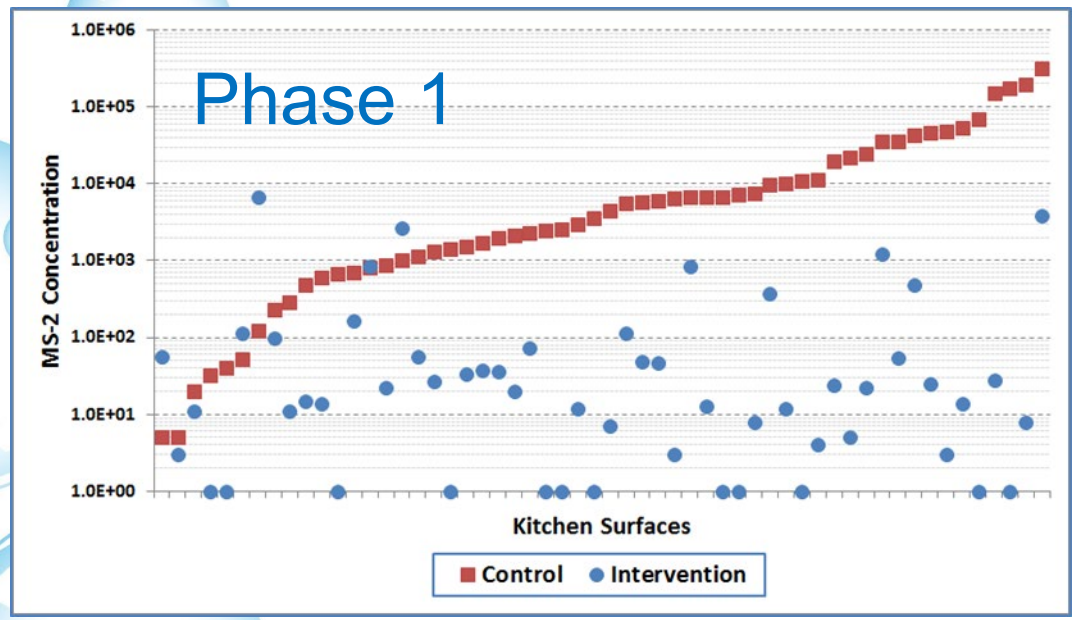

Phase 4
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
MS-2 Concentration
Bedroom Surfaces
Control
Intervention

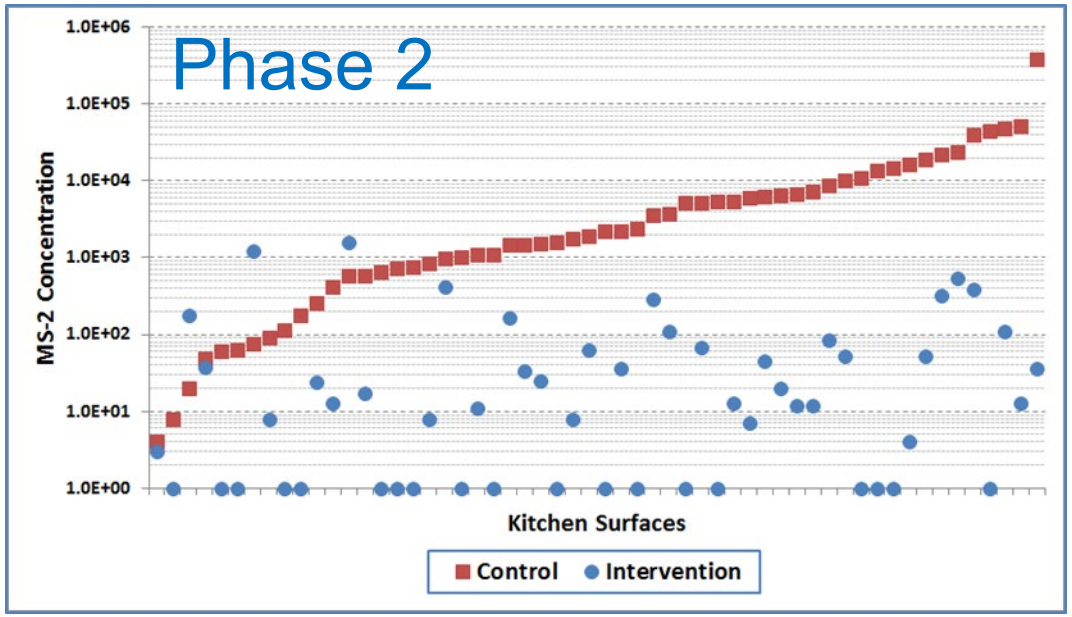
Phase	MS-2 Geometric Mean		Number of Observations	Log_{10} Reduction				% Reduction
	Control	Intervention		Average	Standard Deviation	95% CI Upper Limit	95% CI Lower Limit	Average
1	224	4	36	**1.76**	1.01	**2.10**	**1.42**	98.25
2	177	4	36	**1.60**	1.45	**2.09**	**1.10**	97.46
3	117	7	18	**1.25**	1.67	**2.08**	**0.42**	94.36
4	58	2	18	**1.45**	1.29	**2.09**	**0.81**	96.45

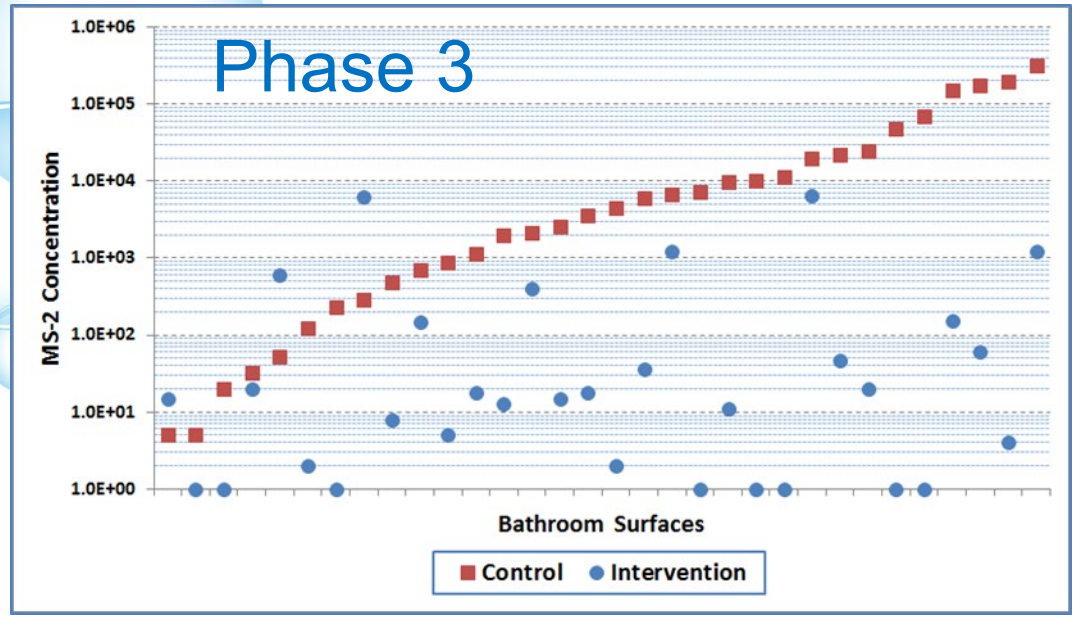
Phase	MS-2 Geometric Mean		Number of Observations	Is There Significant Difference Between Purell Use and Lack of Use?	*p*-value
	Control	Intervention			
1	224	4	36	**Yes**	**< 0.0005**
2	177	4	36	**Yes**	**< 0.0005**
3	117	7	18	**Yes**	**< 0.0005**
4	58	2	18	**Yes**	**< 0.0005**

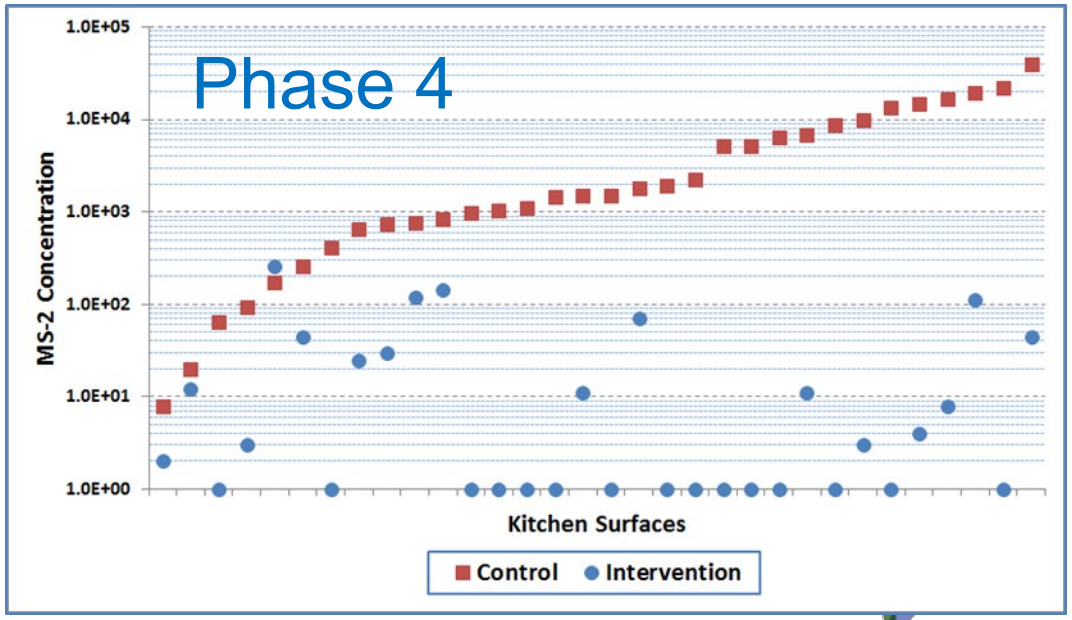
Results: Kitchens' Surfaces

Room	Fomite
Kitchen	Fridge handle
	Kitchen counter
	Kitchen table
	Microwave handle
	Stove knobs
	Kitchen knobs
	Kitchen faucet
	Dishwasher
	Kitchen light switch









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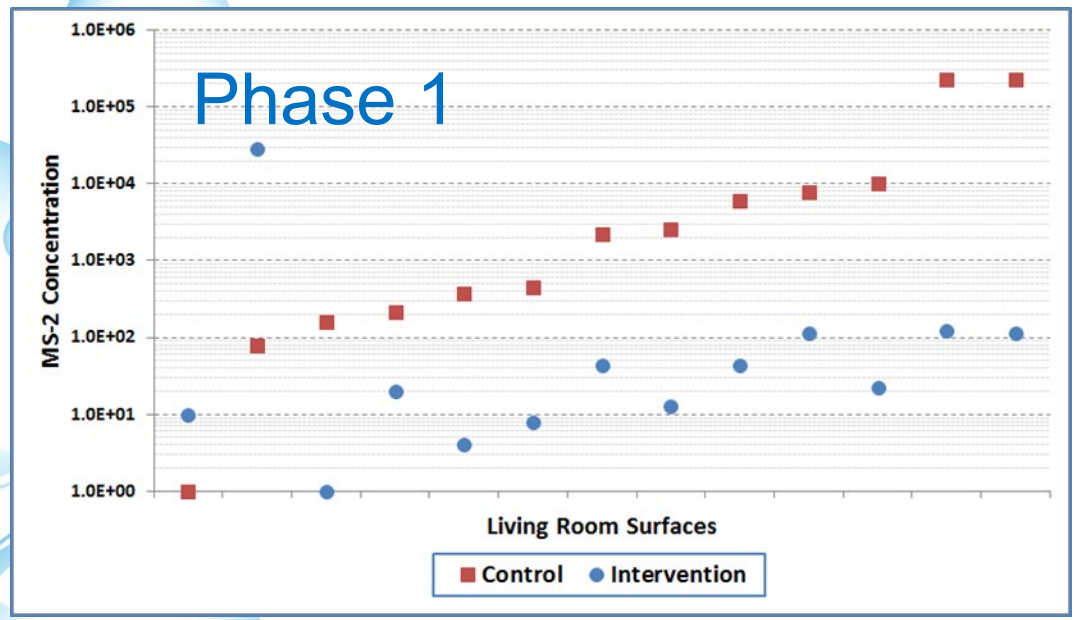
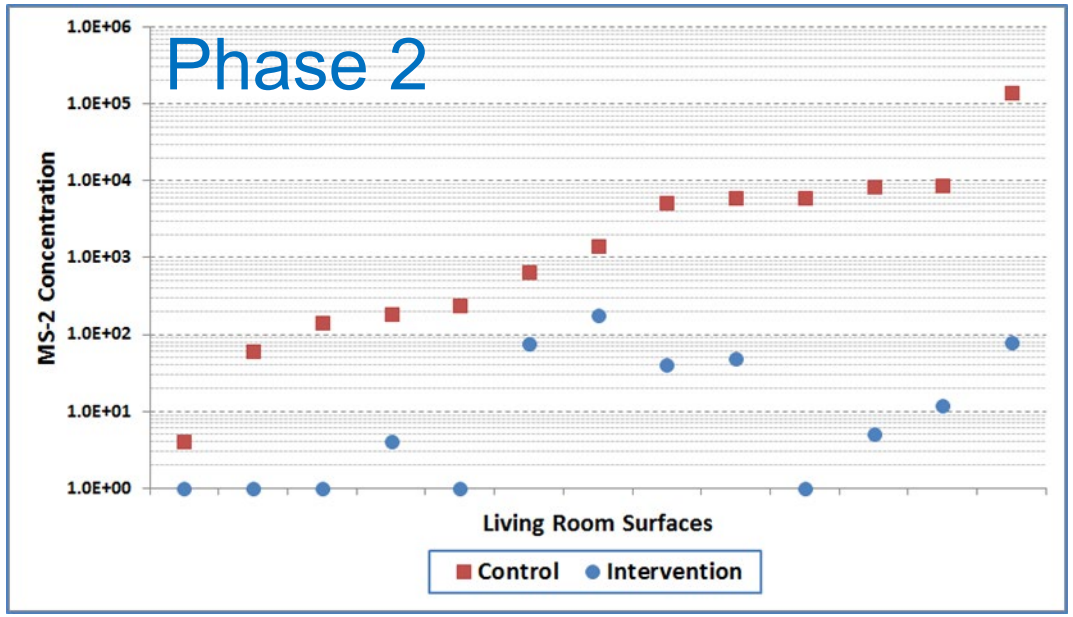
Phase	MS-2 Geometric Mean		Number of Observations	Log_{10} Reduction				% Reduction
	Control	Intervention		Average	Standard Deviation	95% CI Upper Limit	95% CI Lower Limit	Average
1	3022	20	56	**2.19**	1.47	**2.58**	**1.79**	99.35
2	1813	12	56	**2.17**	1.27	**2.51**	**1.83**	99.32
3	2516	19	32	**2.12**	1.62	**2.70**	**1.54**	99.24
4	1531	5	32	**2.48**	1.26	**2.93**	**2.02**	99.67

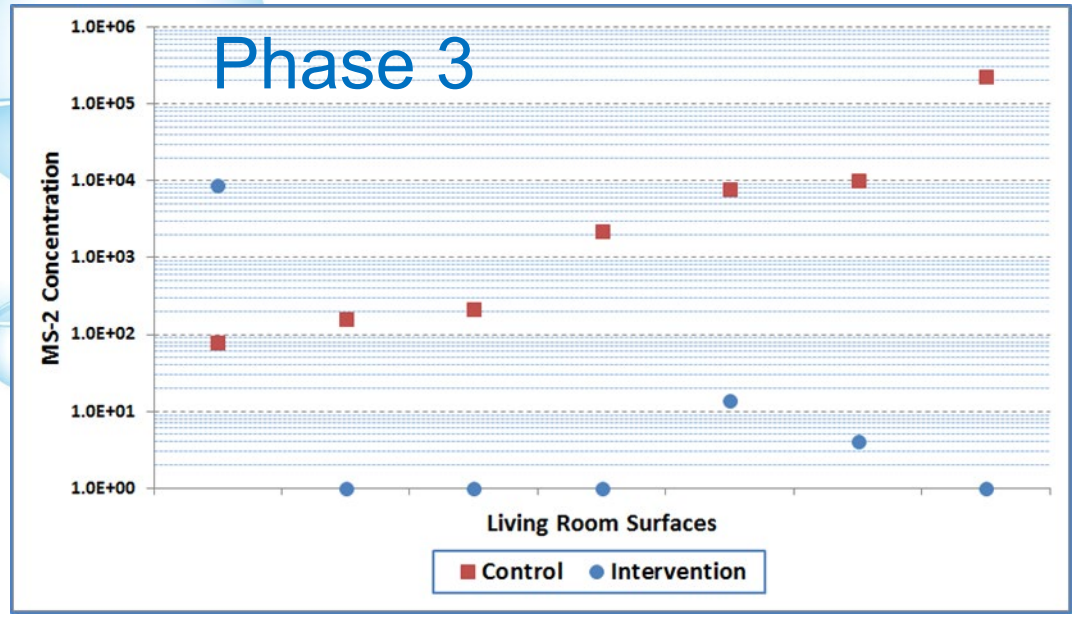
Phase	MS-2 Geometric Mean		Number of Observations	Is There Significant Difference Between Purell Use and Lack of Use?	*p*-value
	Control	Intervention			
1	3022	20	56	**Yes**	**< 0.0005**
2	1813	12	56	**Yes**	**< 0.0005**
3	2516	19	32	**Yes**	**< 0.0005**
4	1531	5	32	**Yes**	**< 0.0005**

Results: Living Rooms' Surfaces

Living rooms	TV Remote Controls Light switches


Phase 1
MS-2 Concentration
1.0E+06
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Living Room Surfaces
Control
Intervention


Phase 2
MS-2 Concentration
1.0E+06
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Living Room Surfaces
Control
Intervention


Phase 3
MS-2 Concentration
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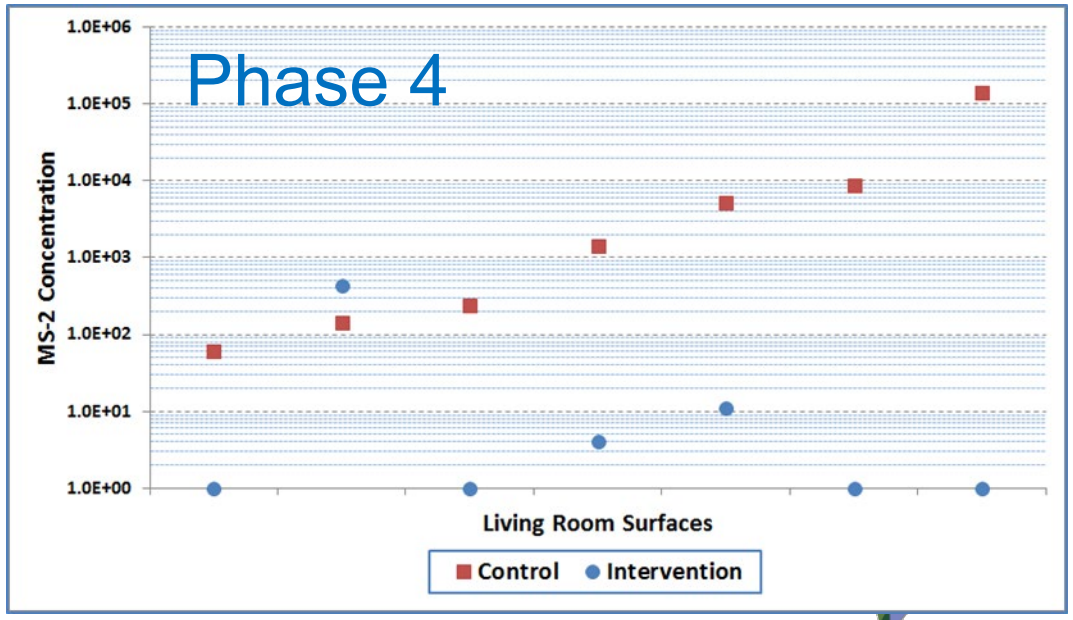
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Living Room Surfaces
Control
Intervention


Phase 4
MS-2 Concentration
1.0E+06
1.0E+05
1.0E+04
1.0E+03
1.0E+02
1.0E+01
1.0E+00
Living Room Surfaces
Control
Intervention

Phase	MS-2 Geometric Mean		Number of Observations	Log_{10} Reduction				% Reduction
	Control	Intervention		Average	Standard Deviation	95% CI Upper Limit	95% CI Lower Limit	Average
1	1375	36	13	**1.59**	1.64	**2.58**	**0.59**	97.40
2	1080	8	13	**2.13**	0.97	**2.72**	**1.55**	99.27
3	1948	6	7	**2.48**	2.25	**4.56**	**0.40**	99.67
4	1512	4	7	**2.57**	1.76	**4.20**	**0.94**	99.73

Phase	MS-2 Geometric Mean		Number of Observations	Is There Significant Difference Between Purell Use and Lack of Use?	*p*-value
	Control	Intervention			
1	1375	36	13	**Yes**	**< 0.0005**
2	1080	8	13	**Yes**	**< 0.0005**
3	1948	6	7	**Yes**	**< 0.0005**
4	1512	4	7	**Yes**	**< 0.0005**

Results: Specific Questions

Phase	No Pets			Pets			Is There Significant Difference Between Households with Pets and those without Pets?	*p*-value
	Arithmetic Mean	Standard Deviation	Number of Observations	Arithmetic Mean	Standard Deviation	Number of Observations		
1	1.867	0.659	7	1.527	0.691	18	**No**	**0.266**
2	2.007	0.865	7	1.878	1.155	18	**No**	**0.762**
3	1.934	0.355	4	2.030	1.366	10	**No**	**0.941**
4	2.452	0.841	4	2.540	1.084	10	**No**	**0.888**

Phase	Female			Male			Is There Significant Difference Between Females and Males	*p*-value
	Arithmetic Mean	Standard Deviation	Number of Observations	Arithmetic Mean	Standard Deviation	Number of Observations		
1	1.832	0.853	12	1.716	0.477	13	**No**	**0.673**
2	2.219	0.832	12	1.742	0.991	13	**No**	**0.208**
3	2.603	0.789	7	1.403	1.186	7	**Yes**	**0.0457**
4	2.598	1.194	7	2.432	0.825	7	**No**	**0.767**

Phase	Children Below 5 Years Old			Children Above 5 Years Old			Is There Significant Difference Between Children ≤ 5 or > 5	*p*-value
	Arithmetic Mean	Standard Deviation	Number of Observations	Arithmetic Mean	Standard Deviation	Number of Observations		
1	2.320	0.828	5	1.641	0.571	13	**No**	**0.0628**
2	2.034	0.857	5	2.010	0.874	13	**No**	**0.959**
3	1.524	0.580	3	2.433	1.173	8	**No**	**0.241**
4	2.725	1.100	3	2.282	1.060	8	**No**	**0.556**

Phase	Children			Adults			Is There Significant Difference Between Children and Adults	*p*-value
	Arithmetic Mean	Standard Deviation	Number of Observations	Arithmetic Mean	Standard Deviation	Number of Observations		
1	1.829	0.699	18	1.623	0.618	7	**No**	**0.503**
2	2.017	0.844	18	1.853	1.194	7	**No**	**0.701**
3	2.185	1.100	11	1.335	1.305	3	**No**	**0.273**
4	2.403	1.035	11	2.925	0.827	3	**No**	**0.440**

Questions?

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Continuing Education Units

FINAL REMINDER

Get your CEU certificate – 3 ways

1. Download certificate from sidebar now
2. Follow-up email
3. Download at fightbac.org under "Events" tab and "Webinar Recordings"

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Survey

A **survey** will pop up immediately following this webinar.

Please respond to it.

Help us serve you better!

Thank you!

Check out these resources on cleaning!

- Cleaning and Sanitizing Surfaces and Toys
  http://www.fightbac.org/wp-content/uploads/2017/06/Crib_Sheet_Cleaning_and_Sanitizing_Surfaces_and_Toys.pdf

- Clean Factsheet
  http://www.fightbac.org/food-safety-basics/the-core-four-practices/

- Study: *Bacterial occurrence in kitchen hand towels*
  https://www.foodprotection.org/files/food-protection-trends/Sep-Oct-14-Gerba.pdf

- Study: *Impact of an Alcohol-Based Hand Sanitizer Intervention on the Spread of Viruses in Homes*
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4032461/

Thank You
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American Frozen Food Institute
Association of Food and Drug Officials
Beef Checkoff
Hormel
International Association for Food Protection
NSF International
McDonald's Corp.
Publix Super Markets Charities
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International Dairy Deli Bakery Association
International Food Information Council Foundation
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Meijer, Inc.
National Association of Convenience Stores
National Chicken Council
National Grocers Association
National Pork Board
National Restaurant Association
National Turkey Federation
North American Millers' Association
NSF International
Produce Marketing Association
Publix Super Markets Charities
Refrigerated Foods Association
Sysco Corporation
Tyson Foods
United Fresh Produce Association

Federal Government Liaisons
Centers for Disease Control and Prevention
U.S. Food & Drug Administration, CFSAN
U.S. Department of Agriculture, FSIS FSES
U.S. Department of Agriculture, NIFA

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Thank you!

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