

June 9-10, 2014
Chicago, IL

FMI Foundation Retail Food Safety Forum

Be on the Forefront of Retail Food Safety



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Innovations in Cleaning
and Sanitation
Tom Ford MPH
Vice President, Food Safety
Ecolab



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Discussion points:

Why cleaning and sanitation is important?

What are your customers perceptions about (and their reactions to) your level of cleanliness?

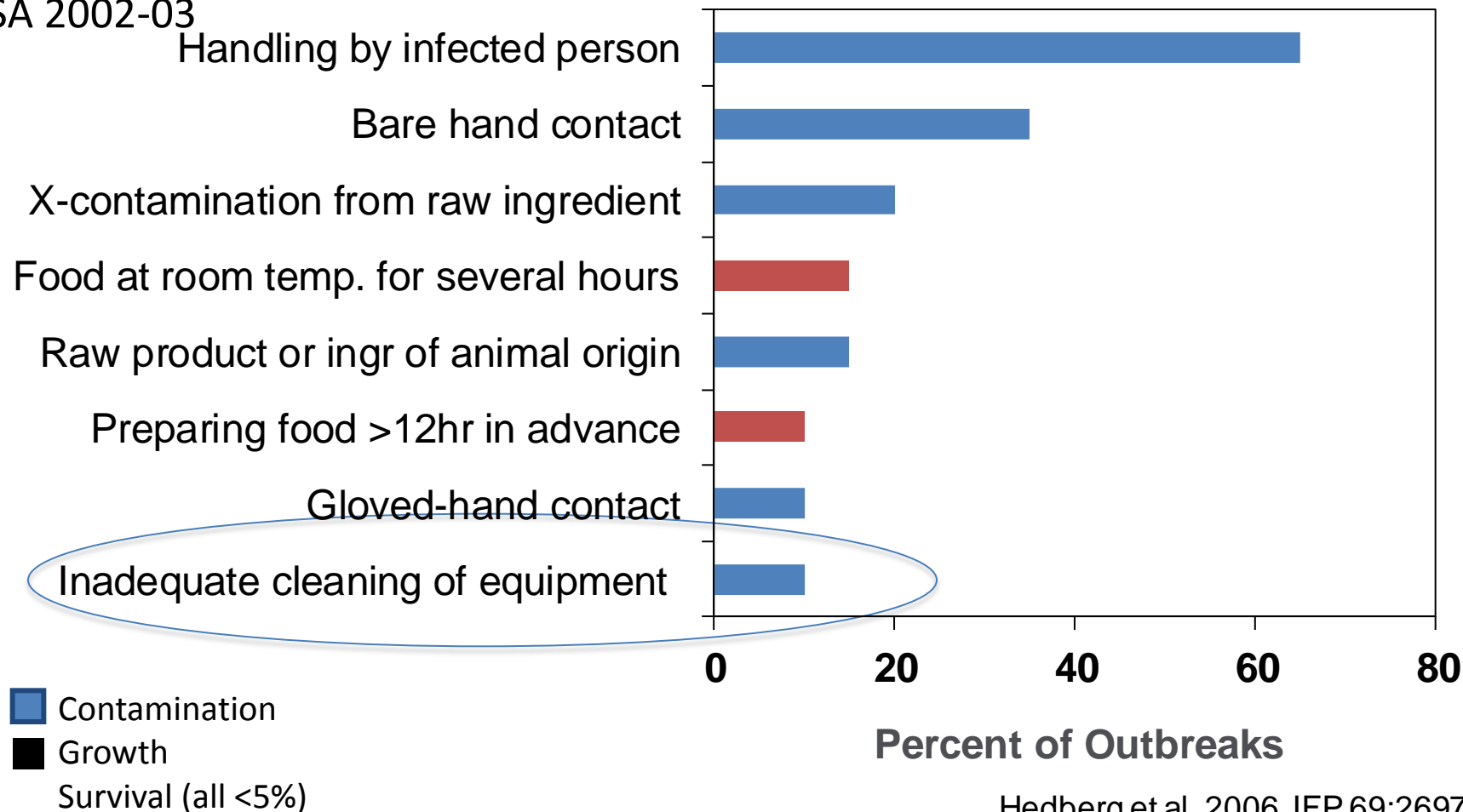
Why is it a challenge for the store team?

Is it a health concern?

What can/should you do about it?

Contributing Factors to Restaurant Outbreaks

USA 2002-03



Hedberg et al. 2006 JFP 69:2697

Three levels of clean at the food service level?

- ▲ Cleanliness level that is “inherited”, tolerated?
- ▲ Cleanliness level that is desired (SSOPs effectively executed, at proper frequency)
- ▲ Microbiologically clean

Cleanliness in Food Retail

Psychological Relevance of Cleanliness
and Food Safety for Consumer Behaviour



Sauberkeit im Lebensmitteleinzelhandel

Psychologische Relevanz von Sauberkeit und Lebensmittelsicherheit
für das Konsumentenverhalten

La propreté en grande consommation:

Importance psychologique de la propreté et de la sécurité des aliments
pour le consommateur

Qualitative Analysis: Psychological Relevance of Cleanliness and Food Safety for Consumers in Food Retail

Findings

Barcelona, 6th February 2009



Consumers seek a lively cleanliness - they want to **experience** the products **sensually**.

They are seeking **sensual juicy plentifulness** that is appetisingly presented.

“A bit of natural dirt conveys the right organic feeling in the vegetable section. It gives you the feeling it is straight from the field.”



Too much cleanliness seems sterile and even dead (Estrangement).

- Everything living is destroyed and cleaned away.
- The person themselves becomes 'dirt'/a 'stranger'.



ALIENATION

Cleanliness

ESTRANGEMENT

Food Safety Culture discussions with:

- ▲ SuperValu
- ▲ Delhaize
- ▲ Walmart Global
- ▲ Walmart China
- ▲ Publix
- ▲ Metro

Survey Results

Culture- cost/benefit ratio

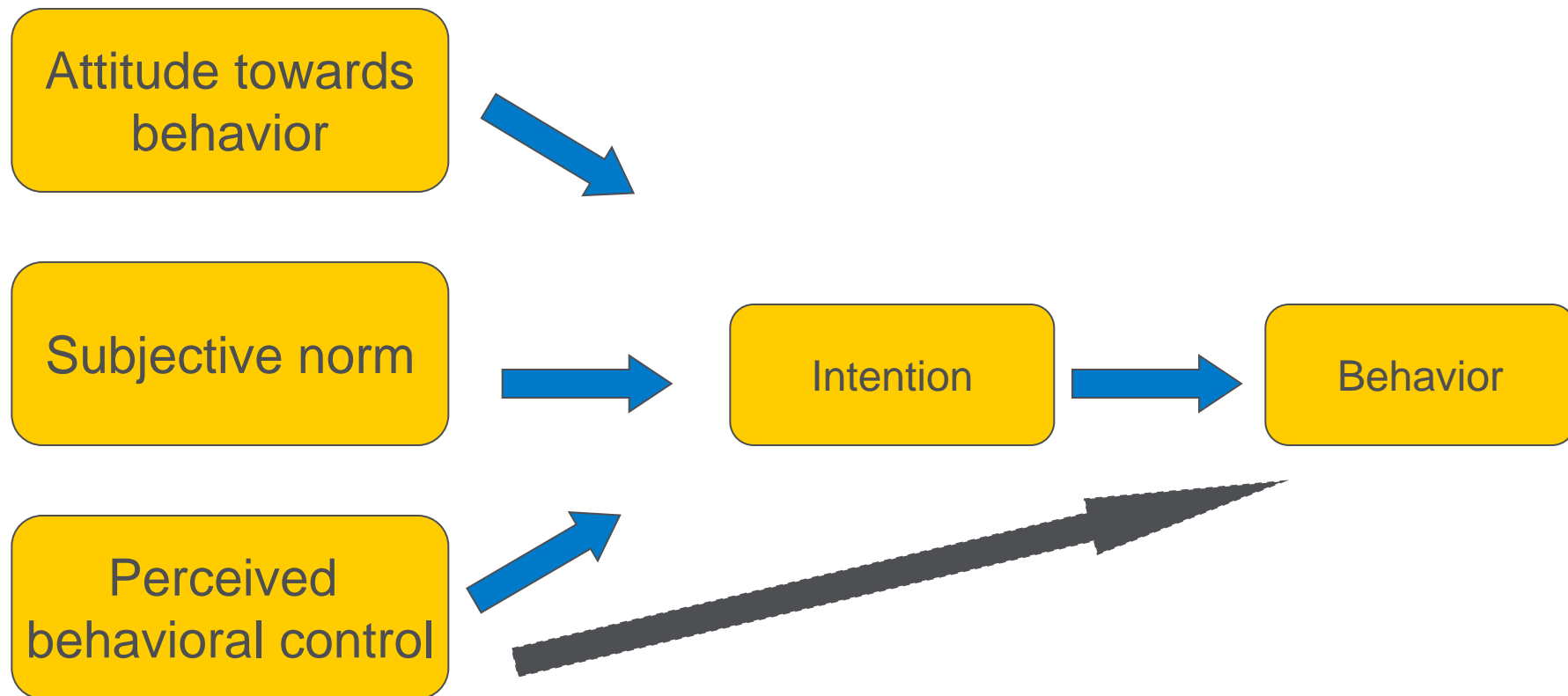
- ▲ A company's culture, and the majority of consumers, do not have the perception of hygiene as we (food safety people) do, it is difficult for QA alone to push for change"
- ▲ The economic rule, if there is no demand for better hygiene, business leaders will not see a need to do more than basics that the consumers expect.
- ▲ Hygiene is the price of entry, is there a payoff for more of an investment?
- ▲ Competitive advantage? It's a competitive disadvantage if you don't!

Survey Results

Training:

- ▲ “Most companies do a good job teaching food safety, but very few train them on cleaning, sanitation and general housekeeping, yet these directly impact customer perception”
- ▲ On the job training places the burden at the store level; training up front creates associate buy in and therefore better execution
- ▲ “Understanding why takes people from doing a task because they are told to, or have to; to doing it because they want to”
- ▲ “Create a personal hook. Touch their heart”

Behavior Change

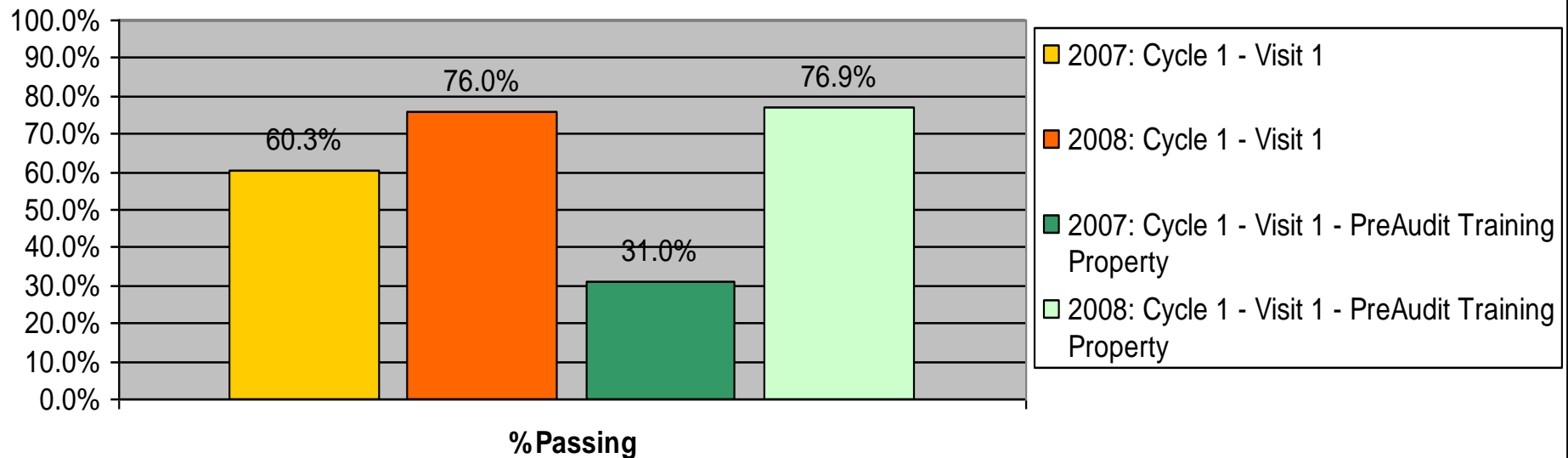


Theory of planned behavior, Ajzen, 1991

Used with permission of Dr. Ben Chapman, NC ST

Effect of Training and Monitoring

Percent of Kitchens with Passing Scores



The science of food safety behavior

When Food Handler behavior has been recognized as a problem the historical solution has been more knowledge dominated training without considering the use of psychological approaches to understand and eventually modify behavior

(Griffith, C.J. 2000 "Food safety in catering establishments" in Farber, J/M. and Todd, E.C.D. (eds) Safe Handling of Foods Marcel Dekker, Winnipeg, pp 235-56)

Student compliance with hand hygiene recommendations during an outbreak of Norovirus at a University in Ontario, finds that only 17% of the students followed posted hand hygiene recommendations but that 83% said they did. (Surgeoner, Chapman, Powell, Journal of Environmental Health Sept 2009)

It has been suggested that 97% of outbreaks traced to non-manufacturing food businesses involved a food handler error/malpractice (Howes et. al. 1996)

Prevalence, Persistence and Control of Foodborne Pathogens

***Listeria monocytogenes* in Retail Delis -- a Case Study**

Haley F. Oliver, Ph.D.
Assistant Professor
Purdue University



Estimated annual human health burden of selected known foodborne diseases, United States

Pathogen	Illnesses	Deaths	Case-fatality
<i>Campylobacter</i>	1,322,137	119	0.1%
<i>Salmonella</i>	1,229,007	452	0.5%
<i>E. coli</i> O157:H7	96,534	31	0.5%
<i>Listeria</i> (LM)	1662	266	15.9%



Scallan, et al., *Emerging Infectious Diseases*, 2011

FDA-FSIS Quantitative Risk Assessment for *Listeria monocytogenes* in Ready-to-Eat Foods (2003)

Summary Table 1. Relative Risk Ranking and Predicted Median Cases of Listeriosis for the Total United States Population on a per Serving and per Annum Basis

Relative Risk Ranking	Predicted Median Cases of Listeriosis for 23 Food Categories				
	Per Serving Basis ^a		Per Annum Basis ^b		
	Food	Cases		Food	Cases
1	Deli Meats	7.7×10^{-8}	Very High	Deli Meats	1598.7
2	High Risk	Frankfurters, not reheated	High Risk	Pasteurized Fluid Milk	90.8
3		Pâté and Meat Spreads		High Fat and Other Dairy Products	56.4
4		Unpasteurized Fluid Milk		Frankfurters, not reheated	30.5
5		Smoked Seafood		Soft Unripened Cheese	7.7
6		Cooked Ready-to-Eat Crustaceans	Moderate Risk	Pâté and Meat Spreads	3.8
7	Moderate Risk	High Fat and Other Dairy Products		Unpasteurized Fluid Milk	3.1
8		Soft Unripened Cheese		Cooked Ready-to-Eat Crustaceans	18 2.8
9		Pasteurized Fluid Milk		Smoked Seafood	1.3

2010 FSIS Risk Assessment

FSIS Comparative Risk Assessment for *Listeria monocytogenes* in Ready-to-eat Meat and Poultry Deli Meats

This risk assessment indicates that of those listeriosis cases and deaths attributed to deli meats, **approximately 83% are associated with deli meats sliced at retail.**

Relative Risk Ranking	Predicted Median Cases of Listeriosis for 23 Food Categories			
	Per Serving Basis ^a		Per Annum Basis ^b	
	Food	Cases	Food	Cases
1	Deli Meats	7.7x10 ⁻⁸	Very High Deli Meats	1598.7

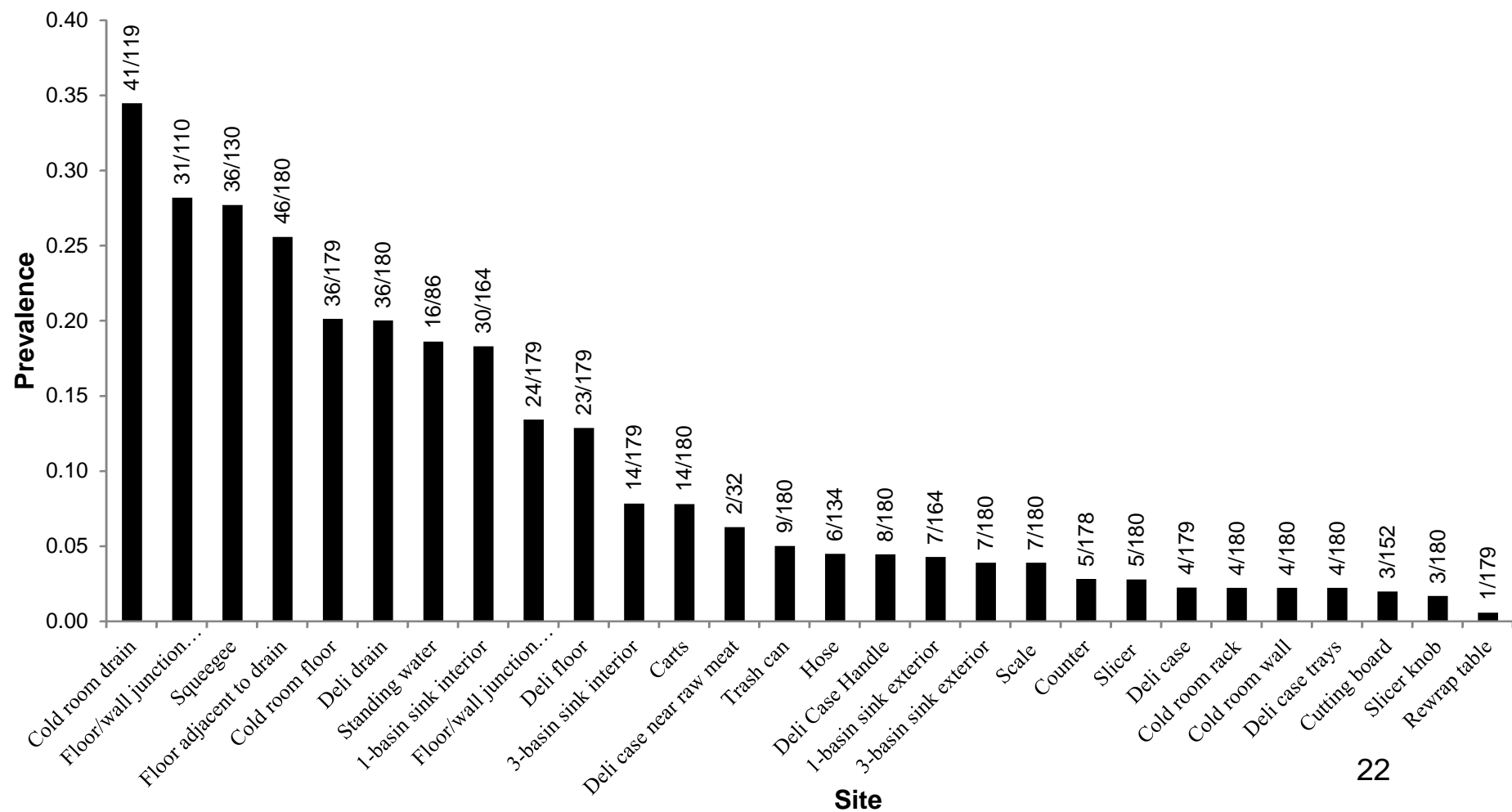
Results – Longitudinal Testing

- 30 stores
- Total samples = **4512**
- **9.4%** (425/4512) positive for *LM*
 - 73/1604 (**4.5%**) of “Food Contact Surfaces” positive for *LM*
 - 18/540 (**3.3%**) of “Transfer Points” positive for *LM*
 - 334/2368 (**14.1%**) of “Non-Food Contact Surfaces” positive for *LM*

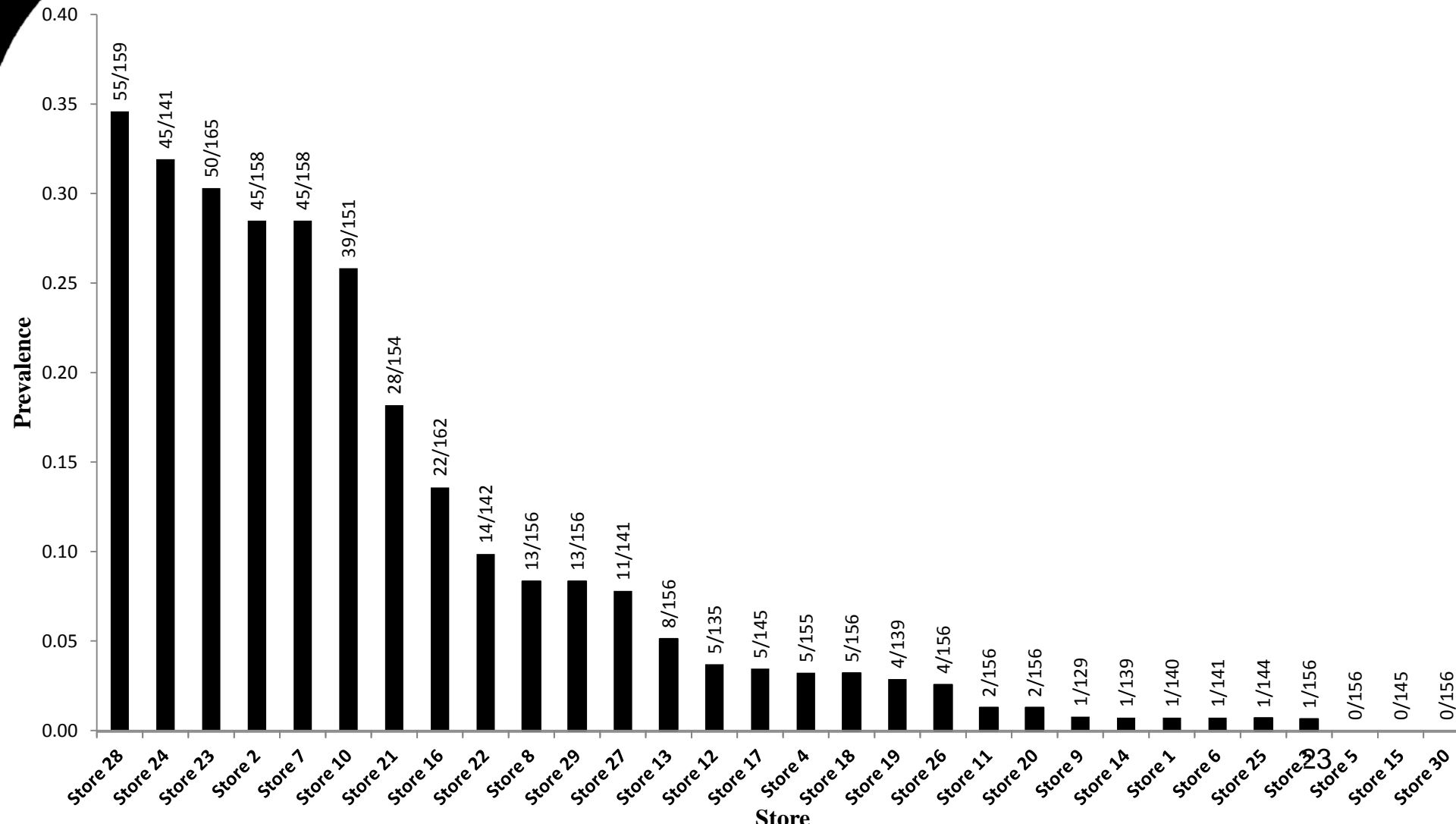
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Prevalence of LM by Site



Prevalence of LM by Store



	April	May	June	July	August	September	October	November	December
Food Contact Sites									
Slicer	-	-	-	-	-	-	-	-	-
Deli case	NT	NT	NT	-	-	-	-	-	-
Deli case near raw meat	NT	NT	NT	-	-	-	-	-	-
Deli case trays	NT	NT	NT	-	-	-	-	-	-
3-basin sink interior	NT	NT	NT	CU-57,267	-	-	-	-	-
1-basin sink interior	NT	NT	NT	CU-258,69	-	-	-	CU-294,321	-
Cold room rack	-	-	-	-	-	-	-	-	-
Cutting board	NT	NT	NT	NT	-	-	NT	NT	-
Rewrap table	NT	NT	NT	-	-	-	-	-	-
Counter	NT	NT	NT	-	-	-	-	-	-
Non-food contact sites									
3-basin sink exterior	NT	NT	NT	-	-	-	-	-	-
Floor/wall junction (3-basin)	CU-258,69	CU-258,69	CU-258,69	CU-258,69	CU-258,69	CU-8,96	LM	CU-258,69	CU-258,69
1-basin sink exterior	NT	NT	NT	CU-258,69	-	-	LM	-	CU-258,69
Floor/wall junction (1-basin)	NT	NT	NT	CU-258,69	-	-	LM	CU-258,69	CU-258,69
Deli drain	NT	NT	NT	CU-258,69	CU-258,333	-	CU-258,69	CU-258,69	CU-258,69
Floor adjacent to drain	-	CU-258,69	CU-258,69	CU-258,69	CU-258,69	-	-	CU-258,69	CU-258,69
Deli floor	NT	NT	NT	CU-258,69	-	-	-	CU-258,69	-
Cold room floor	NT	NT	NT	CU-258,69	CU-295,329	-	CU-258,69	CU-258,69	CU-258,69
Cold room wall	CU-258,69	-	-	-	-	-	-	-	-
Cold room drain	NT	NT	NT	CU-258,69	CU-258,69	-	CU-258,69	CU-258,69	CU-258,69
Standing water	NT	NT	NT	NT	-	-	NT	NT	-
Squeegee	NT	NT	NT	CU-258,69	CU-258,69	-	CU-258,69	CU-258,69	CU-258,69
Cart Wheel	-	-	CU-258,69	CU-258,69	-	-	-	-	-
Hose	NT	NT	NT	-	CU-258,69	-	-	-	-
Trash can	-	-	CU-258,69	-	CU-258,69	-	-	-	-
Transfer Points									
Slicer knob	-	-	-	-	-	-	-	-	-
Case handle	-	-	-	-	-	-	-	-	-
Scale	NT	NT	NT	-	-	-	-	-	-

	August	September	October	November	December	January
<i>Food Contact Sites</i>						
	-	-	-	-	-	-
in case	-	-	-	-	-	-
Deli case near raw meat	-	CU-259,322	-	-	-	-
Deli case trays	-	-	-	-	-	-
3-basin sink interior	-	-	-	-	-	-
1-basin sink interior	CU-40,96	CU-296,330	CU-57,267	CU-296,330	-	LM
Cold room rack	-	-	-	-	-	-
Cutting board	-	CU-262,79	-	-	-	-
Rewrap table	-	-	-	-	-	-
Counter	-	-	-	-	-	-
<i>Non-food contact sites</i>						
3-basin sink exterior	-	-	-	-	-	-
Floor/wall junction (3-basin)	CU-258,323	CU-258,322	-	-	-	LM
1-basin sink exterior	-	-	-	-	-	-
Floor/wall junction (1-basin)	CU-258,323	CU-258,323	-	CU-258,69	-	LM
Deli drain	CU-259,322	CU-258,323	CU-11,320	CU-262,334	-	LM
Floor adjacent to drain	CU-259,322	CU-262,317	CU-258,322	LM	CU-258,322	LM
Deli floor	CU-258,333	CU-258,323	-	-	-	LM
Cold room floor	CU-258,322	-	CU-258,322	-	-	LM
Cold room wall	-	-	-	-	-	-
Cold room drain	CU-258,322	CU-259,322	CU-258,67	LM	CU-258,323	LM
Standing water	CU-82,215	NT	CU-298, 335	NT	CU-258,323	-
Squeegee	CU-259,322	CU-258,322	CU-262,334	LM	CU-259,322	LM
Cart Wheel	-	-	CU-258,323	-	-	-
Hose	-	-	-	-	-	-
Trash can	-	CU-258,322	-	-	-	LM
<i>Transfer Points</i>						
Slicer knob	-	-	-	-	-	25 -
Case handle	-	CU-258,322	-	-	-	-
Scale	-	-	-	-	-	-

Information lead to Innovation:

- Contact time is critical for “below the waist” areas
- Oil/soil interface is a harborage point
- Contact points “above the waist” is still an issue

Contact time is critical for “below the waist” areas

White out foaming technology and more aggressive chemistry



Oil/Soil interface is a harborage point

REAL WORLD RESULTS

Reduced Listeria



LmENTARY Program Enzymatic and Sanitizer

- Does the job of 4 products. Cuts cleaning steps in half.
- Validated in real world delis
 - Reduces Listeria spp beyond detectable levels
 - Improves coefficient of friction
 - Reduces labor, water, and energy



Contact points “above the waist” are still an issue

SIMPLER PROCESS. IMPROVED CLEANING.

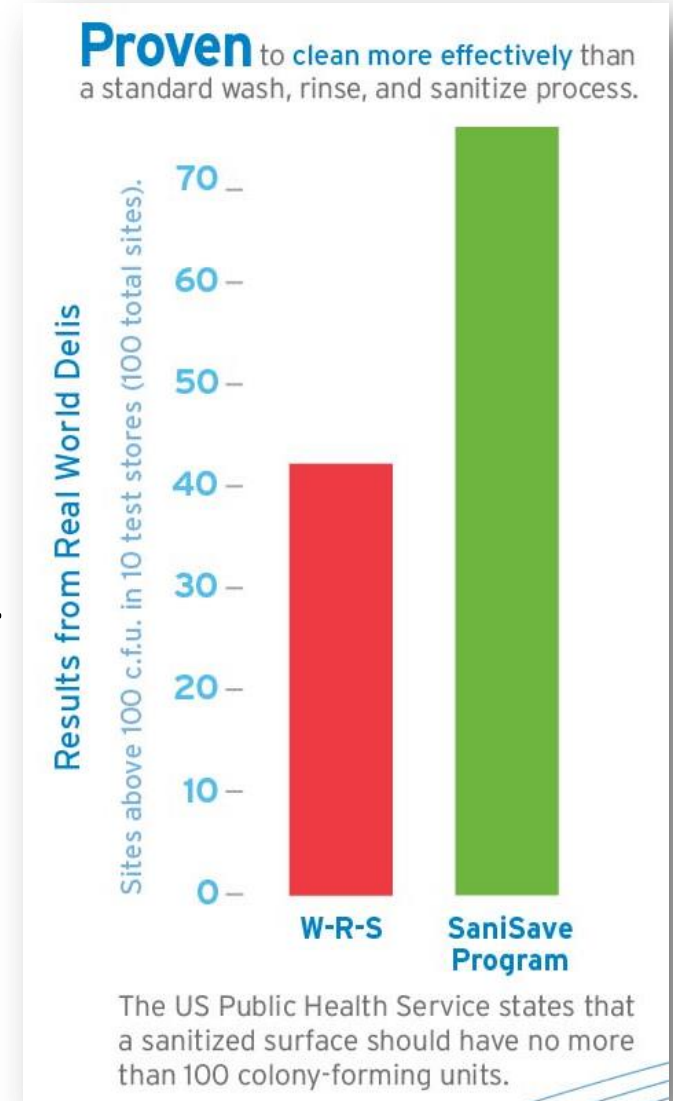


- No-Rinse Cleaner Sanitizer for food contact surfaces
- Simplifies process with 1 product, no-rinse application
- **Validated to improve cleaning in real world delis**

SaniSave Program

REAL WORLD RESULTS

- 100 swab test
- 3 weeks using SaniSave
- Before swabs with <100 CFU: 42
- After swabs with <100 CFU: 77



Summary:

- Cleaning and sanitation is a significant food safety concern
- Your customers assess and act on your level of cleanliness
- Cleaning and sanitation is a unique challenge for the retail industry
- The science shows pathogens are present
- Specific innovations and a multifaceted approach is the solution
- People-facility design- effective and appropriate tools and procedures- oversight and support

People – facility design – effective and appropriate tools and procedures – oversight and support



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Thank You!



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