A Multi-tiered Approach to Prevent Human *Salmonella* Outbreaks from Contact with Live Poultry

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Live-Poultry Linked *Salmonella* Outbreaks
How do we prevent outbreaks?
People infected with the outbreak strains of *Salmonella*, by state of residence, as of October 5, 2017 (n=1120)
Prevention

Farm to Table

Farm to Backyard

Live Poultry Chain

Breeder Flock

Hatchery

Mail

Retail Stores

Schools

Backyards

Nursing Homes

The Food Production Chain

Everyone has a role to play in keeping food safe.

Production

Distribution

Processing

Restaurant

Retail

Home cooks and consumers

Food service workers and customers

www.cdc.gov/foodsafety
Prevention

Farm to Table

Farm to Backyard
Prevention of Foodborne Outbreaks
Pre-harvest Recommendations to Control *Salmonella* and *Campylobacter*

- Pre-harvest products (vaccines, probiotics, prebiotics, organic acids)

- Recommended best practices:
  - Breeder flock & hatchery
  - Growout houses
  - Bedding
  - Feed
  - Water
  - Transportation
National Poultry Improvement Plan
Primary Meat-Type

*Salmonella* Enteritidis (SE) Clean

Multiplier Meat-Type

*Salmonella* Enteritidis Monitored
Salmonella Enteritidis (SE) Clean

Primary Meat-Type

Sanitation procedures as per 147
Testing standards
- Chick papers, hatcher tray swabs, or fluff AND intestinal, liver or spleen tissue from ≥30 chicks that died w/n 7 days
- Environmental samples every 30 days (2-4 individual assays depending on flock size)
- Serotyping of any group D Salmonella
- Presence of SE in a bird specimen renders flock ineligible
- If presence of SE in environmental sample, then additional environmental sample and sampling of 25 live cull birds for SE

Salmonella Enteritidis Monitored

Multiplier Meat-Type
Primary Meat-Type

*Salmonella Enteritidis (SE) Clean*

Multiplier Meat-Type

*Salmonella Enteritidis Monitored*

- Sanitation procedures as per 147
- Testing standards
  - Environmental samples at 16-18 and 40-45 weeks of age and group D samples serotyped
  - If SE isolated, a thorough evaluation of the practices to ascertain the reason(s) for the positive finding
# NATIONAL INSTITUTE OF FOOD AND AGRICULTURE FOOD SAFETY PRE-HARVEST GRANTS

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<tr>
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<td>Zhiu, M.</td>
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Prevention of Live Poultry Outbreaks

Production

Live Poultry Chain

Breeder Flock

Hatchery

Mail

Retail Stores

Schools

Backyards

Nursing Homes
Breeder Flock

Primary
Salmonella Monitored

Multiplier
Sanitation Monitored

Hatchery

Salmonella Monitored
Sanitation procedures as per 147 Testing standards
- Environmental samples every 30 days and isolates serogrouped

Breeder Flock

Primary

Salmonella Monitored

Multiplier

Sanitation Monitored

Hatchery

Salmonella Monitored
Sanitation procedures as per 147 Testing standards
- Environmental samples every 90 days

Breeder Flock

Hatchery

Primary

\textit{Salmonella} Monitored

Multiplier

Sanitation Monitored
Breeder Flock

Salmonella Monitored

Primary

Salmonella Monitored

Multiplier

Sanitation Monitored

Hatchery

Salmonella Monitored

Testing standards
• ≥5 environmental samples every 30 days
Best Management Practices Handbook

A Guide to the Mitigation of Salmonella Contamination at Poultry Hatcheries

Hatchery

Hatchery
Prevention at the Farm

The Food Production Chain
- Breeder Flock
- Hatchery
- Mail
- Retail Stores
- Schools
- Backyards
- Nursing Homes

Live Poultry Chain

Everyone has a role to play in making food safe.

www.cdc.gov/foodsafety
Prevention During Processing

The Food Production Chain
Everyone has a role to play in keeping food safe.

Breeder Flock
Hatchery
Mail
Retail Stores
Schools
Backyards
Nursing Homes

Live Poultry Chain

www.cdc.gov/foodsafety
9 CFR 417.2(a)(1)...The hazard analysis shall include food safety hazards that can occur **before, during, and after** entry into the establishment.
Prevention During Distribution

- Breeder Flock
- Hatchery
- Mail
- Retail Stores
- Schools
- Backyards
- Nursing Homes

Live Poultry Chain
Prevention at Retail

The Food Production Chain
Everyone has a role to play in keeping food safe.

Production
Distribution
Processing
Restaurant
Retail
Supermarket
Food service workers and customers
Home cooks and consumers

Live Poultry Chain
Breeder Flock
Hatchery
Mail
Retail Stores
Schools
Backyards
Nursing Homes

www.cdc.gov/foodsafety
Prevention at Retail

The Food Production Chain

Everyone has a role to play in keeping food safe.

Production

Distribution

Processing

Restaurant

Retail

Safe Handling Instructions

This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions:

- Keep refrigerated or frozen. Thaw in refrigerator or microwave.
- Keep raw meat and poultry separate from other foods. Wash working surfaces (including cutting boards), utensils, and hands after touching raw meat or poultry.
- Cook thoroughly.
- Keep hot foods hot. Refrigerate leftovers immediately or discard.

State Retail and Food Service Codes and Regulations by State

www.cdc.gov/foodsafety
Prevention at Retail

Of 28 States:
- 10: Restrict non-commercial sale
- 3: >5 birds sold at a time
- 1: Prohibit Easter sales
- 1: License to sell
Prevention at Retail

- Sourcing of poultry
- Prevent in-store exposure
- Prevent occupational exposure
- Prevent home exposure
Prevention at Home

The Food Production Chain
Everyone has a role to play in keeping food safe.

Live Poultry Chain

- Breeder Flock
- Hatchery
- Mail
- Retail Stores
- Schools
- Backyards
- Nursing Homes

70% of people are Home cooks and consumers, with 58% of people aging in nursing homes.
Prevention at Home

Handwashing helps!
Learn how to protect yourself from germs

Safely scoop the poop!
Tips to safely clean coops

Too close for comfort!
Learn how to handle birds safely

CLEAN
SEPARATE
COOK
CHILL

Yours.
Keep it that way.
Find out why poultry belong outside

Their.

5 Steps to Clean Your Refrigerator
If you have a recalled food item in your refrigerator, it's important to throw out the food and clean your refrigerator. Germs in the recalled food could spread to shelves or shelves in your refrigerator.

Follow these 5 steps for cleaning your refrigerator.
Multi-Tiered Approach

The Food Production Chain

- Breeder Flock
- Hatchery
- Mail
- Retail Stores
- Schools
- Backyards
- Nursing Homes

Live Poultry Chain

- Production
- Distribution
- Processing
- Restaurant
- Retail
- Food service workers and customers
- Home cooks and consumers

www.cdc.gov/foodsafety
Opportunities for Prevention Partnerships

- Breeders and Hatcheries
- Veterinarians
- Diagnostic Laboratories
- Retail stores
- 4-H/Youth in Ag
- State/local Agriculture Dept
- CDC
- Universities
- State/Local Health Dept
- USDA
- Physicians
- Media
Acknowledgments

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  - Lauren Stevenson
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Thank you

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For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.