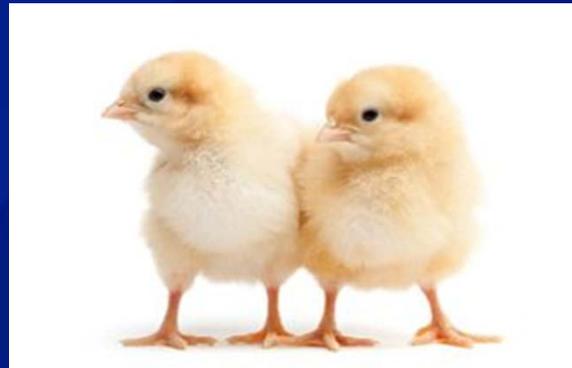


# Update: Outbreaks of Human *Salmonella* Infections Linked to Live Poultry from Mail-Order Hatcheries



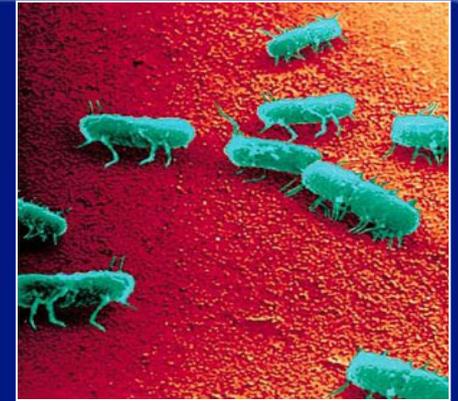
**Casey Barton Behravesh MS, DVM, DrPH, DACVPM**

Deputy Branch Chief, Outbreak Response and Prevention Branch  
Division of Foodborne, Waterborne and Environmental Diseases

Centers for Disease Control and Prevention

September 25, 2012

# *Salmonella*



- Most common bacterial cause of foodborne disease in the U.S.
- Many different sources
  - Meat, poultry, produce, animal contact
- >2,500 serotypes
- Acute gastroenteritis: fever, diarrhea, abdominal cramps, vomiting, bloody stools
- Serious illness: meningitis, bloodstream infections, joint infections
  - Young children, immunocompromised, elderly

# *Salmonella* Transmission Between Animals and Humans

- ❑ Lives in intestinal tract of many animals
- ❑ Direct Contact
  - Animal products (meat, milk, eggs, dairy)
  - Contact with infected animals
    - May appear healthy and clean
    - Bodies (fur, feathers, scales) contaminated
- ❑ Indirect Contact
  - Contamination of food
  - Contact with animal environments, areas where animals live and roam

# Mail-Order Hatchery Industry, United States

- ~20 mail-order hatcheries supply baby birds
- >50,000,000 chicks sold annually
- One hatchery may supply to several states
- Business is booming due to increased demand
  - Backyard flocks
  - Urban chicken phenomenon
- Baby poultry
  - Sold at feed stores
  - Ordered through the mail
  - Sold over the internet



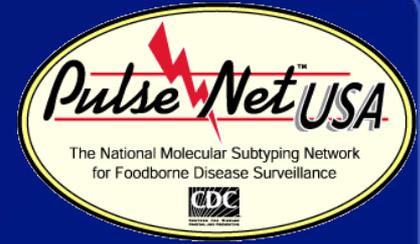


## USDA-National Poultry Improvement Plan

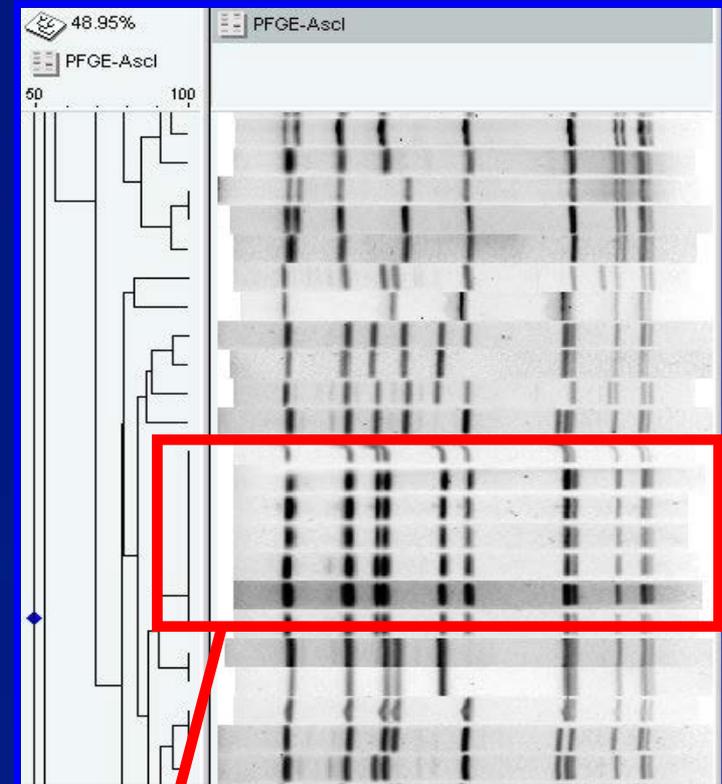


- ❑ Program to eliminate poultry diseases from breeder flocks
  - *Salmonella enterica serotypes Pullorum* , *Gallinarium* and *Enteritidis*
  - *Mycoplasma gallisepticum*, *Mycoplasma synoviae*, *Mycoplasma meleagridis*, and Avian Influenza
- ❑ Does not certify freedom from other strains of *Salmonella* in poultry, including those that cause human illness

# How are illnesses detected?



- National molecular subtyping network for foodborne disease surveillance
- Network of >85 public health & regulatory laboratories
- Current method is pulsed-field gel electrophoresis (PFGE)
  - Creates DNA “fingerprints”
- Share DNA “fingerprints” electronically
- DNA “fingerprints” kept in dynamic database at CDC
- Monitored for clusters



**Cluster of indistinguishable patterns as “outbreak strain”**

# **Outbreak investigations are a major driver for reducing disease burden**

- **Prevent additional cases in current outbreak**
- **Identify a new pathogen or problem**
- **Determine what went wrong in order to prevent future similar outbreaks**
  - **Define higher risk foods or animals**
  - **Define gaps in production systems**
  - **Stimulate further specific research**
  - **New processes or regulations**

# CDC-NPIP Poultry Specific Questionnaire

PulseNet Key: \_\_\_\_\_

Version: 8/19/2009

## Salmonella Typhimurium (PFGE pattern : JPXX01.0302) Child (<18years) Case Questionnaire

**Notes to Interviewer:**

Instructions in *italics* are for the interviewer only. Please do not read italicized words to person being interviewed.

- Please complete as much information as possible.
- Please administer this questionnaire to the patient (or patient's caregiver).
- If the respondent cannot remember exact dates, try and approximate to the 1<sup>st</sup> or 15<sup>th</sup> of the month, and mark estimate next to date.
- For all answers that list multiple choices, please read full list and mark all that apply whenever applicable.

*(If the case is greater than 12 years and less than 17 years of age, ask a parent or guardian the questions in this section. If the case is between 12 and 17 years of age, you can ask either a parent or guardian or the child (if a parent/guardian gives permission to ask the child).)*

PulseNet ID: \_\_\_\_\_

Phone Number(s): \_\_\_\_\_

State: \_\_\_\_\_

County: \_\_\_\_\_

Sex (circle one): Male Female

Interviewer Name: \_\_\_\_\_

Interview Date: \_\_\_\_\_

Hello, My name is \_\_\_\_\_ (Date \_\_\_\_\_ Time \_\_\_\_\_) and I'm calling on behalf of the \_\_\_\_\_ Department of Health. The reason I'm calling is because we are investigating an outbreak of *Salmonella* infections in your area. You may have already spoken with someone about your child's illness, but as we learn more in our investigation, we have a few more questions about contact with animals for people who got sick. This will take about 15 minutes or less. Any information provided will remain completely confidential. You don't have to answer any question that you don't want to answer, but your answers might help us find the cause of people's illness and prevent other people from getting sick. Are you willing to participate?

*(If "NO"...)* Is there a better time that we could call back? Date \_\_\_\_\_ Time \_\_\_\_\_ AM PM  
*(If STILL "NO"...)* It should only take about 15 minutes or less and the information you provide could help us find the cause of illness in your area. Date \_\_\_\_\_ Time \_\_\_\_\_

*(If STILL "NO"...)* Thank you for your time.

*(If Yes.)* Thank you. I will begin the questions.

### SECTION 1 FOR CHILDREN 17 YEARS AND YOUNGER

0. Are you the primary caregiver of the child?  Yes  No  Unknown
- a. *(If yes)* What is your relationship to the child? (Mark one)  
 Mother  Father  Other (specify) \_\_\_\_\_ (Skip to Section 2)
- b. *(If no)* Is the primary caregiver available to speak to me?
- c. *(If still no)* Do you feel that you are able to answer questions for the primary caregiver regarding your household and your child's activities?  
*(If yes)* Great, Thank you.  
*(If no)* Is there a better day and time I could call the primary caregiver back?  
*(If yes)* Name \_\_\_\_\_ date: \_\_\_\_/\_\_\_\_/\_\_\_\_ time \_\_\_\_:\_\_\_\_ AM PM  
*(If no)* Thank you for your time.

### SECTION 2 - INTRODUCTORY QUESTIONS

Now I am going to ask you some general questions about you and your family.

1. How many adults 18 years or older live in your home? \_\_\_\_\_ adults  
How many children 17 years or younger live in your home? \_\_\_\_\_ children 17 years or younger
2. Does anyone in your home work in the following jobs: *(Read list and mark all that apply.)*
- |   |  |
|---|--|
| <input type="checkbox"/> Farmer                       | <input type="checkbox"/> Postal Worker                     |
| <input type="checkbox"/> Pet/Feed store clerk/manager | <input type="checkbox"/> Veterinarian/Animal Health worker |
| <input type="checkbox"/> Teacher/Day Care Worker      | <input type="checkbox"/> Zoo worker                        |
| <input type="checkbox"/> Health care                  | <input type="checkbox"/> Restaurant worker/Caterer         |

Please fax this form to 404-639-3535 Attn: Anagha Loharikar (email: aloharikar@cdc.gov)

1

PulseNet Key: \_\_\_\_\_

Version: 8/19/2009

State Case ID Number: \_\_\_\_\_

Interview Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Interviewer Name: \_\_\_\_\_

## Salmonella typhimurium (JPXX01.0302) Poultry Exposure Supplemental Questionnaire

**Notes to Interviewer:**

\*\*\*\*If respondent (case or control) did not purchase poultry, do not administer this supplemental questionnaire\*\*\*\*

If baby poultry purchase, please complete questions 1-4. If only adult poultry purchase, skip to Q5

We are almost finished with the survey. We just have some additional questions regarding the specific types of live poultry you were exposed to. First, I will ask you a couple questions about contact with baby poultry, meaning baby chicks, ducklings, goslings, turkey poults, or other baby poultry.

1. Which types of baby poultry did you (your child) have contact with?

(Mark all that apply)	How many [POULTRY TYPE] were female and how many poultry were male?
<input type="checkbox"/> Chicks	Females # _____ Males # _____ Unknown # _____
<input type="checkbox"/> Ducklings	Females # _____ Males # _____ Unknown # _____
<input type="checkbox"/> Goslings (geese)	Females # _____ Males # _____ Unknown # _____
<input type="checkbox"/> Turkey poults	Females # _____ Males # _____ Unknown # _____
<input type="checkbox"/> Other:	Females # _____ Males # _____ Unknown # _____

2. *(If chick contact occurred, please complete the following.)*  
I will read a list of common breeds or types of chickens. Please let me know when I list the breed(s) of chickens that you were in contact with. In some cases, I may ask you for more information on the type of chicken. *(Mark all that apply.)*

<input type="checkbox"/> Anconas	<input type="checkbox"/> Silkies: Type _____	<input type="checkbox"/> Leghorns: Type _____
<input type="checkbox"/> Araucanas/Americanas	<input type="checkbox"/> Buff Orpingtons	<input type="checkbox"/> Rhode Island Red
<input type="checkbox"/> Bantams	<input type="checkbox"/> Cornish Game Hens	<input type="checkbox"/> White Rocks
<input type="checkbox"/> Barred Rocks	<input type="checkbox"/> Feather Footed Fancies	<input type="checkbox"/> White cochin
<input type="checkbox"/> Black Australorps	<input type="checkbox"/> New Hampshire Reds	<input type="checkbox"/> Other _____
<input type="checkbox"/> Minorcas: Type _____	<input type="checkbox"/> Red Star	<input type="checkbox"/> Other _____
<input type="checkbox"/> Black Star	<input type="checkbox"/> Rhode Island Reds	<input type="checkbox"/> Other _____
<input type="checkbox"/> Brown Egg Layers	<input type="checkbox"/> Silver Laced Wyandottes	<input type="checkbox"/> Other _____

Unknown *(If Unknown)* Now, I will read you a list of common chicken colors. Please tell me which of the following colors of chickens your household contacted:  
 Black  Brown  Tan  Gray  Red  Yellow  White  Multicolored Other: \_\_\_\_\_

3. *(If ducklings, goslings, turkeys or other baby poultry were contacted, please complete the following.)*  
Please describe the color of each type of [INSERT TYPES OF POULTRY] contacted *(Mark all that apply):*

Species	Black	Brown	Tan	Gray	Red	Yellow	White	Multi-colored	Other Colors? (Specify)
<input type="checkbox"/> Ducklings	<input type="checkbox"/>								
<input type="checkbox"/> Goslings	<input type="checkbox"/>								
<input type="checkbox"/> Turkeys	<input type="checkbox"/>								
<input type="checkbox"/> Other Baby Poultry (Specify)	<input type="checkbox"/>								

4. Were the baby poultry purchased as dyed or colored *(meaning an unnatural color to their feathers)?*

Yes → What colors *(Mark all that apply)?*  
 Red  Green  Blue  Orange  White  Other *(Specify)* \_\_\_\_\_

No

# Outbreaks of *Salmonella* Associated with Live Poultry

- Past
  - First outbreak documented in 1955
  - Involve young children
  - Outbreaks in Spring
  - Dyed birds
  - Pets
- Present
  - See multiple outbreaks/year
  - Adults and children
  - Outbreaks year-round
  - Backyard flocks, urban chickens
  - Agricultural feed stores



# Outbreaks of *Salmonella* Associated with Live Poultry

- ❑ 42 outbreaks reported since 1990
  - >1,340 laboratory-confirmed illnesses
  - >120 hospitalizations
  - 3 deaths
- ❑ Poultry appear clean and healthy
- ❑ Multiple *Salmonella* serotypes associated
- ❑ Multiple outbreak strains linked to single hatcheries
- ❑ Recurring hatchery, different outbreak strains
- ❑ Success in reducing human illnesses linked to specific hatchery strains

# Recent Outbreaks: Live Poultry Contact

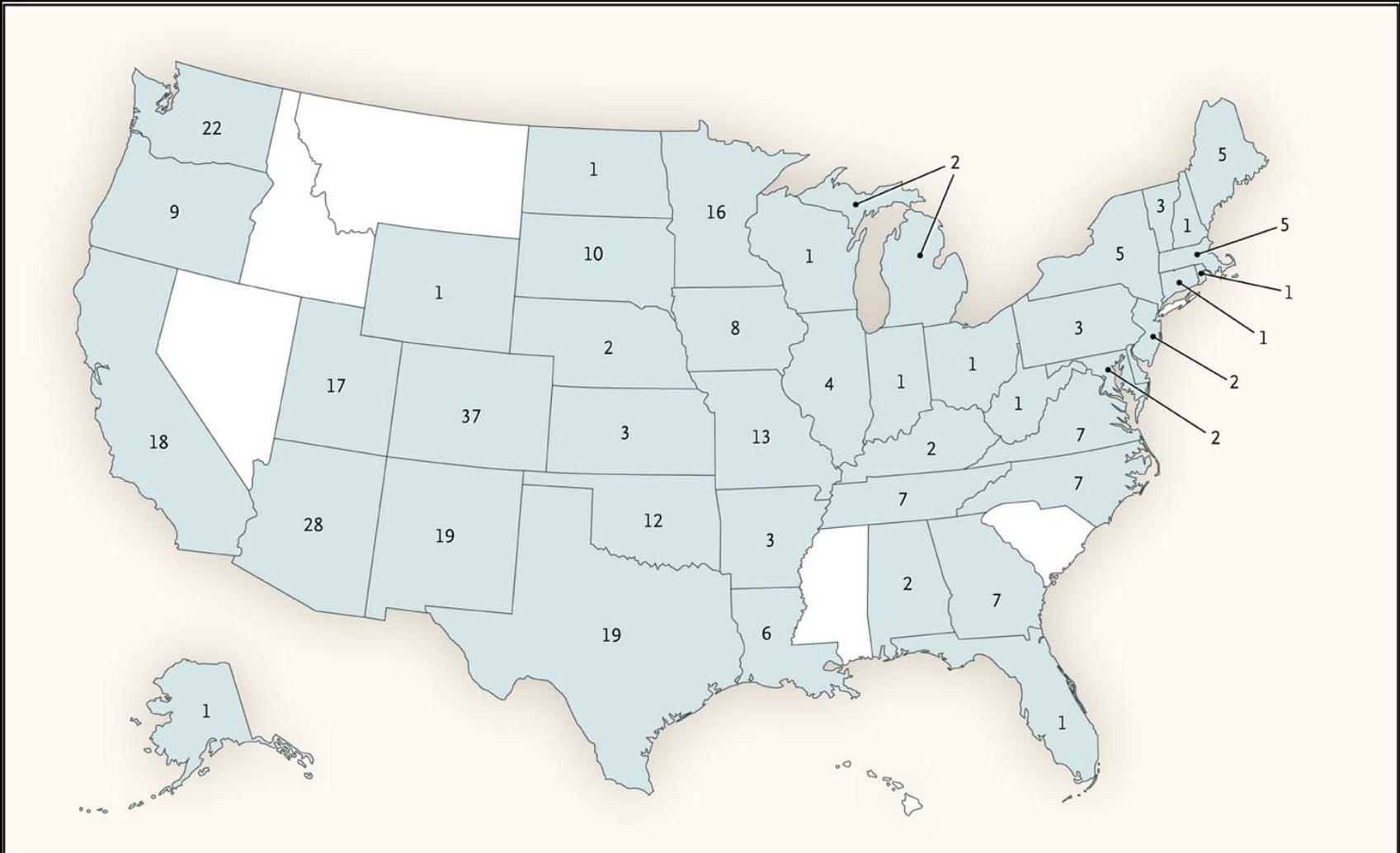
- *Salmonella*Montevideo, Outbreak Strain A, Annually 2005-2011
  - Hatchery A
- *Salmonella*Montevideo, Outbreak Strain B, Annually 2007-2010
  - Hatchery B
- *Salmonella*Johannesburg, 2009
  - Hatchery C
- *Salmonella*Thompson, 2009
  - Hatchery D
- *Salmonella*Typhimurium, 2009-2010
  - Hatchery C
- *Salmonella*Altona/Johannesburg, 2011
  - Hatchery C
- *Salmonella*Hadar, 2011
- *Salmonella*Berta, 2011
- *Salmonella*multiple, 2012
  - Hatchery C
- *Salmonella*Montevideo, 2012
  - Hatchery D
- *Salmonella*Hadar, 2012
  - Hatchery E



# *Salmonella* Montevideo Outbreak Strain A, 2005-2011

- 316 case-patients identified over 7 years
  - Primarily young children; median age 4 years
  - Typically started in spring
- 77% reported contact with live baby poultry
- Linked to contact with live baby poultry from Hatchery A
  - Outbreak strain found in Hatchery A environment
- Hatchery working w/ consultant to improve hatchery sanitation, administering autogenous vaccine, following NPIP guidance
- Following hatchery interventions, number of human infections with declined in 2009, but transmission continued in 2010
- 2012: One illness reported to date, denied live poultry contact
- Success story demonstrating reduction in human illnesses can be achieved with hatchery interventions

# Location and Number of Patients in the Outbreak According to State, January 1, 2004, to December 31, 2011.

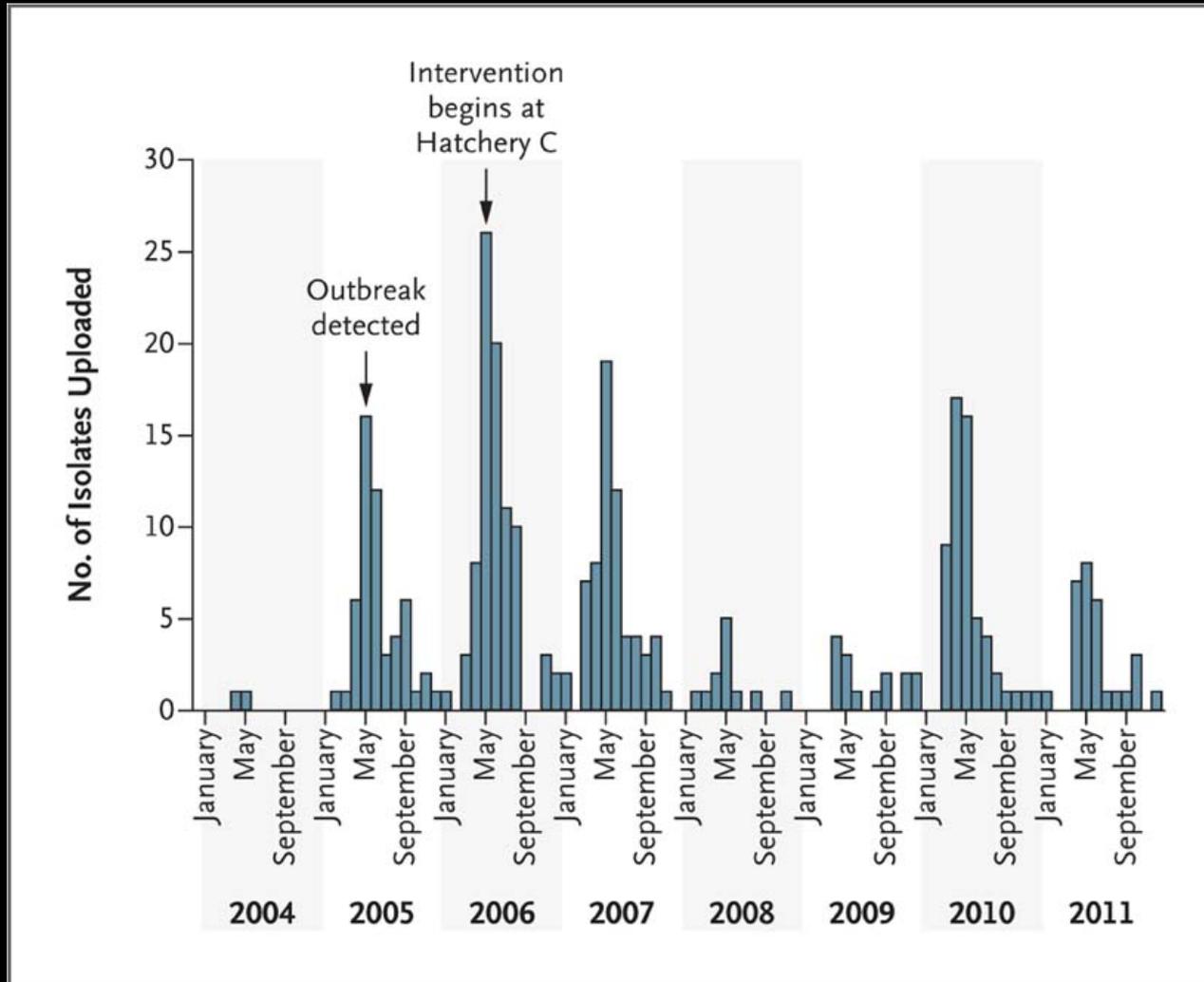


Gaffga NH et al. N Engl J Med 2012;366:2065-2073



The NEW ENGLAND  
JOURNAL of MEDICINE

# Number of Patients Infected with the Salmonella Outbreak Strain, According to Date of Report to PulseNet Database, January 1, 2004, to December 31, 2011.



Gaffga NH et al. N Engl J Med 2012;366:2065-2073



The NEW ENGLAND  
JOURNAL of MEDICINE

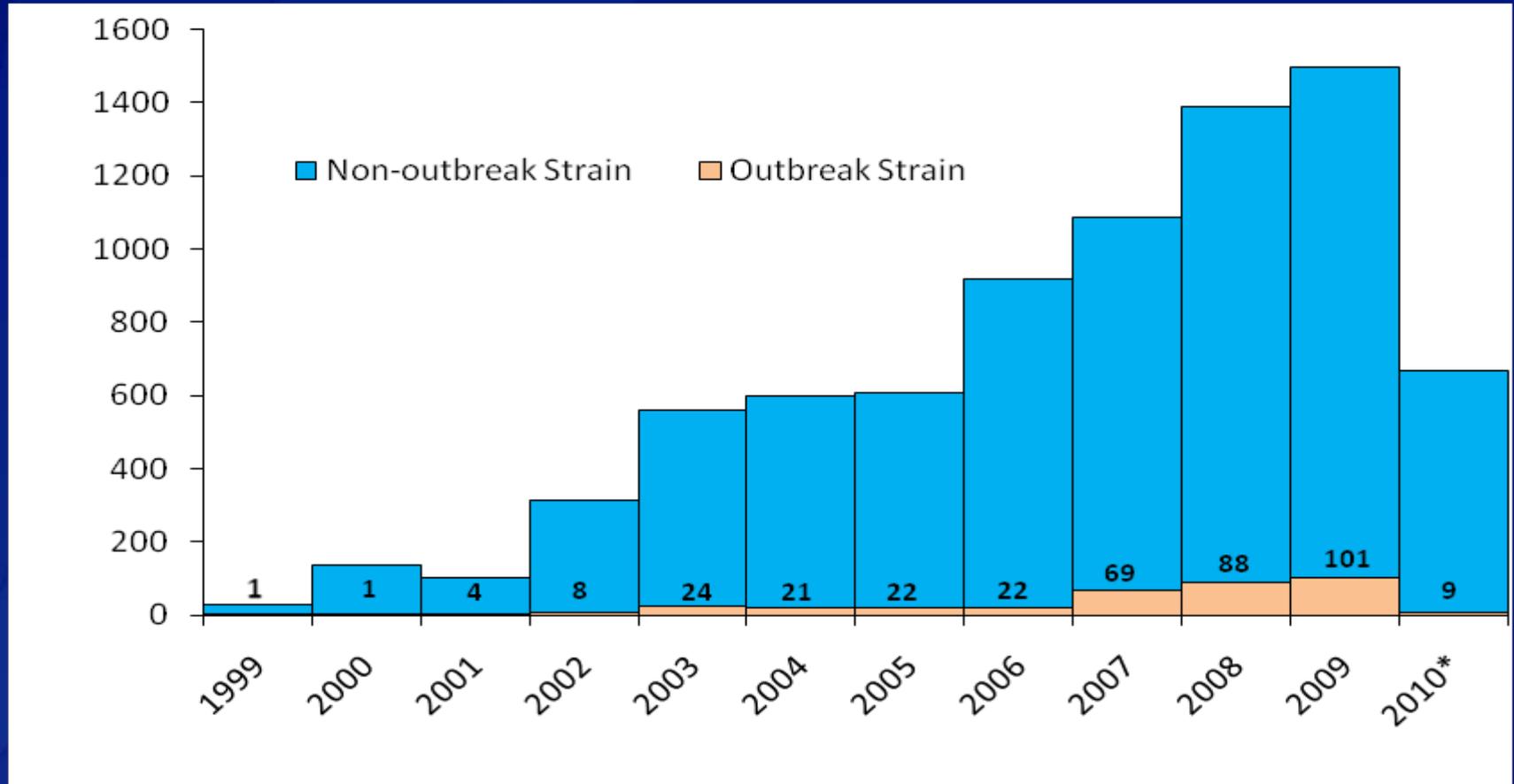
# *Salmonella* Montevideo

## Outbreak Strain B, 2007-2010

- 370 case-patients identified over 4 years
- This outbreak was different from previous outbreaks:
  - Cases less concentrated in spring months
  - Proportion of adults higher than children
  - Patients reported purchasing birds primarily for meat and eggs in backyard flocks, not as pet chicks
- Multiple specimens from poultry and environment from case-patient households yielded outbreak strain
- Linked to contact with live poultry from Hatchery B
- Hatchery working with veterinary consultant and administering autogenous vaccine
- Another example of success in reducing the number of human infections with hatchery-level interventions

# Isolates of *Salmonella* Montevideo in PulseNet, Outbreak Strain Band and Non-Outbreak Strains, 1999-2010 (N=7,819)

Number of Isolates



Year of Isolation

\* Data as of August 25, 2010

# Hatchery C

## 2009--Present

- *Salmonella* Johannesburg, 2009
- *Salmonella* Typhimurium, 2009-2010
- *Salmonella* Altona/Johannesburg, 2011
- *Salmonella* Lille, Newport, Infantis, 2012



# *Salmonella* Typhimurium, 2009-2010

- 101 indistinguishable PFGE isolates from 21 states
  - 62 case-patients in PA and NY
    - 36 linked with focal outbreak in PA and NY by MLVA subtyping (outbreak strain)
- Median age: 8 years (range 0-67 years)
- Case-control study: case-patients significantly more likely to contact with live poultry, contact with chicks, visiting a feed store and visiting National Feed Store Chain A
- 60% received no information on risks from feed store of purchase
- Many birds kept inside the home
- Poultry traced to Hatchery C, supplied by multiple egg sources
- Environmental sampling from source flocks yielded *Salmonella* Typhimurium; different PFGE pattern
- 2010 Investigation, outbreak strain identified in PA and NY in 2010, linked with Hatchery C

# Outbreak of *Salmonella* Altona and Johannesburg Infections, 2011

## *Salmonella* Altona

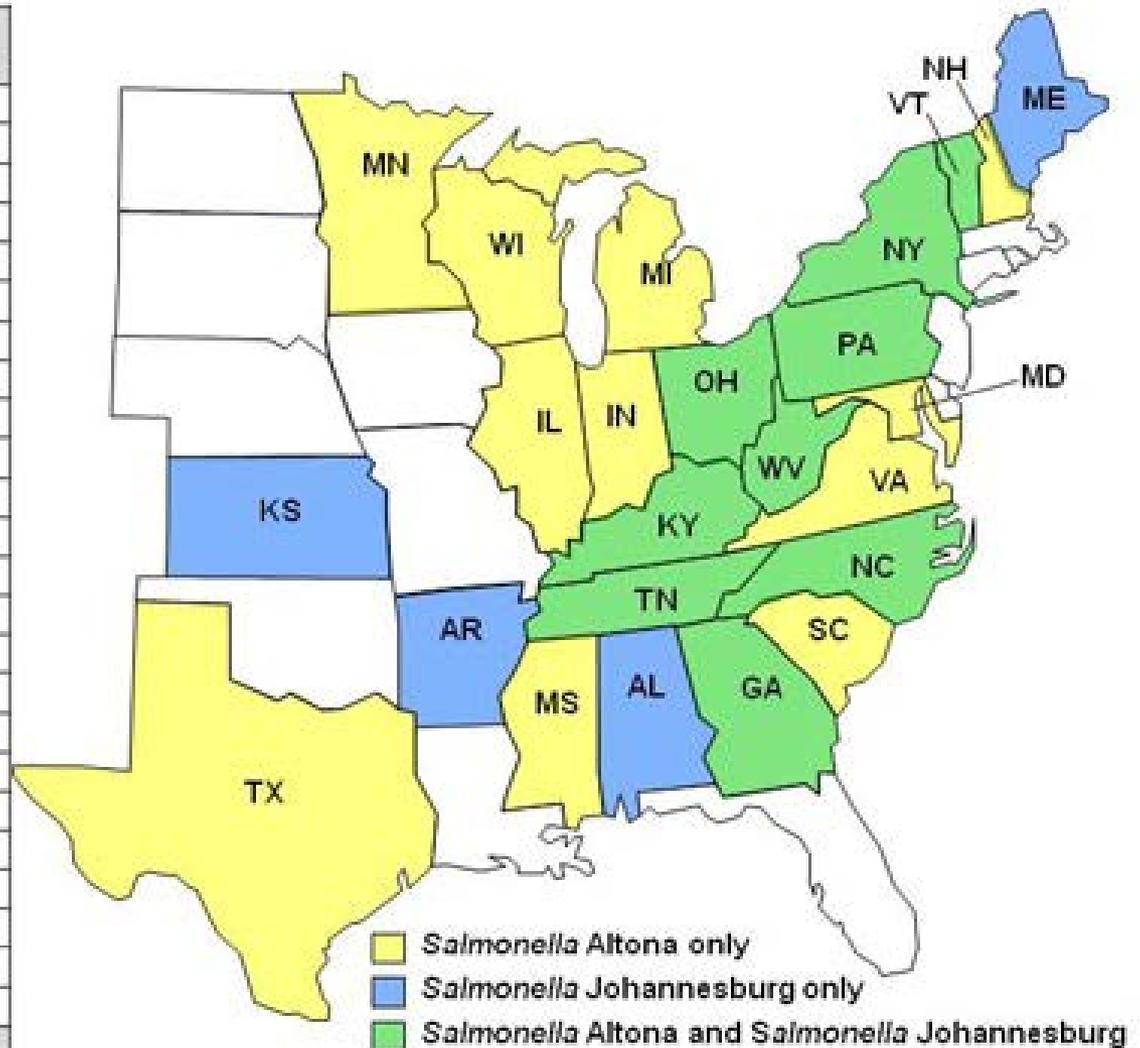
- 68 ill, 20 states
  - 31% hospitalized
  - 32% aged  $\leq 5$  years
  - 74% contact with live poultry
- 
- Chicks or ducklings from multiple locations of an agricultural feed store chain supplied by Hatchery C

## *Salmonella* Johannesburg

- 28 ill, 15 states
- 41% hospitalized
- 75% aged  $\leq 5$  years
- 71% contact with live poultry

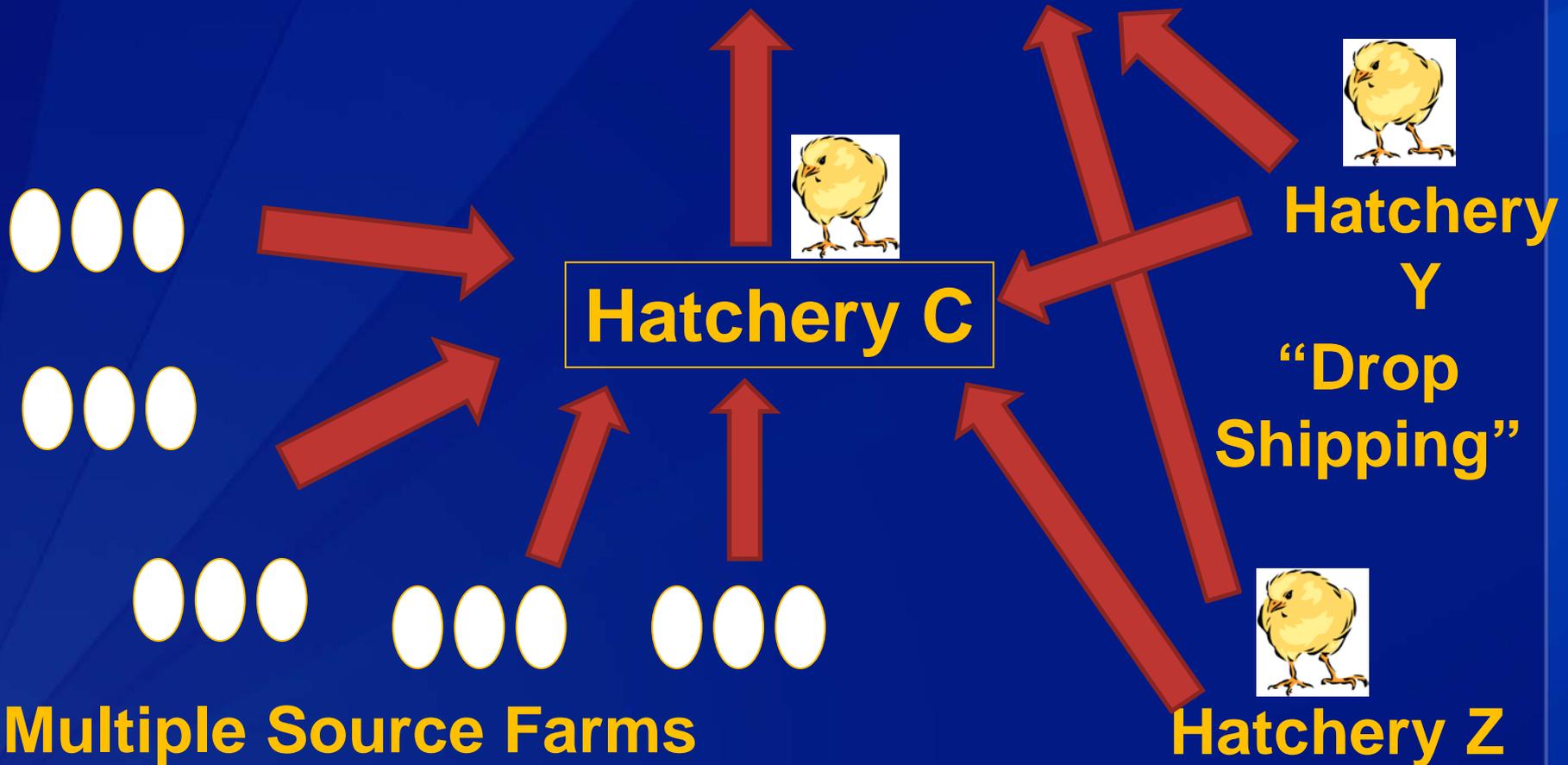
# Outbreak of *Salmonella* Altona and Johannesburg Infections, 2011

Source State	<i>Salmonella</i> Altona	<i>Salmonella</i> Johannesburg
AL	0	1
AR	0	1
GA	1	2
IL	1	0
IN	1	1
KS	0	1
KY	6	2
MD	5	0
ME	0	1
MI	1	0
MN	1	0
MS	1	0
NC	9	4
NH	1	0
NY	4	4
OH	12	3
PA	6	1
SC	1	1
TN	3	3
TX	2	0
VA	7	0
VT	1	2
WI	1	0
WV	4	1
<b>Total</b>	<b>68</b>	<b>28</b>



# Traceback of Baby Poultry, Hatchery C

## Agricultural Feed Store Chain A



# 2012 Outbreaks of *Salmonella* Infections Linked to Live Poultry from Mail-Order Hatcheries

as of September 4, 2012

*Preliminary data, subject to change*



- ❑ **7 outbreaks linked to live poultry**
  - Chicks and ducklings
  - Backyard flocks
  - Multiple *Salmonella* serotypes
  - Median time from purchase to illness\* = 19 days (range: 3-90)
- ❑ **427 illnesses and counting in 2012**
  - Outbreak size range: 20-175 cases
  - 33% (77/233) hospitalized
  - 3 deaths, unclear if infection contributed

\*data currently available for one outbreak

# Ongoing Outbreaks Linked to Live Poultry

as of September 4, 2012  
*Preliminary data, subject to change*

- ***Salmonella* Infantis, Newport, Lille**
  - 175 illnesses in 26 states
  - 35% hospitalized, 2 deaths
  - 34% are children under 10 years
  - Hatchery C
- ***Salmonella* Montevideo**
  - 87 illnesses in 23 states
  - 35% hospitalized, 1 death - *Salmonella* did not cause death
  - 35% are children under 10 years
  - Hatchery D
- ***Salmonella* Hadar**
  - 44 illnesses in 13 states
  - 37% hospitalized, 0 deaths
  - 37% are children under 10 years
  - Hatchery E



# Highlights from 2012 Outbreak Data (n=148)

*Preliminary data, subject to change*

- ❑ 73% reported contact with baby poultry
  - Chicks, ducklings, goslings
- ❑ 67% purchased for eggs; 25% for pets; 2% for meat; 6% for other reasons
- ❑ 33% kept poultry inside their home
- ❑ 30% snuggled with poultry; 9% kissed poultry
- ❑ 91% purchased poultry from a store; 7% through mail



# Highlights from Other Recent Outbreak Investigations

- Caterer contaminated food , caused outbreak in people with no direct live poultry contact (*Salmonella* Montevideo B, 2009)
  - Caterer had backyard flock with chicks from mail-order hatchery associated with outbreak strain
- Poultry flock in daycare cause outbreak (*Salmonella* Johannesburg, 2009)
- Death in nursing home resident, chicks from implicated hatchery brought into nursing home (*Salmonella* multiple, 2012)
- Feed store employees become cases in outbreaks (2006, 2010)
- One sick postal worker who only handled chicks in the mail (*Salmonella* Montevideo A, 2006)

# Prevention and Control

- Mail-order hatcheries
- Feed stores
- Consumers



# Mail-Order Hatcheries



# Potential *Salmonella* Sources



# Intervention Strategies at Mail-Order Hatcheries

- Clean-up efforts should be customized to individual hatcheries
- Monthly Environmental Samples
  - Flocks and hatchery
  - Participate in voluntary US *Salmonella* Monitored Program
- Autogenous Vaccine
- Rodent Control Enhancement
- Feed intervention
- Hatching Egg Disinfection
- Work Flow in Hatchery
- Air Movement in Hatchery
- Hatchery Cleaning and Disinfection
- Consulting with Poultry Veterinarian

# Challenge to Meet Demands

## ❑ Outsourcing

- New flocks – all levels from small scale to commercial operations
- Trans-shipping of day old chicks through hatchery

## ❑ Drop Shipping

- Common practice in hatchery industry
- Hatchery A can not complete customer order because no birds are available
- Hatchery A contacts Hatchery B for availability
- Hatchery B ships order to customer under Hatchery A name
- Can be challenge for traceback to hatchery

# USDA NPIP Proposed Voluntary *Salmonella* Monitoring Program

- Establishing a U.S. *Salmonella* Monitored program and classification for mail-order hatcheries will allow them to practice a defined program for the prevention and control of *Salmonella*
- Proposes minimum environmental sampling
- Currently waiting for determination of public comment period
- Some hatcheries already acting and requiring drop ship partners to participate
- One feed store chain requesting mail-order hatcheries who sell to their company to participate

# Agricultural Feed Stores



# Feed Store Chain A



FARM SUPPLIES

PLUMBING

PAINT

ON SALE  
39<sup>99</sup> ~~49~~

\$249<sup>99</sup>

CHICK DAYS

INFORMATION CENTER

CHICK DAYS

Chicks and Ducks are being sold for agricultural purposes.  
 Live Chick purchases must be a minimum of 6 birds.  
 Live Duck purchases must be a minimum of 2 birds.

PLEASE DO NOT FEED IN BALLETS



PLEASE ASK A TEAM MEMBER FOR ASSISTANCE WITH CHICK OR DUCK PURCHASES

TSC  
 PINE  
 FLAKE  
 FOR  
 YCO

MEDIUM  
 GRAVITY



TSC

## USE CAUTION WHEN HANDLING BABY CHICKS

To avoid the possibility of infection and help stop the spread of *Salmonella*, clean your hands immediately after touching chicks and ducklings. Use the hand sanitizer provided near the Chick Days display or wash your hands with soap and water.

- Chicks & ducklings are not appropriate pets for children under 5 years old.
- Don't nuzzle or kiss chicks & ducklings.
- Call your health care provider if you think you have a *Salmonella* infection.

Children under 5 years old, people with weakened immune systems and women who are pregnant or may be pregnant, should not handle poultry.

If you have any questions, please see a Team Member.

PLEASE DO NOT CLIMB

SUPPLIES

CHICK CARE

CHICKS

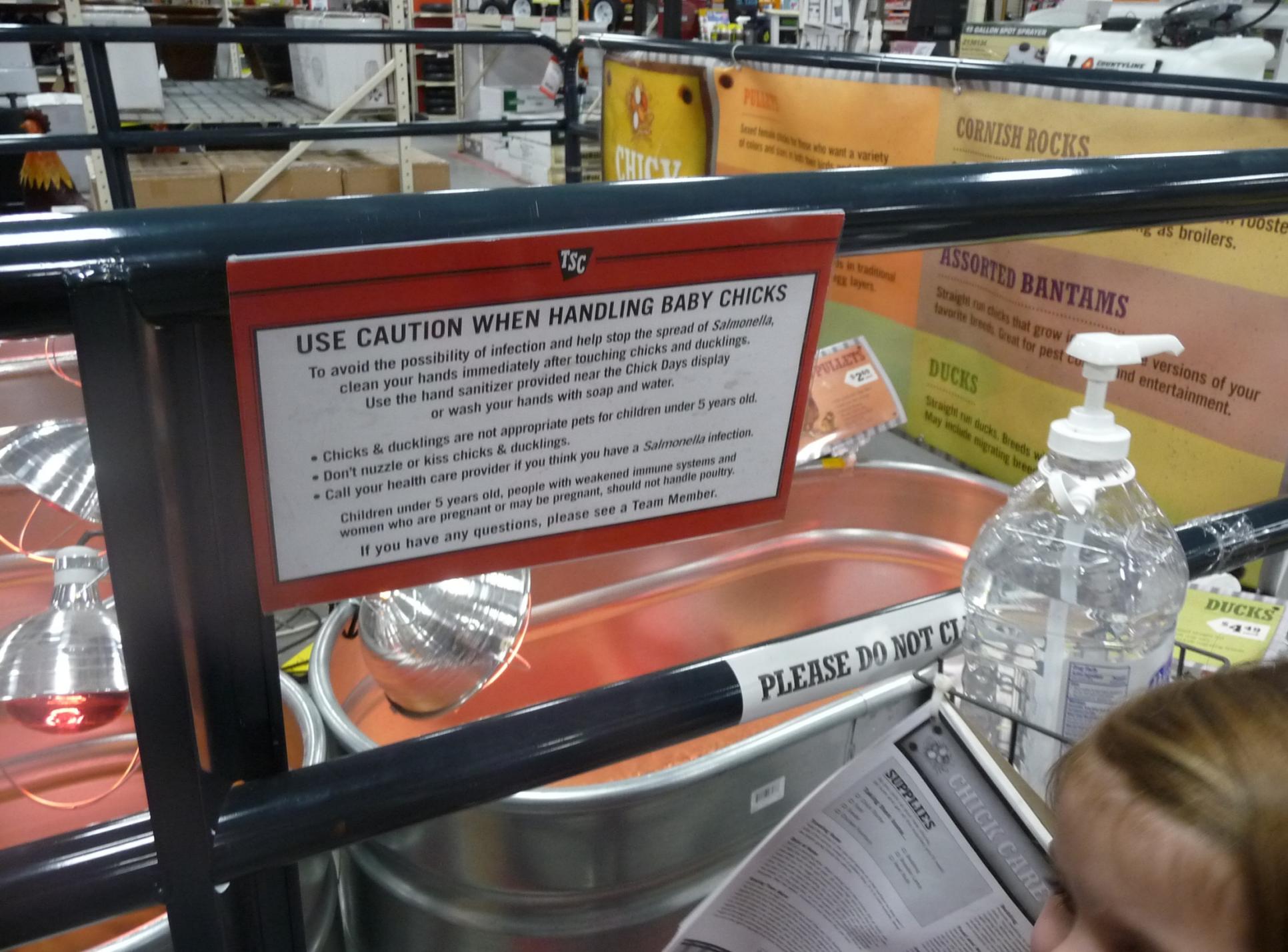
POLY

CORNISH ROCKS

ASSORTED BANTAMS

DUCKS

DUCKS





### After you touch ducklings or chicks, wash your hands so you don't get sick!



- Contact with live poultry (chicks, ducklings, turkeys, geese, and waterfowl) can be a source of human Salmonella infections.
- Salmonella germs can cause a diarrheal illness in people that can be mild, severe, or even life threatening.
- Chicks, ducklings, and other live poultry can carry Salmonella germs and still appear healthy and clean.
- Salmonella germs are shed in their droppings and can easily contaminate their broilers and anything in areas where birds live and roam.

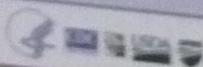
### Protect Yourself and Your Family from Germs

#### DO:

- Wash your hands thoroughly with soap and water right after touching live poultry or anything in the area where they live and roam.
- Adults should supervise hand-washing for young children.
- If soap and water are not readily available, use hand sanitizer and you can also use moist towelettes thoroughly with soap and water.
- Clean any equipment or material associated with raising or caring for live poultry outside the house, such as cages or feed or water containers.

#### DON'T:

- Don't let children younger than 5 years of age, elderly persons, or people with weak immune systems handle or touch chicks, ducklings, or other live poultry.
- Don't let live poultry inside the house, in bathrooms, or especially in areas where food or drink is prepared, served, or stored, such as kitchens, or outdoor patios.
- Don't struggle or kiss the birds, touch your mouth, or eat or drink around live poultry.



### REGLAS PARA EL MANEJO SEGURO DE POLLITOS Y PATICOS

Tocar aves vivas (por ejemplo y incluyendo: pollos, pollitos, patos, paticos, gansos, y pavos) pueden difundir o producir el germen de Salmonella. Este germen puede causar enfermedad suave y temporal, como tambien enfermedad grave, y tambien que cause riesgo a su vida. Escritas aqui se encuentran unas pocas reglas que usted puede usar para protegerse usted y su familia:

- Lavese bien sus manos con agua y jabon cuando usted toque aves vivas o cualquier cosa en donde las aves se mantengan
- Asegurese que niños se laven bien las manos tambien
- No permita que niños menores de 5 años de edad (o nadie con un sistema bajo de defensas contra enfermedad) toque o trabaje con aves vivas
- No permita que aves vivas ocupen o vivan en areas donde humanos tambien vivan

Para una lista completa y mas informacion llame al 1-800-CDC-INFO (800-232-4636) o visite al la pagina [www.cdc.gov/spanish/](http://www.cdc.gov/spanish/)



# Consumers



# Poultry in Public Settings



# Kindergarten Raises Chicks



Each spring the kindergarten class raises little baby chicks! The eggs are placed in an incubator and everyone helps to turn them. There is a great deal of excitement when the eggs begin to crack and little beaks can be seen inside! After hatching, the tired, wet chicks rest and dry out. A brooder box is ready with woodchips and a heat lamp. The children suggest names for the new arrivals and then a vote is taken. During the next several weeks the chicks are held and close observations are recorded. When the chicks begin flying out of the box it's time for them to go to a new home. This is a fascinating project for the Kindergarten class.

# Urban Chickens



# Be Aware of the Risks



# 2012 Selected *Salmonella* Outbreak Investigations

CDC - Outbreaks Involving Salmonella - Windows Internet Explorer  
http://www.cdc.gov/salmonella/outbreaks.html

CDC Home  
Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

## Salmonella

**Salmonella Homepage**

**Outbreaks**

- Reporting Timeline
- Braenderup Infections Associated with Mangoes
- Typhimurium Infections Linked to Cantaloupe
- Enteritidis Infections Linked to Ground Beef
- Human *Salmonella* Hadar Infections Linked to Live Poultry
- Human *Salmonella* Montevideo Infections Linked to Live Poultry
- Human *Salmonella* Infantis Infections Linked to Dry Dog Food

[Salmonella Homepage](#)

Recommend 78 Tweet 13 Share

### Reports of Selected *Salmonella* Outbreak Investigations 2012

- Mangoes - *Salmonella* Braenderup
- Cantaloupe - *Salmonella* Typhimurium
- Ground Beef - *Salmonella* Enteritidis
- Live Poultry - *Salmonella* Hadar**
- Live Poultry - *Salmonella* Montevideo**
- Live Poultry - *Salmonella* Infantis, Newport, and Lille**
- Dry Dog Food - *Salmonella* Infantis
- Raw Scraped Ground Tuna Product - *Salmonella* Bareilly and *Salmonella* Nchanga
- Small Turtles - *Salmonella* Sandiego, *Salmonella* Pomona, and *Salmonella* Poona
- Restaurant Chain A - *Salmonella* Enteritidis

### 2011

- Ground Beef - *Salmonella* Typhimurium

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# Outbreak Announcements and Updates

CDC - Salmonella Infections Linked to Live Poultry - Salmonella - Windows Internet Explorer  
http://www.cdc.gov/salmonella/live-poultry-05-12/index.html

CDC Home  
**CDC** Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

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## Salmonella

**Salmonella Homepage**

- Outbreaks
- Reporting Timeline
- Braenderup Infections Associated with Mangoes
- Typhimurium Infections Linked to Cantaloupe
- Enteritidis Infections Linked to Ground Beef
- Human *Salmonella* Hadar Infections Linked to Live Poultry
- Human *Salmonella* Montevideo Infections Linked to Live Poultry
- Human *Salmonella* Infections Linked to Live Poultry**

[Salmonella Homepage](#) > [Outbreaks](#)

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### Multistate Outbreak of Human *Salmonella* Infections Linked to Live Poultry

Posted August 20, 2012 3:45 PM ET

#### Highlights

- [Read the Advice to Consumers](#) »
- A total of 163 persons infected with the outbreak strains of *Salmonella* *Infantis*, *Salmonella* *Newport*, and *Salmonella* *Lille* have been reported from 26 states.
  - The number of ill persons identified in each state is as follows: Alabama (4), Arizona (1), Delaware (1), Georgia (5), Illinois (3), Indiana (3), Kansas (1), Kentucky (5), Louisiana (1), Maine (4), Maryland (3), Massachusetts

#### At a Glance:

- Case Count: 163**
- States: 26**
- Deaths: 2**
- Hospitalizations: 33**

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 Centers for Disease Control and Prevention

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# CDC Feature: Keeping Backyard Poultry

The screenshot shows a Windows Internet Explorer browser window displaying the CDC website. The address bar shows the URL <http://www.cdc.gov/Features/SalmonellaPoultry/>. The page title is "CDC Features - Keeping Backyard Poultry".

**CDC Features**

- CDC Features
- Current Features
- Data & Statistics
- Diseases & Conditions
- Emergency Preparedness & Response
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[CDC Features > Features by Date](#)

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## Keeping Backyard Poultry



**Live poultry, such as chickens, ducks, geese, and turkeys, often carry harmful germs called *Salmonella*. After you touch a bird, or anything in the area where they live and roam, wash your hands so you don't get sick!**

An increasing number of people around the country are choosing to keep live poultry, such as chickens or ducks, as part of a greener, healthier lifestyle. While you enjoy the benefits of backyard chickens and other poultry, but it is important to consider the risk of illness, especially for children, which can result from handling live poultry or anything in the area where they live and roam.

It's common for chickens, ducks, and other poultry to carry *Salmonella*, which is a type of germ that naturally lives in the intestines of poultry and many other animals and is shed in their droppings or feces. Even organically fed poultry can have *Salmonella*. While it usually doesn't make the birds sick, *Salmonella* can cause serious illness when it is passed to people.



*Salmonella* can make people sick with diarrhea, vomiting, fever, and/or abdominal cramps. Sometimes, people can become so sick from a *Salmonella* infection that they have to go to the hospital.

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## Peep, chirp, quack!

*What you should know about Salmonella if you keep backyard poultry*



It's not unusual to see soft and cute baby poultry put on display in agricultural feed stores, especially during the spring. But most people do not realize that live poultry (chicks, chickens, ducks, ducklings, geese, turkeys) can be a source of human Salmonella infections, especially for children. Since 1990, more than 35 outbreaks of human Salmonella infections associated with live poultry have been reported to the Centers for Disease Control and Prevention (CDC). Many of these illnesses are in young children. "It is important to know that human Salmonella infections from live poultry can occur at any time of the year, not just during the spring" said Dr. Casey Barton Behravesh, a veterinary epidemiologist at CDC. In one recent outbreak, Salmonella Altona and Johannesburg infections were linked to chicks and ducklings in 15 states. ([www.cdc.gov/salmonella/altona-baby-chicks](http://www.cdc.gov/salmonella/altona-baby-chicks))

When live baby poultry carry Salmonella they don't appear to be sick, but they can still spread the germs to people. People can be exposed to Salmonella by holding, cuddling, or kissing the birds and by touching things where the birds live, such as cages or feed and water bowls. Salmonella can make people sick with diarrhea, vomiting, fever, and/or abdominal cramps. Sometimes, people can become so sick from a Salmonella infection that they have to go to the hospital. Young children, elderly persons, and those with weakened immune systems are more likely than others to develop severe illness. When this occurs, Salmonella may spread from the intestines to the bloodstream and then to other body sites and can cause death unless the person is treated promptly with antibiotics.

### **How do people get Salmonella infections from live baby poultry?**

Live poultry may have Salmonella germs in their droppings and on their bodies (feathers, feet, and beaks) even when they appear healthy and clean. The germs can also get on

cages, coops, and other things in the area where birds live and roam. Additionally, germs can be found on the hands, shoes, and clothing of those who handle the birds, or work or play in areas where birds live and roam. People become infected with Salmonella when they put their hands or other things that have been in contact with droppings in or around their mouth.

Young children are especially at risk for illness because their immune systems are still developing and because they are more likely than others to put their fingers or other items into their mouths. It is important to wash your hands immediately after touching poultry or anything in the area where they live and roam, because the germs on your hands can easily spread to other people or things.

### **How do I reduce the risk of Salmonella infection from live baby poultry?**

- Wash your hands thoroughly with soap and water right after touching live baby poultry or anything in the area where they live and roam. Use hand sanitizer if soap and water are not readily available.
- Adults should supervise hand washing for young children.
- Don't let children younger than 5 years of age handle or touch chicks, ducklings, or other live poultry.
- Don't snuggle or kiss the birds, touch your mouth, or eat or drink around live baby poultry.
- Don't let live baby poultry inside the house, in bathrooms, or especially in areas where food or drink is prepared, served, or stored, such as kitchens or outdoor patios. Keep live poultry outside.
- Don't eat or drink in the area where the birds live or roam.
- Don't clean any equipment or materials associated with raising or caring for live poultry, such as cages or feed or water containers, inside the house.
- Don't give live baby poultry as gifts to young children.

### **Are there any restrictions about owning live poultry?**

Rules and regulations vary by city, county, and state ordinances, so check with your local government to determine restrictions about owning live poultry.

For more information and an educational brochure, visit CDC's Healthy Pets Healthy People website at [www.cdc.gov/healthypets/resources/posters.htm](http://www.cdc.gov/healthypets/resources/posters.htm)

## After you touch ducklings or chicks, wash your hands so you don't get sick!



- Contact with live poultry (chicks, chickens, ducklings, ducks, geese, and turkeys) can be a source of human illness.
- Salmonella* germs in people that are sick can be threatening.
- Chicks, ducklings, and ducklings can carry *Salmonella* germs that can be cleaned.
- Salmonella* germs can easily contaminate areas where live poultry are kept.

### Protect Yourself and Your Family from Salmonella

#### DO:

- Wash your hands thoroughly with soap and water right after touching live poultry or anything in the area where they live and roam.
- Adults should supervise hand washing for young children.
- If soap and water are not readily available, use hand sanitizer until you are able to wash your hands thoroughly with soap and water.
- Clean any equipment or materials associated with raising or caring for live poultry outside the house, such as cages or feed or water containers.

For more information, call 1-800-CDC-INFO or visit [www.cdc.gov](http://www.cdc.gov).



#### DON'T:

- Don't let children or elderly persons handle live poultry.
- Don't let live poultry enter your home or especially in areas where food is prepared, served, or stored.
- Don't snuggle or eat or drink around live poultry.

## Si toca pollitos o patitos, ¡lávese las manos para no enfermarse!



- El contacto con aves de corral vivas (como pollitos, gallinas, patitos, patos, gansos y pavos) puede ser una fuente de infección humana.
- Las bacterias de *Salmonella* en personas enfermas pueden ser portadoras de enfermedades graves o incluso la muerte.
- Los pollitos, los patitos y los patos pueden ser portadores de *Salmonella* y parecer sanos y limpios.
- Las bacterias de *Salmonella* pueden contaminar áreas que parecen limpias e iguales que las áreas que están sucias.

### Protéjase usted y su familia de los microbios de Salmonella

#### LO QUE DEBE HACER:

- Lavarse las manos cuidadosamente con agua y jabón inmediatamente después de tocar aves de corral vivas o cualquier objeto ubicado en el área en que habitan o frecuentan.
- Los adultos deben vigilar que los niños pequeños se laven bien las manos.
- Si no hay agua ni jabón, use un producto limpiador para manos hasta que se las pueda lavar bien con agua y jabón.
- Limpie todos los equipos o materiales fuera de la casa que use en el cuidado y crianza de las aves de corral, como las jaulas o los recipientes para agua o alimentos.

Para más información, llame al 1-800-CDC-INFO o visite [www.cdc.gov](http://www.cdc.gov).



#### LO QUE NO DEBE:

- No deje que los niños pequeños, los ancianos o las personas con sistemas inmunitarios debilitados toquen a los pollitos o cualquier otra ave de corral viva.
- No mantenga aves de corral en los baños y en espacios que se preparan, sirven o almacenan comida, como la cocina o los comedores.
- No abraze ni bese a las aves de corral que coma o beba cerca de ellas.

## Lavez vos mains après avoir touché des canetons ou des poussins pour ne pas être malade!



- Le contact avec la volaille (poussins, poulets, canetons, canards, oies et dindes) peut devenir une source d'infections à la *salmonelle* pour les humains.
- Des microbes de la *salmonelle* peuvent provoquer chez les humains une diarrhée, plus ou moins sérieuse ou même entraîner un risque vital.
- Poussins, canetons et autres volailles peuvent être contaminés par des microbes de la *salmonelle* et apparaître propres et en bonne santé.
- Des microbes de la *salmonelle* se retrouvent dans leurs déjections et peuvent facilement contaminer leurs corps et leur environnement.

### Protégez votre famille et vous-même contre les microbes de Salmonella

#### À FAIRE:

- Lavez vos mains avec de l'eau et du savon immédiatement après avoir touché de la volaille ou n'importe quoi dans leur environnement.
- Un adulte devrait apprendre aux jeunes enfants à se laver les mains.
- Si l'eau et le savon font défaut, utilisez du gel hydroalcoolique en attendant. Ensuite, lavez-vous bien les mains avec de l'eau et du savon dès que vous le pouvez.
- Nettoyez tous les équipements ou le matériel utilisés pour élever ou soigner la volaille à l'extérieur: cages ou récipients pour l'eau ou la nourriture, car les uns et les autres peuvent être une source d'infection.

#### À NE PAS FAIRE:

- Ne laissez pas les jeunes enfants de moins de 5 ans, les personnes âgées ou les personnes au système immunitaire affaibli toucher ou tenir des poussins, canetons ou autres volailles.
- Ne laissez pas la volaille entrer dans la maison, dans les salles de bains et surtout dans les endroits où la nourriture ou les rafraîchissements sont préparés, servis ou conservés comme la cuisine ou la terrasse.
- Ne câlinez pas ni embrassez les oiseaux, ne touchez pas votre bouche, ne mangez pas et ne buvez pas près de la volaille.



Pour plus d'information appeler 1-800-CDC-INFO ou consulter le site [www.cdc.gov](http://www.cdc.gov).



After you touch duck wash your hands

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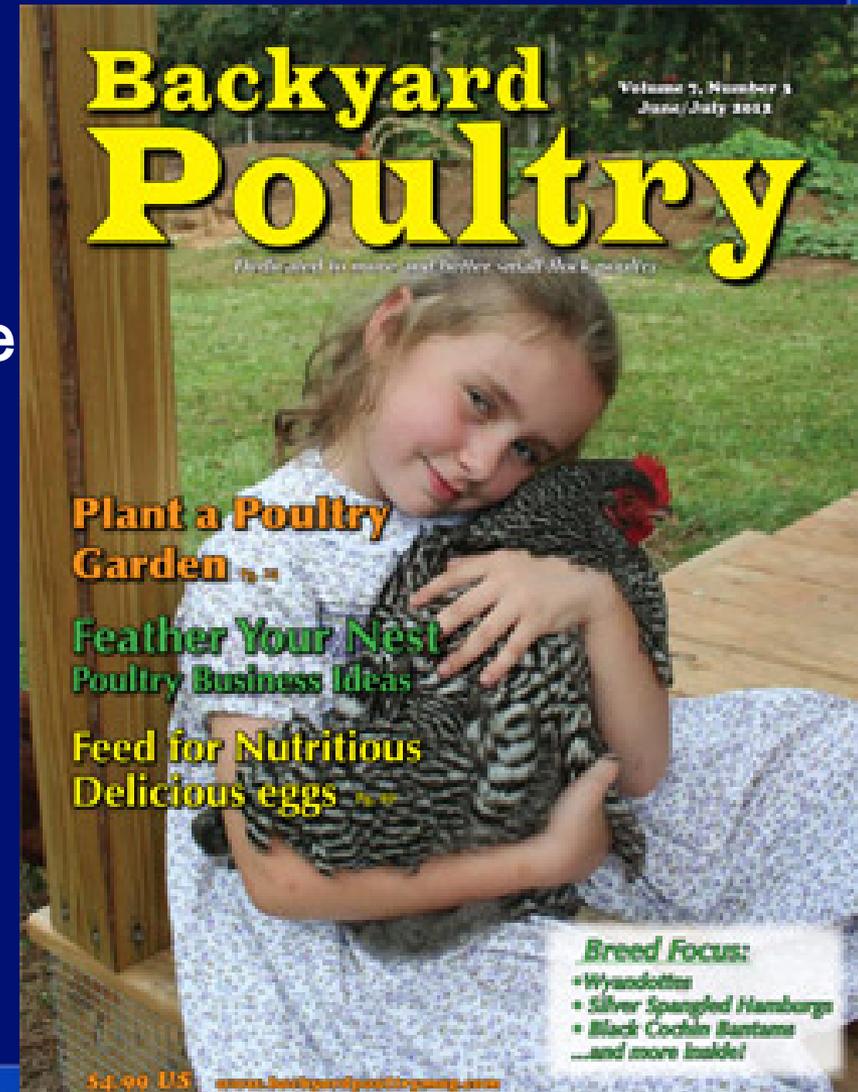
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# Reaching Backyard Flock Owners

- ❑ > 100,000 subscribers
- ❑ Public Service Announcement to be released in the Oct/Nov issue
- ❑ CDC flyer to be posted on magazine's facebook page



# Healthy Chickens Bulletin

## >4,000 Subscribers

Microsoft Outlook interface showing an email from "Healthy Chickens Bulletin". The email content includes a header with a chicken logo and the text "Healthy Chickens Bulletin - Helpful Hints for Healthy Poultry". The main body of the email contains a public service announcement regarding Salmonella risks, a section titled "In This Issue" with links to "CDC Public Service Announcement", "Children and Poultry", and "Tips From the CDC", and a featured article titled "Protect Yourself and Your Family from Salmonella". A sidebar on the right promotes "Backyard Poultry" magazine, "sheep!" magazine, and "Countryside" magazine.

Having trouble viewing this email? [Click here](#)

### Healthy Chickens Bulletin

Issue 43  
8/1/2012

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Featured Article

Dear Healthy Chickens bulletin readers,  
The Centers for Disease Control and Prevention (CDC) has asked us to run a public service announcement regarding the risks associated with handling live poultry and any areas where they live. Like any other animal, poultry can carry Salmonella germs. The purpose of this information is not to scare you out of keeping poultry, but to remind everyone that there is a potential for illness with birds just as there is with any other animal.

Elaine Belanger, Editor, Backyard Poultry

#### In This Issue

- [CDC Public Service Announcement](#)
- [Children and Poultry](#)
- [Tips From the CDC](#)



After you touch ducklings or chicks, wash your hands so you don't get sick!

Contact with live poultry (chicks, chickens, ducklings, ducks, geese, and turkeys) can be a source of human Salmonella infections.

- \*\* Salmonella germs can cause a diarrheal illness in people that can be mild, severe, or even life threatening.
- \*\* Chicks, ducklings, and other live poultry can carry Salmonella germs and still appear healthy and clean.
- \*\* Salmonella germs are shed in their droppings and can easily contaminate their bodies and anything in the area where birds live and roam.

The Centers for Disease Control and Prevention (CDC) reminds you: Live poultry, such as chickens, ducks, geese, and turkeys, often carry harmful germs called Salmonella. After you touch a bird, or anything in the area where they live and roam, wash your hands with soap and water.

**Protect Yourself and Your Family from Salmonella**

See more about: Healthy Chickens Bulletin.

# Conclusions

- ❑ Human *Salmonella* infections associated with live poultry contact are an important public health problem
  - Serious human illness, hospitalizations, and death
  - Young children, elderly, and immunocompromised at higher risk for serious illness
- ❑ Mail-order hatcheries, feed stores and venues that sell or display poultry, and consumers are all involved in prevention
- ❑ Educational posters should be distributed widely
- ❑ Human illnesses can be reduced using interventions customized to mail-order hatchery
- ❑ US *Salmonella* Monitored Program will be of critical importance by allowing mail-order hatcheries to practice a defined program for the prevention and control of *Salmonella*

# Acknowledgments

State and local public health agencies

State Departments of Agriculture

Mail-order hatchery owners

USDA-APHIS

USDA-NPIP

CDC: Outbreak Investigation Teams, PulseNet, ORPB, EDLB



*The findings and conclusions in this presentation are those of the authors and do not necessarily represent the views of the CDC.*

