



Institute for Food Safety and Nutrition Security



***NCOIL 2024 Annual Meeting  
Food as Medicine and Advancing a Healthy America***

SAFER FOOD. BETTER NUTRITION. ONE HEALTH.

# Food as Medicine Focus Areas

Food as preventative medicine to  
**encourage health and well-being**



Food as medicine to  
**improve nutrition security**



**Food as Medicine**  
is a philosophy where  
food and nutrition  
aids individuals through  
interventions that  
support health  
and wellness.

Food as medicine in **disease  
management and treatment**



Food as medicine to  
**promote food safety**



# If it isn't safe, it isn't food

## Eat it **safe**

Everyone has a right to safe, healthy and nutritious food



### ■ **Results in negative health outcomes**

- 600M illnesses, 420K deaths, 33M health life years lost per year
- Associated with long-term health outcomes
- Vulnerable populations bear most of burden

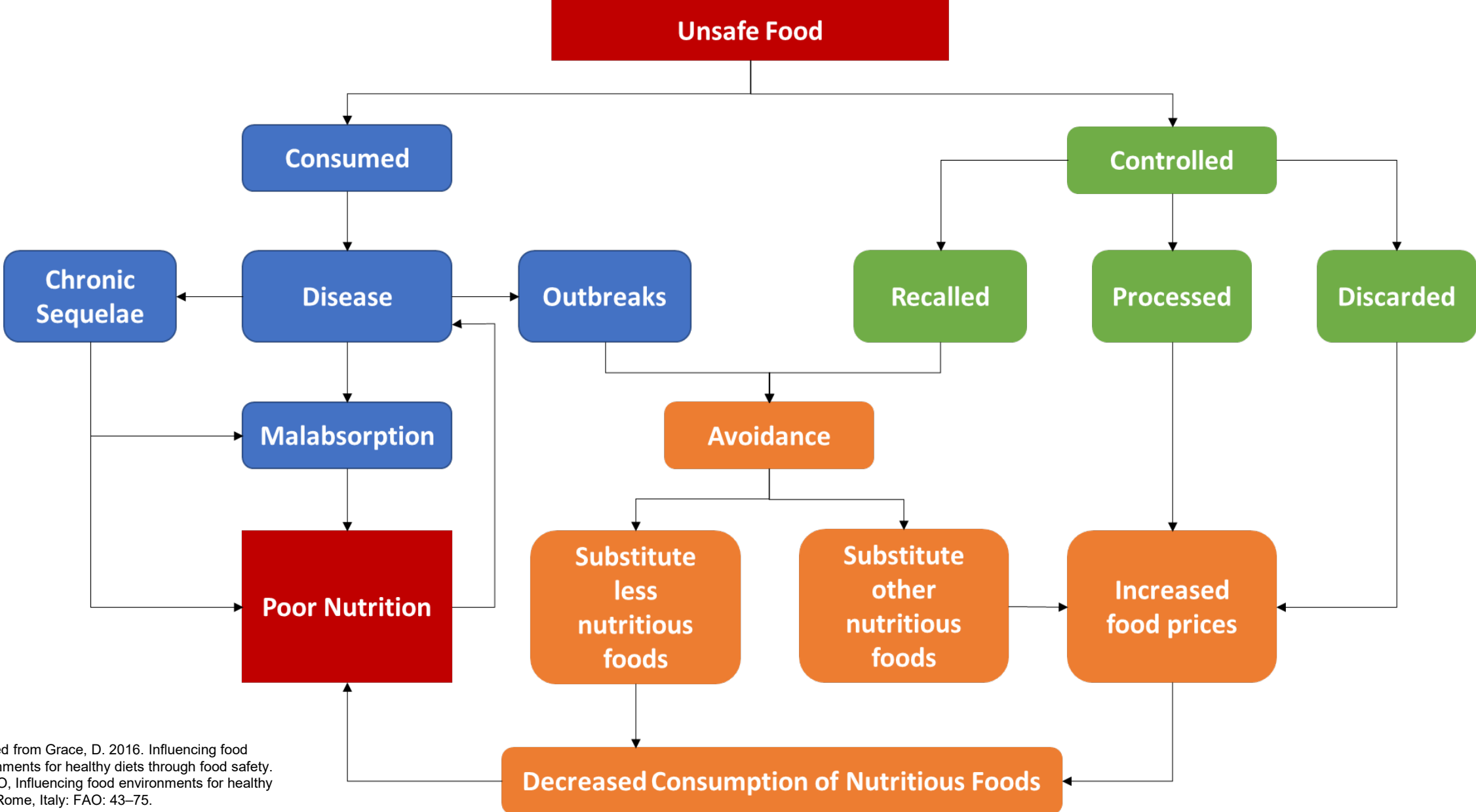
### ■ **Significant economic impact.**

- Medical costs, lost productivity
- Loss of consumer confidence
- Reduced market access
- Increased food loss and waste

# More than a Tummyache

Autoimmune Disorders	<p><b>Reactive Arthritis</b> – associated with many foodborne pathogens; rates vary from 2.3% to 15%.</p> <p><b>Guillain-Barre Syndrome</b> – <i>Campylobacter</i> is common trigger and accounts for 40% of cases in U.S.</p>
Digestive Disorders	<p><b>Irritable Bowel Syndrome</b> – associated with many foodborne pathogens; causes estimated 17% of cases.</p> <p><b>Irritable Bowel Disease</b> – includes Crohn’s Disease, Ulcerative Colitis.</p>
Neurological Disorders	<p><b>Sepsis, Meningitis, Respiratory distress</b></p> <p><b>Paralysis, palsies, seizures, epilepsy</b></p> <p><b>Cognitive impairment, visual/hearing impairment</b></p>
Renal Failure & Associated Sequelae	<p><b>Hemolytic Uremic Syndrome (HUS)</b> – severe, life-threatening illness; leading cause of acute kidney failure in children under age 5 in U.S.; associated with STEC, <i>Shigella</i>.</p> <p><b>Chronic kidney disease, End stage renal failure, Chronic hypertension, Pancreatitis, Diabetes mellitus</b> – often secondary to HUS.</p>
Emerging Issues	<p><b>Schizophrenia, psycho-social disorders</b> – recent studies have found increased risk for toxoplasmosis but not well understood.</p> <p><b>Urinary tract infections</b></p>

# The Interlinkages between Food Safety and Nutrition



Adapted from Grace, D. 2016. Influencing food environments for healthy diets through food safety. IN: FAO, Influencing food environments for healthy diets. Rome, Italy: FAO: 43–75.

# Nutritious but Risky



## ▪ Fresh produce

- Consumption associated with reduced risk of chronic diseases
- Recommendation is “Half of Plate”
- Accounts for ~1/2 of foodborne illnesses in U.S.
- Frequently no kill step

## ▪ Animal sourced foods

- Energy and nutrient rich
- Important source of nutrients (e.g., Vitamin B12)
- Accounts for ~1/3 of foodborne disease burden
- Cooking and safe food handling practices can reduce risk

# A Complex System

**LETTUCE**  
Canada, Chile, Dominican Republic, Mexico, Peru, USA

**CUCUMBERS**  
Canada, Honduras, India, Mexico, Spain, USA

**FETA CHEESE**  
Canada, Denmark, Egypt, Germany, Greece, Israel, Italy, Turkey, UK, USA

**VINAIGRETTE**  
Argentina, Brazil, Canada, Chile, China, France, Germany, Greece, India, Indonesia, Italy, Mexico, Morocco, Peru, Portugal, Spain, Thailand, Tunisia, Turkey, USA, Vietnam

**OLIVES**  
Greece, Israel, Mexico, Spain, USA

**SPROUTS**  
Argentina, Australia, Bangladesh, Canada, China, Egypt, France, India, Morocco, Nepal, Pakistan, South Africa, Spain, Turkey, USA

**CROUTONS**  
Argentina, Australia, Brazil, Canada, China, France, India, Mexico, Netherlands, Poland, Russia, Switzerland, Uruguay, USA, Vietnam

**TOMATOES**  
Canada, Dominican Republic, Holland, Israel, Italy, Mexico, USA

**ONIONS**  
Canada, China, Germany, India, USA

**MANDARIN ORANGES**  
Israel, Mexico, Morocco, South Africa, Spain

**The Well-Traveled Salad.**  
*Do You Know Where Your Food Has Been?*

As consumers, many of us fail to recognize that even our domestic and local food supplies are part of a global network. The daily activity of consuming food directly links our health as humans to the health of crops and produce, food animals, and the environments in which they are produced.

- Thousands of food types and components
- Food is grown, processed, and distributed globally.
- Single meal can have ingredients from multiple countries.

Institute of Medicine 2012. Improving Food Safety Through a One Health Approach: Workshop Summary. Washington, DC: The National Academies Press. <https://doi.org/10.17226/13423>

# Food Safety Events



## RECALL ALERT

Do not buy or eat the below recalled cinnamon applesauce puree pouches because the product may contain harmful levels of lead.

## Food Safety Alert

### Listeria Outbreak Linked to Meats Sliced at Delis

**Do not eat recalled deli meats.**

- Boar's Head Products with "EST. 12612"
  - Liverwurst, different types of ham, bologna, and other meats
  - See the recall notice for the full list
- Clean your refrigerator if you had recalled products.
- People at higher risk should continue to heat all other deli meats to 165°F or until steaming hot before eating.

[cdc.gov/foodsafety/outbreaks](https://www.cdc.gov/foodsafety/outbreaks)





# Cost of Foodborne Illness

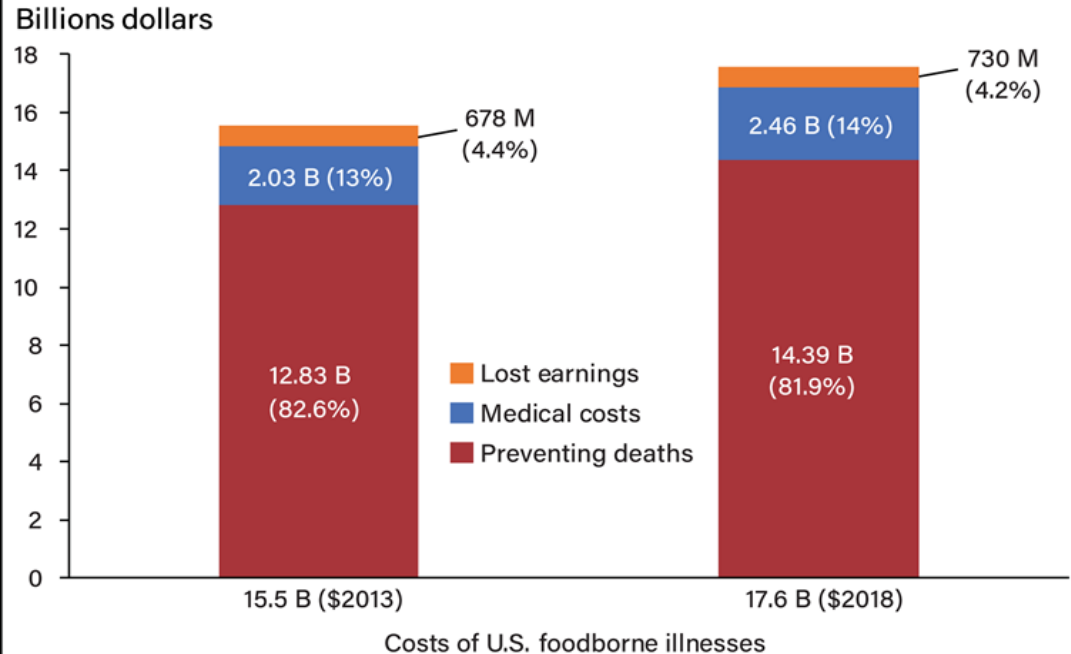
**1 in 6**  
or approximately  
**48 MILLION**  
Americans are sickened by  
foodborne diseases annually

 **128,000**  
hospitalizations annually

**3,000**  
deaths annually 

## Costs of 15 major foodborne illnesses in the United States, 2013 and 2018

USDA Economic Research Service  
U.S. DEPARTMENT OF AGRICULTURE



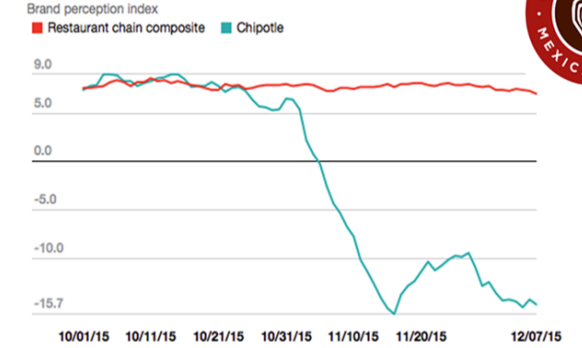
Source: USDA, Economic Research Service (ERS), using data from ERS Cost of Foodborne Illness Data Product, U.S. Bureau of Economic Analysis, and U.S. Department of Labor, Bureau of Labor Statistics.

**\$10 Million** is the **average cost of a recall.**



- for food & consumer product companies
- excludes any brand damages or lost sales

## Chipotle's reputation badly hurt by E. coli drama



FORTUNE

## A SINGLE FOODBORNE OUTBREAK COULD COST A RESTAURANT MILLIONS



According to our computer models:



# Food Safety is a Shared Responsibility



# Prevention: A Multi-Hurdle Approach

**Producers**



**Processors**



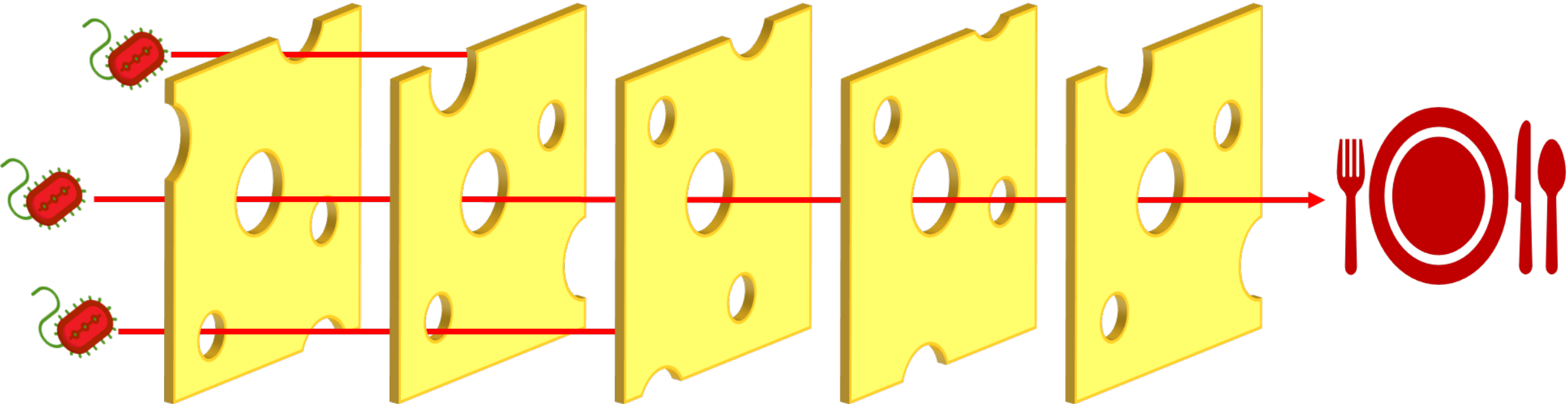
**Retailers**



**Regulators**



**Consumers**



# Role of Insurers

## Types of Food Liability Insurance

**General liability**

**Product liability**

**Spoilage**

**Contamination**

**Liquor**

- **Important but often overlooked stakeholder in the system**
- **Product contamination and recalls can have severe consequences**
- **Under-insurance can lead to increased exposure for directors and officers**
- **Lack of food safety programs and/or product liability insurance can be a barrier to market access**
- **Create incentives for compliance with food safety regulations and best practices**
- **Promote risk reduction strategies**

# A Final Word



***“If consumption of fresh animal sourced foods and produce were tripled, without accompanying action to improve food safety, then the burden of FBD would be likely to double or triple too, offsetting the health benefits from improved nutrition.”***

Grace, D. 2016. Influencing food environments for healthy diets through food safety. IN: FAO, Influencing food environments for healthy diets. Rome, Italy: FAO: 43–75.

# The Real Impact of Food Safety



**Abby**  
Died, Age 7  
*E. coli* O157:H7



**Ruby**  
Died, Age 81  
*E. coli* O157:H7



**Grayson**  
Died, Age 2  
*E. coli* O157:H7



**Kevin**  
Died, Age 2  
*E. coli* O157:H7



**Reese**  
Died, Age 5  
*E. coli* O157:H7



**Joseph**  
Died, Age 8  
*E. coli* O157:H7



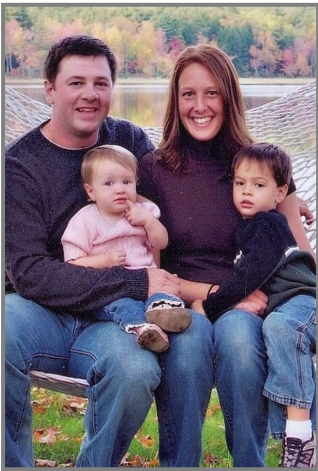
**Kayla**  
Died, Age 14  
*E. coli* O111



**Ryan**  
*Salmonella*



**Ashley**  
*E. coli* O157:H7



**Tammy**  
*Salmonella*



**Matthew & Mariah**  
*E. coli* O157:H7



**Jake**  
*Salmonella*



**Chris**  
*E. coli* O157:H7



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