



THE UNIVERSITY of EDINBURGH  
Global Academy of  
Agriculture and Food Systems

**IDI** Data-Driven  
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Part of the Edinburgh & South East Scotland City Region Deal

A close-up photograph of hands washing several bright orange lemons in a sink. Water is splashing over the fruit, creating many bubbles. The background is slightly blurred, showing more lemons and a green lime.

# Food safety

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# Myths about food safety

- Food safety isn't a big deal
- I can eat anything and be fine
- Freezing food kills bacteria
- The nose knows
- Colour indicates whether meat is done
- Raw milk is safe
- Organic food is safer
- Local food is safer

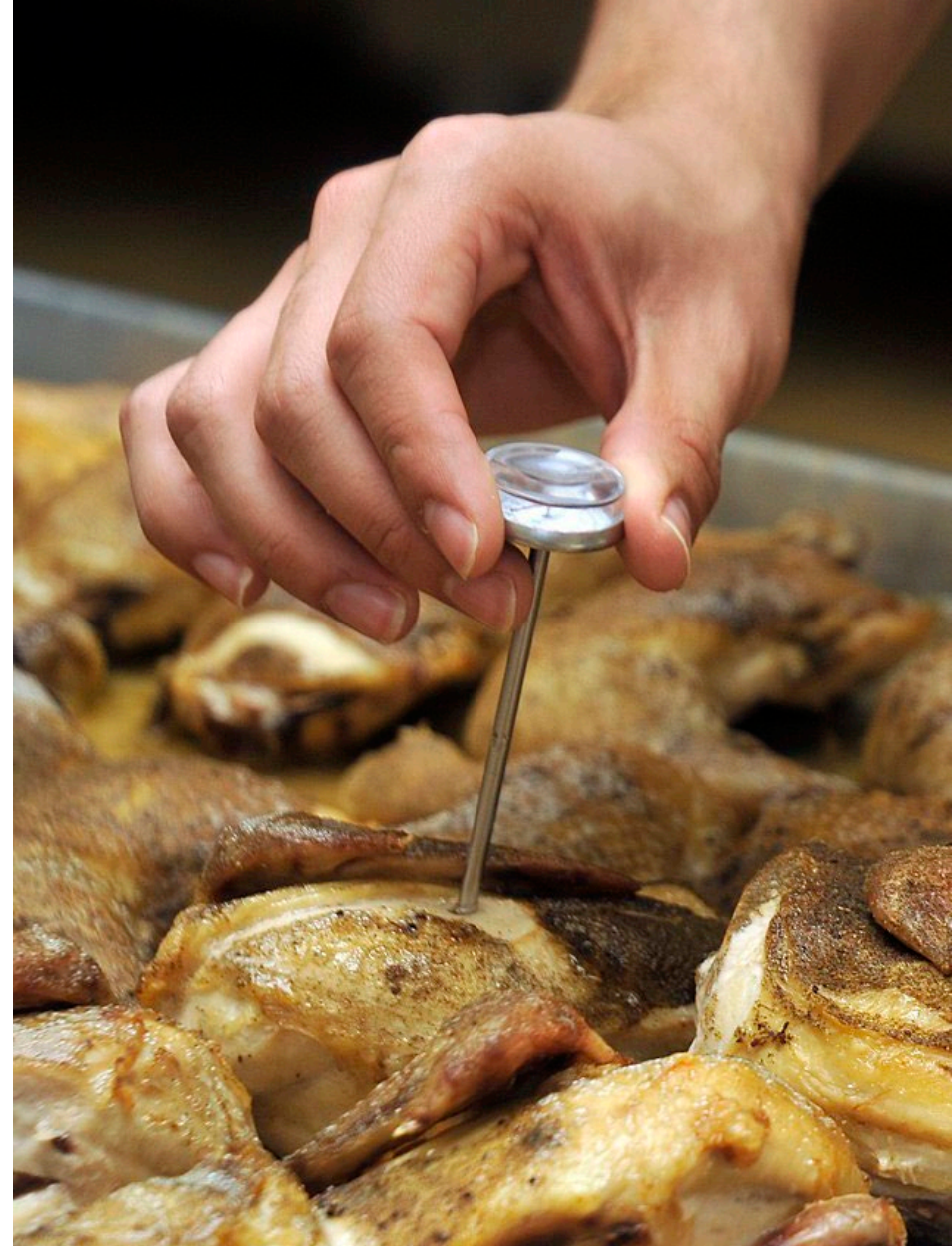
Photo by [Julia Avamotive](#) from [Pexels](#).



# What is food safety?

- Food safety refers to the practices which reduce the risk of contamination of foods from harmful pathogens or substances
- The goal of food safety is to prevent foodborne illness
- Food safety practices take place throughout the entire food supply chain, as well as at home.

Photo by U.S. Air Force Airman 1st Class Zachary Kee, via Wikimedia Commons





# What is foodborne illness?

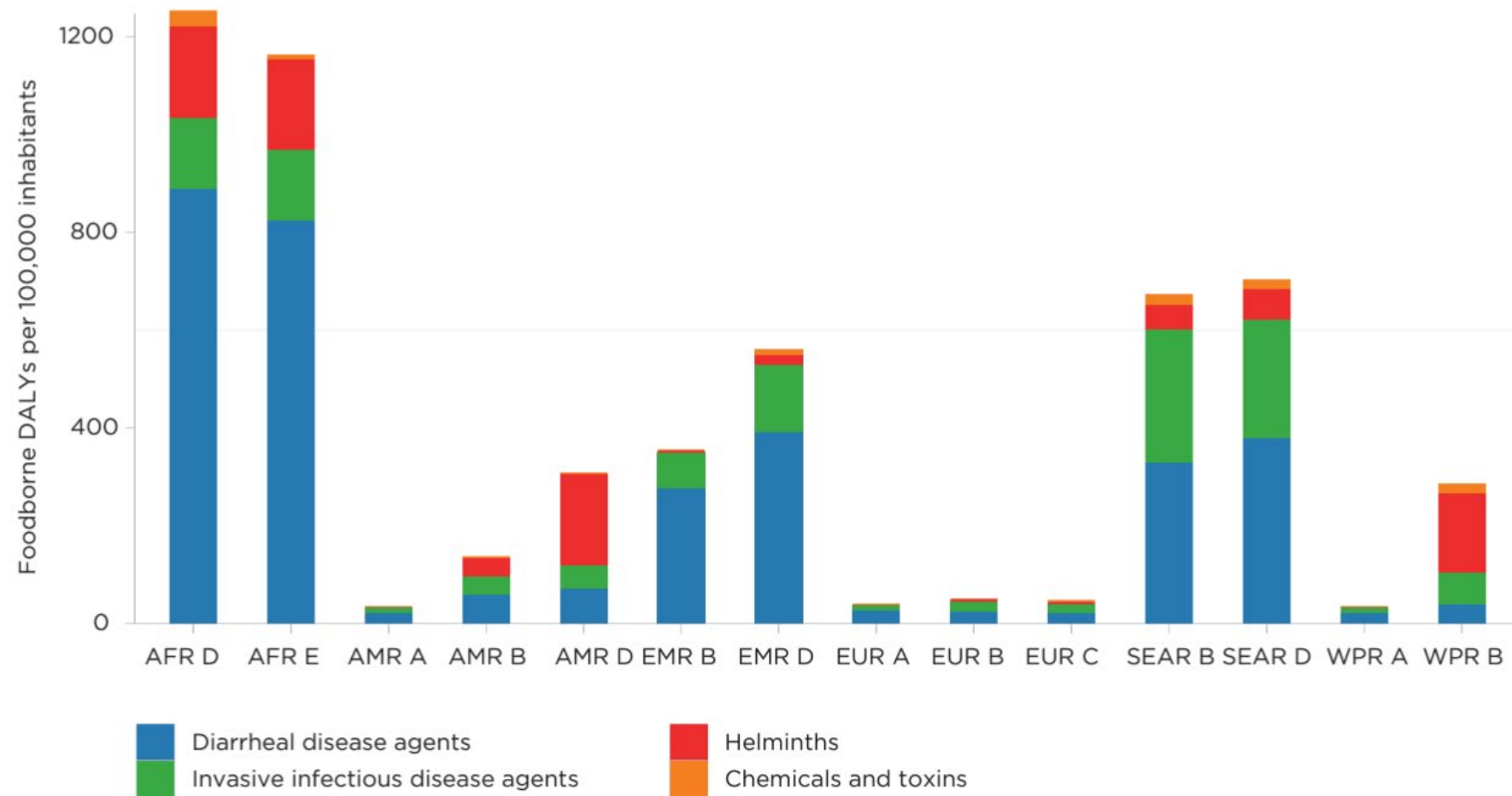
- Foodborne illness can be caused by bacteria, viruses, parasites, or fungi.
- Every year, over 10% of people in the world get sick from eating contaminated food.
  - **This is likely an underestimate.**
- 30% of foodborne illness deaths occur in children under age 5 years.
- Toxins in food can also cause illness, like lead and aflatoxin.



Photo: Salmonella. Rocky Mountain Laboratories, NIAID, NIH, via Wikimedia Commons



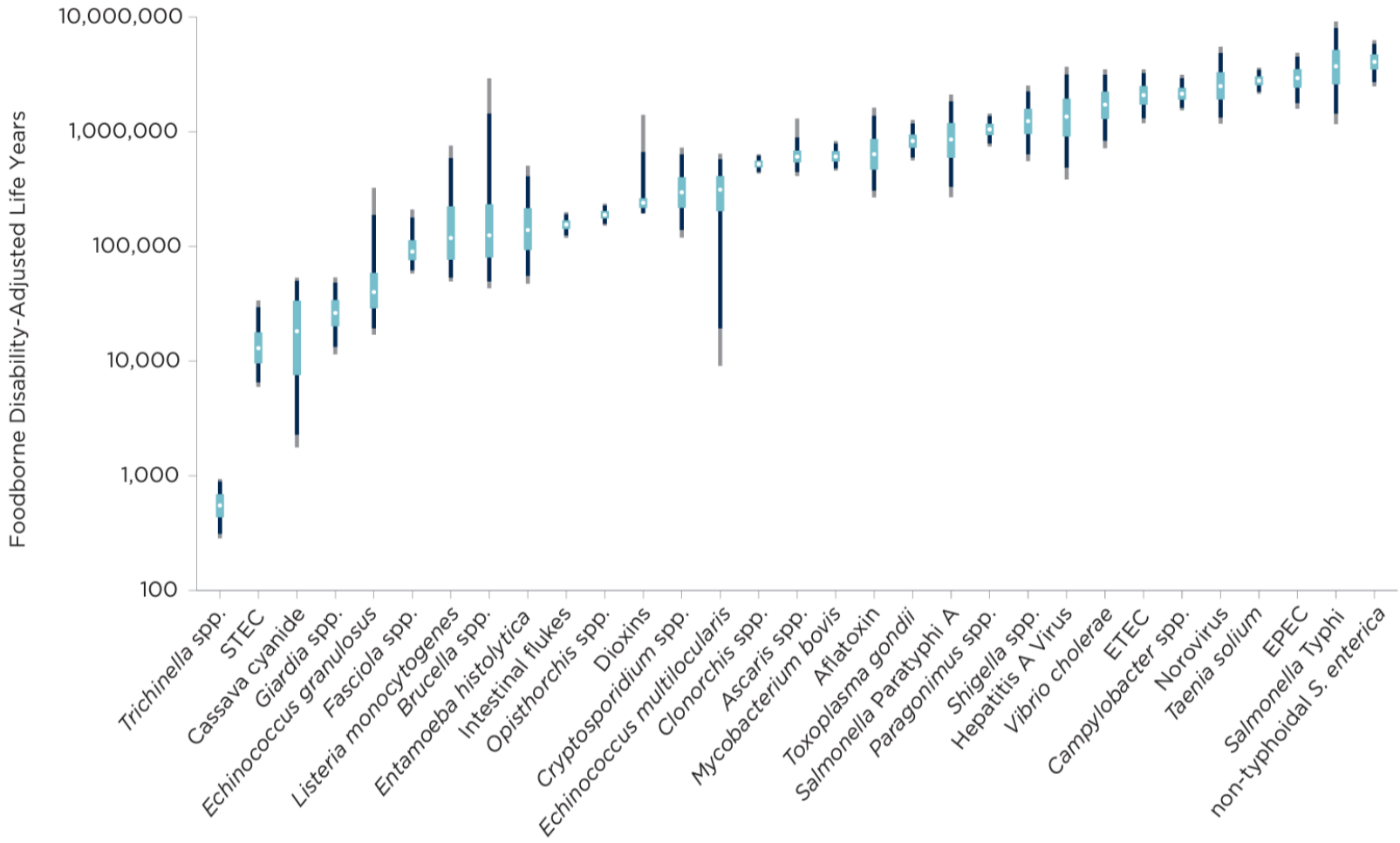
**Figure 12.** The global burden of foodborne disease (DALYS per 100 000 population) by hazard groups and by subregion, 2010.



Source: WHO estimates of the global burden of foodborne diseases: foodborne disease burden epidemiology reference group 2007-2015



**Figure 11.** Ranking of foodborne hazards, based on Disability-Adjusted Life Years at the global level, with 95% uncertainty intervals, 2010.



Source: WHO estimates of the global burden of foodborne diseases: foodborne disease burden epidemiology reference group 2007-2015

# Aflatoxin is carcinogenic

- Aflatoxins are molds that grow on crops that have been stored in warm and wet conditions
- Peanuts, corn, and tree nuts are especially affected
- Aflatoxins can cause liver damage, growth impairment in children, cancer, birth defects, and kidney damage.

Source: Andrews-Trevino et al. (2021), AJCN

Photo by the International Institute for Tropical Agriculture (IITA)





# CDC data on foodborne illnesses in the U.S.



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

## Estimates of Foodborne Illness in the United States



CDC estimates 48 million people get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases each year in the United States.



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# There are some simple ways to improve food safety

## ■ Clean

- Wash hands
- Use clean surfaces, dishes and cookware

## ■ Separate

- Keep raw meat and seafood, away from vegetables and ready-to-eat foods

## ■ Cook

- Cook food to safe internal temperatures. Use a food thermometer

## ■ Chill

- Place leftovers in the refrigerator at 4.4° C (40°F) or below

Photo by [Any Lane](#) from [Pexels](#)



# Evaluating the safety of any given food item can be challenging

- Many types of foodborne illness or contaminated food are invisible
- Expiration dates can help, but not always
  - And might just imply quality, but not safety
- Has the food been outside of a safe temperature?
  - Unsafe temperature for foods: 4° – 60° C / 40° -140° F
- Internal temperatures matter too!
  - Depends on the food
- Mislabelling is possible
- Use your nose but don't 100% rely on it
- Use your eyes but don't 100% rely on them

Photo by [cottonbro studio](#) from [Pexels](#)





# Data and resources

- WHO Report on Foodborne Illness Estimates
- CDC Estimates of Foodborne Illness
- U.S. FDA: CFSAN Adverse Event Reporting System (CAERS)



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# Thank you

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