



Prevention of Foodborne Illness in the High Risk Groups



What is foodborne illness?

Foodborne illness refers to any illness that is related to food ingestion. It is commonly caused by bacterial pathogens such as *Salmonella* spp. However, certain foodborne pathogens may also enter our body through skin cuts or abrasions during food handling or preparation, e.g. *Vibrio vulnificus*. Persons with foodborne illness generally present with gastrointestinal symptoms such as abdominal pain, vomiting and diarrhoea. Sometimes, systemic symptoms like fever may also occur. Healthy persons generally experience mild symptoms when they get these infections. However, some persons are more susceptible to these infections and may present with more severe symptoms.



Pregnant women

Hormonal changes during pregnancy can alter the mother's immune system that may lead to an increased susceptibility to certain infections, notably listeriosis. *Listeria monocytogenes* infection can lead to miscarriage, stillbirth, septicaemia or meningitis in the newborns.



Table 2: Associations between the high risk groups and specific pathogens

High risk group	<i>Listeria monocytogenes</i>	<i>Salmonella</i> spp.	<i>Campylobacter</i> spp.	Shiga toxin-producing <i>Escherichia coli</i>	Hepatitis E virus	<i>Toxoplasma gondii</i>	<i>Vibrio vulnificus</i>	<i>Streptococcus suis</i>
The elderly	✓	✓	✓	✓				
Infants and young children	✓	✓	✓	✓				
Pregnant women	✓	✓	✓		✓	✓		
Immunocompromised persons	✓	✓	✓	✓		✓	✓	✓



The high risk groups

The elderly, infants and young children, pregnant women, and immunocompromised persons are classified as "high risk groups". These persons are either more susceptible to infection caused by a particular pathogen or more likely to develop severe disease or complications as a result of the infection.

The elderly

Elderly people are more susceptible to foodborne illness and associated complications because of the weakened immunity and the decrease in gastric acid secretion. For example, elderly people infected with *Salmonella* are at increased risk of complications and death.

Infants and young children

They are especially vulnerable to foodborne illness because their immune systems are not fully developed and their stomachs also produce less acid. For example, infants and young children are more likely to develop complications arising from infection with Shiga toxin-producing *Escherichia coli*.

Immunocompromised persons

The immune systems of these persons are depressed due to underlying medical illnesses or drug therapy. For example, persons with diabetes mellitus or chronic liver diseases are known to have a higher risk of death when they are infected with *Vibrio vulnificus*.

Table 1: Common diseases or conditions that lower a person's immunity

Liver cirrhosis and other chronic liver diseases	Malignancies
Chronic renal diseases	Malnutrition
Diabetes mellitus	Patients on long-term steroid or immunosuppressive chemotherapy for underlying diseases, e.g. patients with systemic lupus erythematosus, organ transplant recipients
Human immunodeficiency virus (HIV) infection	Patients with their spleens removed

General precautions

- Perform hand hygiene frequently, especially before handling food or eating, and after using the toilet. Wash hands with liquid soap and water, and rub for at least 20 seconds. Then rinse with water and dry with a disposable paper towel or hand dryer. If hand washing facilities are not available, or when hands are not visibly soiled, hand hygiene with 70 to 80% alcohol-based handrub may be considered
- Proper food handling by applying 5 Keys to Food Safety, i.e. Choose (Choose safe raw materials); Clean (Keep hands and utensils clean); Separate (Separate raw and cooked food); Cook (Cook thoroughly); and Safe Temperature (Keep food at safe temperature), can help prevent foodborne illness
- Avoid cooked or ready-to-eat food that has been kept at room temperature for several hours. Leftovers should be refrigerated at 4°C or below as soon as possible and reheated thoroughly before consumption