



Foodborne Illnesses

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Keywords

- Foodborne pathogens • Food safety • Foodborne infections in children
- Preventive measures • High-risk populations

Key points

- Foodborne illness should be part of the differential diagnosis for all children presenting with gastroenteritis.
- Globalization of the food supply has led to novel food items being implicated in foodborne illnesses.
- Children are affected frequently, and sometimes severely, by foodborne infections.
- Special instructions on foodborne illness prevention should be given to patients in immunocompromised states whether acquired or congenital and in other special populations.
- Education and prevention are key to reducing the incidence of foodborne illnesses.

INTRODUCTION

Information regarding food exposure is an important part of a sick patient's history. Food products that can potentially transmit foodborne illnesses increase annually with each novel food item associated with an outbreak. Foodborne illness, otherwise known as foodborne infection or foodborne disease, is a preventable entity caused by a variety of agents that a person ingests via a contaminated food or beverage. Foodborne disease outbreak occurs when 2 or more people develop similar illnesses after ingestion of a common food item. There

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are more than 250 different foodborne diseases described and 1 in 6 Americans is estimated to have a foodborne illness each year [1,2]. The ingestion of poisonous toxins or chemicals can lead to foodborne disease; however, most of the illnesses are infections caused by bacteria, viruses, or parasites. This article reviews changes in food supply and the epidemiology, method of transmission, clinical symptoms, diagnosis, treatment, as well as prevention of the most important foodborne infections. The focus is on pediatric data where available.

FOOD SUPPLY

The characteristics of the human food supply have changed dramatically over the past century. In the early nineteenth century food was grown locally and purchased in a local food store. Over time, food was transported farther and farther from its place of origin, leading to globalization of the food supply. The advantage of this is that people have a more diverse food selection to choose from and availability year round [2,3]. Food imports have increased 10% annually and this diversification continues to increase [3]. Food imports of produce and seafood alone have increased from \$41 billion in 1998 to \$78 billion in 2007 [4]. Furthermore, the farm-to-table continuum, which consists of food production, processing, storage of food product, and transport to a retail venue, has become more complex. Food production and processing facilities are more centralized and are larger (ie, large farms and animal production facilities) and, because of the longer distances travelled by food products, storage and transport are also more complicated. These phenomena have led to the spread of foodborne pathogens and have provided new challenges in identifying source agents and providing adequate regulation.

Practices involving food preparation have dramatically changed as well. Because of mass production, meals are no longer only prepared in the home [2,5,6]. Most Americans dine out on a weekly basis, a practice that increases their risk of foodborne illnesses [6]. Food is also no longer primarily cooked on stoves but is heated in microwaves. Microwave food cooking produces uneven temperatures, which in turn affects killing time of potential pathogens [2].

METHODS OF CONTAMINATION AND TRANSMISSION

There are multiple means by which food and water may be contaminated with pathogens. Contamination can occur during any part of the farm-to-table continuum. Means of contamination include use of inappropriate organic fertilizers or inadequately composted manure; planting of fields where animals have grazed; soil contamination; or contamination during transport (open vehicles), processing (cutting, slicing), packing (improper packaging, contaminated packing equipment), distribution, or at retail markets [7]. Both direct human contact after improper hand hygiene as well as the process by which animals are slaughtered can lead to contamination of fruits, vegetables, and nuts that may be grown nearby [5].

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