

CHAPTER 4: DISEASES SPREAD BY FOOD AND WATER

Highlights

- The incidence of diseases spread by food and water was generally higher in Peel than Ontario with the exceptions of hepatitis A and verotoxin-producing *Escherichia coli* (VTEC).
- There has been a decreasing trend in campylobacteriosis, giardiasis, hepatitis A and yersiniosis in Peel and Ontario.
- In Peel, the incidence of diseases spread by food and water was generally higher in the younger age groups.
- The increase in salmonellosis cases in Ontario and in Peel during 1998 was due to the second largest salmonellosis outbreak in Canadian history; an outbreak caused by a particularly virulent strain of *Salmonella enteritidis* that contaminated cheese used in the production of a pre-packaged lunch product marketed for school-age children.
- The increase in the incidence of shigellosis in 2002 was due to an outbreak associated with the consumption of a contaminated processed pasta salad that involved several public health units in Ontario. The outbreak remains the largest one reported for shigellosis in Canada.

The diseases covered in this chapter were examined in more detail in the *State of the Region's Health 2003 – Focus on Foodborne Disease* report, published by the Region of Peel Health Department in 2003.

INTRODUCTION

Diseases spread by food and water are caused by bacteria, parasites and viruses that have found their way into our food or water from the feces of an infected person or animal.⁴⁵ Many of these diseases can also be spread from one person to another if hands are not thoroughly washed with soap and water after going to the bathroom (this is the main method of transmission for hepatitis A).⁴⁵ All these diseases may cause diarrhoea that can be quite severe. In some illnesses (campylobacteriosis, hepatitis A, some types of salmonellosis, shigellosis, verotoxin producing *Escherichia coli* (VTEC)) people will recover without antibiotics. Unfortunately, some of these infections have a risk of complications such as kidney failure (VTEC), systemic infections (amebiasis, salmonellosis, yersiniosis) and immune system problems (campylobacteriosis, salmonellosis, yersiniosis).

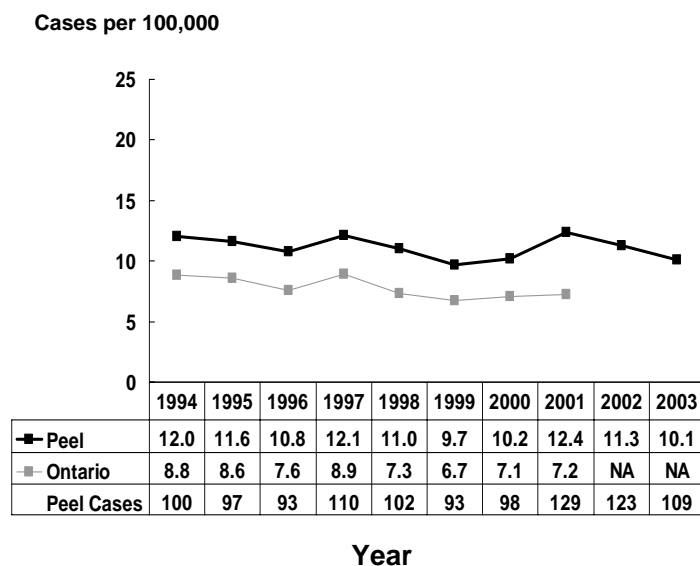
The highest incidence for many of these diseases (campylobacteriosis, giardiasis, salmonellosis, shigellosis, Verotoxin producing *Escherichia coli* and yersiniosis) occurs in those under five years of age. This finding may be due to:

- poor personal hygiene,
- increased likelihood of severe illness due to susceptibility of dehydration in infants and young children,
- increased likelihood of severe illness due to less developed immune system, and
- increased likelihood of being seen by a physician and diagnosed if sick.

AMEBIASIS

Amebiasis is caused by the parasite *Entamoeba histolytica*. It is most common in immigrants from and travellers to developing countries with poor sanitation. The disease can become widespread and infect the liver, lungs or brain.⁴⁶

Figure 4.1: Incidence of Amebiasis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

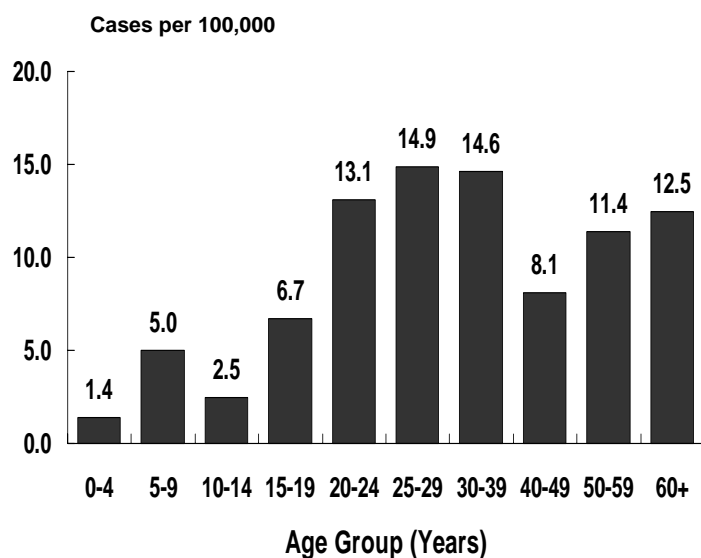
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

Sources: Ontario Data from RDIS, Ontario Ministry of Health and Long-Term Care, as of 05/18/2004.

Peel Data from RDIS, Region of Peel Health Department, as of 02/23/2004.

Statistics Canada, Population Estimates and Projections distributed by the Ontario Ministry of Health and Long-Term Care.

Figure 4.2: Incidence of Amebiasis by Age Group, Region of Peel, 2003



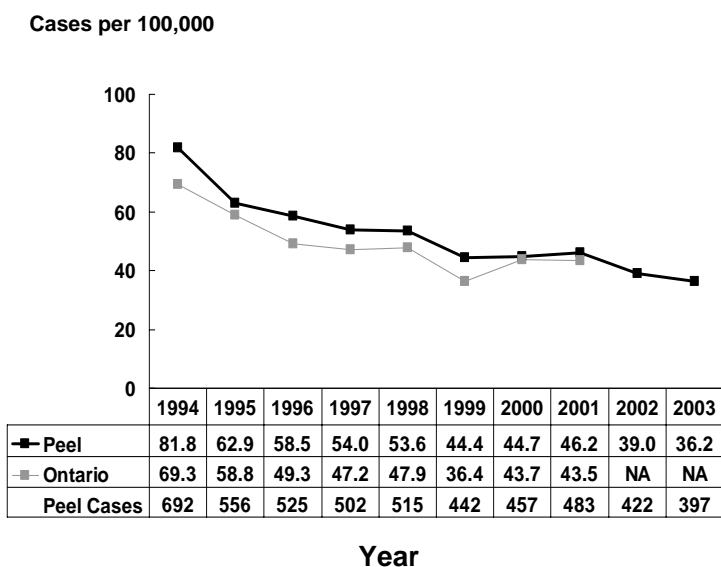
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/23/2004.

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CAMPYLOBACTERIOSIS

Campylobacteriosis is the most common bacterial cause of diarrhoeal illness in Ontario. Most cases are associated with handling or eating raw or undercooked poultry.⁴⁷ Other sources of infection include unpasteurized milk and the stool of an ill dog or cat.⁴⁷

Figure 4.3: Incidence of Campylobacteriosis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

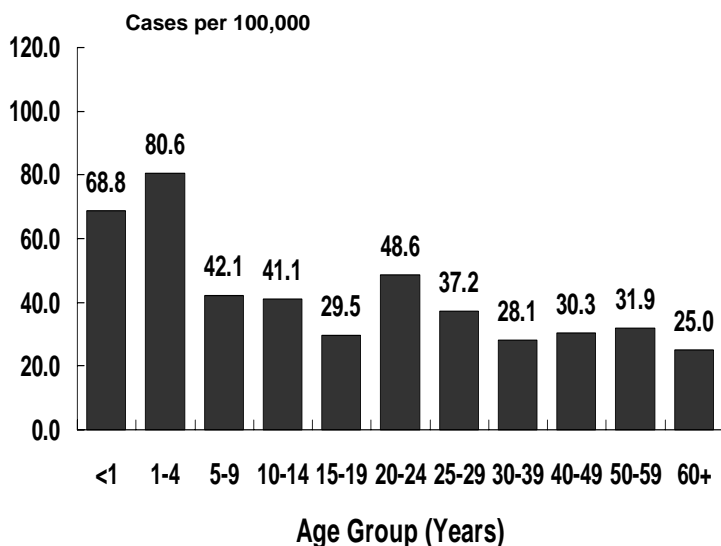
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

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Figure 4.4: Incidence of Campylobacteriosis by Age Group, Region of Peel, 2003



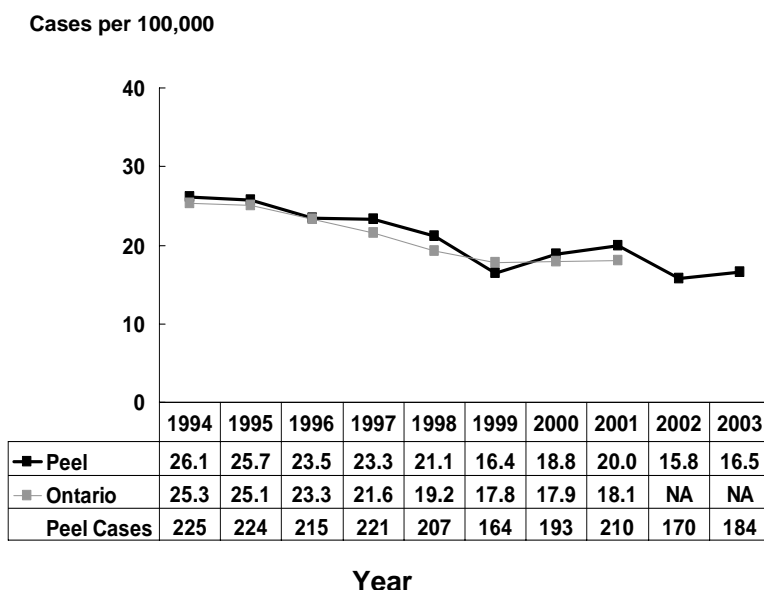
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/23/2004.

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GIARDIASIS

Giardiasis is caused by *Giardia lamblia*, a one-celled, microscopic parasite that lives in the intestines of people and animals. It is one of the most common causes of waterborne disease (drinking and recreational). Person-to-person spread has occurred in day care centres and other institutional settings.⁴⁸

Figure 4.5: Incidence of Giardiasis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

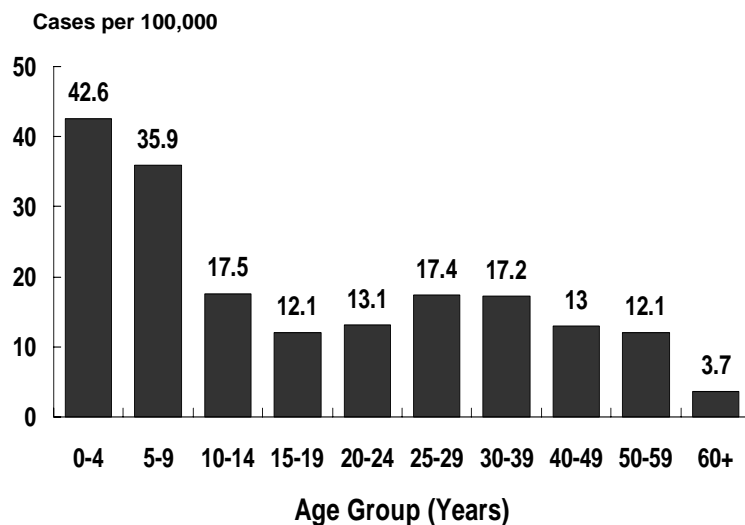
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

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Figure 4.6: Incidence of Giardiasis by Age Group, Region of Peel, 2003



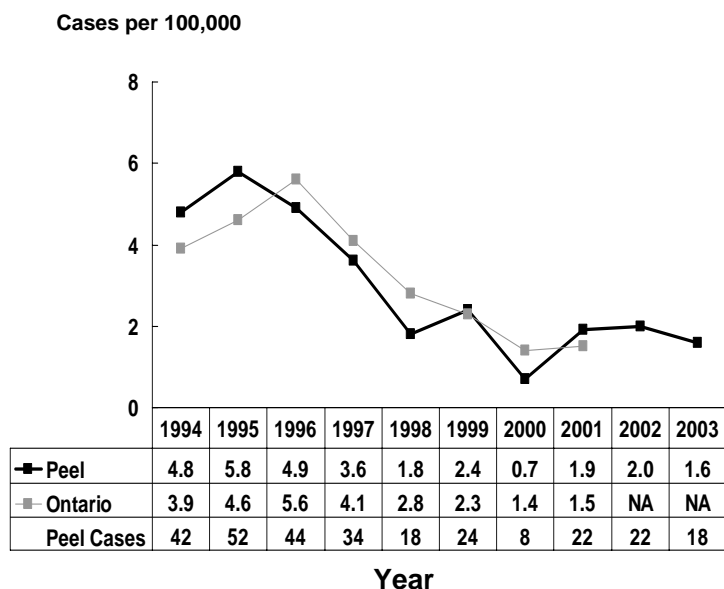
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/23/2004.

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HEPATITIS A

Hepatitis A is a viral infection of the liver with symptoms of fever, tiredness and jaundice. Unlike hepatitis B and C, the infection tends to have less severe consequences and chronic infection does not occur.⁴⁹

Figure 4.7: Incidence of Hepatitis A, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

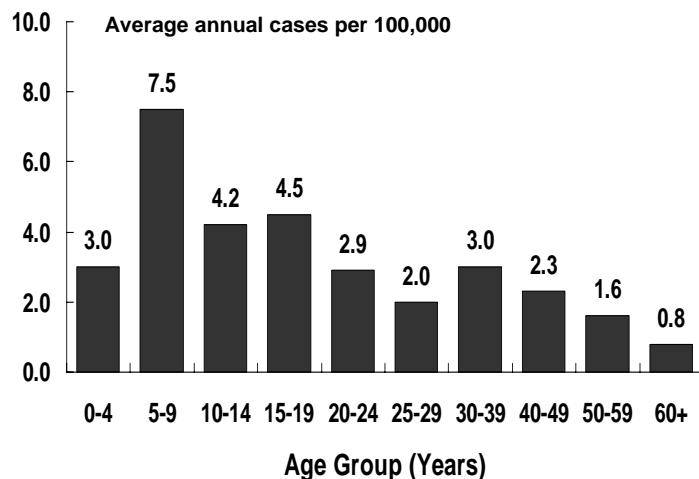
Note: Rates age-standardized using 1991 (adjusted) Canadian population.

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Figure 4.8: Incidence of Hepatitis A by Age Group, Region of Peel, 1994-2003 Combined



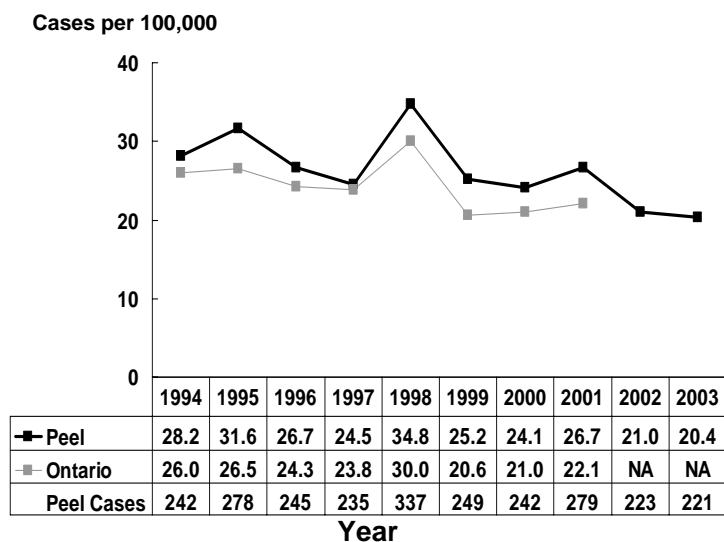
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SALMONELLOSIS

Salmonellosis is caused by a number of different types of *Salmonella* bacteria that live in the intestines of people and animals. Cases are usually associated with contaminated foods of animal origin such as poultry, pork, and eggs, but all foods can be contaminated.⁵⁰ *Salmonella* can also be associated with pets including dogs, cats, and turtles.⁵⁰

Figure 4.9: Incidence of Salmonellosis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

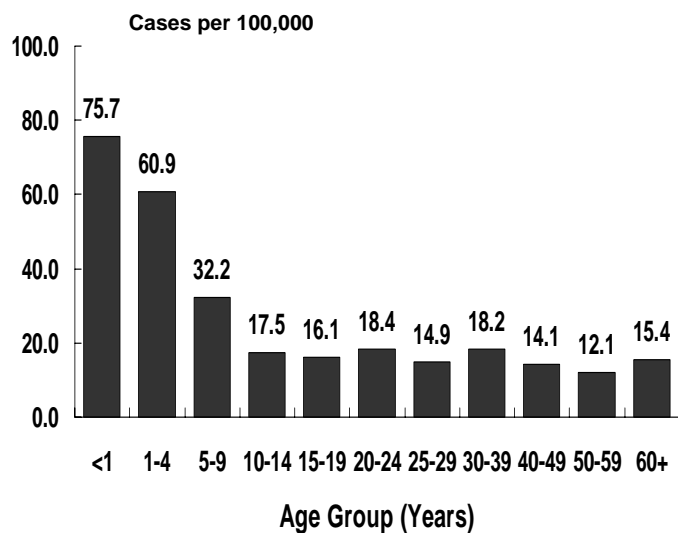
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Figure 4.10: Incidence of Salmonellosis by Age Group, Region of Peel, 2003



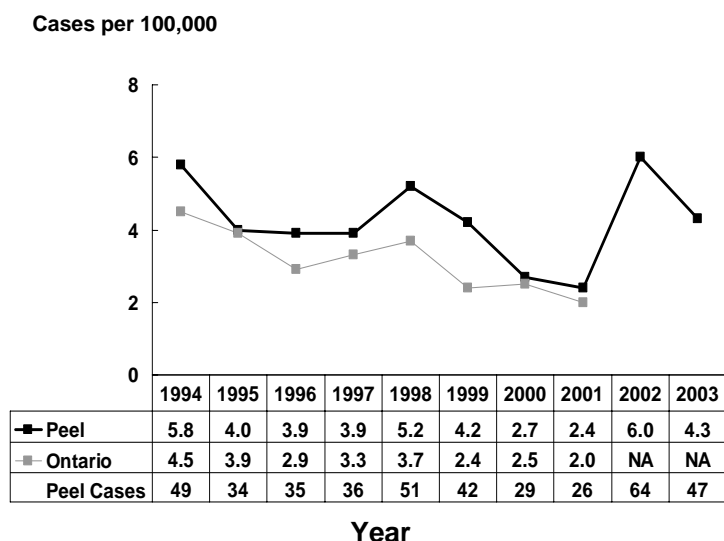
Sources: Peel Data from RDIS, Region of Peel Health Department, as of 02/23/2004.

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SHIGELLOSIS

Shigellosis is caused by a family of bacteria called *Shigella* that are only found in the intestines of humans. Disease is spread directly from improperly washed hands. *Shigella* can also make its way into food and water from infected food handlers, infected fertilizer and contaminated flies.⁵¹ The increase in the incidence of shigellosis in 2002 was due to an outbreak associated with a processed pasta salad, involving several public health units in Ontario.

Figure 4.11: Incidence of Shigellosis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

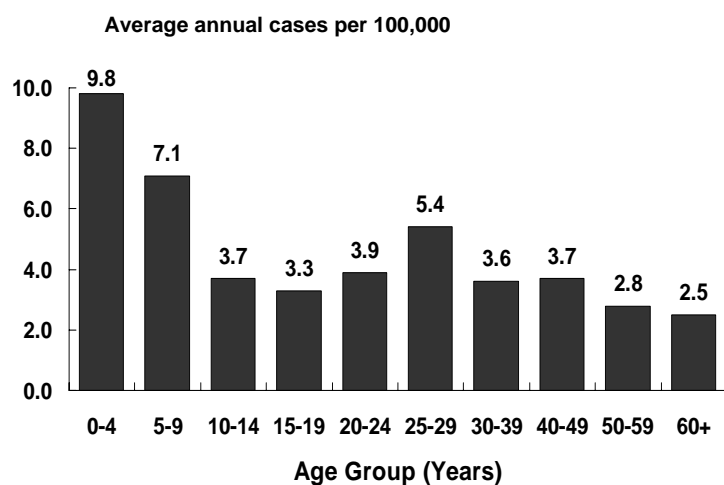
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Figure 4.12: Incidence of Shigellosis by Age Group, Region of Peel, 1994-2003 Combined



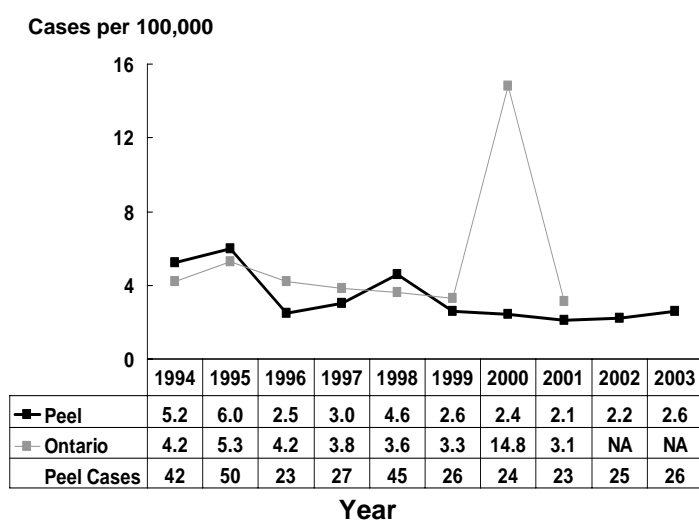
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VEROTOXIN-PRODUCING *ESCHERICHIA COLI* (VTEC)

Verotoxin-producing *Escherichia coli* (VTEC) has made the news in recent years due to outbreaks involving contaminated hamburgers⁵² and in a contaminated municipal water supply in Walkerton, Ontario.⁵³ The increased VTEC incidence in Ontario in 2000 is due to the Walkerton outbreak (see Figure 4.13 below). The bacterium is found in the intestines of healthy cattle. Transmission can occur from one person to another. Most cases are the result of eating undercooked ground beef, but other foods and water can be contaminated.⁵²

Figure 4.13: Incidence of Verotoxin-Producing *Escherichia coli* (VTEC), Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

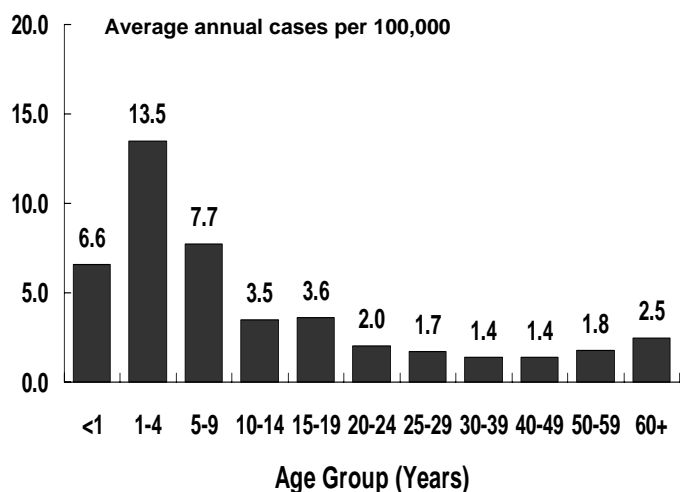
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Figure 4.14: Incidence of Verotoxin-Producing *Escherichia coli* (VTEC) by Age Group, Region of Peel, 1994-2003 Combined



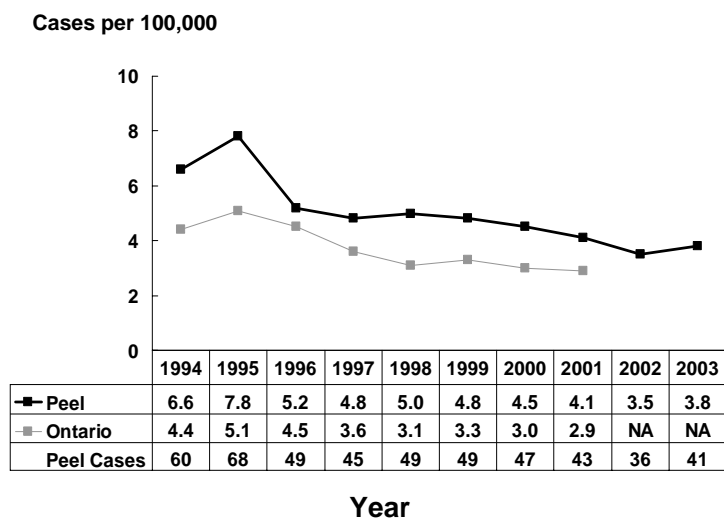
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YERSINIOSIS

Yersiniosis is caused by a number of types of *Yersinia* bacteria found in animals, especially pigs.⁵² Most cases are caused by eating raw or undercooked pork. Children and infants are particularly susceptible to becoming sick from *Yersinia*.⁵⁴

Figure 4.15: Incidence of Yersiniosis, Region of Peel and Ontario, 1994-2003



NA: 2002 and 2003 Ontario data not available.

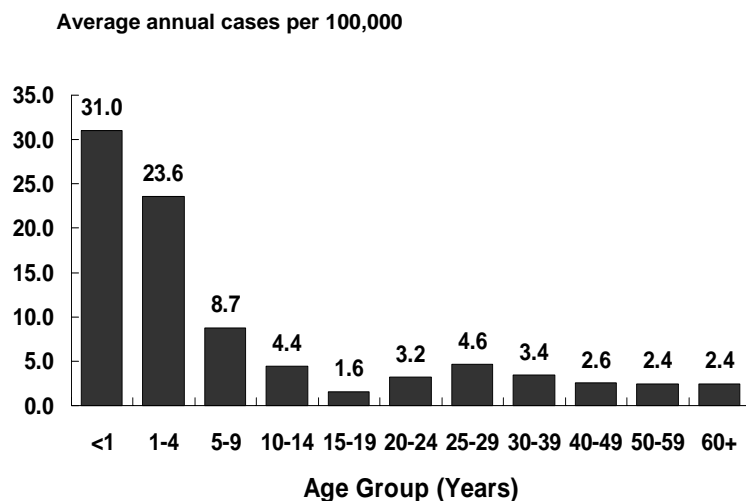
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Figure 4.16: Incidence of Yersiniosis by Age Group, Region of Peel, 1994-2003 Combined



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