



STAFF REPORT ACTION REQUIRED

Food Safety and Foodborne Illness in Toronto

Date:	April 15, 2009
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

This report provides a summary of the key findings and issues raised in two attached reports, *Food Safety in Toronto* and *Foodborne Illness in Toronto*.

Food is essential for health and for Toronto's social, environmental, cultural and economic well-being. However, recent and recurring outbreaks of foodborne illness, both close to home and elsewhere, remind us that food can also be a source of illness and disease. Toronto Public Health (TPH) plays a critical role in contributing to the maintenance of food safety systems and in the surveillance, detection and investigation of foodborne illness.

Illness from food contaminated with micro-organisms is very common and legally reportable to public health, but most cases are not severe and go unreported, so that routine data greatly underestimate the full burden of illness. The *Foodborne Illness in Toronto* report presents an epidemiological overview of disease trends in Toronto and establishes a new estimate of the full burden of foodborne illness: 437 thousand cases per year, or one in every six residents; the report estimates the economic impact in health care costs and lost productivity to be in the range of \$500 million annually.

To reduce the risk of foodborne illness, governments at all levels work together to regulate and monitor food safety at every stage in commercial food preparation from farm to table. The report *Food Safety in Toronto* describes the roles and functions of the responsible agencies and describes how these organizations work together when outbreaks of foodborne illness occur. The report also identifies weaknesses in current food safety systems and inter-agency cooperation and calls for improvements to be made by federal and provincial agencies.

RECOMMENDATIONS

The Medical Officer of Health recommends:

1. That the government of Ontario implement the outstanding recommendations of the 2005 Report of the Meat Regulatory and Inspection Review (the Haines Report), including:
 - i) Require all food premises to implement a provincially-developed food safety program based on a Hazard Analysis Critical Control Point approach.
 - ii) Amend the *Health Protection and Promotion Act* to require that all food premise operators and at least one other person present in the food premise at all times of operation be a certified food handler.
 - iii) Develop and implement a province-wide public health investigation, compliance and enforcement policy for all food premises.
 - iv) Develop and implement uniform consumer food safety education programs.
2. That the Ontario Ministry of Health and Long-Term Care explore the feasibility of making all health service data on gastrointestinal illness (the Integrated Public Health Information System; Telehealth Ontario; the Ontario Laboratory Information System; and the new Emergency Room Information System) available to local public health units and to the Ontario Agency for Health Protection and Promotion to enable early identification of potential clusters of foodborne illness.
3. That the Ontario Agency for Health Protection and Promotion enhance laboratory capacity for rapid identification of agents of foodborne illness in Ontario.
4. That the Government of Ontario explore legislative and funding options to ensure food handlers are compensated for absences from work due to gastrointestinal illness.
5. That the Ministry of Health and Long-Term Care (MOHLTC) ensure that Boards of Health receive sufficient provincial funding to comply fully with the Food Safety Protocol of the Ontario Public Health Standards.
6. That the Government of Ontario and the Canadian Food Inspection Agency require full and timely disclosure of the food safety performance of all food premises they inspect, including premises inspected by local public health units.
7. That the Government of Ontario and the Government of Canada, with input from local public health units, review: the Foodborne Illness Outbreak Response Protocol to Guide a Multi-Jurisdictional Response (FIORP); the Ontario Foodborne Health Hazard and Illness Outbreak Investigations Memorandum of

Agreement; and the Food Premises Plant Investigation: Multi-agency Roles document, to ensure that:

- i) Roles and responsibilities of responding agencies are clear and consistent in all protocols, including lead responsibility for public communications.
 - ii) Regular training, including multi-agency simulation exercises, is provided for staff of all responding agencies.
 - iii) A process is put in place for activating FIORP and striking an outbreak coordination committee of responding agencies whenever a significant multi-jurisdictional outbreak occurs.
8. That the Canadian Food Inspection Agency review its food recall and public notification policies and procedures to ensure that:
- i) A food product is recalled and the public notified when epidemiologic evidence provides reasonable and probable grounds to conclude that cases of foodborne illness are linked to consumption of the product.
 - ii) Public communications and recall verification procedures are thorough and effective in reducing exposure to a potentially hazardous food product.
9. That this report be shared with: the federal Ministers of Health and Agriculture and Agrifood; the Canadian Food Inspection Agency; the Public Health Agency of Canada (PHAC); Sheila Weatherill; the Ontario Ministers of Health and Long Term Care, Agriculture and Rural Affairs, and Natural Resources; the Ontario Agency for Health Protection and Promotion; the Association of Local Public Health Agencies; the Ontario Public Health Association; and all Boards of Health in Ontario.

Financial Impact

There are no financial impacts of this report.

DECISION HISTORY

A verbal update on the 2008 *Listeria monocytogenes* outbreak linked to sliced prepared meats was given to the Board of Health at its September, 2008 meeting. The Board of Health requested that the Medical Officer of Health report back on how the Canadian Food Inspection Agency (CFIA) discloses results of its inspections, and the current status of self-regulation in the food industry. The report *Food Safety in Toronto* summarizes the CFIA's mandate including its disclosure policy and describes Ontario's food safety regulatory framework, including self-regulation of the food industry.

At its meeting in November, 2007 the Board of Health received *Communicable Diseases in Toronto, 2006*, the most recent in a series of printed annual summaries of reportable communicable diseases in Toronto. Since that report was presented, TPH has changed its practice and now publishes the most recent disease surveillance data on-line as they are available. This has increased the timeliness of publicly available communicable disease

data and shifted the focus of TPH communicable disease surveillance reports to more detailed summaries of topical issues. *Foodborne Illness in Toronto* is one of these reports.

ISSUE BACKGROUND

Toronto's Changing Food Environment

The movement of food from farm to table has become increasingly complex as our diet has evolved from one based on seasonal and local foods to one influenced by the immense range of food products available in Toronto as a consequence of the globalization of the food industry and mass production of food. Much of our food is now the result of multi-step production processes involving ingredients sourced from around the world moving over long distances and through many locations before reaching the consumer. The movement of food and its components increases the risk of foodborne illness because of the greater number of points at which contaminants can enter the food production process. Lapses in food safety practices at key steps in the process can enable contamination or undermine processes designed to eliminate contaminants. As we have seen repeatedly in North America, mass production creates the potential for mass exposure of consumers to the risk of acquiring a foodborne illness.

As food moves through multiple jurisdictions, the ability to control, monitor and ensure the safety of food in Toronto has become increasingly difficult. For example, it requires extensive effort to conduct timely trace-back of potentially contaminated food to its origins as part of an outbreak investigation. The reliance by the food industry on ingredients imported from many locations can also complicate epidemiological investigations, as in the case of the 2002 outbreak of *Shigella* linked to pasta salad that, while manufactured in Toronto, contained products from many locations.

Increasing global travel means that Toronto residents are more likely to become infected with foodborne pathogens that are uncommon to Canada and which may not be easily diagnosed and treated when symptoms appear. A long-term trend toward eating a larger proportion of meals outside the home means that retail food safety practices and regulations are playing an increasingly important role in the occurrence and prevention of foodborne illness.

Foodborne Illness in Toronto

Food contamination causing illness occurs in three ways: biological, chemical and physical. *Foodborne Illness in Toronto* focuses on illness resulting from the contamination of food with biological agents such as bacteria and viruses and summarizes current epidemiology through descriptions of the risk factors associated with illness and the recent history of foodborne outbreaks in Toronto. Using a methodology developed by the Public Health Agency of Canada to measure the underreporting of foodborne illness, it estimates the number of foodborne cases that occur annually and the resulting economic impact.

Infectious gastrointestinal illness causes nausea, vomiting, diarrhea and occasionally fever. The severity of illness varies widely. Most individuals will experience one to

three days of symptoms which resolve without medical consultation or treatment. A significant portion of cases of infectious gastrointestinal illness are foodborne. Mild illness which does not require medical attention is infrequently reported to public health.

Foodborne illness that is not linked to an outbreak is known as sporadic. The report outlines a decline in sporadic cases in Toronto over a ten year period with about 1,750 cases linked to contaminated food now reported each year, a reduction of 30% since 2002. This decline coincided with the introduction of the TPH DineSafe restaurant inspection and disclosure program, which resulted in a dramatic increase in compliance with food safety regulations among Toronto's food establishments. While we cannot conclude definitively that food safety program enhancements caused the reduction in cases of foodborne illness, it is reasonable to suggest these changes contributed to the improvement.

Children under the age of five are at highest risk for acquiring sporadic foodborne disease and also experience more severe illness. Older individuals are also at increased risk but are more often affected by outbreaks in institutional settings. Travellers, particularly those returning to their country of origin to visit friends and relatives, have an increased risk of acquiring illness as they are more likely to visit rural areas (compared to travel for business or tourism) and to have prolonged contact with local populations and exposure to local food sources. These travelers are also less likely to seek advice prior to travel or to take prophylactic measures. Reports of sporadic cases of foodborne illness generally peak during the summer months as higher temperatures cause growth of micro-organisms in food and outdoor food preparation raises risk of contamination.

TPH investigates an average of 163 outbreaks of foodborne illness each year. These include outbreaks in community settings and in institutions such as day nurseries and long-term care homes. Outbreaks occur when contaminated food is consumed by a group of people and two or more become ill with the same infection. Person-to-person transmission resulting in secondary cases may also result. Most outbreaks in the community occur at organized and catered events. Among several large community outbreaks that have recently occurred in Toronto, the 2008 *Listeria monocytogenes* outbreak illustrates how a lapse in food safety procedures can result in tragic consequences of significant illness and death and significant economic impact. This outbreak resulted in 57 confirmed cases and 21 deaths nationally, including eight confirmed cases in Toronto.

Total Burden of Foodborne Illness

Foodborne illness goes unreported for a number of reasons. Some infections cause mild symptoms so individuals may not seek medical attention; lab specimens (usually a stool sample) may not be requested by a clinician; there is incomplete compliance with requests for stool samples; samples may not identify a causative agent (the micro-organism may no longer be present); and not all pathogens or positive lab results are reported to public health. Even when reported, infectious gastrointestinal illness can be challenging to link definitively to a food source as individuals may not know whether the illness came through food or from someone else who was infected. Together, these

factors result in disease reporting data which substantially underestimate the burden of foodborne illness in Toronto.

Foodborne Illness in Toronto attempts to quantify this underreporting using survey-based probability in a method developed by the Public Health Agency of Canada. Using disease report data in Toronto, data from Canadian surveys and research studies, it is estimated that an average of 437,000 Toronto residents experience foodborne illness each year, or one in every six residents. Each reported case represents 227 cases that are not reported. Based on studies of the cost of gastrointestinal illness, including health care visits, diagnostic testing, medication and missed days of work, the estimated annual economic impact attributable to foodborne illness in Toronto is between \$476 million and \$587 million each year.

Food Safety in Toronto

Recent foodborne illness outbreaks in Canada and the United States have focused public attention on food safety. While all stakeholders in the food system – farmers, processors, retail outlets and consumers - have a role in preventing foodborne illness, the public relies on governments to cooperate in constructing and maintaining a food safety system with clear lines of responsibility and accountability, effective enforcement and consumer and industry education to ensure that the food we eat is safe. Federal, provincial and local agencies have attempted to integrate their work through a series of agreements and protocols that outline distinct roles for each agency, particularly during outbreaks.

The principal federal agency responsible for food safety is the Canadian Food Inspection Agency (CFIA), which is responsible for inspecting and regulating federally registered food production facilities and administering and enforcing all federal legislation related to food inspection. The CFIA is also responsible for issuing food recalls and ensuring that products ordered off the shelves are removed. A mandatory Hazard Analysis Critical Control Point (HACCP) program, an internationally recognized safety standard, has recently been adopted under the Meat Inspection Regulations, referred to as the Compliance Verification System. This system has enabled the CFIA to replace its hands-on inspection role with one of verification, using a variety of procedures to verify industry compliance with HACCP standards. Although a key goal of this program is to ensure accountability of both the industry and regulators, a standardized approach has not been developed and the CFIA does not routinely disclose inspection results.

Other federal agencies involved in food safety include Health Canada, Agriculture and Agri-Food Canada, and the Public Health Agency of Canada (PHAC). Health Canada is responsible for the policies and standards that are used to establish criteria for safe food production and it also assesses the effectiveness of the CFIA in carrying out its food safety activities. The Foodborne, Environmental and Zoonotic Infections Division and Centre for Infectious Disease Prevention and Control of the PHAC are important components of federal involvement in managing the threats posed by foodborne diseases. The Ontario government is responsible for regulatory oversight for food production facilities that supply food exclusively to Ontario. The principal food regulatory agency is the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), which is responsible for the regulation of meat, milk and other food commodities. It is supported

by the enforcement arm of the Ministry of Natural Resources (MNR) which conducts investigations of potential regulatory breaches for OMAFRA. MNR is also responsible for regulating commercial sale and processing of fish for human consumption, although there is currently no provincial inspection program for fish processing facilities.

The Ministry of Health and Long-Term Care administers the *Health Protection and Promotion Act (HPPA)* which requires that food is stored, prepared, served and distributed in a manner consistent with accepted public health practices. The Ministry delegates the delivery of food safety programs to 36 local public health units such as TPH. The Ministry has recently adopted new Ontario Public Health Standards (OPHS) which require public health units to implement an integrated food safety management system that utilizes hazard identification and risk-based approaches to categorize food service premises.

In addition to enforcing the HPPA and ensuring compliance with the OPHS, TPH exceeds provincial requirements with its award-winning DineSafe program of food safety inspection and disclosure and has more recently implemented a mandatory Food Handler Training Certification program.

Under DineSafe, consumers can see food safety inspection records for retail food premises on site at each premise, on the website, or by telephone inquiry. The program is supported by a number of quality assurance mechanisms including: a well-documented enforcement system with detailed policies and procedures to ensure consistent and transparent regulation; regular reviews of inspection records; and joint inspections involving front-line inspectors and quality assurance staff to ensure consistency and standardization in inspection and enforcement.

In 2006, City Council passed a bylaw introducing a mandatory Food Handler Certification Program requiring at least one certified food handler in a supervisory capacity in each area of a premise where food is prepared, processed, served, packaged or stored. As of 2008, Toronto high-risk food premises must meet this requirement which will apply to medium and low-risk premises in 2009 and 2011 respectively. To date, more than 18,500 food handlers have been trained by TPH and an additional 3,500 food handlers have received certification through equivalent courses of study.

COMMENTS

Food Safety Reviews

The 2004 Justice Haines Report of the Meat Regulatory and Inspection Review – (*Farm to Fork – A Strategy for Meat Safety in Ontario*) was commissioned to strengthen public health and safety and confidence in the meat regulatory and inspection system in Ontario. The report made 113 recommendations for actions by the Ontario government to improve the current system, including strategies for accelerating harmonization with the federal government. Many of the shortcomings that were the subject of recommendations in the report have since been identified as recurring issues during investigations into foodborne outbreaks.

In 2008, a nation-wide listeriosis outbreak resulted in 21 deaths and 57 cases of foodborne illness (15 deaths and 41 cases in Ontario, eight cases and four deaths in Toronto) all linked to a food production facility in Toronto that makes sliced prepared meats. In January 2009, the federal government appointed Sheila Weatherill as an investigator to determine the causes of the outbreak and review the role played by federal organizations with particular attention to the effectiveness of the CFIA. Her report is due in July 2009. The Medical Officer of Health has met with Ms. Weatherill and it is expected that TPH will contribute information and advice to her investigation. In addition, TPH is represented on a provincial working group that will report in spring 2009 on Ontario's response to the Listeriosis outbreak.

The following comments outline areas for improvement in the food safety system which should be addressed in these current reviews.

Improving Surveillance of Foodborne Illness

Foodborne illness surveillance should measure the burden and patterns of illness and permit early identification of outbreaks requiring a public health response. The current surveillance system can be enhanced by including additional data collected in the course of health service delivery. These data could encompass events which precede a full diagnosis through laboratory testing and physician diagnosis, and could utilize existing systems that capture syndromic/symptom data (individuals with a constellation of well defined symptoms) of foodborne illness, including the provincial Emergency Room Information System, Telehealth Ontario, and the Ontario Laboratory Information System.

Public Education

Even as the proportion of food prepared and eaten outside the home increases, safe food preparation practices in the home are still a very important part of food safety. The Ontario Food Safety Standards include requirements for the provision of food safety information and/or educational material through various media to several specific groups. A consistent provincial strategy should be developed to target and educate the public about proper food handling and storage and how to recognize disease. By increasing our understanding of who is most at risk for foodborne illness, a component of this strategy could target high risk groups, as for example: advice to travellers could be linked to the purchase of airline tickets; staff and family of individuals in institutions could receive education about how to recognize disease; individuals preparing foods for outdoor consumption at picnics and barbecues could receive point of sale messages that are intensified during peak periods. The DineSafe program is one local example of a successful program that promotes public awareness of food safety.

Food Handler Training and Certification

Food handlers must be knowledgeable about the factors involved in keeping foods safe and must practice food safety at all times. The Food Safety Standards require local public health units to ensure that food safety training is available to food handlers, yet there is no provincial requirement for food handler certification. While TPH has a strong mandatory food handler certification program, many food industry operations have outlets elsewhere where there is no required training and this causes an inconsistent approach to setting standards and achieving common practices. An amendment of the

HPPA to require trained and certified food handlers at all food premises in the province would be an important step toward improving food safety in Ontario.

Consistent Local Service and Enforcement

There is no provincial compliance and enforcement policy and health units are therefore required to establish their own policies and procedures to address non-compliance, resulting in inconsistent approaches across the province. The MOHLTC is making efforts to standardize certain activities by setting requirements for all Boards of Health in the Food Safety Protocol and Standards. However, more needs to be done to monitor and coordinate the efforts to ensure standardization and consistency in risk assessments, inspections, enforcement and related activities. Hazard Analysis Critical Control Points (HACCP) is a science-based food safety program that is established worldwide as the foremost means of ensuring food safety throughout the food chain. The Food Safety Standards require the incorporation of HACCP-based principles into the inspection process but there is no mandatory HACCP food safety program requirement provincially. To align with federal requirements Ontario should develop a mandatory HACCP-based food safety program for all food premises in the province.

Public Health Capacity

A number of food safety system reviews have identified limited capacity in fiscal, technical and human resources as a deficiency. Local public health units consistently find it challenging to achieve the mandated inspection frequencies for food premises due to limited numbers of staff and competing demands from other public health programs.

Several public and independent reviews have also identified limited capacity, particularly of Laboratory services, as a major factor affecting the ability of the CFIA to ensure a safe food system. The need for enhanced provincial public health laboratory services to support the investigation of foodborne illness was highlighted during the 2008 Listeriosis outbreak. Food and patient samples were sent for testing in laboratories located at sites administered locally, provincially and nationally. The coordination of testing in multiple laboratories spread out across the country increased the complexity of the process and the time required to obtain results. In addition, the Ontario public health laboratory has no access to the Integrated Public Health Information System (IPHIS), the provincial database used by local health units for case management and reporting to the province. Access to this data is necessary for the provincial laboratory to provide a comprehensive analysis of disease trends and to enable early identification of emerging issues and potential outbreaks.

Food handler Employment Standards

Food handlers with symptoms of gastrointestinal illness can transmit infections through food, and when this is reported, they are normally asked not to work when ill. However, most illness is not reported, and food handling jobs are generally in low-wage settings with few benefits. Toronto food handlers who participate in TPH training programs have indicated that potential loss of income or employment is a reason why some food handlers continue to work when ill. This risk of foodborne illness transmission could be reduced through legislation or a publicly funded benefit to prevent loss of income for ill

food handlers. The provincial government should explore the feasibility and health benefit of policy options to accomplish this.

Clarification of Agency Roles

A number of documents have been developed that outline the roles and responsibilities of agencies participating in outbreak investigations linked to food. These documents include the Foodborne Illness Outbreak Response Protocol to Guide a Multi-Jurisdictional Response (FIORP); the Ontario Foodborne Health Hazard and Illness Outbreak Investigations Memorandum of Agreement; and the Food Premises Plant Investigation: Multi-agency Roles. These documents define the roles of each agency during outbreaks and the methods of communication between the agencies and the public. During past foodborne outbreaks including the 2008 listeriosis outbreak there has been a lack of awareness of these documents and they have not fulfilled their potential to guide interagency response coordination. In order to optimize interagency response to foodborne outbreaks, these documents should be harmonized and clarified and all participants in foodborne investigations should be trained in their implementation.

Food Recalls and Public Notification

CFIA has the lead responsibility for food recalls, and in large outbreaks the MOHLTC and local public health units have deferred to the CFIA. But in the experience of TPH with several large outbreaks, the CFIA has required confirmed links between a suspected food source and illness in people before issuing a recall or notifying the public. For example, in a 2005 Salmonella outbreak related to bean sprouts, there were several clusters of illness across the province and TPH closed the bean sprout plant facility before the CFIA issued a food recall. In the case of the 2008 Listeriosis outbreak the CFIA waited until matching DNA fingerprint patterns were received from packaged, unopened food products and human specimens before declaring that the suspected food source was linked to human illness. The threshold for deciding to recall a food product or notify the public is an important policy issue which has been a source of ongoing discussion between responding agencies. Public health officials often err on the side of health protection by notifying the public about likely health risks, even when a precise cause and effect relationship has not been definitively established. Given the potential for different approaches in outbreak situations, a more health-protective threshold for recall and notification decisions should be established to strengthen public safety.

Public Disclosure of Food Safety Performance

Transparency in food safety by industry and regulators can promote public confidence in food safety and enhance accountability and food safety performance by both industry and regulators.

In Ontario there is no standardized approach to the disclosure of food safety performance and results. The disclosure components of the DineSafe program provide the public with easy access to inspection results and facilitate informed decisions about the food premises they choose to visit. Other local public health units have adopted or are developing similar types of disclosure systems. There is no comparable initiative at the national level to provide routine disclosure of federal inspection results. Based on Toronto's experience, public disclosure of food safety inspection and monitoring results for all

provincially and federally inspected facilities would promote public awareness and improve food safety performance.

CONCLUSION

Changes in systems of food production and distribution and patterns of consumption have altered the landscape of food in Toronto and created new challenges in food safety. Foodborne illness continues to create a significant health and economic burden in Toronto, affecting approximately one in six residents annually. Recent large-scale foodborne illness outbreaks have highlighted strengths and weaknesses in federal, provincial and local systems of food safety. The recommendations in this report are intended to inform efforts to improve food safety and reduce the risk of foodborne illness.

CONTACT

For Foodborne Illness in Toronto
Effie Gournis
Manager, Communicable Disease
Surveillance Unit
Communicable Disease Control
Toronto Public Health
Tel. 416-338-7926
Fax. 416-392-0047
egourni@toronto.ca

For Food Safety in Toronto
Sylvanus Thompson
Manager, Healthy Environments
Toronto Public Health
Tel. 416-338-3661
Fax. 416-338-2366
sthomps@toronto.ca

SIGNATURE

Dr. David McKeown
Medical Officer of Health

ATTACHMENTS

Appendix A: *Foodborne Illness in Toronto*
Appendix B: *Food Safety in Toronto*