MINISTRY OF HEALTH

Public Health Activity

The Public Health Activity (Activity) provides funding for programs designed to maintain population health through health protection, health promotion and disease prevention. The Ministry's Public Health Branch (Branch), under the direction of the Chief Medical Officer of Health, is responsible for administering the Activity.

The development and funding of public health programs and services is primarily governed by the *Health Protection and Promotion Act.* The Branch is also responsible for administering the *Immunization of School Pupils Act,* the *Day Nurseries Act* and the *Tobacco Control Act.*

The *Health Protection and Promotion Act* (HPPA) provides the authority for establishing local health units which in turn are administered by autonomous local boards of health. At the time of our audit, there were 42 local health units in Ontario, of which 33 were governed by a board of health whose members were appointed under the HPPA. The remaining nine were operated by regional municipal councils, which have the powers and duties of a board of health.

Every board of health is required to appoint a full-time medical officer of health who must be approved by the Minister of Health. Medical officers of health are responsible for the management and administration of the health programs and business affairs of the board. Medical officers of health have authority to issue orders to abate health hazards and to prevent the spread of communicable disease.

Under the HPPA, the Minister has the authority to require boards of health to provide specified programs and services. In addition, boards of health may deliver other programs and services to meet local health needs. The Ministry has established 20 mandatory public health programs which are divided into four areas of focus: Healthy Growth and Development; Healthy Lifestyles; Communicable Disease Control; and Healthy Environments. The mandatory programs have been defined in the Ministry's 1989 *Mandatory Health Programs and Services Guidelines* which includes goals, objectives and program requirements and standards for each of the 20 programs. The HPPA requires boards of health to comply with guidelines published by the Ministry.

The cost of the mandatory programs is normally shared by the Ministry and municipalities. Depending on the program, the provincial share can range from 40% to 100% of the cost. Programs that are not mandatory are normally funded by the municipalities served by the boards of health providing them. The Ministry also provides free vaccines under its mandatory Vaccine Preventable Diseases Program.

For the 1996/97 fiscal year, expenditures of the Public Health Activity totalled $283 million, of which approximately $237 million was spent on transfer payments for the delivery of mandatory programs and services; $40 million for the purchase of vaccines; and $6 million for branch operating expenditures.

OBJECTIVES AND SCOPE

The objectives of our audit of the Public Health Activity were to assess whether the Ministry had adequate policies and procedures in place:

- to ensure that public health programs were funded and delivered with due regard for economy and efficiency and in accordance with applicable legislation; and
- to measure and report on the effectiveness of provincially-funded public health programs.

Our audit focused primarily on the mandatory programs related to Communicable Disease Control since many of the other major mandatory programs were under review by the Branch. In conducting our audit, we reviewed and analyzed Branch procedures and policies; interviewed appropriate branch staff and outside medical experts; reviewed relevant literature; and researched the delivery of public health programs in other jurisdictions. We also reviewed any relevant audit work performed by the Municipal Audit Bureau and the Audit Branch of the Ministry of Health and, where warranted, relied on their work.

3.10

OVERALL AUDIT OBSERVATIONS

The Public Health Branch has recently introduced a number of significant initiatives. These include mounting hepatitis B and measles immunization campaigns for children; promoting influenza and pneumococcal vaccines for the elderly; addressing the causes of vaccine wastage; and adopting food safety protocols.

However, we found that the Ministry needs to take steps to better ensure that public health programs are being funded and delivered with due regard for economy and efficiency and in accordance with applicable legislation. Specific actions would include:

- ensuring that funding to boards of health is allocated equitably by expanding the use of indicators of service costs and the relative health needs of communities;
- ensuring that assessments of the immunization status of children are being completed by boards of health in accordance with legislation; and
- determining the reasonableness of variances in the cost of immunization programs delivered by boards of health and taking corrective action as required.

Improvements are also required to enable the Ministry to measure and report on the effectiveness of provincially-funded public health programs. In particular, the Ministry needs:

- to periodically report publicly the results of public health programs delivered by boards of health;
- to improve the quality of information available on the results of immunization campaigns to enable the Ministry to take corrective action as necessary;
- to establish and monitor the attainment of coverage targets for adult immunization programs;

- to obtain information to evaluate the effectiveness of contact tracing and case management programs for tuberculosis and sexually transmitted diseases;
- to assess whether food safety inspection protocols have been implemented by boards of health and whether they have been effective; and
- to assess whether additional enforcement measures are required for the *Tobacco Control Act*.

DETAILED AUDIT OBSERVATIONS

ACCOUNTABILITY TO THE LEGISLATIVE ASSEMBLY

The *Ministry of Health Act* requires the Minister to prepare an annual report on the affairs of the Ministry and submit it to the Legislative Assembly. However, there is no specific requirement to report on the effectiveness of public health programs or the health status of the people of Ontario. Since 1991, the Chief Medical Officer, on his own initiative, has been issuing annual public reports that have focused on specific public health concerns such as immunization and tobacco use.

Reporting to the Legislature on whether provincial standards for public health programs have been met would enhance the accountability of the Public Health Activity. We reviewed the legislation and reporting responsibilities for this function in several other provinces.

For example, the responsibilities of the Chief Medical Health Officer for Saskatchewan include publishing an annual report that identifies the health status of Saskatchewan's population and the effectiveness of public health programs and recommends public health issues for consideration at both the provincial and district levels. In British Columbia the Provincial Health Officer is required to report annually to the Health Minister and the public on the health of the people of British Columbia. The Minister must submit the report to the Legislative Assembly.

Recommendation

To improve the accountability of the Public Health Activity, the Ministry should consider periodically reporting to the Legislative Assembly on the extent to which:

- **public health programs delivered by boards of health have met provincial standards; and**
- **provincial public health objectives have been achieved.**

Ministry Response

This can be given further consideration as implementation plans for 100% municipal funding of public health are developed. Under Who Does What [an initiative to redefine the financial and service delivery relationship between the province and the municipalities] and municipal funding, the Ministry will be responsible for setting and monitoring compliance with provincial standards for public health programs. Periodic reporting or tabling of reports in the Legislature could be considered.

3.10 *FUNDING ARRANGEMENTS*

Municipalities share with the Ministry the funding for mandatory public health programs delivered by their boards of health. Over time, significant variations in funding have occurred, with per capita funding for some boards being three times the rate of that for other boards.

The Ministry has not conducted any systematic review to determine whether these funding variations are the result of differing health needs or the costs of providing the programs. Branch staff have indicated that in many cases the variations appear to be based solely on historical patterns. While the Branch's program-based planning and budgeting process attempts to relate program resources to services provided, insufficient information is provided on the quantity and quality of services actually delivered.

Commencing in 1996 provincial funding to boards of health was to be reduced by 15% over three years. Rather than applying a standard percentage reduction to each board, the Branch developed an "equity funding strategy" to ensure that the reduction was applied in a rational manner by using indicators of community health needs and service costs. This led to a decrease in the variances among boards. The Branch had not yet determined whether these indicators could be used to allocate all funding to boards of health.

Recommendation

To ensure that funding for all mandatory public health programs is allocated equitably, the Ministry should expand the use of indicators of service costs and of the relative health needs of communities.

Ministry Response

The province will no longer be funding boards of health to provide public health programs after January 1, 1998.

The Ministry's funding involvement will be through a more indirect means, that is, requiring that provincial standards be met, and thus indirectly requiring local funding levels be adequate to meet the standards. The distribution of funding for the new Healthy Babies/Healthy Children Program, which will continue to be provincially funded, has taken health status and other indicators into account in the distribution of funding to boards of health.

VACCINE PREVENTABLE DISEASES PROGRAM

The goal of the Ministry's mandatory Vaccine Preventable Diseases Program is "to reduce the incidence of vaccine-preventable diseases." Immunization is considered to be a cost-effective health intervention leading to improved health, reduced suffering and fewer premature deaths. The Ministry supplies certain vaccines free of charge to boards of health and physicians. In the 1996/97 fiscal year, the Ministry spent approximately $40 million on vaccines.

In his 1995 annual report, which focused on immunization, Ontario's Chief Medical Officer of Health stated that "the value of immunization has been established beyond any reasonable doubt." However, he also noted that "we have become complacent about immunization, and our levels of childhood and adult immunization are too low. Improving these rates is an opportunity to prevent disease and provide protection against outbreaks."

IMMUNIZATION OF CHILDREN

The immunization of children is governed by the *Immunization of School Pupils Act,* the *Day Nurseries Act,* and the mandatory Vaccine Preventable Diseases Program guidelines. Vaccination programs for children in Ontario cover eight different diseases: diphtheria, pertussis, tetanus, polio, mumps, measles, rubella and Haemophilus influenzae type B. Programs begin for children at two months of age and are completed by their second birthday. Additional vaccinations are required between ages 4 to 6 and ages 14 to 16.

A Regulation under the *Day Nurseries Act* requires every operator to ensure that children are properly immunized before being admitted to a day nursery and from time to time thereafter. Mandatory program guidelines require boards of health to assess the immunization status of all children in licensed child care programs to ensure that they are appropriately immunized.

The *Immunization of School Pupils Act* requires local medical officers of health to maintain immunization records for each pupil attending school in the area they serve and to keep under review the immunization record of any pupil who has not been adequately immunized as prescribed by legislation. In addition, the Act authorizes local medical officers of health to take appropriate action with respect to inadequately immunized pupils, including suspending them from school. Under program guidelines, boards of health are required to assess and keep up-to-date immunization records on all school children.

Boards of health use the Immunization Record Information System (IRIS), which was introduced in 1992, to maintain and report on immunization records of children enrolled in day nurseries and schools. We reviewed the most recent information available from IRIS for day nurseries, which covered September 1994 to June 1995, and found that, based on licensed day care spaces, boards of health had assessed the immunization status of only 67% of the children in day nurseries. Of the children assessed, only 66% were determined to be properly immunized.

We also reviewed the two most recent IRIS reports available for school children. These reports, which covered the 1993/94 and 1994/95 school years, showed that the percentages of pupils whose immunization status had been assessed and found to be in accordance with the immunization schedule were 77% and 82%, respectively. Of the remaining students for the 1994/95 school year, IRIS records indicated that approximately 13.5% had not been fully immunized and 4.5% had not been assessed.

In addition, we noted that coverage rates for the 1994/95 school year varied significantly among health units. Several health units had very low coverage levels, with one reporting a coverage rate of 60%.

1994/95 Assessed Immunization Coverage Rates by Board

*Assessed Immunization Coverage Rate	Number of Boards
Less than 75%	5
75 to 85%	12
86 to 90%	12
91 to 95%	10
Over 95%	3

* *Percentage of school children who have been assessed and are fully immunized.*

Source: Ministry of Health

3.10

While the Branch attempted to follow up with boards of health that had low coverage rates in the 1993/94 school year, this was not done for the 1994/95 school year. Branch staff were of the opinion that boards of health had performed limited assessments of pupils during the 1995/96 school year because of a measles immunization campaign and, accordingly, did not obtain a coverage report for that year.

Recommendation

To better achieve its goal of protecting public health and preventing disease, the Ministry should monitor board of health assessments of the immunization status of children in day nurseries and schools and take appropriate corrective action as necessary.

Ministry Response

The Public Health Branch is committed to monitoring day nurseries and schools. The year under review was a unique year in that health units had additional new immunization programs to administer (measles and hepatitis B catch-up). This routine monitoring of immunization coverage rates was postponed or delayed by some boards. It is expected that routine monitoring by all boards will be implemented from now on. As well, because the draft* Mandatory Programs and Services Guidelines *stipulates that boards monitor coverage rates, the Ministry will be assessing compliance with this requirement.

IMMUNIZATION OF ADULTS

Unlike the immunization of children, the immunization of adults is not required by legislation. Reliance is placed on boards of health and health care providers to promote adult immunization. The Vaccine Preventable Diseases Program guidelines state that boards of health "shall promote and provide adult immunization, according to provincial guidelines, through educational activities organized in institutions, high schools, colleges and universities and, where appropriate, the workplace."

INFLUENZA

Research has demonstrated that the influenza vaccine can prevent up to 70% of hospitalizations for pneumonia and influenza among the elderly. The Public Health Branch provides free influenza vaccines for individuals in high-risk groups, individuals 65 years of age and older, and residents of long-term care facilities.

In February 1993 a Canadian Consensus Conference on Influenza recommended as national objectives for influenza vaccine coverage 95% for residents and staff of long-term care facilities by the 1995/96 influenza season, and 70% for all people aged 65 and over and individuals with high-risk medical conditions by the 2000/2001 season. However, the Branch does not have influenza vaccine coverage targets for Ontario.

The two most recent branch estimates of influenza vaccine coverage for individuals aged 65 and over and those less than age 65 who were at high risk were 58% and 56% for the 1993/94 and 1994/95 influenza seasons, respectively.

Under the Vaccine Preventable Diseases Program, boards of health are required to ensure the availability of the influenza vaccine and promote information on the disease and the vaccine schedule to all long-term care facilities (nursing homes, homes for the aged and chronic care hospitals).

The Branch and several boards of health have implemented a program to increase the influenza vaccine coverage of residents and staff of such facilities. These boards serve 22% of the residents of long-term care facilities in Ontario. Statistics collected by the Branch for the 1995/96 influenza season indicated that approximately 88% of the residents and 30% of the staff of long-term care facilities covered by these boards had been immunized. However, the Branch does not have coverage information for the other 78% of residents in long-term care facilities served by other boards of health.

PNEUMOCOCCAL DISEASE

Pneumococcal infections are estimated to account for 30% to 50% of adult hospital admissions for community-acquired pneumonia and cause thousands of deaths among the elderly in Ontario each year. The elderly and individuals with certain chronic medical conditions are at a higher-than-average risk of contracting pneumonia and other serious diseases caused by pneumococcal bacteria.

The pneumococcal vaccine is usually administered once in an individual's lifetime. The mandatory program requires boards of health to promote the pneumococcal vaccine to individuals for whom it is recommended. However, the Branch has not set specific coverage targets.

The Chief Medical Officer of Health stated in his 1995 report on immunization that "Ontario doctors and the Ontario immunization program have been slow in adopting this vaccine. There is no good reason for this delay." In the fall of 1996, the Ministry introduced a publicly funded pneumococcal vaccine program to be phased in over three years for all high-risk groups and adults 65 years of age and older. The phase-in period was necessary because of the limited amount of vaccine available from the manufacturer. Early results indicated a high response rate to the program.

TETANUS AND DIPHTHERIA

The mandatory program requires boards of health to promote adult immunization, but sets no specific targets with respect to the immunization of adults for tetanus and diphtheria. The *Canadian Immunization Guide* recommends a booster shot every 10 years to maintain immunity against tetanus and diphtheria.

3.10

Although relatively few cases of tetanus or diphtheria have been confirmed in Ontario in the past 10 years, outbreaks of diphtheria with high fatality rates have been reported in many other parts of the world. Immigrants and visitors are not required to show proof of immunization, nor are they required to be immunized upon entry into Canada. This increases the risk of diphtheria being contracted by individuals in Ontario who have not had a booster shot within 10 years. A recent survey in Ontario which tested blood samples showed susceptibility levels of adults to tetanus and diphtheria of 18% and 21%, respectively. The survey also found that susceptibility to both diseases increased with age.

Recommendation

To contribute to its goal of protecting public health and preventing disease, the Ministry should:

- **establish coverage targets for influenza, pneumococcal, tetanus and diphtheria vaccines; and**
- **develop systems to monitor attainment of these targets and take appropriate corrective action as necessary.**

Ministry Response

The revised draft* Mandatory Health Programs and Services Guidelines *outlines vaccine coverage rate goals for all the above diseases. Monitoring immunization coverage rates requires a joint process between the Ministry's Public Health and Provider Services Branches. Presently a pilot project of this nature is under way.

This project is a three-site pilot in which immunization is specified on the billing data submitted to the Ontario Health Insurance Plan, Provider Services Branch. The purpose of the pilot project is to examine the process, which includes the transfer of immunization data from the pilot sites to the Provider Services Branch and then to the Public Health Branch to determine its accuracy and its potential feasibility on a province-wide basis. If there is adequate accuracy in the health care providers' reporting to the Ontario Health Insurance Plan of the vaccine administered, then the Ministry will have* better *information about vaccine coverage rates of the population of all ages (not just school and day nursery pupils). The pilot project began in June 1997 and is expected to be completed by December 1997.

IMMUNIZATION INFORMATION SYSTEM

Experts have expressed concerns that many preschoolers do not receive all of their required vaccinations. In his 1995 report on immunization, the Chief Medical Officer of Health noted that since most vaccinations are given by private physicians, public health officials cannot determine which children have missed being immunized until they enter school or a licensed daycare centre. The Immunization Record Information System (IRIS) contains immunization information on school-aged children.

To determine the percentage of school-aged children that had received all required vaccines by age two, we obtained information contained in IRIS on children born between 1989 and 1991. The results indicated that only 68% of these children had received all required vaccinations on time.

Currently, the Branch has only rough estimates of vaccine coverage for adults and no information about the immunization status of individual adults. Determining coverage rates would enable the Branch to develop appropriate strategies to improve them.

Many jurisdictions have recognized the need for immunization information systems which can provide accurate, complete and timely information on vaccinations. Such a system can be used to issue reminders to parents, to identify children in need of vaccinations and to assess overall immunization coverage. An appropriate system could also be used to determine immunization rates for adults. For example, since 1988 Manitoba has had a system which uses specific billing codes to identify vaccines provided and issues reminders to physicians and parents when vaccinations are due. The United Kingdom has had such a system since the mid-1980s. As well, efforts are under way in other provinces and parts of the United States to develop similar systems.

We also noted that Manitoba is developing a health information network to link health care providers across that province, providing fast access to patient information such as prescriptions, treatments, diagnostic test results and immunization history. In 1992 the Branch attempted unsuccessfully to have Ontario Health Insurance Plan billing codes introduced for specific vaccines.

Recommendation

Immunization is a major contributing factor to the Ministry's goal of protecting public health and preventing disease. Therefore, to better track the immunization of children and adults, the Ministry should assess the feasibility of modifying existing systems or developing appropriate ones to capture the necessary information.

Ministry Response

The Public Health Branch is currently working on improving monitoring systems to enable better assessment of immunization coverage in the population (through the pilot project mentioned in the response of the previous section). In addition, a Biological Inventory System has recently been implemented to help track vaccines and medications through the distribution system (physicians' offices, health units and the Ontario Government pharmacy). It could also be used to monitor usage of vaccines as well as tuberculosis and sexually transmitted disease drugs. The Ministry will investigate the feasibility of modifications to the system to allow this monitoring to occur.

3.10

PROVINCIAL IMMUNIZATION CAMPAIGNS

Recently, public health officers have noticed an increase in the number of reported cases of hepatitis B and measles. Both diseases are preventable through vaccinations. The measles vaccine is part of the standard immunization requirement for children. About 10% of the recipients of the measles vaccine do not successfully develop immunity from a single dose. While vaccinations for hepatitis B are not routinely provided, this sexually transmitted disease is difficult to treat once it is contracted.

To address these matters, the Ministry introduced campaigns beginning in 1994 to immunize all grade 7 students for hepatitis B and in 1996 to provide all school children with a second dose of the measles vaccine. Proper immunization against hepatitis B requires three doses of vaccine.

The Ministry provided boards of health with the necessary vaccines, which cost approximately $10 million. Additional funding totalling approximately $4.5 million was provided to boards to defray added administration costs for delivering the campaigns. This was based on an estimated per-dose cost of $5 for the hepatitis B vaccine and $1 for the measles vaccine. Studies conducted by the Branch indicated that both immunization campaigns had attained a provincial coverage rate exceeding 90%.

Our review and analysis of the reported data indicated the cost to deliver the 1995/96 hepatitis B campaign varied significantly among boards. A consultant who reviewed the 1996 measles campaign made a similar observation. Actual administration cost per dose for measles vaccines ranged from $2.46 to $22.50; for hepatitis B vaccines, the range was from $4.42 to $23.10.

Most health units were not able to conduct their campaigns for $5 and $1 per dose. As a result, boards of health had to redirect resources from other mandatory public health programs such as the maintenance of the immunization information system.

The consultant's report to the Ministry stated that a number of boards had reported a rather high cost per dose but the consultant could not explain the reasons for these high costs. The consultant also concluded that costing efforts could serve as a starting point for planning and budgeting for future provincial immunization campaigns. The Branch did not obtain explanations from the boards on their reported costs.

Recommendation

To assist in planning future immunization campaigns and to identify opportunities for increased operational efficiency, the Ministry should obtain from a sample of boards explanations of why their costs were significantly higher or lower than the provincial average for delivering the recent hepatitis B and measles campaigns.

Ministry Response

This recommendation will be considered before future immunization campaigns are planned. Since funding for delivery of these programs is being devolved to the municipalities, the Ministry's ability to influence local operational efficiencies in future campaigns will be based on more indirect methods.

FINANCIAL CONTROLS OVER VACCINE EXPENDITURES

The Ministry provides vaccines free of charge through its Outbreaks of Diseases transfer payment program. The Public Health Branch is responsible for determining the type and quantity of vaccines to be ordered. The Ministry's Purchasing Unit is responsible for acquiring the required vaccines and the Ontario Government Pharmaceutical and Medical Supply Service (Government Pharmacy) is responsible for the storage and distribution of vaccines.

Physicians located outside of Metropolitan Toronto order vaccines as needed from their boards of health while physicians located in Metropolitan Toronto order them directly from the Government Pharmacy.

The review and payment of vaccine supplier invoices is performed by the Government Pharmacy. Each month, the Government Pharmacy charges the Public Health Branch for the vaccines that have been distributed. During our audit of charges to the Branch, we noted the situations described below.

- Branch staff lacked sufficient documentation to assess the reasonableness of the charges from the Government Pharmacy. For example, we determined that for one type of vaccine, the Government Pharmacy charged the Branch $1.7 million more than was indicated on the authorized purchase order. We were informed by staff of the Government Pharmacy that this resulted from a programming error and that the Program has been appropriately credited.

- Branch staff did not confirm the amount of vaccine ordered nor did they receive copies of the issued purchase orders. We noted that in 1995 the Branch had informed the Purchasing Unit that a particular vaccine would no longer be required. However, the Unit continued to issue purchase orders for the vaccine until January 1997, receiving approximately $64,000 in vaccines during that time. These vaccines were either returned to the supplier or distributed to public health boards to be used.

Recommendation

To better control vaccine expenditures, the Ministry should:

- **work with the Government Pharmacy to develop a system which will allow Public Health Branch staff to review charges to its budget; and**
- **require that Public Health Branch staff review and sign off on all vaccine purchase orders before they are issued.**

Ministry Response

The Public Health Branch and the Government Pharmacy are developing a system that will allow enhanced monitoring of vaccine usage and expenditures. The Public Health Branch will work with the Government Pharmacy to improve accountability.

VACCINE PURCHASING

Contracts with certain suppliers of vaccines include a "value-added award" component. In return for the Ministry agreeing to pay a higher per-unit cost for a vaccine, the supplier agrees to provide related supplies and other services, more vaccines and/or money that the Branch reinvests in its immunization programs. The value-added award is equivalent to the additional amount the Ministry paid for the vaccines.

This method of awarding contracts results in overstating the actual cost of the vaccines since the value-added component is included in the acquisition price.

The Branch does not have a formal record-keeping system to track value-added awards. We reviewed two contracts issued in June 1996 which totalled $610,000 in value-added awards. From our review of available correspondence, we determined that approximately $300,000 remained to be utilized by the Ministry. Subsequent to our audit, we were informed by branch staff that the supplier had been requested to confirm the amounts outstanding and that the Ministry was in the process of utilizing the remaining funds.

Recommendation

To ensure that value for money is received from the acquisition of vaccines, the Ministry should:

- **pay for vaccines and services separately; and**
- **ensure that any outstanding value-added funding held by the vaccine suppliers is properly recorded and used or recovered.**

Ministry Response

Administrative (financial) controls for administering the value-added funding held by the vaccine suppliers are in the process of being developed with a view to separating the cost of vaccines from services.

VACCINE WASTAGE

In 1992 the Public Health Branch estimated that 10% of all vaccines issued for its immunization programs were wasted. Since then, the Branch has taken action to reduce vaccine wastage by providing educational materials on vaccine storage and handling to physicians and boards of health. In addition, the Branch has distributed thermometers, logbooks and insulated vaccine transport carry bags to physicians and provided boards of health with additional funding to purchase refrigerators and thermometers. The Branch plans to evaluate the impact of these initiatives and expects to release a vaccine distribution, storage and handling guideline to all boards of health and physicians in 1997. Boards of health will be held financially accountable for any vaccine losses attributable to them.

The Branch's goal is to reduce vaccine wastage to 5%. Before this goal can be achieved, the Branch requires complete and accurate data on vaccine distribution, usage and returns. While information on vaccine distribution and returns from health units is available, the Branch does not have information on actual vaccine usage by private physicians who administer approximately 90% of the vaccines.

The Branch has also developed a system to improve vaccine inventory management. This system will be made available in 1997 to all boards of health to monitor the vaccines they distribute. Vaccine orders by physicians within Metropolitan Toronto and provincial usage of drugs for sexually transmitted diseases and tuberculosis could be tracked by the Government Pharmacy's system if proper modifications were made.

We will follow up on the results of the Ministry's initiatives on vaccine wastage at the time of our next cyclical audit of the Activity.

TUBERCULOSIS CONTROL

World-wide, tuberculosis (TB) is the leading cause of death from a single infectious disease and is responsible for at least three million deaths each year. An individual with active TB of the lungs is a considerable health risk to others. In 1993 the World Health Organization (WHO) declared TB a global emergency. WHO estimates that one third of the world's population, mostly in developing countries, is infected with TB. About 50 million people may be infected with strains of TB that are resistant to one or more common anti-TB drugs.

Currently, Ontario has one of the lowest rates of active TB cases in the world, with 776 reported cases in 1995. However, Ontario rates are no longer declining significantly. Most of the cases in Ontario occur among immigrants living in major urban centres.

TREATMENT

The mandatory Tuberculosis Control Program requires boards of health to monitor patients' compliance with prescribed drug therapy, which requires six to eight months. Failure to com-

plete the therapy may result in disease recurrence and drug resistance. WHO recommends directly observed treatment (DOT) whereby a health worker or other responsible individual watches the patient actually swallow the prescribed drugs. Based on a 1996 branch survey of boards of health, DOT was used for 10% of TB cases.

At the time of our audit, the Branch was reviewing the need for DOT in Ontario. In addition, a study is under way to look at strategies to improve patient completion of TB treatments, as well as to obtain information about the TB case management practices of boards of health and physicians.

CONTACT TRACING

The mandatory TB Control Program requires boards of health to locate and screen individuals who have been in contact with a person who has active TB to determine whether they require treatment. In some cases this effort can involve trying to locate and screen hundreds of people.

The Branch's Reportable Disease Information System (RDIS) contains limited information about the extent and results of contact tracing. The Branch plans to replace RDIS with an improved system which could collect additional information and would enable the Branch to more effectively monitor and evaluate TB contact tracing by boards of health.

Recommendation

To help monitor the effectiveness of the Tuberculosis Control Program, the Public Health Branch should obtain additional information on the results of tuberculosis contact tracing by boards of health.

Ministry Response

A new information system for tracking reportable diseases is in early development. Additional information on contacts of active cases will be included, resulting in improved management of contacts by the local health departments and more complete data for monitoring the effectiveness of the Tuberculosis Control Program.

SCREENING HIGH-RISK GROUPS

The mandatory TB Control Program requires boards of health to screen groups of people who have a high risk of TB infection. Tuberculin skin testing is the standard method of identifying individuals who are infected with TB but have not developed the disease. Approximately 10% of those infected will go on to develop TB. Appropriate drug therapy can eliminate the infection before the disease develops.

In Ontario, routine screening of school children was discontinued in the early 1980s when consistently low rates of TB infection were found. However, shifting immigration patterns have brought many children to Ontario schools from countries where TB is common.

In the early 1990s, boards of health in urban areas with large numbers of recent immigrants conducted TB screening of school children from countries where TB is prevalent. However, about half of these boards have now stopped screening due to doubts about screening effectiveness and other commitments such as the hepatitis B and measles immunization campaigns.

An October 1995 study of the 1992/93 TB school screening program in the City of Toronto concluded that the effectiveness of the voluntary screening program was significantly reduced by low participation and poor rates of prescription of preventive drug therapy by physicians.

Some boards of health have instituted mandatory TB screening for high-risk children entering school. However, an evaluation of the screening program at one board found that only 25% of the school children with positive skin tests received drug therapy. The study concluded that efforts should be focused on increasing the prescription of preventive drugs by physicians and the taking of medication for the required time.

In April 1997 the Branch surveyed family physicians about their attitudes and practices regarding TB prevention. The survey results should assist in developing ways to encourage the prescribing of preventive drug therapy.

Boards of health with mandatory TB school-screening programs rely on a provision in the *Education Act* which states that a school principal has a duty to refuse admission to any person the principal believes to be infected with or to have been exposed to communicable diseases. However, using this provision requires the cooperation of school authorities. There is no legislation which addresses mandatory screening in other settings.

Recommendation

To improve the effectiveness of mandatory tuberculosis screening programs, the Ministry should:

- **determine whether there is a sufficient legal basis to support the mandatory screening of high-risk groups; and**
- **encourage and monitor the prescribing of appropriate drug therapy.**

Ministry Response

The revised draft* Mandatory Health Programs and Services Guidelines *include screening of high-risk groups and medical assessment of all skin-test-positive individuals. The Public Health Branch has studied and recommended changes to the* Health Protection and Promotion Act *regarding these issues; they will be considered when the next opportunity to make* Health Protection and Promotion Act *changes arises.

MEDICAL SURVEILLANCE UNDERTAKINGS

All potential immigrants and some visitors to Canada are required to undergo medical examinations including a chest x-ray for those 11 years of age or older. If the results show that an individual previously had TB which now is inactive, Citizenship and Immigration Canada requires that individual to sign a Medical Surveillance Undertaking (MSU). In an MSU the

individual agrees to medical surveillance by boards of health and to notify the appropriate authorities of address changes.

The Public Health Branch estimated that it receives about 6,000 MSUs per year from the federal government, most of which are for inactive TB. Recently the Branch estimated that approximately 35% of the MSUs for inactive TB cannot be followed up due to missing or incorrect information. Our discussions with other ministry staff indicated that the Branch may be able to use OHIP's Registered Persons Data Base to obtain the necessary information.

Recommendation

To enhance the effectiveness of the medical surveillance of individuals with inactive tuberculosis, the Ministry should improve its ability to track individuals under surveillance.

Ministry Response

The Public Health Branch is exploring the possibility of obtaining addresses of individuals on medical surveillance from the Registered Persons Data Base. This could assist in dealing with the current problem of follow-up of these individuals.

3.10

IMMIGRATION AND PUBLIC HEALTH

The federal government requires potential immigrants and certain visitors to Canada to have a medical examination which includes, in addition to the chest x-ray, the taking of a medical history, a physical examination and a test for syphilis if the applicant is 15 years of age or older. The examination is usually done in the country of origin by a physician appointed by Citizenship and Immigration Canada.

If the examinations do not effectively screen for serious communicable diseases that are prevalent in the countries from which individuals are entering Canada, there is increased risk that those diseases will be transmitted to the population here. For example, while a chest x-ray is a reasonable method for detecting TB of the lungs, it is a poor method for detecting TB infection. A more effective procedure, a tuberculin skin test, is not used. While syphilis is tested for, other infectious diseases, which may be of equal or greater public health concern, are not. Also, applicants are not required to show proof that they have been adequately immunized.

Medical experts both inside and outside the Ministry have expressed concerns about the effectiveness of the medical examination process. In November 1996 the federal Minister of Citizenship and Immigration appointed an independent Advisory Group to review Canada's immigration legislation and policies and make recommendations by December 31, 1997.

Recommendation

To better meet its goal of protecting public health and preventing disease, the Ministry should provide the federally appointed Advisory Group with suggested changes to federal immigration legislation and policies to address public health concerns in Ontario.

Ministry Response

The Public Health Branch is involved in ongoing discussions with federal counterparts on immigration issues of public health significance such as tuberculosis.

SEXUALLY TRANSMITTED DISEASES

The goal of the mandatory Sexually Transmitted Diseases Program is to reduce the incidence of and complications from all sexually transmitted diseases. Sexually transmitted diseases (STDs) are a major public health concern because they can cause serious short- and long-term health problems.

Under the *Health Promotion and Protection Act*, cases of serious sexually transmitted disease must be reported to the Public Health Branch. The information, which is provided by boards of health, is recorded in the Reportable Diseases Information System (RDIS).

The STDs Program requires boards of health to provide appropriate case management, which includes identifying, tracing and referring the sexual contacts of individuals who have been diagnosed as having a serious sexually transmitted disease. Contact tracing is important for ensuring that other individuals who may have become infected are properly treated, thus preventing further transmission of the disease. In cases where an attending physician conducts contact tracing, public health authorities are still responsible for ensuring that tracing is completed properly.

A 1991/92 federally funded survey of STD contact tracing in Canada found that very few health units had measures of their effectiveness, such as the number of patients or contacts participating in any stage of contact tracing for any sexually transmitted disease.

In 1994 the Branch attempted to measure the effectiveness of case management by boards of health by looking at the percentage of gonorrhea cases reported by each health unit which had a case disposition recorded on RDIS. However, the Branch has never performed any analysis or reviews of contact tracing for STDs. The Branch plans to replace RDIS in 1998 with an improved system that could enable the Branch to more effectively monitor and evaluate contact tracing and other aspects of case management.

Recommendation

To improve the effectiveness of efforts to reduce the incidence of and complications from sexually transmitted diseases, the Ministry should monitor and evaluate the case management practices of boards of health, including the extent and effectiveness of contact tracing.

Ministry Response

Currently, the Public Health Branch analyzes data on specified diseases received through the Reportable Diseases Information System. It is expected that the enhanced information system [for tracking reportable diseases] will allow more in-depth monitoring of contact tracing.

3.10

FOOD SAFETY PROGRAM

The goal of the mandatory Food Safety Program is to improve the health of the population by reducing the incidence of food-borne illness which can arise from consuming improperly prepared or handled food that has been contaminated by bacteria or viruses. The number of cases of food-borne illness is difficult to determine since many mild cases are not diagnosed or reported. However, Canadian public health agencies have estimated that more than one million cases of food-borne illness occur each year, of which approximately 50% of cases reported in Canada can be attributed to food service premises.

All boards of health are required to provide food safety training for operators and food handlers and to conduct inspections of food service premises. In Ontario, there are more than 30,000 food service premises.

The Branch has developed a number of food safety protocols, including the Hazard Analysis Critical Control Point (HACCP), which requires boards of health to assess the risk level of all food service premises within their respective areas. The assignment of a risk level (high, medium or low) is designed to enable boards of health to target inspection resources to higher risk facilities and dictates the type of strategy to be applied. Strategies include food safety training for food handlers and operators of food premises, yearly inspections for compliance with the Food Premises Regulation of the *Health Promotion and Protection Act*, and yearly HACCP audits on medium- and high-risk food service premises.

An HACCP audit focuses on those steps in the food preparation process that can control or eliminate food safety hazards while a compliance inspection focuses on regulatory requirements such as the design of food service premises and basic sanitation requirements. For example, a full-service restaurant would be classified as a high-risk facility requiring both an HACCP audit and a compliance inspection, while a cocktail bar would be classified as low risk, requiring only a compliance inspection.

In 1995 the Public Health Branch began requesting all boards of health to submit quarterly summary reports of their inspection activities of food service premises. Branch staff analyzed the information contained in reports from 28 boards for the first quarter of 1995. The results suggested that boards of health had focused their efforts on compliance inspections rather than

the more detailed HACCP audits required for medium- and high-risk food service premises. Furthermore, the analysis indicated that very few of the medium- and high-risk premises visited had been provided with formal food handler training. The results of this analysis were communicated to board-of-health food inspectors in December 1995.

In 1996 the number of boards submitting reports decreased from 30 in the first quarter to 18 in the third quarter. The Branch then formally requested boards of health to submit data relating to inspections of food service premises conducted for that year. In March 1997 branch staff were in the process of analyzing the reports from all 42 boards of health. This analysis should assist the Branch in determining the degree to which the HACCP protocol has been implemented.

Recommendation

To help ensure that food service premises are in compliance with acceptable public health practices, the Ministry should determine whether boards of health have fully implemented food safety training and Hazard Analysis Critical Control Point protocols, taking corrective action as necessary.

Ministry Response

Under current plans related to implementation of the Who Does What initiative, the Public Health Branch will be setting and monitoring program standards, including those related to food safety, and taking action as appropriate to enforce the standards.

RABIES CONTROL

The goal of the mandatory Rabies Control Program is to prevent the occurrence of rabies in humans. Rabies is an acute viral infection that can be transmitted to humans through domesticated animals and pets that have come in contact with a rabid animal. In Ontario, rabies occurs mainly in foxes and skunks. While domestic dogs and cats account for less than 10% of the cases of rabies in animals, bites from these pets account for the majority of suspected rabies exposures in humans. The treatment of individuals who may have been exposed to rabies must start quickly since a delay reduces the effectiveness of the vaccine. Untreated rabies is usually fatal.

The immunization of cats and dogs helps reduce the risk of rabies being transmitted to humans. The Rabies Control Program only requires boards of health to encourage the vaccination of dogs and cats against rabies. However, a Regulation under the *Health Protection and Promotion Act* requires owners of dogs and cats in areas served by boards of health that are listed in the Regulation to immunize their pets against rabies. The practice has been for each board of health to choose whether or not to be listed in the Regulation. A total of 30 boards of health are now listed.

Experts in the Public Health Branch and at the Ministry of Natural Resources agree that the four boards of health in southern Ontario not yet listed in the Regulation ought to be listed. These boards serve approximately 20% of the population of the province.

Recommendation

To better ensure that the goal of the Rabies Control Program is achieved, the Ministry should take steps to make the vaccination of cats and dogs against rabies mandatory where warranted.

Ministry Response

The Public Health Branch will propose a requirement and standard for inclusion in the revised mandatory rabies control program to ensure health units in southern Ontario implement compulsory pet rabies vaccination.

3.10 TOBACCO CONTROL ACT

In 1992 the Ministry of Health developed the Ontario Tobacco Strategy to reduce tobacco use in Ontario. To support the Strategy, the *Tobacco Control Act* (TCA), passed in November 1994, prohibits tobacco sales to minors; bans the sale of tobacco in pharmacies, health care sites and vending machines; prohibits smoking in a wide variety of public places; and requires the proper placement of signs designating no-smoking areas and prohibiting tobacco sales to minors.

The TCA allows the Minister of Health to appoint inspectors to ensure compliance with the Act. The inspection function has been delegated to the 42 boards of health.

Offences under the TCA fall into two categories. Tobacco sale offences include selling tobacco to a person who is or appears to be less than 19 or failing to post proper signs in retailer premises. General offences include public-smoking offences such as smoking in schools. Penalties include tickets with set fines and prosecutions under the *Provincial Offences Act.*

The Public Health Branch maintains a summary of charges and convictions resulting from violations of the *Tobacco Control Act* based on data submitted by boards of health. In 1996 the Branch analyzed the summary to identify boards of health with low tobacco enforcement activity. As a result, branch staff visited two boards of health to review tobacco enforcement activities. Subsequent to these visits, the number of TCA charges increased for both boards of health.

In December 1996 the Branch introduced an accountability framework for monitoring and planning tobacco enforcement activities. Boards of health were instructed to send in yearly data, beginning with 1996, on tobacco enforcement indicators including the number of full-time inspectors and the percentage of vendors inspected.

Although the Public Health Branch has no formal targets for compliance with the requirements of the TCA, it recognizes that at least 80% of vendors must comply with the provision prohibiting the sale of tobacco to minors in order to reduce tobacco use by minors.

The Ministry has funded several studies in an attempt to measure compliance with the TCA. A study conducted in 32 boards of health prior to the proclamation of the TCA showed that 55% of tobacco retailers would not sell tobacco to minors. A similar study conducted in 16 boards in

late 1996 indicated some improvement. While the overall compliance rate had risen to 74%, rates among boards ranged from 29% to 98%.

Publicity regarding enforcement activities is also an effective deterrent and may encourage voluntary compliance with the TCA. We were informed by branch staff that boards of health are encouraged to make use of the media to publicize their enforcement activities. However, the Branch has no formal procedures or strategies for publicizing TCA enforcement activities.

Recommendation

To increase compliance with the *Tobacco Control Act,* the Ministry should evaluate the use of additional enforcement measures and should develop an overall communication strategy to publicize enforcement efforts.

Ministry Response

The Public Health Branch, in conjunction with the Health Promotion Branch, will explore additional enforcement measures as well as an overall communication strategy.