TORONTO **STAFF REPORT**

November 17, 2004

To: Board of Health

From: Dr. David McKeown, Medical Officer of Health

Subject: Invasive Meningococcal Disease Vaccination Campaign - 2005

Purpose:

To describe Toronto Public Health's (TPH) plan for an immunization campaign against type C Invasive Meningococcal Disease (IMD-C) for youth 15 to 19 years of age and grade 7 students in Toronto.

Financial Implications and Impact Statement:

Beginning in 2005, an additional operating budget of $187,000 gross / $0 net is required annually to integrate the IMD-C vaccine program into the existing grade 7 immunization program for hepatitis B in Toronto. The Ministry of Health and Long Term Care (MOHLTC) will fund $8.50 per dose per year and TPH estimates that it will provide 22,000 doses of IMD-C vaccine to grade 7 students each year beginning in 2005 based on the number of doses of hepatitis B vaccine given annually to this population. Three additional temporary positions are required to deliver this program each year.

A one-time operating budget expenditure of $850,000 gross/ $0 net in 2005 is required for a "catch-up" vaccination campaign against IMD-C for youth 15 to 19 years of age. The MOHLTC is also providing TPH with $8.50 per vaccine dose to support this program. TPH estimates, based on previous campaigns and recent vaccination coverage rates, that 100,000 youth will be vaccinated against IMD-C in 2005. A total of 8.5 temporary positions at a cost of $427,000 will be required to deliver this one-time campaign. To enable delivery of this "catch-up" campaign and still maintain important on-going programs, nursing agencies will also be engaged for specific clinics to support TPH nurses. Agency fees, promotion and other related costs of $423,000 are included in the 2005 estimate of one-time, fully recoverable expenditures. In 2006 this one-time budget of $850,000 gross/ $0 net for youth 15 to 19 years of age will be removed from the base budget.

The combined cost of this vaccine program in 2005 is $1,037,000 gross / $0 net. In 2006 the base program will be reduced by $850,000 gross / $0 net to $187,000 gross / $0 net. This initiative is not included in the proposed 2005 Toronto Public Health Operating Budget.

The Chief Financial Officer and Treasurer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that:

(1) an amount of $1,037,000 gross / $0 net, be added to the 2005 Toronto Public Health Operating Budget to support the immunization campaign against type C Invasive Meningococcal Disease (IMD-C) including $850,000 gross / $0 net in one time 2005 funding for youth 15 to 19 years of age and on-going funding of $187,000 gross / $0 net for grade 7 students in Toronto; and

(2) this report be forwarded to the Budget Advisory Committee for its consideration with the proposed 2005 Toronto Public Health Operating Budget.

Background:

In June 2004, the MOHLTC announced a substantial expansion to Ontario's publicly funded vaccine program. Using funds provided by both the provincial and federal governments, the MOHLTC added public financing for vaccines protecting against varicella (chickenpox), type C invasive meningococcal disease (IMD-C) and invasive pneumococcal disease. The introduction of public funding for these vaccines is being phased in over nine months and is focused on providing protection for populations at highest risk for these diseases (see Appendix 1).

As part of this expansion to the vaccine program, all public health units in Ontario will be given additional resources to provide IMD-C vaccine directly to grade 7 students each year beginning in 2005 (as part of the hepatitis B vaccination program) and to conduct a one time IMD-C "catch-up" vaccination campaign for youth 15 to 19 years of age in 2005. The MOHLTC is supporting both of these programs through a payment to local health units of $8.50 per dose.

Comments:

(A) Invasive Meningococcal Disease

IMD is caused by the bacteria Neisseria meningitides. There are many types of this bacteria but A, B, C, W135 and Y cause most of the reported illness. Vaccines exist for four of these (i.e. A, C, W135 and Y). While type B IMD is also common, a vaccine against type B has not been created due to its similarity to human cell proteins. Up to 30% of individuals carry N. meningitides in their throat without becoming ill. IMD is transmitted through saliva by way of shared utensils, food or direct contact such as kissing. The most common symptoms of IMD include fever, malaise, headache, neck stiffness, back and joint pain, vomiting, weakness,

photophobia and neurological symptoms. Sequelae in survivors include deafness, permanent neurological deficits, seizures and extensive tissue necrosis, sometimes resulting in amputations. While there are treatments for IMD, the case fatality rate remains approximately 10% (up to 40% for IMD-C in Ontario because of increased virulence of the strain circulating in Ontario) and many deaths occur in those less than 20 years of age.

In Canada, the overall rate of IMD is 1 case per 100,000 per year, representing approximately 300 cases reported in Canada annually. In Ontario, there were 57 cases of IMD reported to the MOHLTC in 2003 of which 11 were fatal representing a case rate of 0.48 per 100,000 per year and a case fatality rate of 19.3 per 100 cases (19.3%). Thirteen cases were reported to Toronto Public Health in 2002 of which three were deaths due to IMD and seven cases were reported in 2003 with no deaths. So far in 2004, five cases of IMD have been reported with 1 death. In 2002 and 2003 combined, 30% of the cases were less than 20 years of age.

Across Canada, IMD-C represents approximately 33% of IMD but this varies substantially from year to year. Although an avereage of only six cases of IMD-C were reported to TPH each year between 1991 and 2001, outbreaks can occur. These can be prevented through the use of this vaccine. Vaccines for routine use against the other types of IMD (A, Y, W-135) have not been licensed in Canada but are in development.

The age distribution of Ontario's IMD cases was a critical input into the design of the IMD-C campaign. Appendix 2 outlines the association between age and risk for IMD-C. Risk is highest in very young infants, decreases for children between two and ten years of age and then increases during adolescence before falling again after individuals reach their early 20's. To best use available resources, the MOHLTC is offering the vaccine against IMD-C to infants first (beginning September 2004) through health care providers since most children are seen for routine check-ups and to receive other vaccinations. In 2005, protection will be offered to youth 15 to 19 years of age through one time "catch-up" clinics and to 12 year olds through an enhanced grade 7 immunization program. Children between two and 11 years of age will be vaccinated once they reach grade 7. Those who are 14 years of age in 2005 will be offered vaccine in 2006.

Use of Conjugate IMD-C Vaccine:

In 1999, the United Kingdom initiated a universal vaccination program against IMD-C using a conjugate vaccine. The TPH campaign will use a conjugate vaccine which has been formulated to provide long term protection against IMD-C even when given to infants. This program resulted in a 90% decrease in cases in the four years after the program was started in the population immunized against IMD-C. A number of other countries in Europe have also initiated universal campaigns against IMD-C with similar success.

Toronto Public Health IMD-C "Catch-Up" Campaign:

Youth 15 to 19 years of age seldom see a health provider but the vast majority of this age group attend some form of school. Therefore, local health units can reach many people in this age group through schools and other community settings. These youth will also have the option of

receiving the vaccine through their own health care provider. The MOHLTC and local health units will therefore be initiating a "catch-up" campaign against IMD-C starting in January 2005. The campaign will be substantially completed during the first half of 2005 but clinics will also be offered later in 2005.

Structure of the IMD-C "catch-up" campaign for youth 15 to 19 years of age:

(1) Post-Secondary Institutions

The first component of the campaign will focus on post-secondary institutions. Literature in the United States and Britain has indicated students new to dormitories have a slightly elevated risk for IMD. Clinics will be held at post-secondary institutions to provide easy access to vaccination for busy post-secondary students. Connections have already been made with Student Health Services at many post-secondary education institutions. It is anticipated that Vaccine Preventable Disease (VPD) nurses will visit these institutions to provide the vaccine to interested students. As with the other components of this campaign, youth who miss a clinic at their school can receive the vaccine from their health care provider or at one of TPH's community clinics later in the year. To ensure only eligible individuals receive the vaccine, proof of age will be required.

(2) Secondary Schools

As the first component draws to a close, the campaign will focus on secondary schools. The bulk of youth between 15 and 19 years of age attend secondary school and TPH VPD nurses will visit secondary schools to offer this vaccine. Toronto school boards and private schools have been contacted to initiate planning for this program. There are 243 high schools in Toronto and all will be visited at least once.

(3) Community Clinics

As the 2004/05 school year draws to a close, the third component of the campaign, community clinics, will be scheduled to offer vaccination to youth in the target age group who do not attend secondary school or one of the post-secondary institutions where vaccine was offered. These will be planned at civic centers and other accessible locations. VPD nurses will collaborate with community partners to ensure that youth in shelters and who visit drop-in centres are offered IMD-C vaccination. These community clinics will also be an opportunity for individuals who missed the other clinics to be vaccinated. As well, IMD-C clinics will continue during the rest of 2005.

VPD nurses will form the core of the staff participating in the "catch-up" campaign. These nurses have many years of experience conducting large scale vaccination clinics including previous measles and hepatitis B catch-up campaigns and vaccine campaigns against meningitis and hepatitis A during outbreak situations. VPD nurses will be clinic co-ordinators at all clinics to ensure TPH policies and procedures are followed.

There is an insufficient number of TPH nurses to completely support this initiative and still maintain important on-going programs. The MOHTLC is providing additional funding to support this program that will be used to hire additional nurses through nursing agencies for specific clinics to support TPH nurses.

Partners:

TPH is working closely with the Toronto District School Board, the Toronto District Catholic School Board, other local boards, universities and colleges and private schools to ensure that the clinics are scheduled at a time that is appropriate for students attending these institutions. TPH is also working closely with EMS and Shelter, Housing and Support Division of Community and Neighbourhood Services to provide the vaccine to youth who are not attending the traditional school system.

Implementation of Enhanced Grade 7 Immunization Program:

The enhanced annual grade 7 immunization program will be introduced this spring concurrent with the "catch-up" campaign for youth 15 to 19 years of age. VPD nurses already visit approximately 420 grade 7 classes twice each school year to offer hepatitis B vaccine. During the second visit that usually occurs between February and May of each school year, VPD nurses will offer vaccination against IMD-C to grade 7 students who have not yet been vaccinated. Three new temporary VPD nurse positions will support this on-going implementation.

Some health authorities in British Columbia have implemented their hepatitis B and IMD-C vaccination programs for grade 6 students in this fashion. TPH staff have been in contact with a number of health authorities in B.C. to gather information on their program and hear about lessons they learned when they began their program. Giving two vaccines together has generally been accepted by parents and students and no increased side effects have been noted.

Promotion:

Since health seeking behaviour such as vaccination is not a high priority for youth between 15 and 19 years of age, efforts must be made to ensure that all youth are informed about this campaign, including those who do not attend school. TPH will utilize a number of promotional channels such as on-campus media, school bulletins and newspaper advertisements and communication through community agencies to ensure that youth in this age group are aware of this program. The MOHLTC will also be providing promotional support along with material for the enhanced grade 7 vaccination program.

(B) Implementation of Public Funding for Chickenpox and Pneumonia Vaccines

Public funding has also been added for chickenpox vaccine and pneumococcal vaccine in this expansion to Ontario's publicly funded vaccine program. Chickenpox vaccine is a live attenuated vaccine much like the vaccine against measles, mumps and rubella. The vaccine was made available in September 2004 for all one year olds born after September 1, 2003. In 2005, it will be available for five year olds who are susceptible to chickenpox and individuals with

medical conditions that place them at increased risk of severe illness due to chickenpox. Information from the United States, where this vaccine is already widely used, showed it reduced chickenpox infection by 70 to 90 % in schools and day cares where a case of chickenpox was detected.

Public funding has already begun for a conjugate vaccine against pneumococcal disease for children less than five years of age who have medical conditions that place them at increased risk of invasive pneumococcal disease. Beginning in 2005, all children born after January 1, 2004 will be eligible to receive this vaccine with their childhood shots through their health care provider.

Conclusions:

The MOHLTC has taken a substantial step in protecting the health of Ontario residents by initiating public funding for three new vaccines; varicella (chickenpox), type C invasive meningococcal disease (IMD-C) and invasive pneumococcal disease.

TPH will be ensuring that the new vaccine against IMD-C, an uncommon but potentially life threatening disease, is promoted widely in the eligible youth population. The MOHLTC is providing TPH with funding to offer vaccination against IMD-C directly to a portion of the population known to be at high risk for this disease, youth between 15 and 19 years of age and grade 7 students. Vaccination programs in other countries using similar vaccines have shown a dramatic decline in IMD-C cases and it is anticipated that the widespread availability of this vaccine will greatly reduce the risk of IMD-C in Toronto.

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List of Attachments:

Appendix 1 - Introduction of New Publicly-Funded Vaccines in Ontario
Appendix 2 – Invasive Meningococcal Cases, Ontario – Age Distribution

Appendix 1

Introduction of New Publicly-Funded
Vaccines in Ontario

Vaccine Diseases	Who Qualifies	When Available	What is Prevented
Conjugate Pneumococcal	High-risk children 24 to 59 months of age	July 2004	Invasive pneumococcal diseases (meningitis, pneumonia and infection of the bloodstream)
	All children born on or after Jan. 1, 2004	January 2005	
	High-risk children under 2 years of age	Available Now	
Varicella	Children born on or after Sept. 1, 2003 can receive the vaccine on or shortly after their first birthday	September 2004	Chicken pox and its complications (e.g., bacterial skin infections)
	Five-year-old children who have not yet had chicken pox	September 2004	
	Certain High-risk people (all ages)	January 2005	
Meningococcal C-Conjugate	Children born on or after Sept. 1, 2003 can receive the vaccine on or shortly after their first birthday	September 2004	Invasive meningococcal disease (IMD), including meningitis and meningococcemia (meningococcal infection of the blood)
	Children 12 years of age, youth aged 15-19, and high-risk people of all ages	January 2005	
	People in close contact with a person who has a vaccine-preventable meningococcal disease	Available Now	

Appendix 2

Invasive Meningococcal Cases, Ontario

Age Distribution