alPHa RESOLUTION A26-01

TITLE: **Strengthening Hepatitis B Prevention in Ontario Through Vaccination in the First Year of Life**

SPONSORS: **The Board of Health for the District of Algoma Health Unit (Algoma Public Health); The Board of Health for the Simcoe Muskoka District Health Unit (Simcoe Muskoka District Health Unit)**

WHEREAS hepatitis B virus (HBV) infection causes a substantial burden of disease globally, with chronic infection leading to cirrhosis, liver failure, and liver cancer(1), noting that in 2021 alone, 3524 cases of HBV were reported in Canada(2); and

WHEREAS chronic HBV infection results in high lifetime healthcare utilization and substantial costs, with increased costs related to disease severity and for patients requiring liver transplantation(3); and

WHEREAS infants and young children who become infected with HBV are at the highest risk of developing chronic infection, with up to 90% of infected infants becoming chronic carriers compared with fewer than 5% of infected adults(4); and

WHEREAS Ontario currently administers HBV vaccine routinely in Grade 7, which leaves children susceptible to infection during their first 12 years of life when they are most vulnerable to developing chronic HBV infection(5); and

WHEREAS surveillance data from Public Health Ontario indicate that HBV infections continue to occur among children in Ontario prior to adolescence, including Canadian-born children (139 cases before age 12 between 2003 and 2013)(1), often due to missed prenatal screening for HBV, incomplete post-exposure prophylaxis, household exposure to undiagnosed carriers, travel, or immigration from regions of higher HBV prevalence(6); and

WHEREAS the National Advisory Committee on Immunization (NACI) has concluded that HBV vaccination in the first year of life provides long-lasting protection(4,6,7) and that acceptable schedule options in the first year of life include either vaccination at birth or later in infancy; and

WHEREAS birth dose HBV vaccination is safe and highly effective(3), and jurisdictions that implemented it decades ago now show lower adult HBV prevalence and reduced long-term disease burden, supporting the population-level benefits of early immunization(8); and

WHEREAS infant HBV vaccination at 2, 4, and 6 months of age is a well-studied safe and effective alternative to birth vaccination which has also been implemented in many jurisdictions in Canada and globally(9); and

WHEREAS a recent analysis modelling potential HBV immunization strategies for Ontario showed that providing 3 doses of the DTaP-HB-IPV-Hib vaccine (combination vaccine against 6 diseases) in infancy would lead to cost-savings compared to the current practice of administering the DTaP-IPV-Hib vaccines (combination vaccine against 5 diseases) in infancy plus the HBV vaccines in grade 7, due to reduced costs related to averted visits to healthcare providers, treatment costs, and complication costs, and noting this is also more favorable from a cost perspective than introducing birth dose HBV vaccination(10); and

WHEREAS several other Canadian jurisdictions already provide universal HBV vaccination in infancy, including British Columbia, Quebec, PEI, and Yukon; and

WHEREAS altogether, considering cost, safety, effectiveness, feasibility to integrate into the current vaccination schedule, and likelihood of acceptability to parents and health care providers, adopting HBV vaccination in infancy (at 2, 4 and 6 months of age) may be preferred for Ontario over birth vaccination, with the benefits of this immunization strategy over the Grade 7 program sufficiently justifying the required catch-up efforts.

NOW THEREFORE BE IT RESOLVED that the Association of Local Public Health Agencies (alPHa) writes to the Ontario Minister of Health recommending a review in consultation with the Ontario Immunization Advisory Committee and/or the National Advisory Committee on Immunization, as well as local public health agencies, regarding shifting universal HBV vaccination from Grade 7 to the first year of life, based on existing epidemiologic and economic evidence and programmatic considerations, in order to strengthen early protection against HBV, reduce preventable chronic infections, and advance health equity for children and families across Ontario;

AND FURTHER that alPHa recommends that the Minister of Health specifically considers the adoption of the combined DTaP-HB-IPV-Hib vaccine given at 2, 4, and 6 months of age as the preferred option for Ontario given its ability to seamlessly integrate into the existing vaccination schedule;

AND FURTHER that the Chief Medical Officer of Health be so advised.

Background

Hepatitis B is a liver disease that can lead to complications such as cirrhosis, liver failure, liver cancer, disability, and premature death, especially when acquired at an early age. Hepatitis B virus is very infectious; the virus can survive on surfaces for up to 7 days. Globally, the highest risk of transmission in childhood occurs in infants exposed during birth to their mothers who are carriers of Hepatitis B, many of them being immigrants from hepatitis B endemic areas such as Africa and Asia(4)(11); in such cases, 70% of infected pregnant women will transmit the virus to their baby.(12)

Transmission in childhood is also possible via close household contact with infected individuals (horizontal transmission), the risk being as high as 54%(13). Although rare, horizontal transmission in daycare settings is also possible (14). One of the challenges with childhood transmission is that Hepatitis B infection at an early age is mostly asymptomatic, therefore, not all cases are identified. Despite the absence of symptoms, 90% of infants infected will develop Chronic hepatitis B, and one out of four individuals with Chronic HB will die prematurely of cirrhosis or hepatocellular carcinoma.(12)

There are various Hepatitis B-containing vaccines available in Canada, alone or in combination with other vaccines that are already part of the current vaccination schedule[1].

Canada's vaccination strategy varies by province, under the principle that circulation of hepatitis B in the country is low (less than 5% of Canadians have markers of past infection, and less than 0.5% are carriers).(4) However, between 2003 and 2013, there were six cases per every 1000 Canada-born children under age 12 (time at which they usually receive the vaccine in Ontario).(1) Infections in childhood may be more likely to be occur among racialized children.(15)

Currently, the National Advisory Committee on Immunizations (NACI) does not give a specific recommendation regarding the best age for Hepatitis B vaccination. Instead, they leave it up to the provinces to make updates based on local epidemiology and specific programmatic considerations.(7)

Currently in Ontario, the Hepatitis B vaccine is routinely offered in Grade 7 (12 years of age) through the school immunization program, and a high-risk program is offered for younger age of vaccination for those most at risk. Immunization nurses visit schools twice a year to administer two doses at least 6 months apart.(5) With the current approach, most children remain unprotected from hepatitis B for the first 12 years of life.

There are two other approaches to Hepatitis B vaccination in Canada: vaccination at birth and vaccination in infancy.(11) Research shows that vaccinating children early in life is effective and safe.(4,16) Vaccination at birth[2] is done in New Brunswick, Northwestern Territories and Nunavut. WHO recommends universal vaccination at birth based on the evidence that mother to child transmission is the highest risk factor for Hepatitis B in childhood.(11) Vaccination in infancy[3] is routinely done in British Columbia, Yukon, PEI and Quebec. Countries in Europe and the Americas have too successfully included Hepatitis B vaccine into their immunization programs in infancy.(9)

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[1] ENGERIX-B-Pediatric, INFARIX hexa (DTaP-HB-IPV-Hib), RECOMBIVAX HB-Pediatric and TWINRIX Junior.

[2] At birth, at 1 month of age and at 6 months.

[3] This can be achieved by giving a hepatitis B vaccine in addition to the current combination vaccine against five diseases (pentavalent vaccine + Hep B vaccine) or by giving one vaccine protecting against six diseases, including hepatitis B (hexavalent vaccine).

Hepatitis B vaccine is safe. There is no information suggesting that administering the vaccine at an earlier age is associated with safety concerns, the only exception being an increased risk of side effects among premature babies under 1500 g birth weight.(4) Moreover, there is no evidence that hepatitis B interferes with the immune response to any other vaccine or vice versa.(11) Likewise, there are no clinically meaningful differences in the safety profile of combination vaccines with and without the hepatitis B component.(9)

Records from Public Health Ontario indicate that vaccination coverage achieved in infancy through the routine infant vaccination schedule is higher than what is achieved in adolescence through school-based programs. Immunization coverage in the first year is above 80%, higher than the 70% coverage of Hepatitis B vaccination offered in adolescence.(17) Shifting to vaccination in infancy would likely translate into a higher number of children protected from the infection.

An Irish study found universal vaccination in infancy using a combination vaccine cost effective when compared to selective vaccination to newborns at high risk.(18) In the Ontario case, switching from the current practice of vaccination in grade seven to vaccination at birth or in infancy would prevent 37-38% of acute hepatitis B cases and 30-31% of chronic hepatitis B cases. Furthermore, birth vaccination would be cost-effective and infant immunization -involving vaccinating with a combined vaccine at 2, 4 and 6 months of age- would be cost saving.(10) This study considered costs of each vaccination modality, healthcare costs of hepatitis B disease and complications, and costs of years lost due to premature death and due to disability resulting from complications of hepatitis B infection.

In conclusion, hepatitis B and its complications are preventable with vaccination. Giving the vaccine earlier in life is safe and effective. A shift to a schedule that includes starting hepatitis B vaccination in the first year of life in Ontario would protect our children earlier and provide long-term cost-savings.

A representative from both Algoma Public Health and Simcoe Muskoka District Health Unit will be present at the meeting to introduce, move, and answer questions about the resolution being presented and commits to undertaking actions as requested by aIPHa for carrying out the strategy should the resolution pass.

References

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