Hepatitis Essay, Research Paper

THE PRIORITY OF HEPATITIS B VACCINATIONS IN CANADA The increase in the number of children attending schools in Canada and the potential for transmission of viral infection in that environment is a problem of great size. A virus is defined as “a morbid principle, or a poisonous venom, especially one capable of being introduced into another person or animal” in The Shorter Oxford English Dictionary. Due to their miniscule size, it was not until 1885 that Adolf Mayer observed their existence in the mosaic (leaf-spot) disease of the tobacco plant, which he described as to be caused by a strangely invisible contagious agent.1 This particular living entity was so small that it readily passed through a porcelain filter. With the invention of the electron microscope by Ernst Ruska, the virus’ true anatomy was first time visible to us in 1933.2 They are so infinitesimal that billions could fit into a drop of water—or a drop of human blood. Viruses have the most exquisite ability to sense the right cell surfaces. They don’t just cause diseases in people, they infect every form of life on earth. Some emerging viruses are very serious. Common examples are the hepatitis viruses, B and C. The hepatitis B pattern of illness was recognized at the end of the nineteenth century, yet the virus itself was not isolated until 1963. One hundred and seventy six million people are carrying the surface antigen of this one virus globally, and the infection causes a vast amount of illness and death, including most of the fatal cases of liver cell cancer.3 To prevent the wide spread of this disease, a rush for vaccination in the elementary schools for children in the K-6 levels had been implemented in Canada. However, the most effective way to prevent chronic infection is to vaccinate against it during the neonate stage up to the age of 5, the period of where the risk is the highest. Therefore, instead of targeting elementary school children, the ministry of health should have been inoculating neonates for their first priority.Hepatitis B (HBV) is a liver disease that causes inflammation of the liver. This inflammation can cause liver cell damage, which can lead to scarring of the liver (cirrhosis) and an increased risk of liver cancer. Each year in the U.S. more than 100,000 people contract HBV.4 Approximately 90-95% of adults will recover within six months and not contract HBV again.5 However, blood tests will always show that they have been infected with HBV and blood banks will not accept their blood. Approximately 5-10% of adults and 25-90% of children under the age of five that are infected with HBV are unable to clear the virus within six months and are considered to be chronically infected, commonly called hepatitis B chronic carriers.6 Many people with acute hepatitis B have no symptoms at all, or they may be very mild and flu-like: loss of appetite, nausea, vomiting, diarrhea, fatigue, muscle or joint aches and mild fever. About 25-35% of the patients may notice dark urine, yellowing of the skin and eyes (jaundice) or light coloured stools.7 A few patients have a more severe course of illness and may die of fulminant (overwhelming) hepatic failure within a short period of time after getting sick. HBV is transmitted through contact with body fluids containing HBV, such as blood, semen and vaginal secretions (menses). Thus, anyone who is exposed to blood or body fluids of an infected person is at risk of contracting HBV. Hepatitis B is most commonly passed from person to person through sexual contact. It can also be passed through exposure to sharp instruments contaminated with infected blood, such as tattooing, body piercing and acupuncture needles, sharing of razors or toothbrushes with an infected person, or human bites and through blood given before hepatitis B testing was available (1975). In about 30%-40% of cases, the method of passing the virus to others is unrecognized. The virus can survive outside of the body for at least 7 days on a dry surface and is 100 times more contagious than HIV.8 People who have not cleared HBV from their blood within 6 months are considered to be chronically infected and are called hepatitis B carriers. There are about 1 million persons chronically infected with HBV, who have no symptoms but can pass the infection on to others in the U.S. at the present time. An estimated number of 300,000 new cases show up each year.9 Babies born to HBV-infected mothers are at a high risk of becoming chronically infected with HBV compared to a much lower risk for adults. Usually a person with chronic HBV infection has no signs or symptoms of infection and can unknowingly pass HBV to others. In some patients, HBV continues its silent attack on the liver, eventually causing cirrhosis (scarring) or cancer of the liver. Cirrhosis slows the blood flow through the liver and causes greatly increased pressure in the portal vein that carries nutrients from the stomach and intestines to the liver. As a result, varicose veins may develop in the stomach and esophagus and, without warning, these large veins can break, causing a person to vomit blood or have black, tarry stools (bowel movements). A pregnant woman who is an HBV carrier can pass the infection on to her new-born baby at birth. Eighty-five-90% of babies infected at birth will become carriers or chronically infected, reducing their life expectancy.10 About 4,000 people die each year in the U.S. due to liver problems related to HBV.11

Currently, the only approved treatment for hepatitis B is Interferon. Less than 50% of patients with chronic HBV are candidates for interferon therapy. Initially 40% of HBV patients who are treated will respond; however, some will relapse when the treatment is stopped. Overall, about 35% of the eligible patients will benefit.12 The treatment, given by injection, may have a number of side effects including flu-like symptoms, headache, nausea, vomiting, loss of appetite, depression, diarrhea, fatigue and thinning of hair. Interferon may lower the production of white blood cells and platelets by depressing the bone marrow. Thus blood test are needed to monitor blood cells, platelets and liver enzymes. One way of preventing the disease is to vaccinate against it. The package for inoculating against the disease consists of three shots. The usual schedule is: first injection, then a second one in 1 month, and a third one 5 months later. Children receiving the second and third injections may be given a combined vaccine that includes the Hib influenza type b, and HBV. This vaccine provides protection for at least 14 years, and possibly a lifetime. It will not “cure” a person who is already infected. The centres for Disease Control and Prevention recommend that all new-borns receive hepatitis B vaccine. Babies born to infected mothers should also receive hepatitis B immune globulin (HBIG) within twelve hours of birth. All children should be vaccinated by 11 years of age. The prevalence of HBV in Canada is unknown, although some have estimated it to be about 0.5%-1.0%, however, this is just an educated guess.13 Furthermore, hepatitis B is not uniformly distributed in the community, as the prevalence in different ethnic or occupational, and other risk groups has not been well defined. Some specific population groups can be identified, in whom the prevalence is much higher than the national average. Most easily identifiable of these are immigrants from South East Asia and Africa, but other immigrant groups also have a higher than expected prevalence of the hepatitis B carrier. n Canada, eleven provinces and territories have opted for elementary schoolchild (grades 4-6) vaccination, and only four of the eleven have also targeted neonates, even though the Canadian Paediatric Society, and the American Public Health service recommended that the first priority in universal vaccination should be neonates.14 This could be mainly due to the fact that British Columbia has set a misguided example by targeting children in grade six, because of the province’s relatively high rates of acute hepatitis B in teenagers and young adults, especially around the greater Vancouver region. Supposedly, with the school child vaccination, one could observe tangible reduction in acute HBV infection within only a few years, rather than within 15-20 years with the neonatal program. However, most health ministries have apparently not distinguished between preventing disease versus preventing mortality. The rate of teenagers and adults becoming a chronic carrier is very low (approx. 0.3% -0.9%) as opposed to a neonate’s risk of becoming a carrier (>90%).15 Five to ten percent of hepatitis B young adult victims become chronic carriers, often without knowing it. However, nine of ten infants infected (90%) become chronic carriers. They are the group with the highest rate of risk to develop cirrhosis and liver cancer. The hepatitis B virus is globally distributed among humans. In a population with little immigration and emigration, childhood vaccination will eventually reduce the population pool of chronic HBV carriers. However, the continuous coming of immigrants into Canada, of whom the vast majority is from high-endemic countries, makes this strategy of inoculating elementary students lose the purpose. The bottom line is that the risk of chronic hepatitis is high before the age of five, and very low after the age of ten. Hence, if the vaccination program had been directed at new-borns instead of elementary schooled children, the end effectiveness of such an action would have justified the means.