

Diphtheria

A Rick Cooper MD FRCPC

Paediatrics has been practised as a specialty in Canada for almost 100 years. When paediatrics was in its infancy, children faced many health hazards. In 1900, 20% of all children in North America died before their first birthday, and many more died in later childhood due to tuberculosis, diphtheria, malignancies and accidents. Today, parents can be assured that, most of the time, their children will grow to be adults, and will live long and productive lives. There has never been a better time to be a paediatrician or a family physician caring for children and youth, not because of the remuneration or lifestyle, but because we have so much to offer young families.

Thanks to these huge achievements that are due to lessons learned and discoveries made in paediatrics and public health, today's Canadian children are indeed a

privileged generation. The editors of *Paediatrics & Child Health* believe that it is very important not to forget these outstanding achievements in paediatric health care. That is why we are launching a new column, "Lessons Learned", to recognize these accomplishments. Sometimes parents, physicians and the general public forget or take for granted how far paediatric medicine has come, particularly in areas such as childhood immunization and infectious diseases. Canadians need to remember the legacy of the gift of health and of longevity given to us by previous generations of physicians and scientists. This column will recognize these accomplishments and, hopefully, will remind us all of our good fortune.

As physicians who care for Canadian children, we are very grateful for the many achievements of the past.

One hundred years ago, 20% of Canadian children born would die before the age of one year due to a variety of infectious causes that are mostly preventable today. Even in older children, death was not uncommon, and from 1921 to 1924, the leading cause of death among Canadian children aged two to 14 years was diphtheria. Death in a child at any age is tragic, but losing a previously well, older child to diphtheria must have been particularly devastating on families and the community.

In 1923, Ramon developed a toxoid vaccine, and clinical trials the following year showed that this vaccine induced a high level of protection among recipients (1). With the widespread use of this toxoid vaccine, the incidence of diphtheria dropped dramatically. Diphtheria is very rare in North America today and is considered to be eliminated.

Diphtheria is caused by an exotoxin produced by *Corynebacterium diphtheriae*, and the organism is spread from human to human by respiratory droplets. Symptomatic respiratory carriage is common.

Local infections of *C diphtheriae* can occur in the respiratory tract or skin. Symptoms may also occur at distant sites secondary to absorption and dissemination of diphtheria toxin in the heart and nervous tissue. Respiratory infections can be anterior nasal, facial, laryngeal or tracheobronchial. The severity of the symptoms is dependent on the location and the size of the membrane formed by the toxins of this organ-

ism. Most patients die from asphyxia or myocarditis, and the mortality rate varies from 3.5% to 12% – a mortality rate similar to that in children with lymphoblastic leukemia.

Most paediatricians have never seen diphtheria, but in the early years of the 20th century, it was a common diagnosis and, all too often, was a cause of death. Often, the child had a horrible death by suffocation, and there was very little that could be done to treat the disease or relieve the patient's suffering. Parents today have no cause to be concerned about diphtheria, and most have never heard of it. They, however, must be aware that without immunization this infection can occur and cause a horrible life-threatening illness in their children. I am sure that if we offered a vaccine today for leukemia that was 100% effective and that had no serious side effects, there would be very few parents refusing this immunization for their children; however, when a disease becomes controlled and forgotten, it is much harder for parents to accept the importance of a vaccine. The elimination of diphtheria in Canada in the 20th century was a tremendous accomplishment that was achieved only by the universal immunization of children.

REFERENCES

1. Lérry FM. A Corner of History: The fiftieth anniversary of diphtheria and tetanus. *Immun Prev Med* 1975;4:226-37.

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