The value of vaccination

Dr Paul Martiquet, Medical Health Officer

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

Public policy decisions have long been influenced by economics; vaccinations are no exception. The decision to fund one practice but not another is rarely simple, especially given finite budgets. How does one decide? In today's healthcare climate, these decisions have to be made while considering vast details and alternatives.

Economists play an important role in providing information about the 'value' of healthcare options for public health officials to use in making choices. A good example is measuring the cost-effectiveness of vaccines: does it make economic sense to fund this or that vaccine?

Ask any parent whose child has gone through a preventable illness such as measles, pertussis or worse, what the worth of prevention would have been had they been able to know, and you will get the obvious answer: "cost is irrelevant". Unfortunately, as a society, that is not an option. Therefore, is there an overall benefit to vaccinations?

Benefit-Cost Analysis is a tool of public policy which helps us to compare alternatives. The concept is very simple. We add up all the benefits of an outcome (for example, fewer cases of measles); add up the costs, both direct (vaccines, delivery method) and indirect (loss of work by parents caring for a sick child) and calculate a ratio. If the ratio is above 1.0, there are more benefits than costs; and the inverse means fewer benefits than costs.

A paper prepared by the Institute of Health Economics (IHE) in Alberta attempts to evaluate the economics of childhood immunizations in Canada. The findings are very interesting.

While childhood contagious diseases are not the threat they once were (when was the last time you thought about polio?), there remain multiple childhood threats against which vaccines have been effective. The partial list includes diphtheria, pertussis, tetanus, polio, measles, mumps, hepatitis B, and Human Papillomavirus and others.

The costs of a disease included both direct and indirect costs. For example, measles and meningitis have total costs per case of $929 and $15,542 respectively.

The savings of an effective vaccine are also calculated. The specific figures are not all available in the IHE paper, but some of the numbers suggest the value of vaccines. For example, the estimated savings in medical costs from immunization (for Edmonton in 2004) are calculated as over $3 million in direct medical costs from preventing an estimated 5800 cases of pertussis. For mumps, the numbers are 446 prevented cases and a savings of about $37,000.

The costs of a disease included both direct and indirect costs. For example, measles and meningitis have total costs per case of $929 and $15,542 respectively.

The benefit/cost ratio (B-CR) shows the relative benefits of public policy choices. The IHE paper calculates the B-CR of vaccinating all grade 10-12 and at-risk first year university students at 0.63. Hepatitis B vaccination comes in at 1.41; and the MMR (measles, mumps, rubella) vaccine show a ratio of 14.4.

Vaccines are beneficial to individuals and even more so to our communities as a whole. Guiding public policy decisions with good information makes for better decision-making, but it is only one part of the process. Public good and community priorities are also important.

Dr Paul Martiquet is the Medical Health Officer for the Coast Garibaldi Region including Powell River, the Sunshine Coast, Sea-to-Sky, Bella Bella and Bella Coola.