

Myth

Busters

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A SERIES OF ESSAYS GIVING THE RESEARCH EVIDENCE BEHIND CANADIAN HEALTHCARE DEBATES

MYTH

The risks of immunizing children often outweigh the benefits

A significant number of parents are preoccupied with vaccine side-effects.ⁱ Hundreds of anti-vaccine web sites link vaccines for once-common childhood diseases to sudden infant death syndrome, Crohn's disease, autism, diabetes, and other diseases. Many claim the risks of vaccines are far greater than the benefits of being immunized.^{ii, iii}

Growing doubts about the benefits of vaccines are even seen among healthcare providers. For example, one study in Quebec found more than 40 percent of nurses do not fully agree with the opinion that vaccines are safe, effective, or altogether useful for children.^{iv} And 40 percent of nurses also believed that practices such as homeopathy and healthy eating were effective alternatives to vaccination.^{iv}

However, research shows vaccination has saved more lives in Canada in the last 50 years than any other intervention,^v and vaccination ranks as one of the most effective and cost-effective public-health achievements. In fact, when you consider the number of lives immunizations save each year, it actually costs more not to invest in vaccination programs.^{vi, vii}

A calculated risk

While no vaccine is risk-free, these interventions have been dubbed "the safest tools of modern medicine."^{vi} The large majority of vaccine side-effects are minor and temporary, such as a sore arm or mild fever.^{vi, viii} Although more serious side-effects – such as severe allergic reactions—can occur, these are rare, occurring less than once in every one million vaccine doses in Canada.^{vi} On the other hand, the risks of letting kids get a disease like measles or diphtheria are far greater than any vaccine side-effect.^{vi, viii}

Take diphtheria for example – while the vaccine can cause minor and temporary redness and swelling at the injection site or fever, the disease may lead to heart and neurological complications, not to mention a five-to-10-percent death rate.^{vi} In the case of mumps, the occasional side-effects of the vaccine are a fever and mild skin rash. However, one in 200 children who get mumps will develop a brain disorder.^{vi} Other children who get mumps may become deaf.^{vi} Mumps in adolescent or adult males can cause painful swelling of the testicles and may lead to infertility.^{vi}

Comparison of effects of diseases and common side-effects of vaccines^{vi}

Disease	Effects of Disease	Side-Effects of Vaccine
Tetanus (lockjaw)	One in 10 dies	One in five has discomfort or swelling; one in 20 has fever
Pertussis (whooping cough)	One in 100 children less than six months dies from pneumonia or a fatal brain disorder	One in five has discomfort or swelling; one in 20 has fever
Haemophilus influenzae, type B disease	One in 20 dies from meningitis; 10 to 15 percent have permanent neurological dysfunction; 15 to 20 percent become deaf	One in 20 has discomfort and swelling; one in 50 has fever; no serious side-effects have been attributed to Hib vaccine
Measles (red measles)	One in 10 develops pneumonia or an ear infection; one in 1,000 develops brain inflammation and, of these, 10 percent die and 25 percent will have permanent brain damage; one in 25,000 develops a rare chronic brain infection	One in 20 has discomfort and fever with or without a rash; one in a million develops brain inflammation



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MMR and autism: no link

One vaccine that has come in for serious criticism is the measles, mumps, rubella (MMR) vaccine, which critics claim is the cause of a range of developmental problems in children, including autism. However, the argument made in one or two reports that the link exists has been highly refuted in numerous scientific studies and in major systematic reviews.^{ix-xi} A recently updated Cochrane review found “no credible evidence” of an association between the MMR vaccine and autism.^{ix} Similarly, a 2006 Montreal-based study that explored the relationship between recent trends in pervasive developmental disorders—a wide spectrum of social and communication disorders, including autism – and exposure to MMR vaccine ruled out any association.^x In fact, there is no sound evidence whatsoever that links immunizations with sudden infant death syndrome,^{xiii} diabetes,^{xiii} or Crohn’s disease.^{ix}

One thing not in doubt is the MMR vaccine’s ability to prevent the diseases it is designed for – used in more than 30 countries, this vaccine has been given to populations en masse, successfully demonstrating its ability to virtually eliminate the target diseases.^{ix}

The key to preventing outbreaks

While vaccination coverage data vary by province and territory, the 2002 National Immunization Survey shows, for example, that reported coverage of MMR in seven-year-olds is just more than 75 percent^{xiv} – well below the national goal, which is closer to 95 percent.^{xv} The same survey shows many children are underimmunized; the rate of children receiving their booster of MMR vaccine falls nearly 20 percentage points below the national target.^{xiv}

As recent history tells us, the possible outcomes of low vaccination rates are alarming.^{xvi, xvii} In Great Britain in 1974, an epidemic of more than 100,000 cases – including 36 deaths – of pertussis (whooping cough) followed a dramatic drop in vaccine use for this disease.^{xvii} Following the outbreaks, vaccination rates rose once again, which, in turn, saw disease rates fall.^{xvii} Similarly, a recent U.S. study found that for states with lax vaccination laws, there is a 90-percent-higher incidence of whooping cough.^{xviii}

To keep measles and other once-common childhood diseases from spreading, a high percentage of the population – in the realm of 95 percent for measles, for example—must be immunized. When vaccination rates are close to this percentage, “herd immunity” is said to exist, where the majority (and vaccinated) portion of the population protects the rest of the population.^{xix, xx} If this critical mass is not achieved, outbreaks can occur.^{xx}

Conclusion

No medical intervention is ever 100-percent effective or comes without any risks. In the final analysis, vaccines for childhood diseases that were once common in Canada appear to be particularly well-evaluated interventions where the benefits clearly outweigh the risks.

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