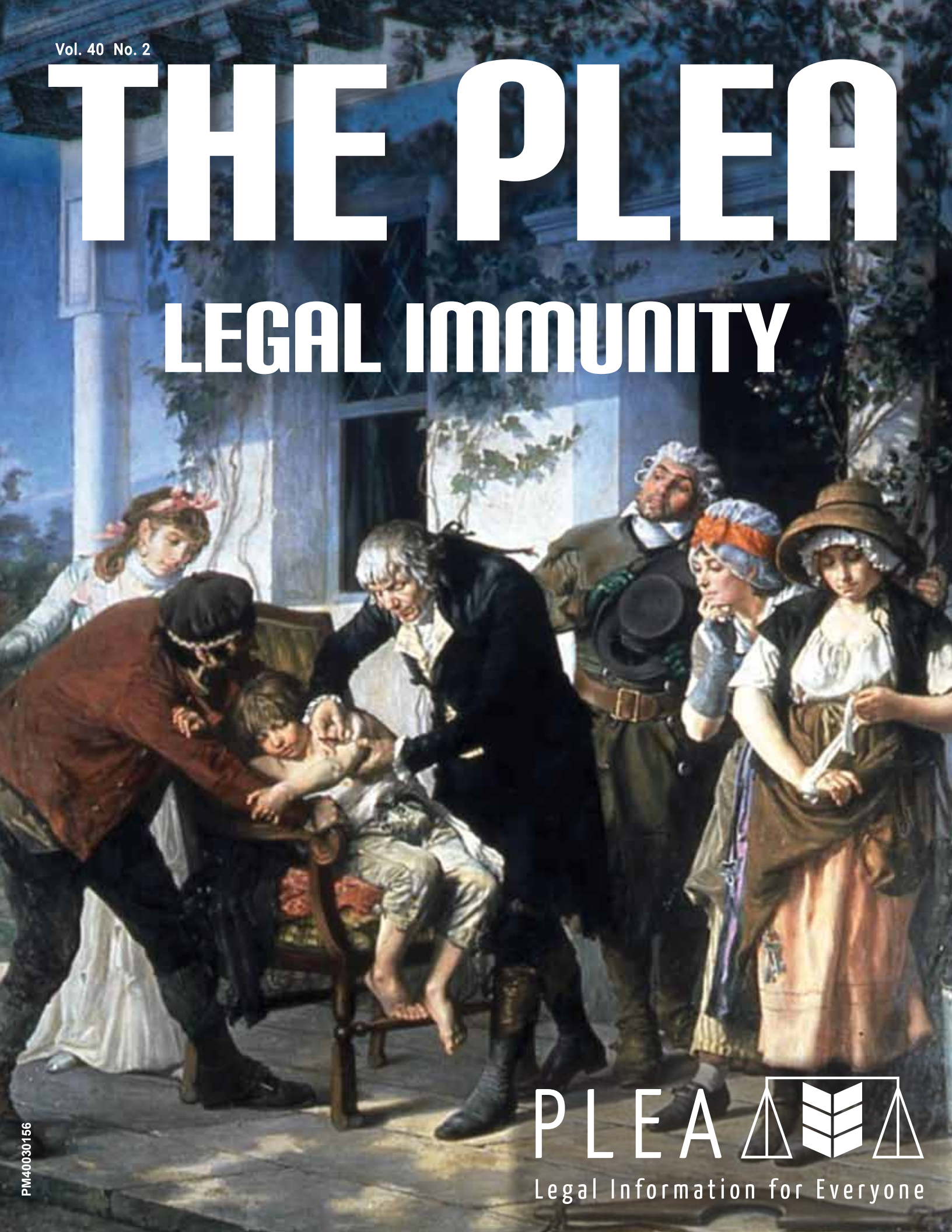


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THE PLEA

LEGAL IMMUNITY



PLEA   

Legal Information for Everyone

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Don't stop learning now!

In 1900, over 10% of children born in Canada did not live to see the age of one. Today, that number is 0.44%. Meanwhile, average life expectancy has moved from 50 to over 80 years of age. No single reason can be given for such advances in public health. Nonetheless, we cannot miss the development of vaccines. Since their creation, vaccines helped tame almost thirty diseases.

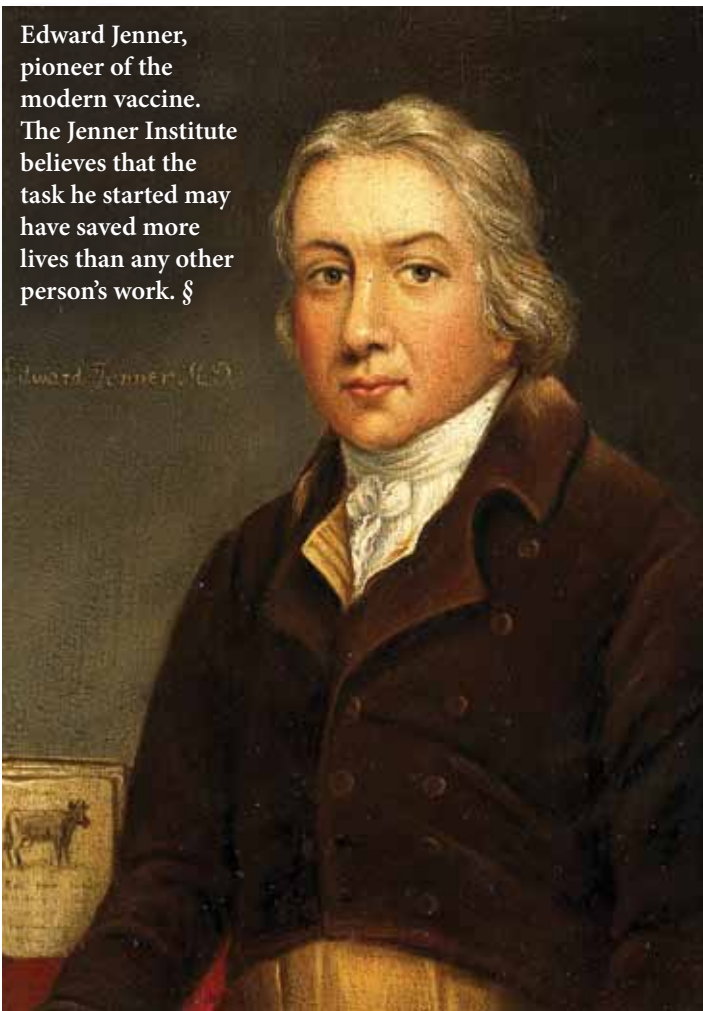
Where did vaccines come from? How did they help free us from so many diseases? And what role has the law played in their development and use? This issue of *The PLEA* explores these questions. It considers:

- the story behind the creation of vaccines,
- hesitancy about vaccines,
- the sometimes complicated relationship vaccines have with personal freedom, and
- the laws regulating vaccination today.

Ideal for most any reader, *Legal Immunity* helps fulfil several indicators in Saskatchewan's renewed Law 30 and Life Transitions 20/30 curricula. It will also be of interest to people curious about the role of law in public health.

The Creation of Vaccines

Edward Jenner, pioneer of the modern vaccine. The Jenner Institute believes that the task he started may have saved more lives than any other person's work. §



In just over 200 years, vaccines have helped tame almost thirty diseases. How did it all begin?

Polio. Whooping cough. Typhoid. Such deadly and disfiguring diseases are little more than a memory in the west. Yet, only a few generations ago catching such a disease could be a death sentence. The decline of many contagious diseases is one of the great success stories of modern society.

This decline cannot be boiled down to a single, all-encompassing explanation. Better sanitation has played a role. So has our access to more nutritious foods, our stronger health and labour laws, and the creation of public health care. Amongst all this, we cannot miss the impact of the vaccine.

A vaccine usually involves the injection of a dead or weakened disease organism (or parts of it) into the body. The injection prompts the body to start developing its own antibodies to fight off that disease. Because vaccines train the immune system to create its own antibodies, vaccines provide long-term immunity to diseases. Put simply, vaccines protect us from disease.

Before vaccines, there only was one accepted way to immunise people: a process called variolation. Variolation was used to give people immunity to one particularly deadly disease: smallpox. The procedure originated in China, and knowledge of it moved its way westwards as trade and travel expanded.

To variolate a person, pus from a smallpox lesion was taken from a patient, and then scratched into a healthy person's skin. Another method had doctors blow dried smallpox scabs up people's noses. For reasons still not entirely

understood, the exposure would only spur a mild case of smallpox. The mild smallpox infection would train the immune system to develop antibodies to the disease.

Unfortunately, variolation was not perfect. Sometimes people developed full-blown smallpox, leaving them seriously ill or even dead. Other unlucky recipients contracted diseases such as syphilis or tuberculosis, if the smallpox pus came from a person carrying such diseases. Further, people who contracted mild smallpox through variolation were contagious while the disease ran its course. Without careful isolation, they could spread the disease. Still, the

death rate from variolation was usually no more than 2%, a far cry from the 20-60% mortality rate of a serious smallpox outbreak.

Variolation quickly spread across 18th-century England. One recipient was an eight-year-old boy named Edward Jenner. His treatment turned out fine, and he grew up to become a doctor. Knowing the risks of variolation, in 1796, Dr. Jenner set out to develop a better way to immunise people from smallpox.

English farm folklore had it

that milkmaids who contracted cowpox—a comparable but much milder disease—would never contract smallpox. Similar tales had been floating around India for

centuries. By the mid-1700s, most people believed that there was truth to these stories. Jenner wanted to prove it.

When Jenner diagnosed Sarah Nelmes, a local milkmaid, with cowpox in May 1796, he saw his chance to see if cowpox would make people immune to smallpox. Jenner took pus from her cowpox lesion, and exposed his gardener's son to it. The boy developed mild cowpox. A few weeks later, he exposed the boy to smallpox. The boy did not come down with the disease. It appeared that controlled exposure to cowpox would provide immunity to the much more dangerous and disfiguring smallpox. Jenner called his innovation a vaccine, after the Latin word for cow, *vacca*.

Jenner spread the word about his vaccine. In 1797, he submitted a short paper describing his work to the Royal Society, the United Kingdom's national academy of sciences. The Royal Society rejected the paper. Not dissuaded, he performed more scientific experiments to verify his findings. Then, in 1798, he published *An Inquiry into the Causes and Effects of the Variolae Vaccinae, a disease discovered in some of the western counties of England, particularly Gloucestershire, and known by the name of "The Cow Pox."* He travelled to London to promote his findings. Doctors were impressed and passed along the news to their colleagues. In a few short years, the smallpox vaccine spread across much of the world.

Realising the enormous public health benefits of vaccinations, Bavaria, Sweden, Denmark, and Norway created mandatory smallpox vaccination laws by 1821.

REALISING THE ENORMOUS PUBLIC HEALTH BENEFITS OF VACCINATIONS, BAVARIA, SWEDEN, DENMARK, AND NORWAY CREATED MANDATORY SMALLPOX VACCINATION LAWS BY 1821.



Lady Mary Wortley Montagu learned about variolation while visiting Turkey in 1717. She spread the word to England, where several death-row prisoners were given the option of variolation experiments or execution. Not surprisingly, the prisoners chose variolation. It worked, the prisoners were freed, and variolation began in England. †

Blossom, the cow that gave Sarah Nelmes cowpox. Its hide is on display at St George's Medical School in London. β



To be sure, Jenner's accomplishment is not the story of one person. His work rested upon centuries of prior knowledge and experimentation, across many cultures. And Jenner was not even the first person to immunise people using cowpox. During a 1774

England banned variolation in 1840 and made infant vaccination compulsory in 1853. And several American states, beginning with Massachusetts, mandated that people be vaccinated. Vaccination worked so well that, following a 20th-century global vaccination effort, smallpox disappeared entirely. And so the end came for a disease once responsible for one out of every twelve deaths. Today, only lab specimens remain in the United States and in Russia.

smallpox outbreak in Downshay, England, a farmer immunised his family using a haphazard mix of a knitting needle and a neighbour's cow. As well, similar procedures were tried in France in the late 1700s. Nonetheless, Edward Jenner's understanding of past knowledge, his use of the scientific method of controlled and reproducible experiments, and his dogged determination to promote his discovery, gave him a place in history as the person credited with creating the vaccine. 🇬🇧

DISCUSS

1. Scientific developments rarely come from out of nowhere. Edward Jenner's vaccine built on previous knowledge from countless people and cultures. What does this tell us about the importance of cooperation between people and across cultures?
2. New discoveries or innovations—including vaccines—can be patented. A patent gives the inventor the exclusive legal rights to use and sell their innovation. In Canada, a patent lasts for 20 years. Is this fair?
3. English intellectual Francis Galton said "In science, credit goes to the man who convinces the world, not the man to whom the idea first occurs." What does this tell us about the role of storytelling in our society?

GERM THEORY

The curious part about Jenner's smallpox vaccine was that nobody was sure *how* it worked. It took over sixty years for the secret to be unlocked, by French scientist Louis Pasteur and German scientist Robert Koch.

In the 1800s, a common belief was that disease spread through miasma, or putrid air. In 1857, Pasteur said it could be explained by germ theory. Germ theory is the idea that small microorganisms are responsible for disease. He was not the first person to suggest this, but he was the first to demonstrate through replicable experiments that particles in the air—and not the air itself—were causing diseases.

Koch picked up on Pasteur's work, and began to isolate and identify particular germs that caused particular diseases. Koch also recognised that antibodies built up our immunity to diseases.

With germs such as rabies and anthrax now identified, Pasteur was able to weaken them and inject them into animals. He discovered that if you injected weakened germs into an animal, it would develop antibodies for that disease. Because humans are animals, the same principle applied. And so came the next great step in vaccine science.

The Shapes of Vaccine Hesitancy

Science is not always perfect. Fears—justified or not—about medicine help explain hesitancy and outright opposition to vaccines.

For as long as there have been vaccines, there have been people who have questions about or are outrightly critical of vaccines.

Doctors sometimes call these people vaccine hesitant. In popular culture, they are often called anti-vaxxers. People with vaccine hesitancy exist across society. Their reasons for being hesitant are diverse.

The anti-vaccine movement emerged alongside the smallpox vaccine. At the time, medical science had determined that the smallpox vaccine worked. However, medical science did not yet understand how germs caused diseases. This lack of knowledge meant that vaccinations were risky, and performed with unsterilised equipment. Catching a disease from vaccination was a very real possibility.

Because of the risks, people were not wrong to ask questions. That said, smallpox was painful, disfiguring, and often lethal. Most people weighed the

risks against the benefits, and determined that vaccination was the best course forward.

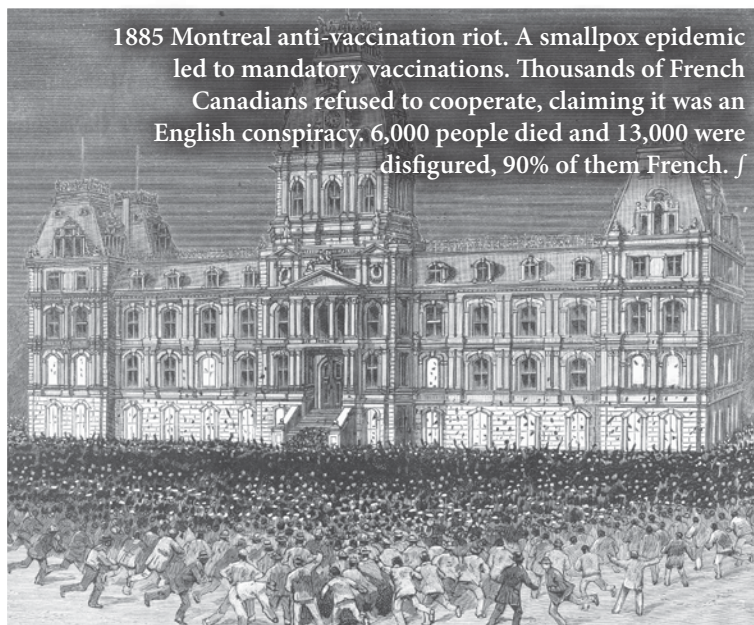
Smallpox went into decline, due almost entirely to vaccinations. Yet, opposition to vaccines grew. At first blush, this seems illogical: a vaccine subduing a disease is proof that it works. However, the decline of smallpox meant that few people experienced its horrors first-hand. With the public memory of smallpox fading, space was created for people to capture the public imagination with vaccine risks. And capture it, they did. By the late 1800s, anti-vaccination leagues were popping

up everywhere, pitting many citizens against the medical community.

The concerns of the anti-vaccination leagues of this era were not all unwarranted, and the freedom we have in a liberal democracy to offer constructive criticism often works to make things better. Critics continued to worry about catching diseases from vaccination. To that they tacked on questions about vaccine ingredients. Some religious people joined in, concerned about body purity. People opposed to animal experimentation added to the chorus. And some civil liberties advocates jumped on board, criticising laws of the day that made vaccines mandatory.

The issues raised by early anti-vaccination movements were never fully settled. Public opinion was instead won over by results: as the 20th century proceeded, diseases ranging from polio to rabies were safely tamed, thanks in no small part to vaccines.

Nonetheless, history echoes. With so many diseases subdued over



CONSPIRACY THEORIES

Some anti-vaccination beliefs are based in nothing more than conspiracy theories. Most conspiracy theories begin with a grain of truth, then quickly become unhinged from reality. Social media can push along conspiracy theories, as algorithms feed people information they already agree with. Add to that, people often bubble together in echo chambers, where they only hear self-reinforcing arguments from like-minded people. Together, in these increasingly narrow halls of discussion, far-fetched anti-vaxxer claims like “vaccines turn people into 5G antennas” can become some people’s “truth.”

While it is healthy for us to become informed, we need to be careful about what information we put stock in. Relying on echo chambers or social media algorithms to gather information does not lead to well-informed people. In fact, it is the exact opposite of the classic public square, where everybody ideally would get together to learn from each other, and to reach informed decisions.

Misinformation and outright conspiracy theories grow when people abandon mutual trust and avoid having broad-based, good-faith discussions.

the 20th century, space has again been created to capture the public imagination with vaccine risks. Today, many people are declining vaccines. The result? More and more disease outbreaks. The trend led the World Health Organisation to declare anti-vaccination movements one of 2019’s top-ten threats to health.

No single personality trait or fact explains why people embrace vaccine hesitancy. Just as a member of a

small orthodox religious community may be hesitant because they accept the authority of their faith leaders, a member of a small “hippy” town may be hesitant because they reject the authority of government and large pharmaceutical corporations. And just as a member of a minority community may be hesitant due to a history of unethical, racist medical experiments, a member of an affluent white community may be hesitant

because of advice from a fee-based alternative medicine practitioner. Vaccine hesitancy is a complex mix.

Canada’s laws recognise the complexity associated with vaccine hesitancy. They attempt to balance the need for public health with the desire of some individuals to refuse vaccines. How the law balances these conflicting interests will be discussed on pages 10 and 11. 📖

DISCUSS

1. In 2018, countless millions of vaccines were given in Canada. Only 221 people reported adverse effects, primarily allergic reactions. Why do we seldom talk about the times things go as planned?
2. In her book *On Immunity*, Eula Biss reminds us that “groups of people, if they are sufficiently diverse, and free to disagree, can provide us with thinking superior to any one expert.”
 - a) Do you agree? Can we solve problems better if we act collectively?
 - b) How do respectful conversations help bring about superior thinking?
 - c) Can you think of times when groups have made objectively bad decisions?
3. Canada’s *Charter of Rights and Freedoms* guarantees freedom of expression.
 - a) Can we come to good conclusions without this freedom?
 - b) Charter freedoms are subject to “reasonable limits... demonstrably justified in a free and democratic society.” What is a reasonable limit to freedom of expression?

VACCINE PANICS

Everyone should consult their health care provider to determine what medical procedures are best for them. That understood, the overwhelming consensus of the medical community is that for most people, vaccines are safe and effective.

Nonetheless, sensational, outlier events do happen. These events tend to stick in our minds and tug at our hearts. They evoke our sympathy, play to our fears, and compel us to demand better. This is especially true in the age of social media, where a single story can be amplified like never before.

A single story or event—no matter how compelling—cannot *always* be taken as a wholesale reflection of our collective reality. Over the past 70 or so years, about once every generation a widely-discussed event has cast doubt on vaccines. Consider how these events have shaped public perceptions, and influenced our behaviour.



1976 – American Flu Fiasco

When a new strain of swine flu broke out, the American government feared the worst. Thus, a mass vaccination campaign was planned.

The campaign was delayed when vaccine laboratories announced that although the vaccine appeared to be safe, they could not secure liability insurance for their vaccines. This was partly a result of the litigious nature of Americans: precedents had been set by polio vaccine lawsuits in the 1950s. The announcement rattled public confidence. As the Center for Disease Control’s director later said, a message was sent that “There’s something wrong with this vaccine.”

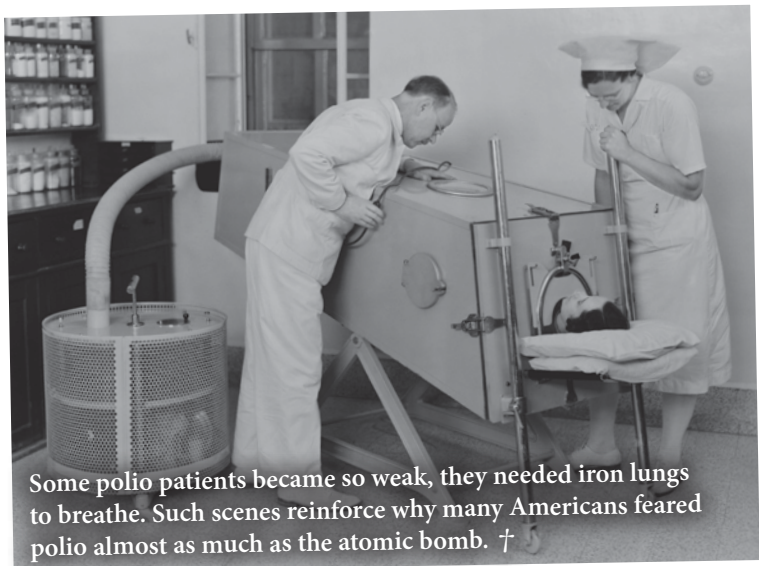
Nothing unusual happened, medically speaking, from the vaccinations. However, the rocky start led to the media amplifying unsubstantiated claims about the vaccine. One *New York Post* headline panicked about vaccinations at a “Pennsylvania Death Clinic” when three Pittsburgh seniors died of heart attacks almost certainly unrelated to the vaccine. The flu ultimately turned out to be mild, and the vaccination campaign was disbanded.

Are some media sources more responsible than others?
What factors give you trust in what you watch, read, or hear?

OF THE 20TH CENTURY

1955 – Polio Vaccine Tragedy

Perhaps the greatest modern vaccination failure came in the first year of mass polio vaccinations. A faulty batch of vaccine was produced by Cutter Laboratories. 120,000 doses were given that contained live polio virus, instead of weakened virus. 40,000 children developed polio: most cases were mild, but over 160 children became paralysed and 10 died.



Some polio patients became so weak, they needed iron lungs to breathe. Such scenes reinforce why many Americans feared polio almost as much as the atomic bomb. †

The tragedy spawned even more stringent government regulation of vaccines, building on a process that began in the early 1900s. It also opened up vaccine manufacturers in the United States to a flood of lawsuits. Courts ruled that Cutter Laboratories was liable to pay compensation to the people harmed by its faulty vaccine.

Fortunately, the vaccine drive continued without major problems. By 1962, 400 million polio vaccines were safely given, virtually obliterating the disease in many countries.

Every medical procedure requires us to put our trust in others. What does society lose if we lose our sense of mutual trust?

1998 – Debunked Autism Research

In the 1990s, a belief took root that vaccines caused autism. The belief was cemented in by an infamous report published in the medical journal *The Lancet*. British doctor Andrew Wakefield, along with a dozen co-authors, suggested that there may be a connection between vaccines and autism. Even though the report cautioned that more research was needed, the claim caught fire in anti-vaccine circles.

When people looked more deeply into the report, it came into serious question. First, several researchers were unable to replicate the study's findings. Second, it was discovered that some key data was manipulated. Third, it was revealed that Wakefield received more than £400,000 from American lawyers trying to connect autism to vaccines, for a lawsuit against pharmaceutical companies.

In 2010, *The Lancet* retracted the report and Wakefield's medical licence was revoked. For his part, Wakefield denies that he misrepresented facts or acted unethically. He remains active in anti-vaccination movements. To date, no lawsuit blaming autism on vaccines has been successful.

How much stock should we put in a single scientific study, especially if its findings are preliminary or speculative?



The now-retracted report on vaccines and autism. Ten of the co-authors formally withdrew their support for the paper in 2004. †

The Evolution of Vaccine Laws

The law is often used to promote public health. As society has advanced, so too have our laws.

In the mid to late 1800s, vaccinations were often mandatory. England, Ontario, and many American cities and states had such laws in place. The application of these laws was often shameful, and minority communities usually received the worst treatment.

For example, a smallpox vaccination raid in New York City's Little Italy neighbourhood saw the police hold men down and vaccinate them against their will, while babies were torn from their mothers' arms and sent to quarantine hospitals. Worse yet, in one of Middlesboro Kentucky's Black neighbourhoods, people were vaccinated at gunpoint.

To many, mandatory vaccinations were an overreach of state power, to say nothing of the uneven and cruel implementation. States, on the other hand, believed that they had a duty to keep society functioning and citizens free of contagious disease. Courts often sided with the state. For example, in *Jacobson v. Massachusetts*, the U.S.

**UNVACCINATED
PEOPLE MAY NOT
ENJOY THE SAME
FREEDOMS AS
VACCINATED PEOPLE.**



Satirical 1802 cartoon by James Gillray, imagining cows emerging from people vaccinated for smallpox. ‡

Supreme Court found that the health interests of the public as a whole—through compulsory smallpox vaccinations—outweighed the individual's right to decline vaccines. Refusing a vaccine meant disease could spread, and individuals do not have an unfettered right to harm society.

In 1898, England moved towards a different approach to vaccination.

To appease people who objected to mandatory vaccination, England added a "conscience clause" to its

vaccination laws. The clause was vague, allowing people to be exempt from a vaccine so long as they could convince a magistrate that they had good reason to do so. The law popularised the term conscientious objector and spawned a widespread debate on what it meant to be one.


The legacy of this change in English law—the desire to balance conscientious objection with the need to protect public health—can be seen in vaccination laws in Canada today.

Canada has no laws that force people to be vaccinated. However, some provinces may require children to

have certain vaccines in order to attend public school. As well, some healthcare facilities may require workers to be vaccinated against particular diseases, if they will be performing particular duties. And some vaccines may also be mandatory to enter a foreign country.

People generally may decline vaccinations for medical, religious or philosophical reasons. However, unvaccinated people may not enjoy the same freedoms as vaccinated people. For example, in the event of an outbreak of a particular disease, children who have not been immunised may be required to stay home from school. Similarly, healthcare workers who refuse a vaccine may face restricted duties in the event of an outbreak. These are the kinds of compromises that society has agreed upon, when there are no mandatory vaccination laws.

Today, our collective and our individual memories are free of first-hand accounts of many contagious diseases. This is why it is important to understand the history of disease and vaccines, in order to give context to the role vaccines have played in society. There have been a few hiccups in vaccination's history, sometimes major. But vaccines have been a significant factor in freeing us from many fatal and disfiguring diseases.

As the Public Health Agency of Canada notes, vaccines have saved more lives in the past 50 years than any other health intervention. The overwhelming consensus of the medical community is that vaccines are safe and effective. Nonetheless, everyone with questions should discuss their medical procedures with their health care provider, to help understand risks and benefits of their health care. 

DISCUSS

1. Babies cannot be vaccinated for measles, mumps, and rubella until they are one year old. They are at risk of catching the disease from people who choose not to be vaccinated.
 - a) About 10% of people in Saskatchewan have not had measles vaccinations. Should we be concerned about this?
 - b) What are our obligations to each other when it comes to vaccinations?
2. In December 2020, the Canadian government promised a nationwide vaccine harms compensation program. It would compensate people if they had an adverse effect from a vaccine approved by Health Canada. Do you support such a program? Why or why not?
3. Can people be free if a contagious disease is left to ravage through society, unchecked?

HISTORICAL SHAME

COVID-19 has hit Indigenous peoples harder than the general population. Crowded housing conditions and poorer general health have played a role, which can be linked to racism, economic inequality, and inadequate access to healthcare.

To help counter COVID's disproportionate impact on Indigenous communities, vaccines have been prioritised for First Nations. Yet, some people are hesitant. This hesitancy can be explained in part by rather shameful historical realities. As an *APTN News* report pointed out,

In the residential schools and sanatoriums eras, residents have shared stories of medical testing and experiments. Most recently, a class action lawsuit was launched after several Indigenous women say they were sterilized without their consent. And still to this day Indigenous people face systemic racism within the healthcare system resulting in substandard care or neglect.

Such dark experiences of neglect, abuse, and medical experimentation help explain why some Indigenous people are apprehensive about new COVID vaccines. Many culturally-relevant resources are now available to help Indigenous people make informed decisions about vaccination.

Further Resources



DIRECT DEMOCRACY

Learn about the classic public square, where people assembled together as a whole to debate the issues of the day.



70 YEARS OF THE BOMB

Learn about the most-feared weapon of the 20th century.



THE BATHROOM BARRISTER

Learn how laws surrounding public sanitation systems have helped reduce disease and make cities cleaner.



COMING SOON!

ALBERT CAMUS' *THE PLAGUE*: THE LEARNING RESOURCE

Ideal for Grade 12 English, this resource uses Camus' classic novel to build understandings about disease, laws, and human decency.

Manage your subscription to *The PLEA* at teachers.plea.org

Here are just a few books that helped inform this issue of *The PLEA*. Find them at your public library.

Eula Biss. *On Immunity: An Inoculation*. Graywolf Press, 2014.

Nicholas A. Christakis. *Apollo's Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. Hachette Book Group, 2020.

Mark Honigsbaum. *The Pandemic Century: One Hundred Years of Panic, Hysteria, and Hubris*. W.W. Norton & Company, 2020.

John Fabian Witt. *American Contagions: Epidemics and the Law from Smallpox to COVID-19*. Yale University Press, 2020.

"The only means of fighting a plague is—common decency"

— Albert Camus, *The Plague*

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