



AN OUNCE OF PREVENTION: MANITOBBANS AND IMMUNIZATION

A summary of the report, *The Manitoba Immunization Study* by Tim Hilderman, Alan Katz, Shelley Derksen, Kari-Lynne McGowan, Dan Chateau, Carol Kurbis, Sandra Allison, Jocelyn Nicole Reimer

Summary written by RJ Currie

An ounce of prevention is worth a pound of cure. Conventional wisdom says the best way to beat something is to keep it from happening. Nowhere is that philosophy more relevant than in Manitoba's immunization program.

In the last 50 years, vaccination has essentially erased illnesses like diphtheria and polio. Others, like measles, mumps, rubella and whooping cough have been dramatically reduced. Today, the growing list of vaccine-preventable illnesses includes pneumococcal disease, human papillomavirus and invasive meningococcal disease.

Are vaccinations causing serious side effects in Manitobans? No. Nothing we found supports that claim.

With all this good news, you might expect to see more and more Manitobans getting immunized. Yet studies elsewhere suggest fewer of us are taking these ounces of prevention. And there are fears that those who need a vaccination the most might be the least likely to get it. Furthermore, this all may be compounded by sensationalist media reports suggesting serious neurological side effects from vaccinations.

At the request of Manitoba Health, this MCHP report takes a comprehensive look at childhood and adult immunization

rates in our province. Are they falling? The short answer is some immunization rates are up; some are down; most have been stable. Are vaccinations causing serious side effects in Manitobans? No. Nothing we found supports that claim.

For a more complete answer, this study looks at eight years of data across all of Manitoba, from April 1, 2000 to March 31, 2008. For regional comparisons, we contrast the third year with the last year—a difference of five years.

Our study has three main sections. The first two focus on childhood and adult immunizations. Some of the key questions asked: How many Manitobans are being immunized? Are the rates consistent across the province? Are people identified as most at risk (target groups) receiving the recommended immunizations? Are there specific factors that influence whether an adult or child gets immunized?

Thirdly, we take a close look at safety. Is there any link between vaccinations and three commonly rumoured side effects?

Childhood immunization

Manitoba's universal childhood immunization program provides protection from polio, tetanus, diphtheria, whooping cough, pneumonia and Hib (Haemophilus influenzae type B, a major cause of meningitis). It also protects against measles, mumps, rubella, chicken pox, hepatitis B (HBV), human



papillomavirus (HPV) and influenza. HPV is not included in this study because it was added after 2008.

Table 1: Manitoba Recommended Number of Doses Required to be Complete For Age from Birth

Antigen	Age				
	1	2	7	11	17
Tetanus	3	4	5	5	6
Diphtheria	3	4	5	5	6
Pertussis	3	4	5	5	5
Polio	2	3	3(4) ^a	3(4) ^a	3(4) ^a
Measles	0	1	2	2	2
Mumps	0	1	1	1	1
Rubella	0	1	1	1	1
Hib	3	4	4	4	4
HBV	0	0	0	3	3
Varicella*	0	1	1	1	1
Men-C*	0	0	0	1	1
PCV-7*	3	4	4	4	4

^aAdditional dose added in 2007

*Added to the Recommended Immunization Schedule October 2004

We focus on four ages that represent milestones in immunization—ages 2, 7, 11 and 17 (Table 1).

It's recommended Manitoba babies get vaccinated (at 2, 4, 6 and then 18 months) against polio, tetanus, diphtheria, meningitis, whooping cough and pneumonia—two shots, four times, called the primary series. At 12 months, they get inoculated against measles, mumps and rubella (German measles) and chicken pox (added in 2004).

By age seven, children have one repeat (preschool boosters) of most of the primary series. At age 11 (the first school-based program) they get immunized against meningococcal conjugate and hepatitis B (three times). By age 17, they should all have received a tetanus and diphtheria booster (usually given in grade eight or nine). Children who have had all the recommended shots at each age are called complete-for-age.

These analyses are further divided into two groups. The first—covered from birth—had Manitoba Health coverage the whole time. Residents who immigrate to the province and register for coverage after birth or leave Manitoba and then return (coverage gets interrupted) would fall into the second group—not covered from birth. This group might have had some vaccinations in another country or province, but there may not be any record of that in Manitoba Health data. This would make immunization rates seem lower than they actually are. So we look at these groups separately and combined to try to get as complete a picture as possible.

Key findings

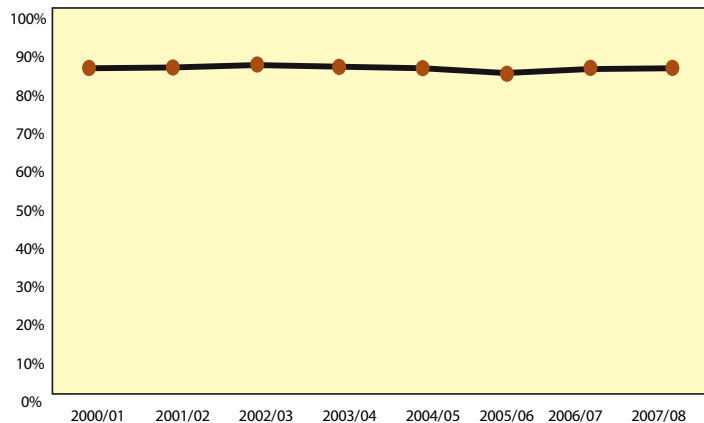
Overall immunization rates for children in Manitoba are quite stable over the eight years. Those covered from birth have consistently higher complete-for-age rates than those not covered from birth. However, most partially immunized children have received three of four doses by age two.

Other factors associated with higher rates are mother's age over 24 at child's birth, higher family income, seeing the same physician, having fewer than four siblings and living in southern Manitoba.

Additional findings of note:

- The measles immunization rate for all two-year-olds across the study is consistently around 86-88%. (Figure 1)
- Since chicken pox was added to the recommended vaccination schedule, rates by age two have gone up from 12% to 76%.
- The complete-for-age rates of seventeen-year-olds (covered from birth) are up from 54% to 66% over the study period.
- Since flu vaccine was added for all children aged 6-23 months, rates are down from 36% to 22%.

Figure 1: Manitoba Measles Immunization Rates



There are sometimes big differences between or within RHAs. For example, the age-two immunization rate for whooping cough is around 60% in Burntwood, while in Parkland it's close to 80%. In Interlake's Southwest district the Hib vaccination rate in 2008 is 83% and suggests an upward trend while in Interlake's Northeast district it's at 61% and is down since 2003.

Adult immunization

For adults, this study looks at flu shots and PCV (pneumococcal conjugate vaccine) that protect against septic illnesses like meningitis and blood infections. Our primary focus is on target groups—women who are pregnant or have a newborn, people

A comparison of nursing home death rates between those who did and didn't have a flu shot indicates seniors who get a flu shot live longer than those who don't.

which doesn't support claims of immunization causing the problem.

In addition, a comparison of nursing home death rates (any cause) between those who did and didn't have a flu shot indicates seniors who get a flu shot live longer than those who don't.

The upshot

There is good news and bad about immunization in Manitoba.

First of all, immunization does protect people from illness. And we find nothing to link vaccination with any of the disorders the media has suggested they might cause. So people should not be worried about safety when getting vaccinated.

It's also good that overall immunization rates for children between 2001 and 2008 are fairly steady. And newly introduced vaccinations like chicken pox have already led to a decline in hospitalizations (Figure 3).

Newly introduced vaccinations like chicken pox have already led to a decline in hospitalizations.

Manitobans appear especially careful about protecting their kids. Rates by age two for the primary series are very high, including measles immunization rates near 90%. It's also good to see that even children listed as not-complete-for-age usually have had at least partial immunization—like 3 out of 4 shots. We see this pattern across all age groups.

over the age of 64 and people with chronic illnesses such as diabetes, heart trouble and respiratory problems.

These groups have their immunizations covered by Manitoba Health. People not in the target groups pay out-of-pocket. This may partially explain the overall pattern of higher rates among target groups (with the exception of pregnant women). That said, some still have rates well below what they should be.

Findings of note:

- Rates for women aged 15-45 getting flu shots have been steadily rising since 2000. But it is far from high at only 8%. More surprising is that the rate for pregnant women is even lower at under 6%. Women in the first year after pregnancy are more than twice as likely to get a flu shot, but their rate is also still very low.
- Manitobans over 65 have the highest rates of immunizations, which is a good thing. However, the flu shot rate is declining—from 68% in 2004 down to 61% in 2008. PCV rates, on the other hand have been trending upward to around 70% in 2008.
- People with a chronic illness have higher immunization rates than those without the illness (Figure 2). However, there is a sharp drop-off for both groups under the age of 65—from 60-70% down to the low 30% ranges. Seniors appear to be getting the message, but younger people with chronic illness don't.

Is immunization safe?

To address safety concerns, our report looks at hospitalizations for illnesses that the media have suggested are triggered by immunization—namely Guillain Barré syndrome (paralysis), encephalitis (brain swelling) and thrombocytopenia (blood doesn't clot).

In the eight years of our study, only 997 Manitobans got hospitalized for any of these disorders—so very few cases. Of those, less than 10% had any kind of immunization in the previous 12 weeks,

Figure 2: Manitoba Influenza Immunization Rates for people with Diabetes

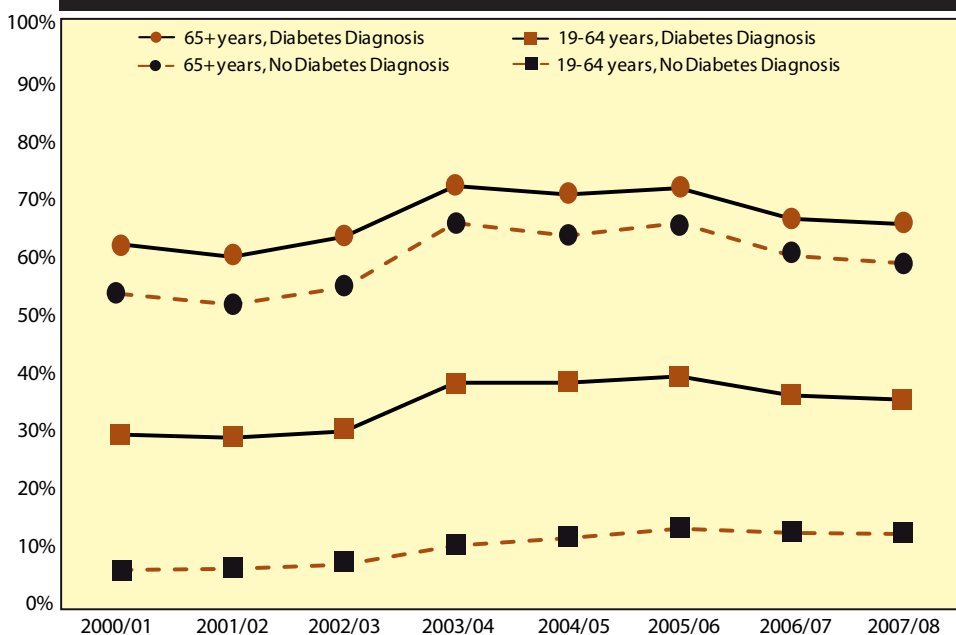
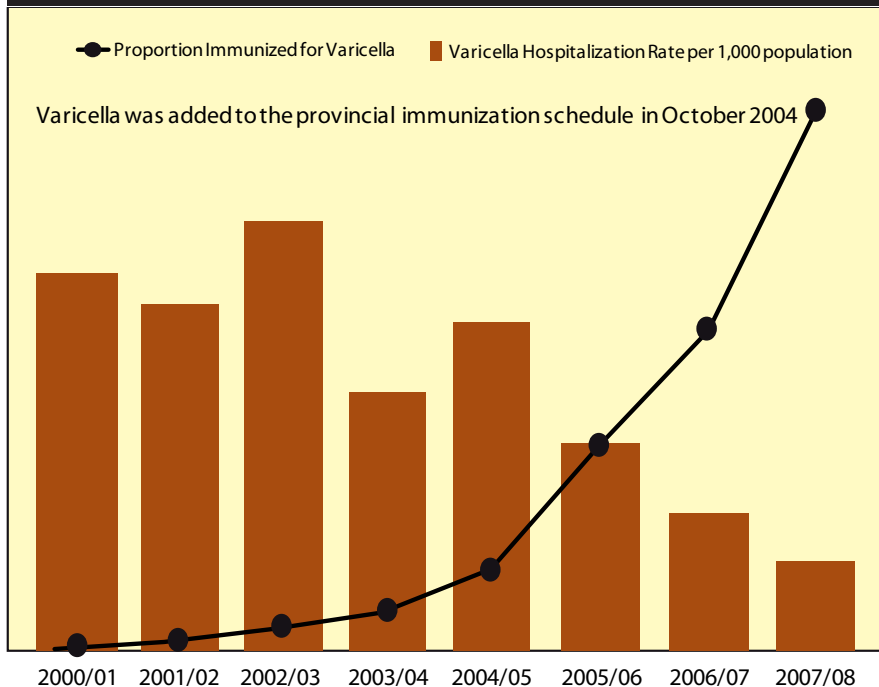


Figure 3: Varicella Hospitalization Rates (per 1,000 population) Compared to Varicella Immunization Rates for Children Aged 0-18, 2000/01 — 2007/08



However, there is room for improvement. We see kids are less likely to be immunized if they are not covered by Manitoba Health from birth, are from large, poorer families with a young mom and/or see more than one doctor. Healthcare providers need to be even more vigilant with these children.

There are also regional variations. Overall, northern kids are less likely to be vaccinated than southern kids. Even then, some southern RHAs have lower rates than others, and some rates are declining while others are rising. There is even variation within some RHAs. This is something that warrants a closer look. Perhaps one area can learn from another.

Overall, the news is less positive for adults. It is good to see that immunization rates are highest (above 70%) in one of the target groups—people over 64. And we do see that people with a chronic illness have consistently higher rates than those without. That said, people under 64 with a chronic illness have rates at around 30% or less—that’s not good.

More troublesome is the 6% immunization rate among pregnant women. Maybe they mistakenly think it will harm the fetus; maybe their doctor didn’t suggest immunization. Other studies have shown that obstetricians think it’s the family doctor’s job, so that may play a part. We can’t say for sure. It suggests education and awareness campaigns might be in order.

Which bring up a final point. If we know 6% is a poor rate, what’s a good rate? That’s been a big question for a while. A clinician might say only 100% is good. But is it realistic? It’s safe to say the 60% flu-shot rate for people over 64 could be better, like their rate for PCV, which is around 70%. Yet that could also be better. That’s why instead of absolute numbers, some RHAs focus on ‘percent increases’ trying simply to improve rates. And since the flu shot rate is declining, perhaps it might take priority.

Which underscores why studies like these are so important. Watching trends and making comparisons highlight discrepancies and target areas most needing improvement. These offer starting points for follow-up. All of which helps us work toward more Manitobans getting a few cc’s of prevention and perhaps a lifetime of cure.



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