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Introduction

Immunization is an essential primary health service that reduces the incidence of disease, severity of illness, and frequency of hospitalization. If a population does not maintain sufficient immunization coverage, it risks communicable disease outbreaks in local communities and the possibility of diseases spreading to other locations. Immunization may also decrease health care costs as it prevents the need for acute care.

To protect the public, governments monitor immunization coverage rates. Governments also monitor immunization coverage rates as a general indicator of health and awareness of disease prevention practices.

The immunization coverage rate often monitored is the percentage of eligible children receiving the recommended immunizations by their second birthday. Immunizing young children provides early disease protection and establishes positive contact with the health system.

This chapter reports the findings of our audit of the immunization coverage rate in the Prince Albert Parkland Regional Health Authority. In 2004, the Authority was one of four where immunization rates for two-year olds fell below 70%. The Public Health Agency of Canada recommends an ideal of 95% immunization coverage by age two.

Background

The Prince Albert Parkland Regional Health Authority (Authority) serves Prince Albert, Spiritwood, Big River, Shellbrook, and the surrounding areas. The Authority is accountable for the health of nearly 78,000 people including First Nations people living off reserves within its region.

In Saskatchewan, childhood immunization is provided free to residents. Saskatchewan regional health authorities (RHAs) provide most immunization services for children. In most cases, First Nations people living on reserves receive health services operated by the Federal Government or the Northern Inter-Tribal Health Authority. Regardless of who operates these health services for First Nations people, the Federal Government pays for the services and monitors the results.

All agencies immunizing children in Saskatchewan use the provincial immunization schedule. Primary immunization includes vaccines to prevent diphtheria, pertussis, tetanus, haemophilus influenza B, polio, measles, mumps, and rubella.¹ The schedule recommends infants and young children be immunized at ages 2, 4, 6, 12, and 18 months, with multiple injections at each visit.

Regional health authorities record immunization on paper and in a computerized record. The Saskatchewan Immunization Management System, or SIMS, is a centralized, internet-based record system. Federal and First Nations health services use paper records. Only if a child receives some immunization from the Authority would the Authority have a record of that child's immunization status.

Our audit objective, conclusion, and recommendations

The objective of this audit was to assess whether the Prince Albert Parkland Regional Health Authority has adequate processes as of June 30, 2006 to achieve recommended immunization rates for two-year olds.

To assess the adequacy of the Authority's processes, we developed criteria based largely on national immunization guidelines, a review of relevant literature, and the work of other audit offices as set out in Selected References. The Authority agreed that the criteria were reasonable and attainable.

To have adequate processes to achieve recommended immunization rates for two-year olds, the Authority should:

- ◆ promote parental awareness of the benefits of immunization
- ◆ organize services to encourage access to immunization
- ◆ create opportunities to immunize
- ◆ monitor immunization coverage

We found the Authority had adequate processes as of June 30, 2006 to achieve recommended immunization rates for two-year olds, except for its processes to create opportunities to immunize by

¹ Federal and First Nations health services also give immunizations for hepatitis A to children under two who live on reserves.

working with others and its processes to monitor immunization coverage.

- 1. We recommend that the Prince Albert Parkland Regional Health Authority work with First Nations and Federal health agencies to maximize access to immunization for children in the region.**
- 2. We recommend that the Prince Albert Parkland Regional Health Authority set target immunization coverage rates for children in the region and develop plans to achieve those targets.**
- 3. We recommend that the Prince Albert Parkland Regional Health Authority regularly report to its board an analysis of the causes of its low immunization coverage rate.**
- 4. We recommend that the Department of Health adjust its immunization performance measure so that it calculates the measure it has defined.**

Our findings by criteria

Promote parents' awareness of immunization benefits

To have adequate processes to promote parental awareness of immunization benefits, we expected the Authority to:

- ◆ *inform parents clearly of immunization benefits*
- ◆ *inform parents of risks and controls for safe immunization*
- ◆ *use effective promotional methods*

The Authority uses its own and Department of Health (Health) materials to inform parents about the benefits of immunization and controls that make immunization safe. Written materials are understandable with few technical terms. Most written materials focus on the direct benefits to the child; some materials mention benefits to the community (e.g., preventing the spread of disease).

When the Authority invites parents to immunize their children, the message often explains why immunization is important. For example, a

radio advertisement informed parents: “These are shots that stop simple diseases that people used to die from.”

Annual training for public health nurse certification includes information on risks and controls. The *Saskatchewan Immunization Manual* and the *Canadian Immunization Guide* recommend that nurses explain risks to parents. The Authority uses handouts from the Canadian Paediatric Society to tell parents how to handle risks like fevers after a child is immunized.

The Authority uses a variety of effective methods to communicate with parents including posters, handouts, mailed invitations, radio messages, and newspaper articles. Public health nurses talk directly with parents to encourage immunization (e.g., during prenatal classes, in community schools, in daycares).

The Authority uses consistent messages to promote parental awareness of the benefits of immunization. Messages like “vaccines are safe” and “vaccines prevent disease” are common.

The Authority’s print materials are culturally neutral. For example, print materials often use graphic designs rather than pictures of people. In 2006, the Authority used radio advertisements. To encourage immunization, CKBI radio aired a “Grandparents Challenge” in English and Missinipi Radio aired a message from a grandmother speaking to her grandchild in Cree. The Authority also uses free community-service announcements on local radio stations.

The Authority works with doctors’ offices, hospitals, and daycares to make parents aware of the benefits of immunization. For example, the Authority urges local physicians to display immunization posters in examining rooms.

Organize services to encourage access to immunization

To have adequate processes to organize services to encourage access to immunization, we expected the Authority to:

- ♦ *offer accessible times to immunize children*
- ♦ *offer accessible locations to immunize children*

- ◆ *reduce common barriers to access*
- ◆ *obtain resources to improve access to immunization*

The Authority offers immunization at reasonably accessible times and locations. The Authority offers sixteen immunization clinics in small communities outside Prince Albert and six within the city. The Prince Albert clinics are located throughout the city including areas where parents might not have transportation.

Appointment times vary by location. Usually immunization clinics operate from 8:30 a.m. to 4:30 p.m. one day each week or one day each month in some rural locations. Parents usually can obtain a scheduled appointment within a week in urban locations. In one location, the Authority offers a few appointments late in the day—up to 7:00 p.m. There are few lunch hour appointments. No appointments are available during weekends.

In addition, Prince Albert has drop-in immunization clinics. The Authority calculates that 70% of the immunizations it provides in the City of Prince Albert are at drop-in clinics. In rural areas, public health nurses often immunize children outside of scheduled clinic hours to meet family needs.

The Authority offers services to reduce known barriers to immunization. It recognizes major barriers such as the lack of transportation. If necessary, the Authority transports clients to immunization clinics in Prince Albert.

The Authority asks its other employees to help increase immunization rates. For example, nurses in hospitals and emergency wards refer children who may require immunization after their discharge.

The Authority also attempts to address barriers such as changing family structures and transience. Many children move often (e.g., from parents to grandparents, for parents' seasonal employment, for housing). When children move, the Authority no longer has current contact information. A public health assistant works to locate children whose contact information is no longer accurate.

The SIMS records are not automatically updated when families move and change their address for their health cards. In addition, due to problems with the accuracy of addresses and postal codes, SIMS may not identify all immunized children as belonging in the Authority's region.

The Authority has a \$1.5 million budget (2005-06) for public health nursing; it does not budget for specific activities like immunization. The program manager occasionally requests resources for special immunization campaigns or activities. The Authority has not allocated resources to evaluate its immunization program.

During 2005-07, the Authority received \$32,500 one-time funding from Health to help it improve its immunization coverage rates. The funding was for service to underserved areas, a data-entry pilot project, and computers that will facilitate recording immunizations electronically at all clinic locations.

Create opportunities to immunize

To have adequate processes to create opportunities to immunize children up to the age of two, we expected the Authority to:

- ♦ *use best practices to maximize immunization coverage*
- ♦ *follow up children who are not fully immunized*
- ♦ *work with other health service providers to maximize coverage*

The Authority uses manuals and other references that outline best practices to guide its immunization program. All staff have electronic access to the *Canadian Immunization Guide* and the *Saskatchewan Immunization Manual*. These manuals set out practices that help public health nurses to maximize immunization coverage. For example, the Authority expects that nurses rarely defer immunization. The Authority certifies public health nurses annually to ensure they know how to immunize safely and use best practices.

Every three months the Authority receives from SIMS, the provincial electronic record system, a list of children who are overdue for immunization. The Authority sends reminders by mail or telephone inviting families to attend an immunization clinic. In some cases, a public health assistant visits the family to urge that the children be immunized.

The Authority works with some agencies to improve immunization coverage rates. For example, the Authority works with a *KidsFirst* project for at-risk families to immunize participating children. The Authority also

encourages daycares to require children to be immunized. With parents' consent, daycares help the Authority review each child's record and encourage any required immunization.

Public health nurses, health assistants, and other staff work co-operatively with health workers on reserves and in other health authorities. Workers fax immunization records on request so that a child may be immunized immediately. *The Health Information Privacy Act* enables this exchange of information between service providers to facilitate health care.

The Authority's managers have not communicated with local federal or First Nations health agencies serving the Aboriginal community to identify ways to improve immunization coverage in the region. Such discussions could help the Authority analyze the gaps and plan effective strategies to maximize immunization coverage.

Monitor immunization coverage

To have adequate processes to monitor immunization coverage, we expected the Authority to:

- ◆ *communicate expected coverage rates for immunization*
- ◆ *use the record system to facilitate accurate immunization records*
- ◆ *report analysis of immunization coverage rates*
- ◆ *act on reported immunization rates*

Expected childhood immunization coverage rates are not clear in Saskatchewan. The Public Health Agency of Canada recommends that ideally 95% of children should receive primary immunization by age two.² Health told us that 95% coverage may not be achievable in all areas of Saskatchewan; it has not set an alternate target rate. Thus, each regional health authority is responsible to assess its overall mandate and set priorities.

In 2006, the Authority had not set immunization coverage targets. When employees know the target, they can redesign programs or allocate resources to achieve the target. Immunization coverage targets for the

² National Advisory Committee on Immunization recommends rate to the Public Health Agency of Canada.

region and for specific high-risk areas would help the Authority compare actual rates to those planned and analyze the reasons for differences.

The SIMS electronic record system has processes to protect the accuracy of immunization records. It has built-in checks to prevent errors. Employees are trained to use SIMS and can use a manual for further reference. A study done by Saskatchewan Health in 2005 concluded that “SIMS as an electronic immunization record is as accurate as the hard [paper] copy immunization record.”³

Since 2001, the Authority has required its staff to maintain duplicate paper and electronic records. The Authority is working to increase its capacity to computerize data entry at all clinic locations. In 2006, the Authority requires nurses to verify twice that the record is accurate—when making a paper notation after immunizing a child, and again when entering the record into SIMS. The Authority has not evaluated the cost of its parallel recording system.

SIMS has some limitations in its capacity to help managers monitor immunization rates. SIMS reports data only from 2004-05 forward, so the Authority no longer monitors long-term trends as it did up to 2000. Also, SIMS provides immunization rates for the whole region and not for specific locations or communities. The Authority has not allocated resources to do regular surveys or hand-count immunization records to help it monitor immunization rates in specific areas with lower immunization coverage.

In 2005, there were approximately 1,000 children age two living in the Prince Albert Parkland region.⁴ Children who receive any immunization from the Authority are registered in the Authority’s immunization records. Of the approximately 800 two-year olds registered in the Authority’s records, just over 530 or 67% were fully immunized at age two. Children who live in the region, but have never registered for immunization are not included in the calculation. Some children living in the region may have received immunizations from federal or First Nations health services and these would not be recorded in the Authority’s electronic records.

³ *Saskatchewan Immunization Management System (SIMS): Validation study*. SaskHealth 2005.

⁴ 2005 estimate from Saskatchewan Health’s Person Registry System.

Despite its limitations, the SIMS immunization rate for two-year olds is a performance measure that will help to monitor immunization coverage in the long term. As required, the Authority reports its SIMS immunization rates for two-year olds to the Department annually and in its annual report to the public. The Authority compares its SIMS immunization rate to the SIMS provincial rate, but it does not explain the reasons for lower rates in the Authority's area.

The reported immunization rate for 2005-06 was 67% for diphtheria and 67.8% for measles compared to provincial rates of 73% and 71% respectively. The reported immunization rate is misleading if not explained. The Authority's annual report does not explain the complexity of the calculation or whether the rate reported is accurate except to remind readers that some additional children may be immunized on reserves.

The Authority does not provide analysis of immunization rates to management or its board. The Authority has not analyzed the causes of its low immunization coverage. It does not explain the extent to which children are overdue to receive an immunization. It does not explain the proportion of two-year olds in the region who have valid health cards but whose immunization status is unknown. Lack of analysis can lead to failure to address root causes of low immunization rates.

The Authority's staff take action in response to the reported SIMS immunization rates. The public health nursing preschool team regularly discusses immunization rates and plans strategies to increase the coverage rates. For example, during April 2006, the Authority arranged for extra advertising and a door-to-door campaign to find children who were not immunized. The Authority evaluated that 59% of the children immunized during its April immunization blitz were behind with their immunizations. The Authority repeated its blitz strategies in August 2006 to improve its overall immunization rates.

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