



Final Evaluation of Done By 2 Immunization Program

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Executive Summary

Currently within Canada, immunization coverage goals are not being met. Improving vaccination rates and reducing vaccine-preventable disease outbreaks are thought to improve population health outcomes and reduce costs to the Canadian healthcare system. As such, the Saskatchewan Health Authority (SHA) is focusing on increasing immunization coverage in Saskatchewan by implementing the Done By 2 (DB2) program to increase demand for immunization, enhance access to immunization services, and improve the ability of health care providers to provide immunization. DB2 began in the Core and West areas of Saskatoon in 2007. DB2 comprises an electronic immunization database and reminder system as well as hiring of Community Program Builders (CPB) who engage with clients who are overdue for immunizations. In April 2019, DB2 was extended to include the remainder of Saskatoon, the city of Prince Albert (PA), and the Regina South network. The program utilizes various strategies to increase immunization rates, including providing tailored assistance and reliable information about immunizations and healthcare, increasing clinic capacity through protected hours for DB2 clients, and partnerships with community organizations.

The aim of the evaluation is to assess the effectiveness of the Done By 2 (DB2) program on (1) increasing immunization rates of two year old children in Saskatoon, the Regina South network, and Prince Albert; (2) decreasing the disparity between the underserved and vulnerable populations and the total population in each of these areas; and (3) assess the process of implementation for scale-up and sustainability within Saskatchewan. To accomplish this, a survey was created to assess client knowledge and attitudes towards immunization, client perceptions of the public health (PH) staff, barriers to accessing immunization services, and preferences around immunization appointments and reminders. DB2 staff were interviewed to assess the strengths and limitations of the program, facilitators and risks to successful scale up, as well as potential program improvements. Finally, data were extracted from the DB2 database regarding coverage rates at 2 years of age; immunization of children within 30 days of different types of contact; and disparities between the most and least disadvantaged populations.

Survey results are limited due to a low response rate. However, clients generally have positive attitudes towards immunization and a positive view of the SHA PH staff. Participants preferred telephone and text message reminders, and suggested that email reminders would be a good option for the future.

The core strength of DB2 is the **focused time and attention of the CPB** on tracing and contacting hard-to-reach clients and providing assistance to attend immunization appointments where necessary. A key mechanism in achieving increased levels of immunizations is the **creation of a trusting relationship** between clients and the CPB. People are generally more willing to listen and act on information when they feel respected and supported. This trust relationship may extend beyond PH to the SHA as a whole, thereby benefiting other aspects of healthcare. The DB2 program can be summarized as **persistence, assistance, and relationships**. The CPBs need persistence in tracking and contacting clients, and will provide assistance where necessary for the immunization of the child to occur. This is more successful when CPBs are able to create a trust relationship with the clients, such that information is perceived as reliable and the client is motivated to attend an appointment.

A further strength of the program is the creation of the DB2 database and ongoing analyst support to maintain the database and provide timely site-specific feedback about issues that require attention,

such as decreases in coverage rates. However, heavy reliance on one analyst means that the program would suffer substantially without this key person.

DB2 faces some challenges to success. Clinic capacity is an issue as current wait times in PA and parts of Saskatoon are over 30 days, which may discourage clients from committing to an appointment. Public Health nurses (PHN) have been diverted to COVID-19 work, further reducing clinic hours, and high levels of client no-show rates exacerbate the strain on clinic capacity. Transient populations can be difficult to track as contact details are often changed. Additionally, the COVID-19 pandemic has led to increased barriers to immunization for clients and increased vaccine hesitancy.

Database results were ambiguous in assessing program success. Saskatoon and PA have higher levels of vulnerable populations, which places greater demand on the CPBs and is likely to lower coverage rates. The negative effects of COVID-19 cannot be assessed separately to other program impacts. The DB2 program officially began in April 2019; however, complications in the hiring process led to long delays in hiring CPBs, who are central to program success. This meant that DB2 actually began in Regina South in March 2020 and in PA and the remainder of Saskatoon July 2020, allowing very little time for meaningful results in this evaluation. Resolution of the ongoing HR issues is key to success in DB2. Results showed that in all areas, **a telephone call to the client that results in a booked appointment has a far higher rate of arrival than other methods**. CPBs should be encouraged to use this method wherever possible, rather than relying on other forms of communication, such as text messages.

Recommendations for sustainability and improvement include:

- Dedicated funding for full-time CPBs who have realistic geographical area coverage that allows time to build relationships with clients. Saskatoon has existing funding for three CPBs, but requires additional support for either one FTE or two 0.54 FTE CPBs to cover the NE and the SE areas. The option of two part-time employees would give greater flexibility in covering these areas. Prince Albert would require at least two CPBs, as they found that one dedicated DB2 CPB was not enough to cover the city. Regina would assess the capacity as they scale up from Regina South to other Regina networks.
- Dedicated funding for PHN time to create additional clinic time to meet the client needs and reduce wait time from current waits of 30-60 days to 7-10 days. This would encourage clients to book an appointment as some currently feel unable to plan their schedule 30 days in advance.
- Understand site-specific data and facilitate timely implementation of necessary changes to improve results.
- Ensure the CPBs feel supported when they encounter difficulties with clients.
- Create a collaborative, non-hierarchical team in which the CPB feels a valued member.
- Create staff engagement with the program.
- Provide sufficient resources for implementation. Comprehensive orientation and training at the start of the program will help to increase understanding of the program goals and assessment as to how DB2 could best be implemented within each context.

DB2 is more than an immunization program. It is a **client-centred point of entry into a complex, integrated healthcare system** where PH staff connect with people to help address their healthcare needs. A trust relationship between clients and the system develops as clients become confident that resources are available when they need help.

Evaluation of Done By 2 Immunization Program

Program Overview

Currently within Canada, immunization coverage goals are not being met. As such, the Saskatchewan Health Authority (SHA) is focusing on increasing immunization coverage in Saskatchewan by implementing interventions in three key geographic areas to increase demand for immunization, enhance access to immunization services, and improve the ability of health care providers to provide immunization. Although the province has a practice of providing reminders about immunizations, this is generally done by an office assistant (OA) on a monthly basis. Parents receive a telephone reminder; however, the onus is on them to act on this and make an appointment for their child immunizations. Little further follow-up is usually done if the OAs cannot reach a client or parents do not call back. OAs are generally unable to trace people with incorrect listed telephone numbers or addresses. Incorrect information resulted in wasted time in repeated efforts. Reminders are not the primary duty of the OA, so can be missed when other issues became more urgent. Furthermore, OAs are not knowledgeable about immunizations or protocols and so are unable to answer questions that parents might have. OAs would refer parents to a general SHA telephone number that required navigation to access the right information.

The approach involved scaling up a current immunization program that shows promising results. The Done By 2 (DB2) program began in 2007 with the aim of increasing child immunization rates in Saskatchewan, and decreasing the disparity between underserved and vulnerable populations, who often have higher needs and are harder to reach, and the total population. The program comprises an electronic immunization database and reminder system as well as hiring of Community Program Builders (CPB) who use the database to engage clients who are overdue for immunizations. The database system improves the ability to identify under and unimmunized children. CPBs are recruited from within the targeted communities and act as a liaison between community members and Public Health (PH) staff. The CPBs also provide supports, such as help navigating health and social systems and overcoming transportation challenges for clients. CPB activities include:

- Providing reminder phone calls, home visits, letters, or texts to clients that have children that are overdue on their immunizations;
- Providing additional enhanced reminders and services (e.g., arranging transportation) to people delayed in receiving immunizations;
- Offering home visits at 6 weeks to allow for proactive scheduling of children for their first set of immunizations at 2 months of age; and
- Providing information on immunization schedules at CPB 6 week home visits and subsequent reminder visits.

There is an overall growth in population as well as growth in population sub groups, such as newcomers and Indigenous populations. The project focuses on parents and caregivers of children younger than two years old who live in underserved and vulnerable neighbourhoods, inclusive of immigrants, refugees, and First Nations clients. The majority of these residents face multiple cultural and socioeconomic barriers that may impede their knowledge of immunization and community services, and their ability to access such services. Barriers include language (e.g., English as an additional language, low literacy skills), low level of education, unreliable transportation, family situation (e.g., single parent), unemployment, mental illness and addictions, food insecurity, transiency, new to community and don't

know resources, or lack trust of healthcare providers and the healthcare system. Lower immunization uptake in these situations may be as much due to access as to hesitancy and other factors.

Hiring CPBs who live in or are familiar with the community and are trusted role models can open doors to audiences that official health care providers are sometimes unable to access, and may have a more positive influence and success in increasing the uptake of immunizations. CPBs liaise between the clients and PH staff helping bridge the disparity gaps evident in underserved and marginalized populations within the community. They are trained to provide basic health education and referrals for a wide range of services, and to provide support and assistance in navigating the health and social services system. CPBs are also positioned to offer incentives to clients to access immunization services, including providing assistance with transportation.

CPBs can enhance communication with clients that facilitates delivery of immunization services (e.g., answering client questions, obtaining informed consent for immunization ahead of appointments). When connecting, communicating, and establishing trust relationships with clients, CPBs can provide immunization information (e.g., the provincial immunization schedule and fact sheets) to clients and can address general immunization questions. They can refer clients to a PH nurse for further information and provide information about other health and social services (e.g., smoking cessation, emergency food programs). Expansion of the current electronic database and reminder system will improve the ability of PH nurses to identify under and unimmunized children.

Improving vaccination rates and reducing vaccine-preventable disease (VPD) outbreaks are thought to reduce costs to the Canadian healthcare system and improve population health outcomes nation-wide. By increasing community immunity, the project will ultimately prevent and reduce transmission of VPDs, recognizing that the proportion of the population required to be immunized in order to achieve community immunity varies for each disease. The benefits of immunization are well documented and clear, demonstrating reduced incidence of disease leading to fewer hospital and doctor's office visits, disability, death, and inequity. The cost of individual vaccines and the expense of providing immunization programs are greatly outweighed by the benefits achieved by preventing disease.

Results to date show that measles coverage (2 doses) in two-year-olds increased from 73.6% to 80.7% between 2008 and 2017. Additionally, the measles vaccination disparity ratio by neighbourhood has been steadily decreasing due to the implementation of a range of interventions and equitable policies. DB2 is a step towards improving immunization coverage rates, opening doors to the underserved, and gaining valuable understanding of the barriers affecting utilization of immunization services. The program has expanded to include the remainder of the city of Saskatoon, the city of Prince Albert (PA), and the Regina South Health Network. The aim is to continue to expand to other high needs areas of the province, including rural and remote communities, and potentially to First Nations communities.

Current provincial and area immunization coverage rate reports do not identify under or un-immunized children, barriers that these groups face, challenges to improving immunization coverage for children, or progress in doing so. Disparities in coverage rates highlight the need to explore the root cause of immunization inequities, reduce barriers, and ultimately increase immunization rates. The projected benefits of this initiative include the examination of the most prevalent barriers faced by the province in increasing vaccination uptake, improved immunization rates, and the development of recommendations for policy interventions of provincial and national benefit that may reduce overall costs to the health care system.

Evaluation Objectives

The aim of the evaluation is to assess the effectiveness of the Done By 2 (DB2) program on (1) increasing immunization rates of two year old children in Saskatoon, the Regina South network, and Prince Albert; (2) decreasing the disparity between the underserved and vulnerable populations and the total population in each of these areas; and (3) assess the process of implementation for scale-up and sustainability within Saskatchewan.

The evaluation matrix shows the evaluation objectives, the specific questions by which to achieve these objectives, and the method and data source used to answer the questions.

Evaluation Question	Indicators	Data Source
Objective 1: Increasing immunization rates		
Is there a decrease in overdue children (receive 2 doses of measles vaccine by 2 years of age)?	Coverage rates at 2 years of age.	Done By 2 Database.
What types of contact are most effective?	Number of parents immunizing children within 30 days of different types of contact. Client self-reported efficacy of type of contact.	Done By 2 Database. Client survey.
Do clients know about the importance, benefits, and logistics of immunization?	Client-reported knowledge and attitudes towards immunization (knowledge of logistics, intention to immunize, perceptions of contribution to reduction of disease).	Client survey.
Do clients trust the information given by the SHA PH staff?	Client-reported perception of trust in SHA PH.	Client survey.
Do clients feel supported by the SHA PH staff?	Client-reported perception of support from SHA PH.	Client survey.
What are the barriers to accessing immunization services?	Client-reported barriers to accessing immunization services.	Client survey.
Is DB2 effectively addressing barriers to accessing immunization services?	Client-reported removal of barriers to accessing immunization services.	Client survey.
Objective 2: Decreasing disparities		
Is there reduced disparity between the underserved and vulnerable populations, and the total population in Saskatoon,	Decreased disparity between the most and least disadvantaged populations since start of program.	Done By 2 Database.

Evaluation Question	Indicators	Data Source
the Regina South network, and Prince Albert?		
Objective 3: Sustainability and scale up		
What are the potential challenges, facilitators, and risks to successful scale up?	Identification of potential challenges, facilitators, and risks, e.g., over-reliance on key personnel.	Interviews with DB2 staff.

Methods

Database Review

Data were extracted from the DB2 Database regarding:

- Coverage rates at 2 years of age;
- Immunization of children within 30 days of different types of contact; and
- Disparity between the most and least disadvantaged populations

Survey

A survey (see Appendix A) was created to assess client knowledge and attitudes towards immunization, client perceptions of support from and trust of the SHA PH staff, client barriers to accessing immunization services, as well as preferences around immunization appointments and reminders. Face and content validity was tested by initially distributing the survey to knowledgeable staff, who checked for comprehension and potential gaps. The survey was distributed through REDCap¹ and was open from September 10 to October 23, 2020. As an incentive to complete the survey, clients were offered the opportunity to participate in a draw to receive one of five gift baskets. The Regina site opted to increase this to ten baskets for their clients. The CPBs contacted clients to complete the survey.

Distribution of the survey turned out to be more complicated than expected. It was assumed that email addresses were available to the CPBs; however, this was not the case. As such, there were difficulties in recruiting clients to participate. Language barriers may be a further issue as the survey would only capture English-speaking clients. The CPBs in each area showed great initiative in recruitment, such as texting the link to clients, requesting email addresses to send the link, creating messages to encourage participation, and offering to help clients complete it over the telephone. Beyond this, the CPB in PA created paper copies for the clients who came into the clinic (using necessary COVID-19 precautions) as well as mail out slips with the link to the survey website. The CPB in Regina had iPads available and asked clients to complete the survey during their 15 minute wait after the immunization. However, even with these efforts, the response rate was very low, with 112 clients participating in the survey. As such, the survey results are unlikely to be representative of the client population. Future survey efforts would need to have a more detailed plan to reach a broader section of the client population, possibly with a greater incentive attached to it.

¹ REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies.

Interviews

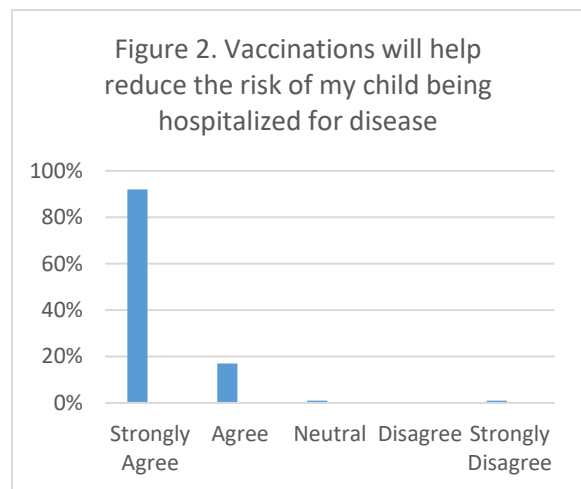
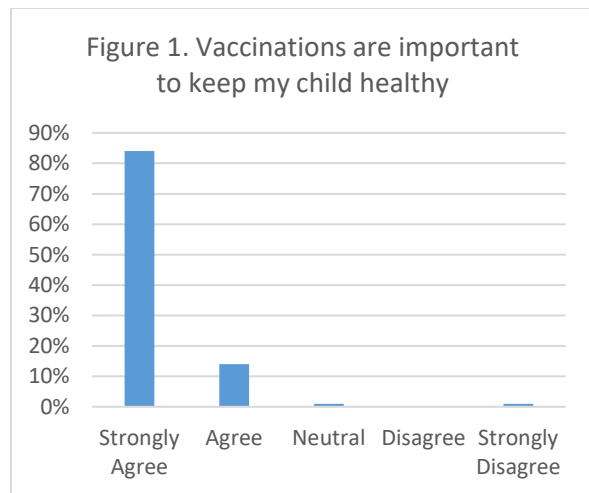
The DB2 project lead and staff from Regina (4), Saskatoon (4), and PA (4) were interviewed to gain an understanding of how the program works, the strengths and limitations of the program, the barriers to immunization faced by the clients, facilitators and risks to successful scale up, as well as improvements that could be made to the program (See Appendix B for Interview Guide).

Results

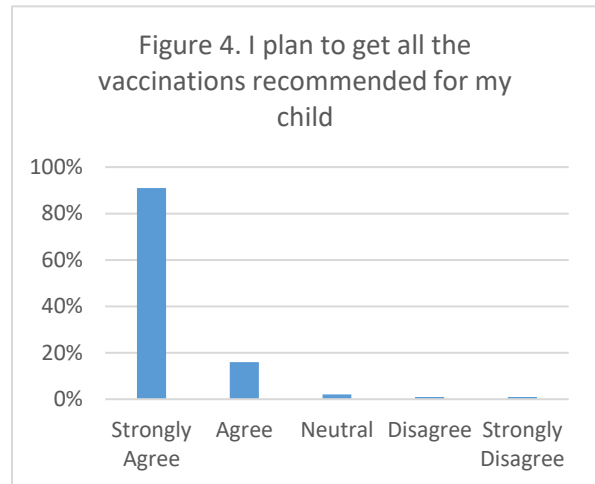
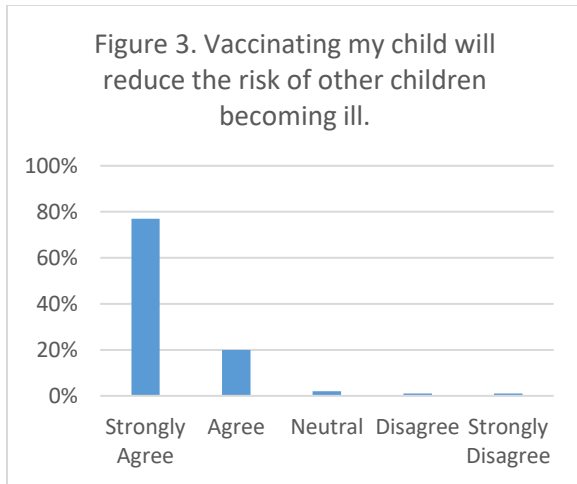
Survey Results

Participants (N=112) were mostly female (80%), White (41%; Indigenous, 24%, South Asian, 13%; Filipino, 7%, African, 5%; Asian, 5%; Arab, 3%), between 26 to 35 years of age (60%; below 25, 13%; 36 to 45, 24%), and were married or living with a partner (76%; single parent 16%). Most had post-secondary education (college diploma, 27%; undergraduate degree, 18%; post-graduate/professional designation, 24%). Income brackets were dispersed: Less than \$25,000 per year (22, 20%), \$25,00 to less than 50,000 per year (23, 21%), \$50,000 to less than \$75,000 per year (10, 9%), \$75,000 to less than \$100,000 per year (16, 15%), \$100,000 to less than \$150,000 per year (12, 11%), more than \$150,000 per year (13, 12%). Participants were from Regina (55%), PA (30%), and Saskatoon (15%).

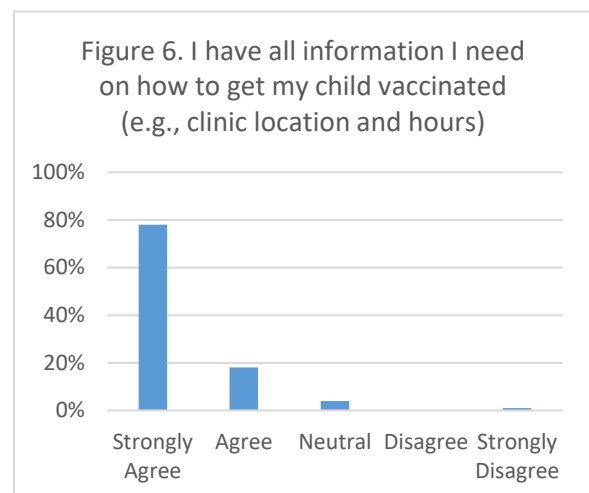
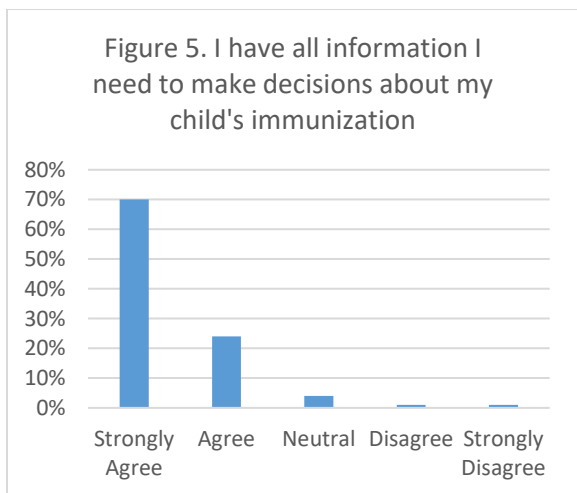
Respondents had very positive attitudes towards immunizations in general, reflected in the graphs below. They felt that vaccinations were important to their child’s health as well as the health of other children.



Evaluation of Done By 2

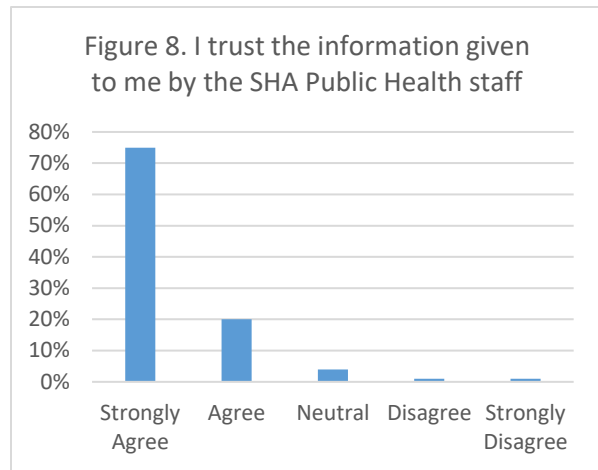
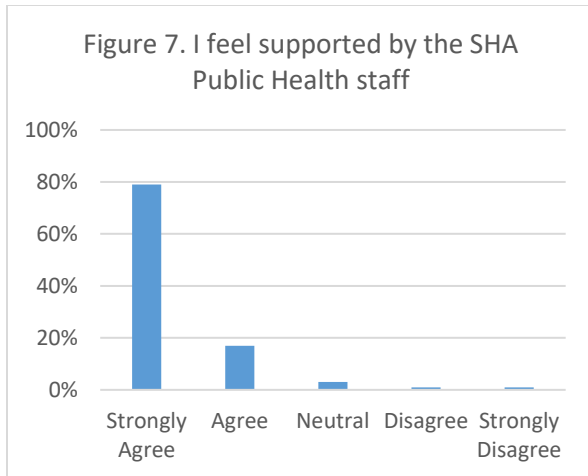


Respondents felt that they had the information needed to make the decision about immunizations as well as how to access immunization services.

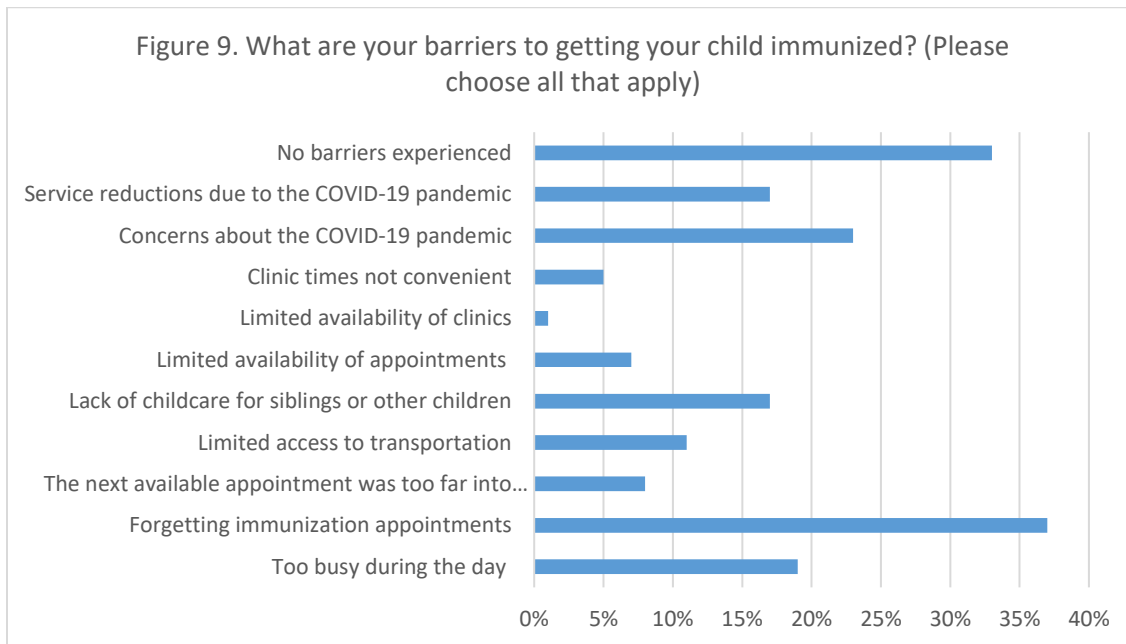


Respondents had a positive view of PH staff as they generally felt supported by staff and trusted the information given to them.

Evaluation of Done By 2



The main barriers to immunizations selected from the provided list were forgetting about the appointment (37%), concerns about COVID-19 (23%), followed by service reductions due to COVID-19 (17%) and lack of childcare for other children who could not accompany the parent to the appointment (17%). No new barriers were identified through the comments; however, some took the opportunity to mention how helpful reminders have been.



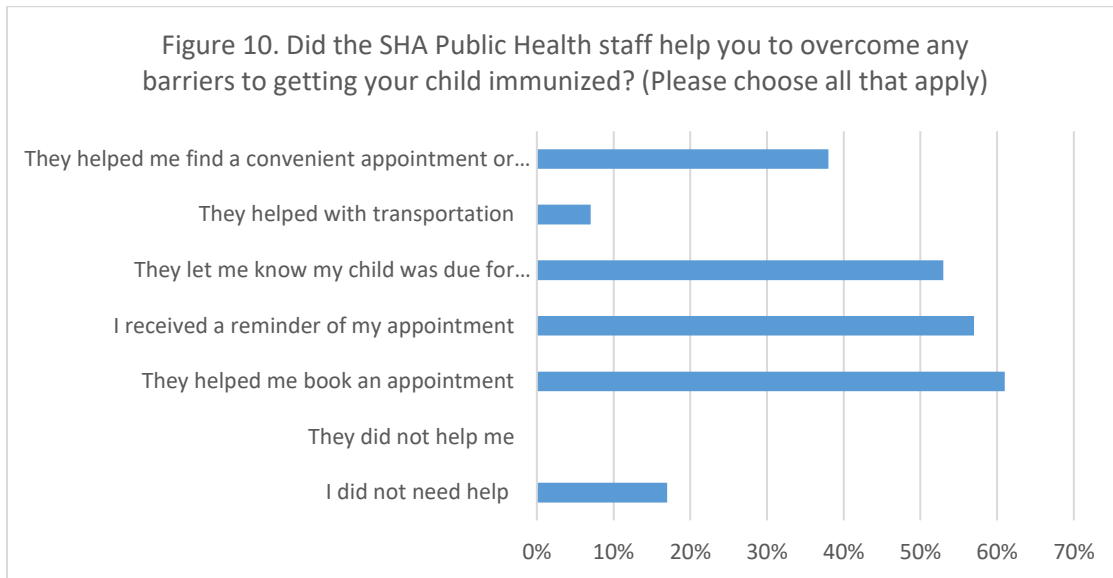
Staff were generally seen as helpful in getting immunizations done and people took the opportunity to express appreciation for the work done by PH staff.

“The nurse even helped with questions with baby nutrition and provided me helpline to call the dietician.”

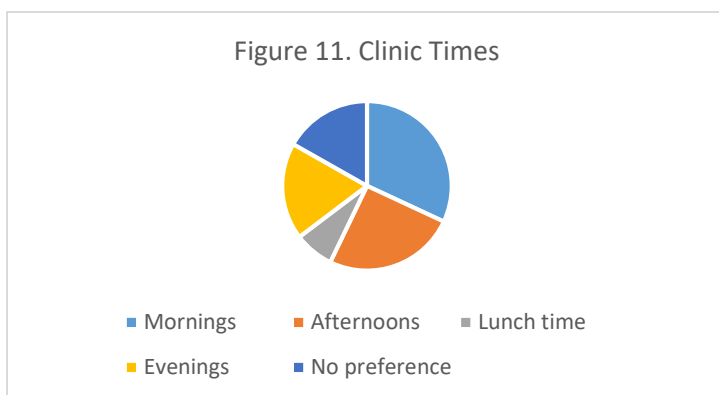
"I'm fairly new to the city and had always just gone to my doctor's office, but couldn't during the pandemic. I'm grateful I was contacted by public health."

The only negative comment was not related to immunizations but postpartum screening.

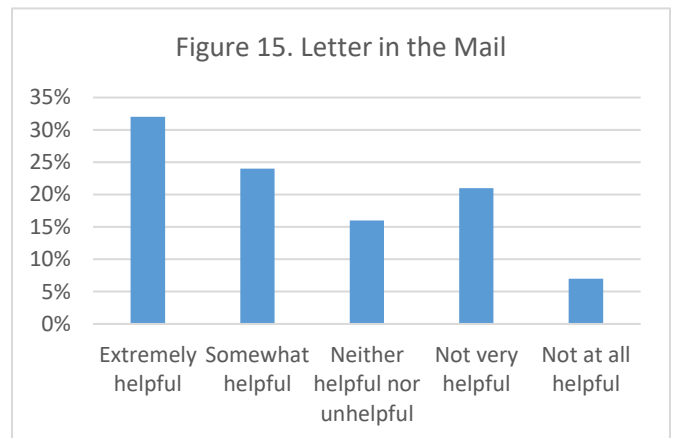
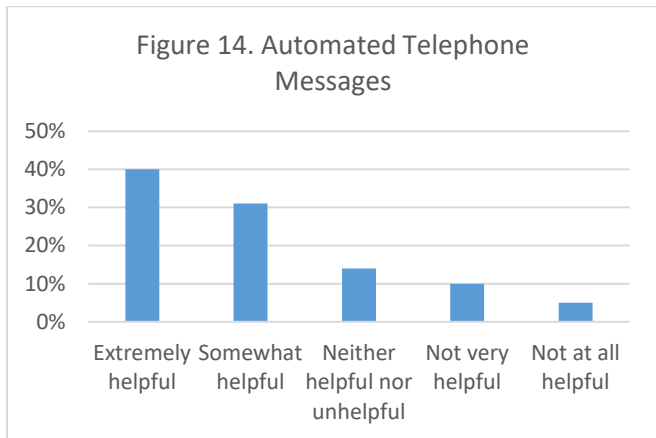
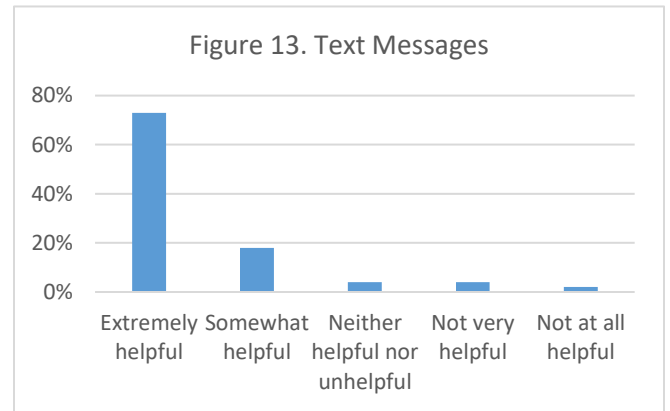
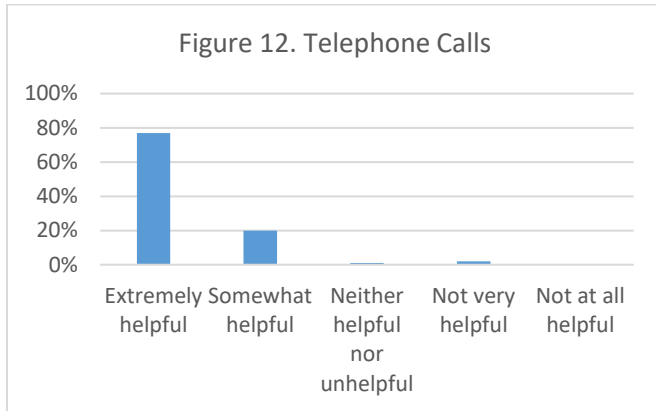
"I think that the screening for postpartum depression is an absolute joke. Public health care nurses need to look beyond the questionnaire and be able to properly screen for symptoms of distress inclusive of anxiety, depression, mood swings, domestic violence, attachment issues, etc. What a wasted opportunity."



The majority of people preferred to attend a booked appointment (84%) rather than a drop-in clinic (12%). However, this may reflect the demographic of participants as it is anecdotally known that marginalized populations often have more difficulty attending an appointment at a fixed time, rather than deciding to attend when convenient. Opinions were more diverse regarding clinic times: 38% preferred mornings, 30% preferred afternoons, 22% preferred evenings, 9% preferred to attend over lunch, and 20% had no preference.



Participants were asked to rate how helpful different types of reminders would be to them. Combining the 'strongly agree' and 'agree' options, there is a preference for telephone calls (97%) and text messages (91%), followed by automated telephone messages (71%) and letters in the mail (56%). Comments did not shed further light on this, as there were differences of opinions as to what is helpful. Some people did suggest that emails would be a good option; however, this is not currently offered to clients.



Interview Results

The DB2 program initially began in Saskatoon in 2007, focusing in the West and Core areas. Scale up of the program in April 2019 expanded DB2 to the remainder of Saskatoon, the city of Prince Albert, and the Regina South network (serving as a pilot project area for Regina), with each city receiving funding for one CPB. However, the Saskatoon and PA programs were too large for one CPB and chose to bring in additional CPB resources.

Program Strengths

Community Program Builders

The core strength of DB2 is the focused time and attention of the CPB. The CPB does not have other program commitments and is able to spend time tracing and contacting clients, providing information about immunizations, hearing the difficulties faced by clients, and providing assistance to overcome barriers to immunizations where possible. CPBs use telephone calls, text messages, and letters in the mail to communicate with parents. Immunization reminders for clients without CPBs are often minimal and inconsistent.

The percentage of families who are harder to reach and bring to an appointment is relatively small; however, this group needs a more intensive effort. For example, the CPB might spend some time trying an existing telephone number, which may not be the correct number. The CPB then has to find the right number for the client, which is often a process of elimination through multiple avenues, for example, looking up family members or checking contact details on different databases. Once the correct contact details are found, the work of speaking to the client, making appointments, dealing with no shows at the appointment, rebooking appointments, and dealing with barriers to attending appointments begins. The database is then updated for future contact. CPBs have the focused time and capacity to do this deeper work. CPBs can also answer any questions parents have about immunizations and make an appointment while speaking to the parent. The DB2 contact list is created weekly to ensure that no parent drops off the list due to lack of follow-up.

A key mechanism in achieving increased levels of immunizations is the **creation of a trusting relationship** between clients and the CPB. This starts with listening to families talk about their unique circumstances and challenges and collaboratively finding ways to overcome these. CPBs have conversations with families, rather than sending reminders and telling them what to do. People are generally more willing to listen when they feel respected and supported and do not feel that the system is trying to force them to do something they are not comfortable with. DB2 enables CPBs to get to know their clients in more depth than would otherwise be possible.

“We had a dad who was receiving dialysis and they had 5 children. It wasn’t that they didn’t feel that immunization was important, but mum didn’t drive and dad had dialysis. He’s unwell and didn’t have a lot of family support. With logistics, they just couldn’t get to the clinics to immunize their children. So because we were able to understand – when you have those conversations and understand what those true barriers are, we were able to do a home visit and send the nurse in to immunize all of them. So we wouldn’t have those strategies in place otherwise. That focus, attention and support.”

CPBs give clients a specific telephone number to call if they have questions about PH as well as about healthcare in general. Clients know that the CPB or PH nurse will answer that call and will take the time to listen to their questions and concerns. CPBs can act as a point of contact for other health issues and have helped clients navigate the healthcare system beyond PH. **Relationships are key to building trust and trust is key to building connection.** The CPB is integral to this work as they bridge the gap between the healthcare system and the clients. Families who feel that the CPB is non-judgmental of their situation, cares about them, and wants the best outcome for them are more likely to trust the information given to them and act on that information. This trust relationship may extend beyond PH to the SHA as a whole, benefiting other aspects of healthcare.

There was agreement from all interviewees that a CPB needs to have certain qualities to be successful. Most important of these is **empathy and communication skills**. CPBs need to be engaging, friendly, supportive, and helpful. They need to be able to create relationships with a variety of different people and understand their circumstances and concerns. They need to be engaged and invested in the job; they need to care about people, have a desire to connect in a meaningful way, and be willing to do what is necessary to help. This sometimes requires creativity and willingness to go the extra mile, for example making house calls to speak to people who are difficult to reach and being comfortable knocking on a door while not knowing who is on the other side of the door. CPBs need a great deal of patience and to be prepared for poor reactions to attempts to contact, such as verbal abuse or bad language. They need to be persistent in their work, willing to learn, be able to work independently, flexible, and able to adapt the day's schedule as necessary.

The role of the CPB is to build relationships within a community, therefore, hiring a CPB from within the community would help to achieve this. This is particularly the case with Indigenous communities, where there is historical lack of trust in the healthcare system. People are more likely to trust health information from someone they can relate to, who understands their situation, and who takes time to engage in dialogue about their health rather than simply telling them what to do. A successful CPB is a certain type of person, thus, it is helpful to have the CPB position exempt from the union requirement to hire based on seniority.

Program Strategies

The DB2 program utilizes various strategies to increase immunization rates.

1. **Reliable information.** Parents get information about immunizations from many different sources, which are often not reliable and can lead to indecision about booking their child in for an appointment. The CPB is able to give parents correct information about issues such as immunization schedules and effects. Where they are not able to provide answers, they can refer parents to a specific PH nurse, rather than a generic information source. Direct personal contact can create greater levels of trust and is helpful in making parents aware of the importance of immunizations, the necessity of adherence to the immunization schedule, as well as combating immunization misinformation and myths. Parents can then make an informed decision about their child's immunization.
2. **Tailored assistance.** Vulnerable populations, such as Indigenous, newcomers, and low-income people, face different barriers to attending clinic appointments, including lack of transportation, language, or difficulties with childcare for siblings. CPBs can offer tailored solutions, such as providing taxi vouchers, translation assistance, or a home visit. Similarly, communication methods can be specific to people's needs, for example, using text messaging when people do not have paid minutes on their cellphone plan or when there are comprehension issues with

speech. A text message can be shown to a friend, who could help with translating it and sending a reply. CPBs know that one method of communication does not work across the board. Appointments can be booked while speaking to the client, which increases the likelihood of appointment attendance.

3. **Incentives.** Hampers containing food or personal items might be given to a difficult to reach client who books and attends the appointment. These are not widely advertised, but are used in certain circumstances.
4. **Clinic capacity.** Specific clinic slots are held for DB2 clients to avoid a lengthy wait time for appointments. Further clinic times can be opened up to meet demand, depending on nurse availability.
5. **Staff continuity.** Speaking to the same PH staff can help to create relationships with clients as clients feel comfortable speaking to a familiar person, which makes the conversation more personal. Similarly, staff become aware of clients' circumstances and their needs.
6. **Team support.** The CPBs are members of the larger PH team and need to be well integrated into the team in order understand how their work ties into the work of others, rather than being isolated in their own area. They need to feel they are a necessary part of the team, feel supported by the team, and a have sense of working together to achieve health for the community. There needs to be a shared vision that DB2 is important and meaningful work that makes a difference to families who need additional support.
7. **Partnerships with Community-Based Organizations.** Community-based organizations (CBOs) are important partners in achieving high immunization rates. CBOs are often a trusted source of information as their clients generally believe that the organization wants the best outcomes for them. For example, the Open Door Society helps newcomers to get settled and established in Canada and will help them to access necessary resources and information. Newcomers rely on Open Door to give them reliable and trustworthy information about all aspects of life in Canada, including healthcare, and are likely to act on information about why and how to immunize their child. Additional partners are CBOs who work with families, such as Kids First and Family Futures, as well as Daycares.
8. **Database support.** An IT analyst provides weekly support and site specific updates from the DB2 database, which gives real-time information to follow-up or address issues. The analyst is a key person as there is heavy reliance on the analyst regularly maintaining and updating the database and the program would suffer substantially without him. As such, a weak point of the program that would need to be addressed is how to replace this analyst either on a short-term or long-term basis.

The DB2 program can be summarized as persistence, assistance, and relationships. The CPBs need persistence in tracking and contacting clients and provide assistance where necessary for the immunization of the child to occur. This is more successful when CPBs are able to create a trust relationship with the clients, such that the information given is perceived as reliable and the client is motivated to attend an appointment.

Program Challenges

Clinic Capacity

Although the CPBs are often successful in contacting clients and making appointments, clinic capacity is an issue as there may not be enough nursing staff to accommodate the appointments. At present, there are long wait times for appointments in PA and parts of Saskatoon, which may discourage clients from making a commitment to come. Vulnerable populations are often more focused on the immediate and sometimes do not know what they will be doing or where they will be in six weeks. As such, drop-in clinics were popular in the past; however, pandemic restrictions have limited this option. In order to run a successful immunization program, greater nurse capacity is needed to meet the increased demand for appointments. Longer appointments may be needed for higher client needs, for example, where there are language barriers. In addition, nurses may have to spend time providing information to clients or making home visits to accommodate client need.

A further issue that strains clinic capacity is high no-show rates as some clients book appointments but do not attend them. This wastes staff time and extends the wait list. Having an appointment reminder system may help to alleviate this, for example, the Regina CPB makes a point of reminding clients 24 hours prior to their appointment. The CPB has flexible time so is able to work on Saturdays when necessary to accommodate this.

Transient Populations

Vulnerable populations can be transient with little stability in their lives, making it difficult to keep track of contact information. People may leave the community and come back with a different name. Telephone numbers and addresses may have changed. There is no record of whether children received immunizations while they were away, making tracking and ensuring correct information difficult. Many Indigenous people may have returned to their home Reserves due to the pandemic. Education transiency can also be a factor, where people live in a city for program attendance and leave for the summer.

IT Structure

The biggest challenge for CPBs is tracking people. As mentioned previously, some people have multiple addresses or contact information. People in the healthcare system will often add an address and not end date an old one, which can lead to confusion. Part of the CPB work is helping to clean up databases, which is beneficial not only for DB2, but also for others who use the system to trace clients.

At present, there is no provincial IT infrastructure where people can access online options to select an appointment convenient for them and receive an electronic reminder, notification of the appointment, or respond with confirmation, similar to platforms offered by other services, for example, dentists or hair salons. Having access to such a platform would help to reduce the amount of time spent and workload on office staff.

Public Health Team

Many teams experience staff shortages and lack of capacity. While some PH nurse time is committed to DB2 clinics, they also have the regular demands of the clinics, administration duties, and school

immunizations sessions. In some cases, there were delays in hiring and orienting CPBs, often due to union requirements, which led to delays in rolling out the DB2 program, particularly in Saskatoon and PA where the current CPBs only began in July 2020. Resources were further challenged due to staff illness and/or absence due to COVID-19 related home monitoring and re-assignment to COVID-19 work, such as contact tracing.

Coordination of communication between the CPB and nurses is necessary to ensure there are no gaps or misunderstandings about roles and responsibilities. Regular team meetings where issues are raised and discussed are helpful with this, for example, establishing who is responsible for certain documentation. The CPB is more limited than the nurse in what they can do with information from the database as they do not have the scope of practice or PH training in immunizations. For example, the database says that a child is overdue, but reviewing the records to ascertain what the child is overdue for could mean that booking them an appointment four weeks later rather than three weeks later would enable the PH nurse to do four vaccines instead of two in the same visit. The CPB does not have the knowledge to assess the records for gaps in the system and the nurse does not have time to review every record pulled by the CPB.

Client Communication

It can be difficult to find the line between encouragement and harassment of clients, for example, assessing how many times the CPB makes contact with the clients. This is a delicate balance as the CPB cannot give up too soon but also does not want to push too hard. For example, a client may not show up to booked appointments so the CPB would call the client a few times and perhaps go to the house. It would be difficult to have a standard guideline for this, as each case is different. For example, a guideline of not hearing from the client after two phone calls and a letter and a drop in generates 'unable to contact'. However, someone may be verbally abusive the first time the CPB calls and tells her not to call back, as compared to a client who appreciates the call because they forgot about the appointment. Both clients are only receiving one call. More difficult though, are the families who have booked and not attended three appointments, which has taken up time and capacity and prevented other clients using those appointments. Similarly, time is wasted if the PH nurse tries to do a home visit that is cancelled at the last minute. It becomes a trade-off between persisting with that family and preserving time and capacity for other clients. Continually moving schedules to accommodate certain families is hard on the system and on other clients.

Effects of COVID-19

The COVID-19 pandemic has had great impact on DB2, largely due to reduced clinic capacity and accessibility as some clinics were closed. Pandemic requirements mandate additional cleaning between appointments, leading to fewer available appointments in the day. The pandemic has also affected staffing structure as many nurses have been re-assigned to COVID-19 teams and other PH programs that also need to be maintained. Additionally, the rollout of the influenza campaign has reduced resources available for DB2, as many nurses have dual roles. High levels of no-shows for DB2 appointments have created frustration for PH nurses as they feel the strain on PH resources across the board due to increased COVID-19 and influenza related workloads.

The pandemic has compounded existing levels of vaccine hesitancy, as some parents are reluctant to bring their children in due to fears of infection, leading to increased appointment no-shows. Pandemic restrictions of numbers of people attending appointments means that parents cannot bring other

children to the appointment, and need to make alternative childcare arrangements. These arrangements are more difficult with school and daycare closures. On the positive side, appointment reminders were not generally sent prior to COVID-19; however, at present, clients are sent a message regarding pandemic protocols, which now serves as a reminder.

Recommendations for Improvement

Interviewees had some suggestions for improvement, although generally they felt that the program was effective in increasing immunization rates.

- **Training for CPBs.** People felt it would be beneficial to have thorough orientation and training as well as someone they could turn to when they had questions. Learning motivational interviewing skills was suggested to help with client communication.
- **CPB flex time.** CPBs may need to contact clients outside usual office hours and need to be able to accommodate this in their schedule.
- **Support for CPBs.** The CPB role can be difficult at times, particularly when there is verbal abuse from clients. People generally do not like it when they feel their beliefs are questioned or if they feel judged for not immunizing their children. CPBs would benefit from a supportive supervisor to help them through the challenges and frustrations of this work.
- **CPB capacity.** There are differences in the amount of work the CPB in each area is expected to do. For example, the Regina South network has one CPB dedicated to that network and is showing excellent results. However, Saskatoon has one CPB for the North East and South East areas and PA has one CPB to cover the city, which does not appear to be enough. As previously mentioned, Saskatoon and PA have found it necessary to bring in additional CPB resources to assist with this.
- **PH nurse capacity.** Additional nurse capacity would help to alleviate the clinic wait times that are currently too long in some areas and would help to open new clinics and hours that are more accessible for clients. Additionally, having nurses to help the CPB with more complex clients who need more education or a home visit would be helpful.
- **Have a stable, non-hierarchical team.** This helps people to feel valued and respected as a team member. Team members know their role, the role of others, and how best to work together. A stable team also creates continuity in client relationships.
- **Understand the data.** Managers should understand what the numbers mean, as well as understand the population they are attempting to reach and tailor the interventions for them.
- **Large scale messaging.** A consistent provincial immunization message will help to reinforce the importance of immunization for children.
- **Partnerships with primary care clinics.** Enabling different healthcare practitioners, such as family doctors or nurse practitioners to immunize children and update the database would ease resource strain on PH staff.

Facilitators to Scale-Up

Interviewees had some suggestions to facilitate provincial scale-up of DB2:

- **Create staff engagement.** Managers, supervisors, and CPBs need a comprehensive orientation in order to understand the program before it is implemented and to become familiar with roles and responsibilities. Understanding the reason for the program and the benefits of it can help staff engage with it and be willing to do the extra work required to implement and sustain the

program. Staff who see the bigger picture of how DB2 contributes towards community health know that it is more than an immunization program: it is a point of entry to the health system for many families and can help to address health needs and create trust in the system.

- **Provincial work standard.** Identify best practices and use these to implement and sustain the program, while allowing necessary flexibility to accommodate the local context. For example, a client script may not be appropriate in every situation and may sound impersonal. Each area has existing practices that are tailored to their clientele, such as immigrant or Indigenous populations. It is best to give people objectives and resources and allow them to decide how best to implement it.
- **Collaboration between different areas.** It is helpful to hear about techniques used in different places and to be able to collaborate on successful practices.
- **Have an open mind.** Be prepared to assess what is and is not working and to adapt and change usual practices as necessary.
- **Identification as a provincial priority.** A clear message from leadership as to the importance of this program will lead to prioritization of resources. It is easy to redirect staff to issues that are perceived to be more urgent if it is not understood that this program is a priority in the province.

Challenges to Scale-Up

Perceived challenges to scale-up were often the lack of the facilitators mentioned above, but also included:

- **Lack of time and capacity.** This was a recurrent theme, mentioned by interviewees multiple times in the interview. The program may be seen as one more project on top of an already busy schedule. Implementation of the program takes time and effort, for example, writing work standards and training the CPB on immunization protocols and use of the database. Other work still needs to be done, and it is frustrating to be asked to do more, without the necessary resources.
- **Resistance to change.** People may not see the need for more intensive efforts with hard to reach clients when they are busy with other issues. Provision of additional resources to meet program needs is likely to overcome this resistance, for example, a budget for additional PH nurse hours as well as the CPB.
- **Database support.** As mentioned previously, the IT analyst providing database support is a key person, essential to the success of the program. As such, heavy reliance on a single person is a high risk factor to program sustainability.

Database Results

Information specific to DB2 clients is extracted from the Panorama database and entered into the DB2 database. CPBs can access clients' contact information and immunization status and PH nurses enter information regarding completed immunizations. As per the evaluation questions, the following measures were used to assess the effectiveness of DB2:

- Coverage rates at 2 years of age;
- Children immunized within 30 days of different types of contact; and
- Disparity between the most and least disadvantaged populations

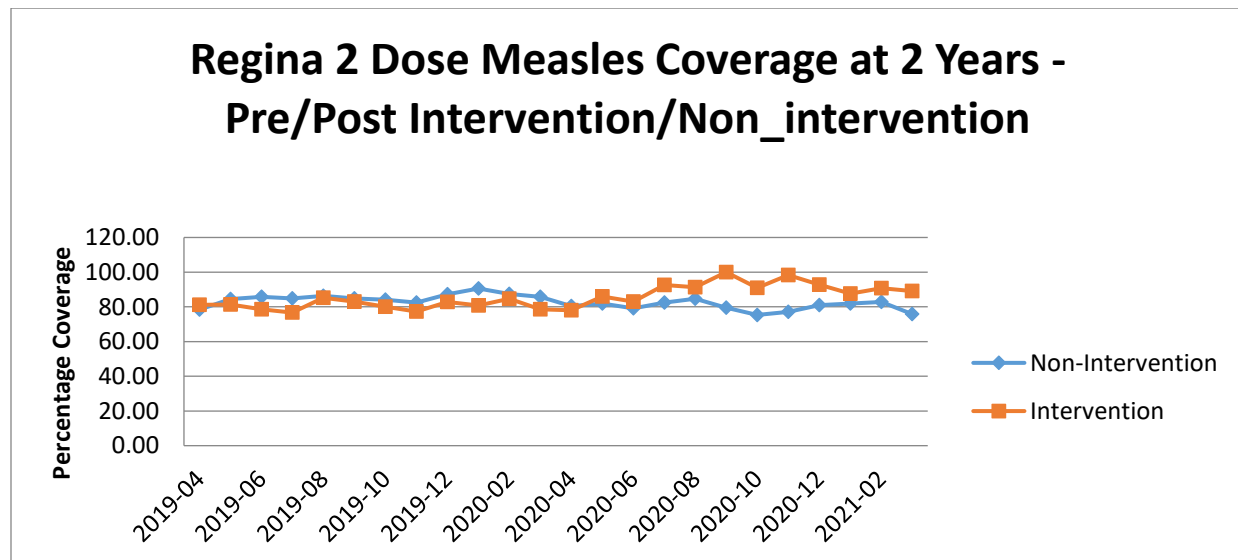
Increases in immunizations should start to show approximately one month after the CPB starts the position, allowing for time to contact parents and book an appointment. However, full impact may not be seen for 21 months as the earliest age of intervention is 3 months and results are measured at 24 months.

Regina

The DB2 program began in the Regina South network in March 2020. Using Regina South as a pilot project within Regina allowed for comparison between Regina South and Regina (Figure 1). Coverage rates in Regina South increased in April when the CPB began her work, and has consistently remained higher than the rest of Regina, peaking at 100% in September. March 2021 showed a drop in both the intervention and non-intervention rates due to the COVID-19 vaccine rollout. However, the Regina South DB2 coverage rate is 89% compared to 76% for Regina, showing the effectiveness of the DB2 program even during a time when resources are strained. A realistic coverage rate is around 95%, as some families may refuse immunizations or move into the network with overdue children.

Coverage Rates at 2 Years of Age

Figure 1. Comparison of Regina South (intervention) and Regina coverage rates at 2 years of age (Apr 2018 – Mar 2021)



Children Immunized Within 30 days of Different Types of Contact

It is clear from Table 1 that a telephone call that results in a booked appointment has a far higher success rate of appointment arrival (60%) than other contact methods, including a telephone call without booking an appointment (14%). Although 33% of clients visited by the CPB came to their appointment within 30 days, the sample size for this group is small and this figure should be used with caution. Leaving telephone messages or information did not appear to be any more effective than calling wrong numbers or receiving busy signals. Leaving information at a client's residence or mailing letters to overdue clients in these neighbourhoods appears to have little to no effect within 30 days.

The COVID-19 pandemic resulted in increased pressure on public health nurses and clinic capacity, which affected the availability of appointments for DB2 clients. As such, the figures are also given for arrivals within 60 days of contact (Table 2), which may give a better indication of client response to different types of interventions. Using this measure, a telephone call that results in a booked appointment has a response rate of 86%, again higher than other types of interventions.

Table 1. Children Immunized Within 30 days of Different Types of Contact in Regina South (01 March 2020 – 31 March 2021)

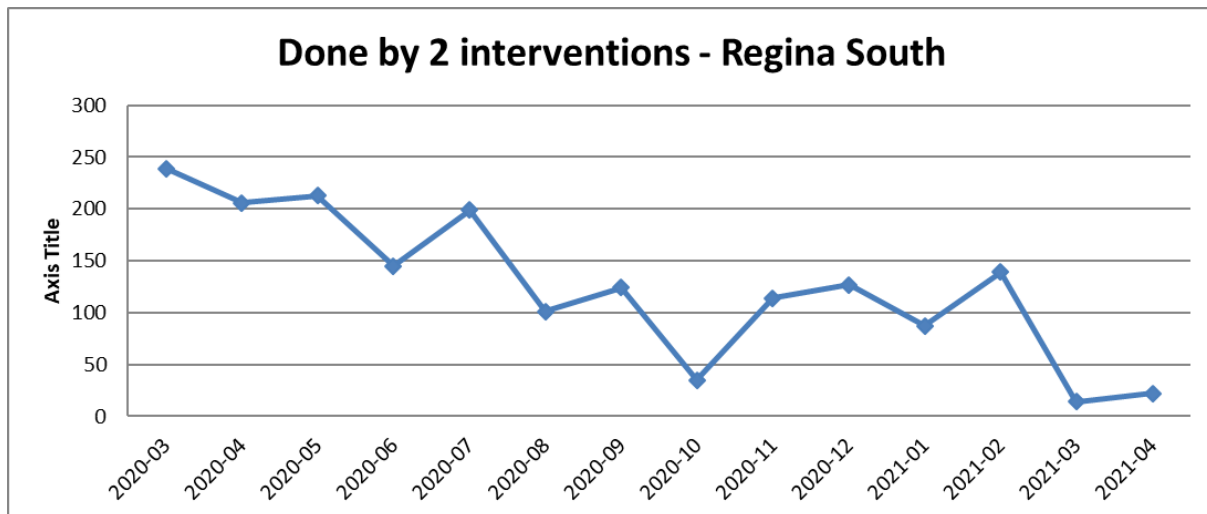
Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 30 days
CPB - Phone Call	Phone - Success -- Appt Booked	295	177	60.00
CPB visit	CPB Visit - success	24	8	33.33
CPB - Phone Call	Phone - Success	175	25	14.29
CPB - Phone Call	Phone - Message left	536	62	11.57
CPB - Phone Call	Phone - Wrong Number	26	3	11.54
CPB - Phone Call	Phone - Busy	28	3	10.71
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	43	4	9.30
CPB - Phone Call	Phone - Temporarily Unavailable	45	4	8.89
CPB visit - Not 6 week	CPB Visit - Wrong address	34	2	5.88
CPB - Phone Call	Phone - No answer	40	2	5.00
CPB - Phone Call	Phone - Disconnected	130	5	3.85
CPB visit - Not 6 week	CPB Visit - Not Home	36	1	2.78
CPB visit - Not 6 week	CPB Visit - Info left	25		0.00

Table 2. Children Immunized Within 60 days of Different Types of Contact in Regina South (01 March 2020 – 31 March 2021)

Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 60 days
CPB - Phone Call	Phone - Success -- Appt Booked	292	252	86.30
CPB visit	CPB Visit - success	24	12	50.00
CPB - Phone Call	Phone - Message left	529	146	27.60
CPB visit	CPB Visit - Wrong address	34	8	23.53
CPB - Phone Call	Phone - Temporarily Unavailable	44	10	22.73
CPB - Phone Call	Phone - Success	172	35	20.35
CPB - Phone Call	Phone - Wrong Number	26	5	19.23
CPB - Phone Call	Phone - Busy	28	5	17.86
CPB - Phone Call	Phone - No answer	40	7	17.50
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	42	6	14.29
CPB visit - Not 6 week	CPB Visit - Not Home	36	5	13.89
CPB - Phone Call	Phone - Disconnected	129	14	10.85

Intervention attempts are decreasing in Regina South (Figure 2), which is likely due to decreased numbers of children who are overdue for immunizations as well as the decreased availability of resources (CPB and clinic hours) due to the COVID-19 pandemic.

Figure 2. Reminder Attempts in Regina South (01 March 2020 – 31 March 2021)



Disparity between the most and least disadvantaged populations

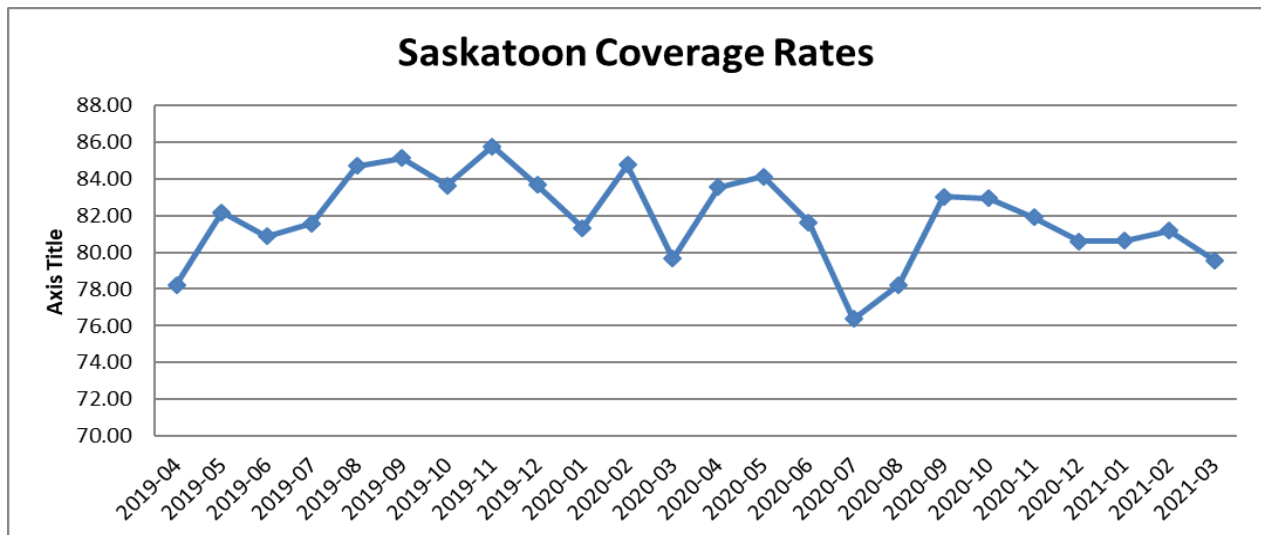
Although certain vulnerable populations live in Regina South, such as newcomers to Canada, only 5% of the lowest quintile children reside within this network. DB2 cannot have an effect on the lowest quintile population as long as it operates only in Regina South; therefore, decreases in disparity are not expected here. The effect of DB2 on disadvantaged populations can be better measured and assessed once the program is extended to the entire city of Regina. As such, we cannot assess differences in disparity between the most and least disadvantaged populations at this time.

Saskatoon

DB2 was extended to cover the remainder of the city of Saskatoon in April 2019; however, there were difficulties in recruiting and hiring a CPB. The position was briefly filled for three days in March 2020 and was then vacant until early July. The CPB worked full-time July – December 2020 but has only worked 6.5 days between January – March 2021. Coverage rates dipped to 77% in July, but rebounded to close to pre-pandemic levels, reflecting little change in pre- and post-intervention levels, despite the impact of the pandemic (Figure 3).

Coverage Rates at 2 Years of Age

Figure 3. Coverage rates at 2 years of age in Saskatoon (01 March 2020 – 31 March 2021)



Children Immunized Within 30 days of Different Types of Contact

Similar to Regina South, Tables 3 (30 days) and 4 (60 days) show that the most effective intervention is the CPB calling the client and booking the appointment with them over the telephone (60% and 84% success rate respectively). Personal contact (in person or by telephone) has a higher success rate than information given through a text, telephone message, or unsuccessful visit.

Table 3. Children Immunized Within 30 days of Different Types of Contact in Saskatoon (01 March 2020 – 31 March 2021)

Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 30 days
CPB - Phone Call	Phone - Success -- Appt Booked	839	507	60.43
CPB visit	CPB Visit - success	102	35	34.31
CPB - Phone Call	Phone - Success	1042	280	26.87
Text Reminder	All	1613	387	23.99
CPB - Phone Call	Phone - Temporarily Unavailable	41	9	21.95
CPB - Phone Call	Phone - Message left	1635	321	19.63
CPB - Phone Call	Phone - No answer	426	81	19.01
CPB visit	CPB Visit - Info left	144	26	18.06
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	170	29	17.06
CPB - Phone Call	Phone - Busy	54	9	16.67
CPB - Phone Call	Phone - Disconnected	352	45	12.78
CPB - Phone Call	Phone - Wrong Number	98	12	12.24
CPB visit - Not 6 week	CPB Visit - Wrong address	42	4	9.52
CPB visit - Not 6 week	CPB Visit - Not Home	58	5	8.62

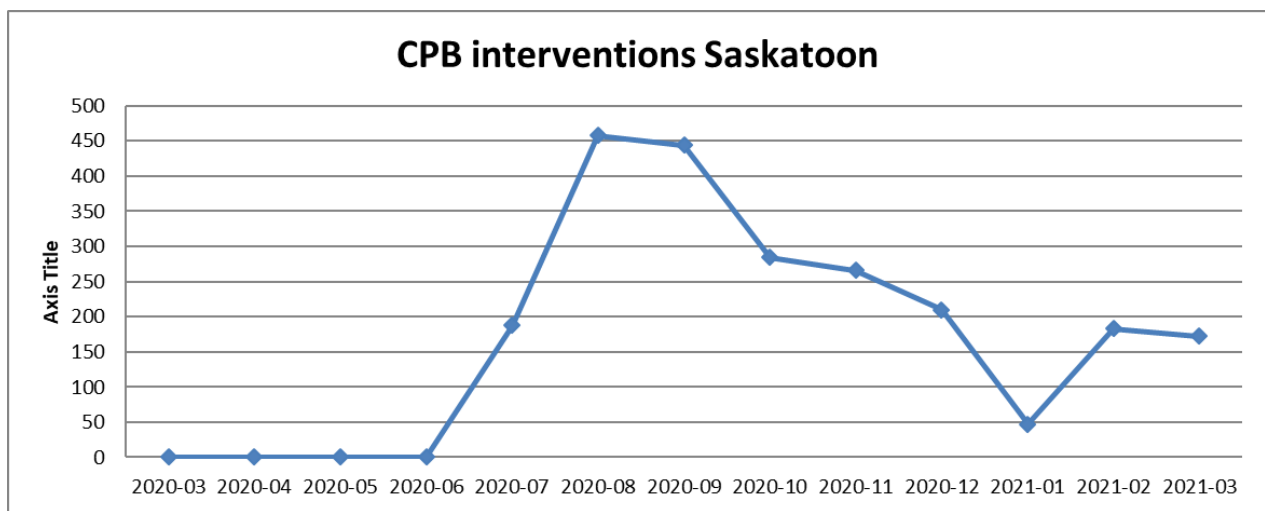
Table 4. Children Immunized Within 60 days of Different Types of Contact in Saskatoon (01 March 2020 – 31 March 2021)

Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 60 days
CPB - Phone Call	Phone - Success -- Appt Booked	738	620	84.01
CPB visit - Not 6 week	CPB Visit - success	85	35	41.18
CPB - Phone Call	Phone - Busy	53	21	39.62
Text Reminder	ALL	1434	537	37.45
CPB - Phone Call	Phone - Success	940	351	37.34
CPB - Phone Call	Phone - Temporarily Unavailable	35	13	37.14
CPB - Phone Call	Phone - Message left	1451	499	34.39
CPB - Phone Call	BLANK	33	11	33.33
CPB visit	CPB Visit - Info left	140	42	30.00
CPB - Phone Call	Phone - No answer	388	114	29.38
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	156	39	25.00
CPB/PHN joint HV attempt	CPB/PHN HV parent consult	20	5	25.00

CPB/PHN joint HV attempt	HV - No answer - Info Left	48	10	20.83
CPB - Phone Call	Phone - Disconnected	323	67	20.74
CPB visit	CPB Visit - Wrong address	42	7	16.67
CPB - Phone Call	Phone - Wrong Number	90	13	14.44
CPB visit	CPB Visit - Not Home	54	7	12.96

Reminder attempts rose sharply in August but have declined since then, due to inconsistent CPB employment (Figure 4).

Figure 4. Reminder Attempts in Saskatoon (01 March 2020 – 31 March 2021)



Disparity between the most and least disadvantaged populations

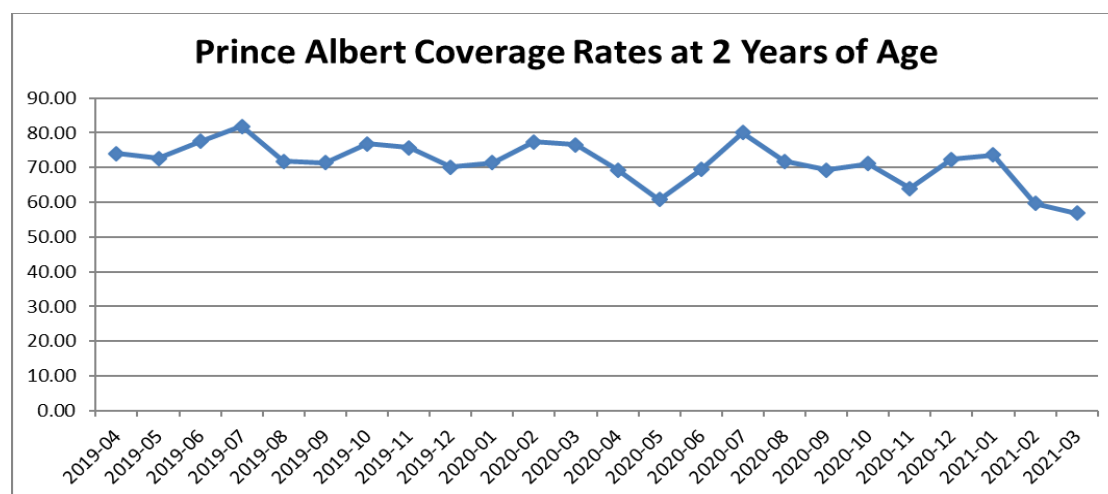
DB2 initially started in the West and Core areas of Saskatoon in 2007 with the most disadvantaged populations and was successful in decreasing disparity rates. The program was then rolled out to less disadvantaged areas in the city. As such, there may be a ceiling effect in disparity rates as maximum intervention was already provided, making further improvements less likely. Furthermore, the CPB only began contacting clients in August 2020, which does not provide enough data to draw meaningful, valid, or reliable conclusions. As such, we cannot assess differences in disparity between the most and least disadvantaged populations at this time.

Prince Albert

Employment of a CPB has been inconsistent in PA. The CPB position was filled between February 15 – May 28 2020 and was then vacant until early July. The CPB began making contact with clients at the end of July; however she left her position in October 2020 and a new CPB was hired in December 2020. Coverage rates have largely remained between 70-80% over the last 18 months, dipping to 60% in May 2020 and rising to 80% in July. However, rates dropped to 57% in March 2021, likely due to decreased availability of resources (CPB and clinic hours) due to the COVID-19 pandemic (Figure 5).

Coverage Rates at 2 Years of Age

Figure 5. Coverage rates at 2 years of age in Prince Albert (01 March 2020 – 31 March 2021)



Children Immunized Within 30 days of Different Types of Contact

PA has an appointment wait time of longer than 30 days, which will affect the success rates of different types of contact within 30 days and make 30-day attendance an inappropriate measure of success. As with the other sites, a telephone call that includes a booked appointment has a far greater rate of success than other intervention types, being 33% attendance within 30 days (Table 5) and 60% attendance within 60 days (Table 6).

Table 5. Children Immunized Within 30 days of Different Types of Contact in Prince Albert (01 March 2020 – 31 March 2021)

Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 30 days
CPB - Phone Call	Phone - Success -- Appt Booked	850	286	33.65
CPB - Phone Call	Phone - Message left	770	91	11.82
CPB - Phone Call	Phone - Success	333	39	11.71

Evaluation of Done By 2

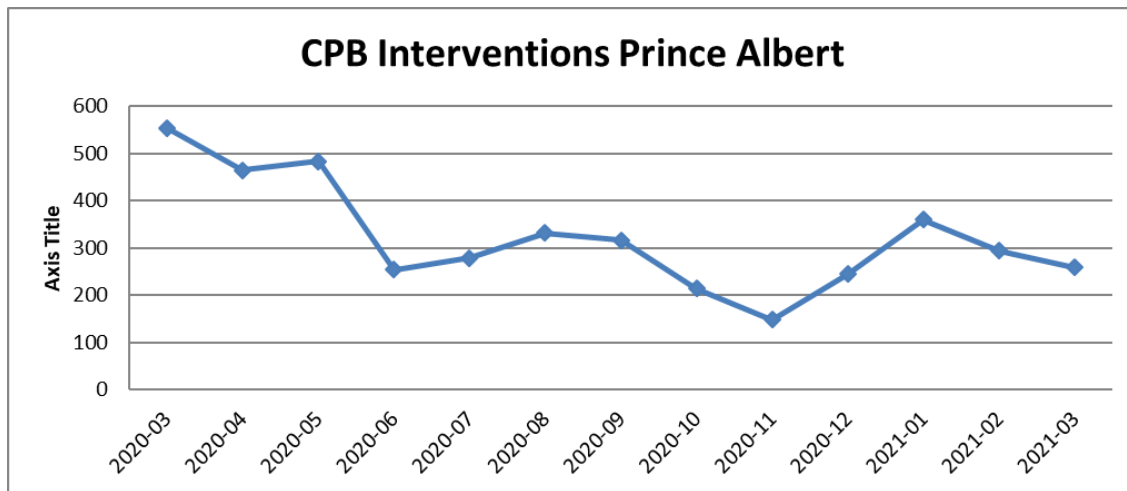
CPB visit - Not 6 week	CPB Visit - Info left	49	5	10.20
CPB - Phone Call	Phone - No answer	264	24	9.09
Text Reminder	Text Reminder - Sent	168	13	7.74
CPB visit	HV - Success	41	3	7.32
CPB visit	HV - No answer - Info Left	42	3	7.14
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	70	4	5.71
CPB - Phone Call	Phone - Disconnected	158	8	5.06
CPB - Phone Call	Phone - Busy	36	1	2.78
CPB - Phone Call	Phone - Wrong Number	40	1	2.50
CPB visit	CPB Visit - success	34	0	0.00
CPB visit	CPB Visit - Not Home	20	0	0.00
CPB visit	HV - Wrong Address	20	0	0.00

Table 6. Children Immunized Within 60 days of Different Types of Contact in Prince Albert (01 March 2020 – 31 March 2021)

Intervention	Intervention Outcome	Attempts	Arrivals	% arrivals within 60 days
CPB - Phone Call	Phone - Success -- Appt Booked	802	488	60.85
CPB visit	HV - Success	41	11	26.83
CPB - Phone Call	Phone - Message left	734	182	24.80
CPB - Phone Call	Phone - Success	317	68	21.45
CPB - Phone Call	Phone - Mailbox Full/Can't Receive Calls	64	13	20.31
CPB - Phone Call	Phone - No answer	250	45	18.00
CPB visit	CPB Visit - Info left	46	8	17.39
CPB - Phone Call	Phone - Wrong Number	37	6	16.22
CPB - Phone Call	Phone - Disconnected	144	22	15.28
Text Reminder	Text Reminder - Sent	143	21	14.69
CPB - Phone Call	Phone - Busy	35	5	14.29
CPB visit	HV - No answer - Info Left	39	5	12.82
CPB visit	CPB Visit - success	32	4	12.50

Reminder attempts in PA have fluctuated over the last year (Figure 6), reflecting resource issues.

Figure 6. Reminder Attempts in Prince Albert (01 March 2020 – 31 March 2021)



Disparity between the most and least disadvantaged populations

Similar to Saskatoon, the CPB only began contacting clients in August, which does not provide enough data to draw meaningful, valid, or reliable conclusions. Additionally, children in PA are not prioritized according to disparity. As such, we cannot assess differences in disparity between the most and least disadvantaged populations at this time.

Database Results Limitations

These results have many limitations and may not be a true reflection of the effectiveness of DB2:

- Implementation of DB2 was delayed by many months in all sites, particularly Saskatoon and PA, thus the length of time between the program start and evaluation is too short for meaningful results.
- The COVID-19 pandemic has had an impact on work processes and coverage rates. PH nurses have been redirected to the pandemic, particularly during the vaccine rollout, resulting in fewer clinic hours available for appointments. Regardless of CPB success in contacting clients, they are unable to book an appointment if there are no appointments available.
- The measurement of success of different types of intervention is assessed by arrival within 30 days. However, PA and some clinics in Saskatoon have wait times of over 30 days, which will affect this benchmark.
- A further effect of COVID-19 is vaccine hesitancy and increased barriers. Although some parents are reluctant to bring their children into clinics, often those willing to immunize must overcome additional barriers.
- The CPBs in all areas began work during the pandemic, which does not allow for meaningful comparison of pre- and post-DB2 numbers. The effects of COVID-19 will negatively affect coverage rates; however, it is not possible to filter these out.

- Only one network is implementing DB2 in Regina, which could mean that the most vulnerable populations in Regina are not being reached.
- Clients might have received multiple types of interventions within the 30 or 60 days prior to immunization, which may make some of the lower categories in the 'intervention outcome' statistic look more effective than they are.
- This analysis had to be completed before the end of April 2021 due to the report deadline. The 'intervention outcome' statistic requires 30 days to pass before it can be accurately assessed, and, as such, some interventions from March are excluded and analysis of March interventions cannot be done at this time.

Conclusions

The core strength of DB2 is the focused time and attention of the CPB on tracing and contacting hard-to-reach clients and providing assistance to attend immunization appointments where necessary. A key mechanism in achieving increased levels of immunizations is the **creation of a trusting relationship** between clients and the CPB. People are generally more willing to listen and act on information when they feel respected and supported. This trust relationship may extend beyond PH to the SHA as a whole, thereby benefiting other aspects of healthcare. The CPB needs to possess certain qualities to be successful, primarily **empathy and communication skills, as well as persistence and patience**.

A further strength of the program is the creation of the DB2 database and ongoing analyst support to maintain the database and provide timely site-specific feedback about issues that require attention, such as decreases in coverage rates. However, **heavy reliance on one analyst** means that the program would suffer substantially without this key person.

DB2 utilizes various strategies to increase immunization rates, including providing tailored assistance and reliable information about immunizations and healthcare, increasing clinic capacity through protected hours for DB2 clients, and partnerships with community organizations. The DB2 program can be summarized as **persistence, assistance, and relationships**. The CPBs need persistence in tracking and contacting clients, and provide assistance where necessary for the immunization of the child to occur. This is more successful when CPBs are able to create a trust relationship with the clients, such that information is perceived as reliable and the client is motivated to attend an appointment. In all areas, a telephone call to the client that results in a booked appointment has a far higher rate of arrival than other methods. CPBs should be encouraged to use this method wherever possible, rather than relying on other forms of communication, such as text messages.

DB2 faces some challenges to success. Clinic capacity is an issue as current wait times in PA and parts of Saskatoon are over 30 days, which may discourage clients from committing to an appointment. PH staff have been diverted to COVID-19 work, further reducing clinic hours, and high levels of client no-show rates exacerbate the strain on clinic capacity. Transient populations can be difficult to track as contact details are often changed. Additionally, the COVID-19 pandemic has led to increased barriers to immunization for clients and increased vaccine hesitancy.

Survey results are limited due to a low response rate. However, clients generally have positive attitudes towards immunization and a positive view of the SHA PH staff. Participants preferred telephone and text message reminders, and suggested that email reminders would be a good option for the future.

Quantitative results were ambiguous in assessing program success. The negative effects of COVID-19 cannot be assessed separately to other program impacts. Saskatoon and PA have higher levels of vulnerable populations, which places a greater demand on the CPBs and is likely to lower coverage rates. The DB2 program officially began in April 2019; however, complications in the hiring process led to long delays in hiring CPBs, who are central to program success. This meant that DB2 actually began in Regina South in March 2020 and in PA and the remainder of Saskatoon in July 2020, allowing very little time for meaningful results in this evaluation. Resolution of HR issues is key to success in DB2.

This evaluation may not be a true assessment of the impact of DB2, due to the many limiting aforementioned factors. Nevertheless, results showed that Regina South had achieved greater coverage rates than Saskatoon and PA. This may be due to higher resource levels as the CPB has fewer clients to contact than Saskatoon and PA. Additionally, Regina South does not have the highest needs population in city, which requires more CPB time to bring to successful immunization. However, there is clear team camaraderie in Regina South, where the CPB is a valued member of the team and has the full support of the PH nurses and manager. The success in Regina South has shown that **a cohesive team with sufficient resources** can lead to tremendous gains in coverage rates, even in difficult times.

Recommendations for sustainability and improvement include:

- Dedicated funding for full-time CPBs who have realistic geographical area coverage that allows time to build relationships with clients. Saskatoon has existing funding for three CPBs, but requires additional support for either one FTE or two 0.54 FTE CPBs to cover the NE and the SE areas. The option of two part-time employees would give greater flexibility in covering these areas. Prince Albert would require at least two CPBs, as they found that one dedicated DB2 CPB was not enough to cover the city. Regina would assess the capacity as they scale up from Regina South to other Regina networks.
- Dedicated funding for PHN time to create additional clinic time to meet the client needs and reduce wait time from current waits of 30-60 days to 7-10 days. This would encourage clients to book an appointment as some currently feel unable to plan their schedule 30 days in advance.
- Understand site-specific data and facilitate timely implementation of necessary changes to improve results.
- Ensure the CPBs feel supported when they encounter difficulties with clients.
- Create a collaborative, non-hierarchical team in which the CPB feels a valued member.
- Create staff engagement with the program.
- Provide sufficient resources for implementation. Comprehensive orientation and training at the start of the program will help to increase understanding of the program goals and assessment as to how DB2 could best be implemented within each context.

Challenges to sustainability and scale-up include lack of resources, time, and capacity, which could lead to resistance to implementation.

DB2 is more than an immunization program. It is **a client-centred point of entry into a complex, integrated healthcare system**, where PH staff connect with people to help address their healthcare needs. A trust relationship between clients and the system is formed as clients become confident that resources are available when they need help.

Appendix A: Done By 2 Client Survey

Cover page

The Public Health Department of the Saskatchewan Health Authority is committed to high-quality and accessible care. To help us achieve this goal, it's important that we hear from clients about their health care experiences. Your feedback will help us to understand what is working and where we can improve. This survey will take 5-10 minutes to complete. Thank you for your time and participation!

Your participation is voluntary. Your responses will be **anonymous** and all responses will be combined to protect your identity.

If you have any questions about this survey, please feel free to contact Fiona Fick, Fiona.fick@saskhealthauthority.ca, Tel: 306-529-5874.

Client Survey

Please indicate your level of agreement with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Vaccinations are important to keep my child healthy.					
Vaccinations will help reduce the risk of my child being hospitalized for disease.					
Vaccinating my child will reduce the risk of other children becoming ill.					
I have all information I need to make decisions about my child's immunization.					
I have all information I need on how to get my child vaccinated (e.g., clinic location and hours).					
I plan to get all the vaccinations recommended for my child.					
I feel supported by the SHA Public Health staff.					
I trust the information given to me by the SHA Public Health staff.					
Please make any comments you feel are necessary to clarify or add to your answers.					

Barriers to immunization: (Please check all that apply)

- Too busy during the day
- Forgetting immunization appointments
- Limited access to transportation
- Lack of childcare for siblings or other children
- Limited availability of appointments

Evaluation of Done By 2

- Limited availability of clinics
- Clinic times not convenient
- Concerns about the COVID-19 pandemic
- Service reductions due to the COVID-19 pandemic
- Other _____

Did the SHA Public Health staff help you to overcome any barriers to getting your child immunized?

- No, I did not need help.
- No, they did not help me.
- Yes, I received a reminder of my appointment.
- Yes, they helped with transportation.
- Yes, they helped me find a convenient appointment or location.
- Other _____

Do you have any suggestions to make immunizations easier or more accessible? _____

I prefer to attend: (Please choose one)

- A walk-in clinic (when COVID-19 restrictions are lifted)
- A booked appointment.

I prefer to attend an immunization clinic:

- During the week
- On Saturdays
- I have no preference

The best times for me to attend an immunization clinic are: (Please check all that apply)

- Mornings
- Afternoons
- Lunch time
- Evenings
- I have no preference

Please let us know how helpful different types of reminders for immunizations would be to you:

	Extremely helpful	Somewhat helpful	Neither helpful nor unhelpful	Not very helpful	Not at all helpful
Telephone call from public health staff					
Text message					
Automated telephone voice message					
Letter in the mail					
Please make any comments you feel are necessary to clarify or add to your answers.					

Demographic Questions:

1. What is your age?
 - 25 and under
 - 26 to 35
 - 36 – 45
 - Above 45
 - Prefer not to answer
2. Gender
 - Male
 - Female
 - Non-Binary
 - Prefer not to answer
3. Are you:
 - Married/living with partner
 - Single parent
 - Prefer not to answer
4. People living in Canada come from many different cultural and racial backgrounds. The following question will help us to better understand the experiences of the communities that we serve. Do you consider yourself to be: (please check all that apply)
 - African
 - Arab
 - Asian (Chinese, Japanese, Korean, etc)
 - Caribbean
 - Filipino
 - Hispanic / Latino
 - Indigenous
 - South Asian (East Indian, Pakistani, Sri Lankan, etc.)
 - White / European
 - Prefer not to answer
5. Please indicate the education that best describes you:
 - Some high school but did not graduate
 - High school or high school equivalency certificate
 - College or other non-university certificate or diploma
 - Undergraduate degree
 - Post-graduate degree or professional designation
 - Prefer not to answer
6. To help us better understand our communities, please let us know which income bracket your household falls under?
 - Less than \$50,000 per year
 - \$50,000 to less than \$75,000 per year
 - \$75,000 to less than \$100,000 per year
 - \$100,000 to less than \$150,000 per year
 - More than \$150,000 per year
 - Prefer not to answer

Appendix B: Done By 2 Staff Interview Guide

1. What is your current job title and role in DB2
2. Please describe the DB2 program as you understand it. What differentiates DB2 from other public health immunizations?
3. What are the strengths of the program?
4. What makes the DB2 program effective? Mechanisms
5. Traits of CPB to be successful
6. Role and importance of CBO partners
7. What challenges do you face with the program?
8. What effects of Covid-19 have you seen on the pandemic?
9. How could the DB2 program improve?
10. What are the potential facilitators to successful scale up?
11. What are the potential challenges and risks to successful scale up?
12. What advice would you give to another area that is implementing the program?