

NDIIS Collaboration With Other Public Health Programs

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NDIIS Manager





Background



NDIIS Background

- The North Dakota Immunization Information System (NDIIS) is a confidential, population-based, computerized information system that attempts to collect vaccination data for all North Dakotans.
 - Lifespan system that includes infants, children, adolescents and adults
 - Have approximately 92% of adults represented in the IIS
- Established in 1988 as a modem, dial-up system
- The NDIIS is a grantee-developed (i.e. homegrown) IIS
 - The North Dakota Department of Health (NDDoH) contracted with Noridian Mutual Insurance Company (NMIC), formally Blue Cross/Blue Shield of North Dakota (BCBSND), in 1996 to develop the current web-based system.
 - The NDIIS is still currently hosted and supported by NMIC.



NDIIS Background

- ND Century Code requires North Dakota providers enter all childhood (18 years of age and younger) immunizations into the NDIIS within 4 weeks of administration.
 - There are more than 1.1 million active client records in the NDIIS.
 - There are more than 12.1 million dose records in the NDIIS.
- 96.9% of immunization data is entered into the NDIIS within 30 days of administration.
 - 75.8% is entered within one day.
- As of March 2017, the NDIIS is receiving electronic immunization data from the electronic health record (EHR) system of 291 individual provider locations.
 - 229 providers are connected through our state-wide health information exchange (HIE) the North Dakota Health Information Network (NDHIN).
 - These providers represent approximately 72% of all immunizations reported to the NDIIS.



NDIIS-Immunization Program Collaboration

- The NDIIS is integrated into every component of the NDDoH Immunization Program.
- The NDIIS is used to support Immunization Program Operations Manual (IPOM) goals and activities.
- NDIIS data is used to evaluate and prioritize program activities.
- Non-IIS staff play a role in developing business requirements for NDIIS functionality with the NDIIS manager.
 - Participate in end-user testing of new functionality
- Non-IIS staff are trained on the NDIIS and are able to provide support for users.
- NDIIS staff have attended VFC and AFIX site visits.
- NDIIS staff are involved in pandemic planning.





Key Partnerships

Partnerships

- The NDIIS team and North Dakota Immunization Program have developed several key partnerships with immunization stakeholders and other public health programs in North Dakota.
- These partnerships are all working towards a common goal of improving the health of North Dakotans.
- Key NDIIS Partnerships:
 - ND Department of Health Field Epidemiologists, Vaccine Preventable Disease (VPD) Coordinator and Disease Surveillance Program
 - Ryan White Program
 - North Dakota Cancer Coalition and Cancer Registry



Disease Surveillance & Investigations

- In 2014, the CDC Sentinel Site project provided supplemental funding to the six IIS sentinel sites to explore data exchange with other public health registries.
- As part of this work, the NDIIS established a HL7 query/response connection to the NDDoH disease surveillance system, Maven, in December 2015.
 - Maven is used for electronic reportable disease surveillance in North Dakota.
 - Collects and stores data for 77 different diseases including foodborne outbreaks, sexually transmitted infections (STI), HIV and TB cases and VPDs.
 - It's used for case management, contact tracing and outbreak management.
- Investigations for VPDs use NDIIS data to determine the vaccination status of cases and contacts.
- Use NDIIS to verify the hepatitis B vaccination status of infants born to hepatitis B positive mothers as part of the perinatal hepatitis B program.



Disease Surveillance & Investigations

- ND Department of Health Field Epidemiologists and VPD Coordinator manually trigger the query to the NDIIS from Maven.
- If a matching record is found for the case in the NDIIS, the last name, first name, birthdate, gender, address, city, state and zip code as well as the vaccine history are sent back to Maven and displayed for the user.
 - Primary matching is done using first and last name and birthdate.
 - The NDIIS has additional matching logic in place when an exact match is not found using these three initial matching criteria.
 - Vaccine history displayed in Maven is filtered by CVX code, so only vaccines relevant to the disease investigation are displayed for the user.
 - HPV vaccines are displayed for all STI cases.
 - All vaccines are displayed for HIV cases.



Disease Surveillance & Investigations

NDIIS Results	
NDIIS Query Result Count	1 Result
Result Last Name	TMYJJW
Result First Name	BLPJWPUBORS
Result Birth Date	07/12/2011
Result Gender	Male
Result Address	
Result City	GRAND FORKS
Result State	ND
Result Zip	58203

Vaccine History	
Vaccine name	CHICKENPOX
Date given	07/24/2013
CVX code	21
Lot	
Manufacturer	Unknown
NDIIS Response	<div> <div>MSH ^~\& ND0000 NDIIS MAV00052 00001 20151211102309 RSP^K11^</div> <div>RSP_K11 2015121110230900001 P 2.5.1 Z32^CDCPHHINVS</div> <div>MSA AA 1370157420151211102317</div> <div>QAK 13701574 OK Z34^Request Immunization History^HL70471</div> <div>QPD Z34^Request Immunization</div> <div>History^HL70471 13701574 ^^^^ TMYJJW^BLPJWPUBORS^ ^ 2011071</div> <div>2 ^^^^ND^L^</div> <div>PID 1 0000964544^NDIIS^SR TMYJJW^BLPJWPUBORS^V HNHLXD</div> </div>

Vaccine History	
Vaccine name	DTAP/IPV
Date given	08/10/2012
CVX code	130
Lot	
Manufacturer	Unknown
Vaccine name	DTAP
Date given	10/17/2008
CVX code	20
Lot	
Manufacturer	Unknown
Vaccine name	DTaP-HBV-IPV (Pediarix)
Date given	02/08/2008
CVX code	110
Lot	
Manufacturer	Unknown
Vaccine name	DTaP-HBV-IPV (Pediarix)
Date given	11/16/2007
CVX code	110
Lot	
Manufacturer	Unknown
Vaccine name	DTaP-HBV-IPV (Pediarix)
Date given	09/17/2007
CVX code	110
Lot	
Manufacturer	Unknown
NDIIS Response	<div> <div>MSH ^~\& ND0000 NDIIS MAV00052 00001 20151124010504 RSP^K11^</div> <div>RSP_K11 2015112401050400001 P 2.5.1 Z32^CDCPHHINVS</div> <div>MSA AA 1341615120151124130514</div> <div>QAK 13416151 OK Z34^Request Immunization History^HL70471</div> <div>QPD Z34^Request Immunization</div> <div>History^HL70471 13416151 ^^^^ EHVBCN^OTIYZDM^ ^ 20070719 1547</div> <div>Pocket Ave^Bismarck^ND^58501^L^</div> <div>PID 1 0000801913^NDIIS^SR EHVBCN^OTIYZDM^G SIEZKCUVDX^</div> </div>



Disease Surveillance & Investigations

- Benefits of this partnership:
 - Reduces data entry for Field Epidemiologists and the VPD Coordinator.
 - More accurate vaccination history available for disease case investigations.
 - NDIIS demographic data can be used to update missing information in Maven.
 - Provides potential for new research looking at immunization rates for individuals diagnosed with reportable diseases in North Dakota.

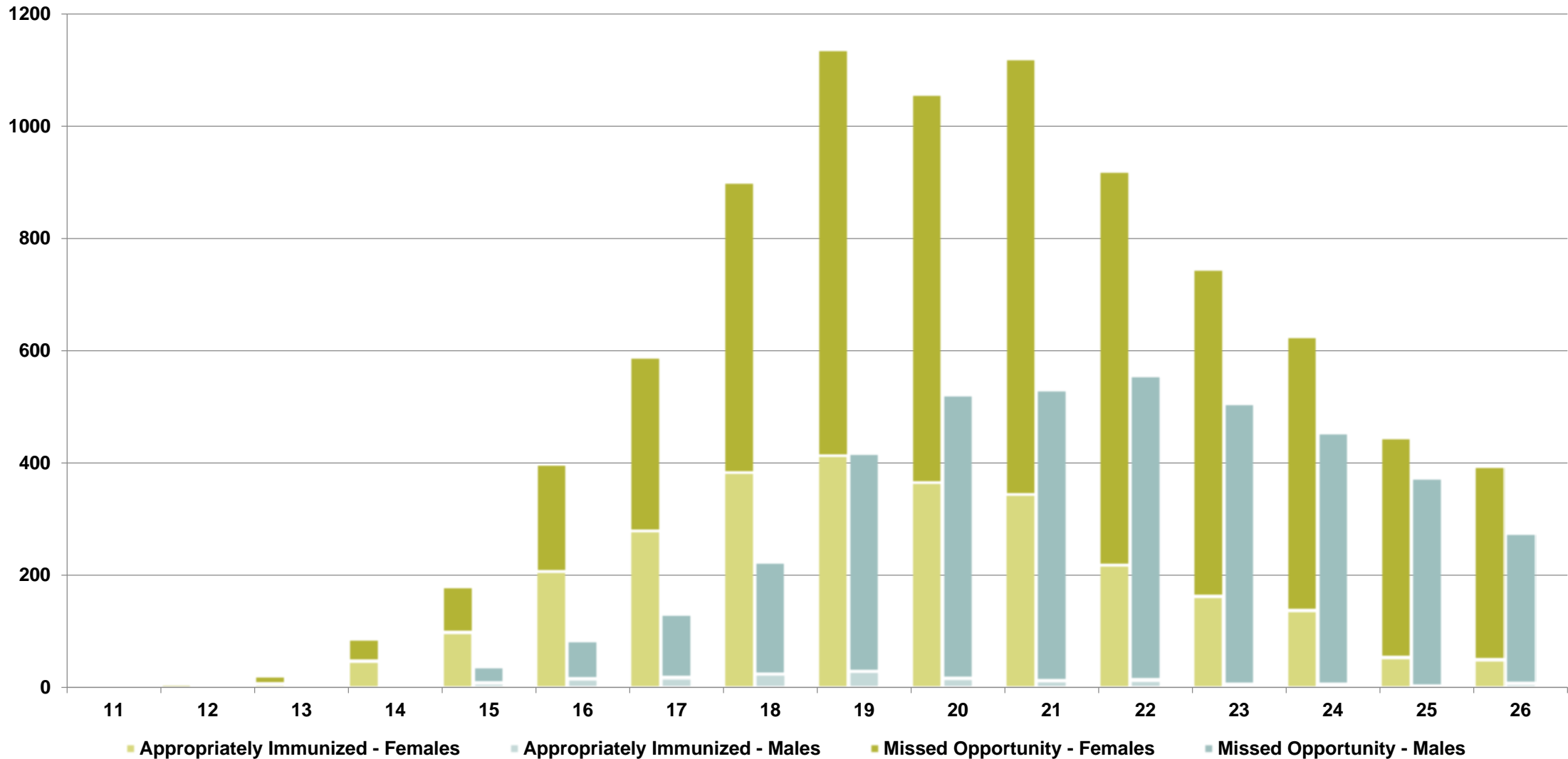


Disease Surveillance & Investigations

- Missed Opportunities for HPV Vaccination Among Patients Diagnosed with Sexually Transmitted Infections in North Dakota, 2010 - 2014
 - Tatia Hardy, a University of North Dakota Medical Student and previous ND Immunization Program employee, completed a project that evaluated HPV immunization coverage rates amongst reported STI cases and missed opportunities for HPV vaccination at the time of diagnosis.
 - Data from Maven was reviewed to find patients diagnosed with chlamydia, gonorrhea or syphilis from January 1, 2010 through December 31, 2014 in North Dakota.
 - Mandatory reportable conditions in North Dakota
 - Data from the NDHHS and Maven were linked to determine the HPV vaccination status for the STI cases.
 - For the purposes of this study, missed opportunities were identified when HPV vaccine was not administered on or within 5 days of the STI diagnosis data.



HPV Immunization Status at STI Diagnosis, by Age and Gender



Data source: North Dakota Immunization Information System (NDIIS) and Maven from 2010 through 2014.



Disease Surveillance & Investigations

- Conclusions:

- Ideally, these individuals should have been vaccinated against HPV, prior to sexual encounter.
- While the percentage of missed opportunities decreased over the five years studied, this was likely reflective of increased HPV vaccine coverage prior to STI diagnosis.
- Missed opportunities were more likely to occur for older individuals, males, and black/African American individuals.
- Providers of sexual health services in North Dakota may benefit from further education, training, or resources in order to decrease missed opportunities for HPV vaccination.
 - Vaccinate when testing for STIs!



Ryan White Program

- Individuals diagnosed with HIV/AIDS are recommended to receive additional immunizations above what is normally recommended for their age group.
- The NDIIS does not capture information about high risk conditions.
 - The NDIIS clinical decision support for immunization (CDSi) functionality does not include rules to forecast for high risk conditions.
- The Ryan White Program Coordinator at the NDDoH and the Ryan White case managers did not previously have access to the NDIIS and did not discuss vaccines with their clients.

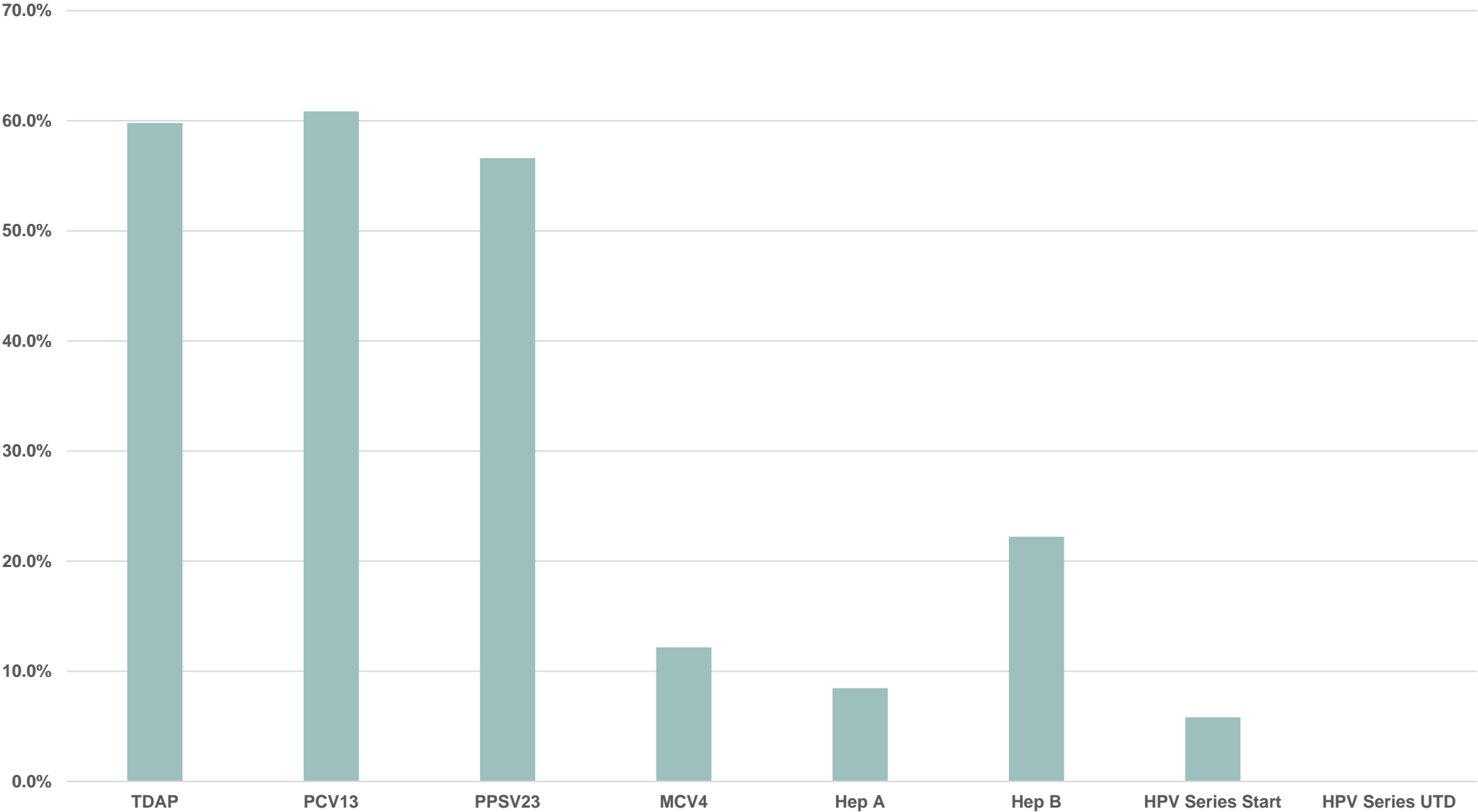


Ryan White Program

- Ryan White Program Coordinator provided the ND Public Health Associate (PHA), who works for the ND Immunization Program, with the names of their Ryan White clients.
- The PHA looked up the NDIIS client ID for each Ryan White client (n=189).
- Using the NDIIS client IDs, the NDIIS Manager worked with the PHA to pull data from the NDIIS for the vaccine history for all of the Ryan White clients.
- Using SAS, the NDIIS vaccination history for all of the Ryan White clients were evaluated to:
 - determine which vaccines each of the clients had already received and which vaccines they still needed
 - and to determine the rate of Ryan White clients up-to-date with the recommendations for individuals diagnosed with HIV/AIDS.



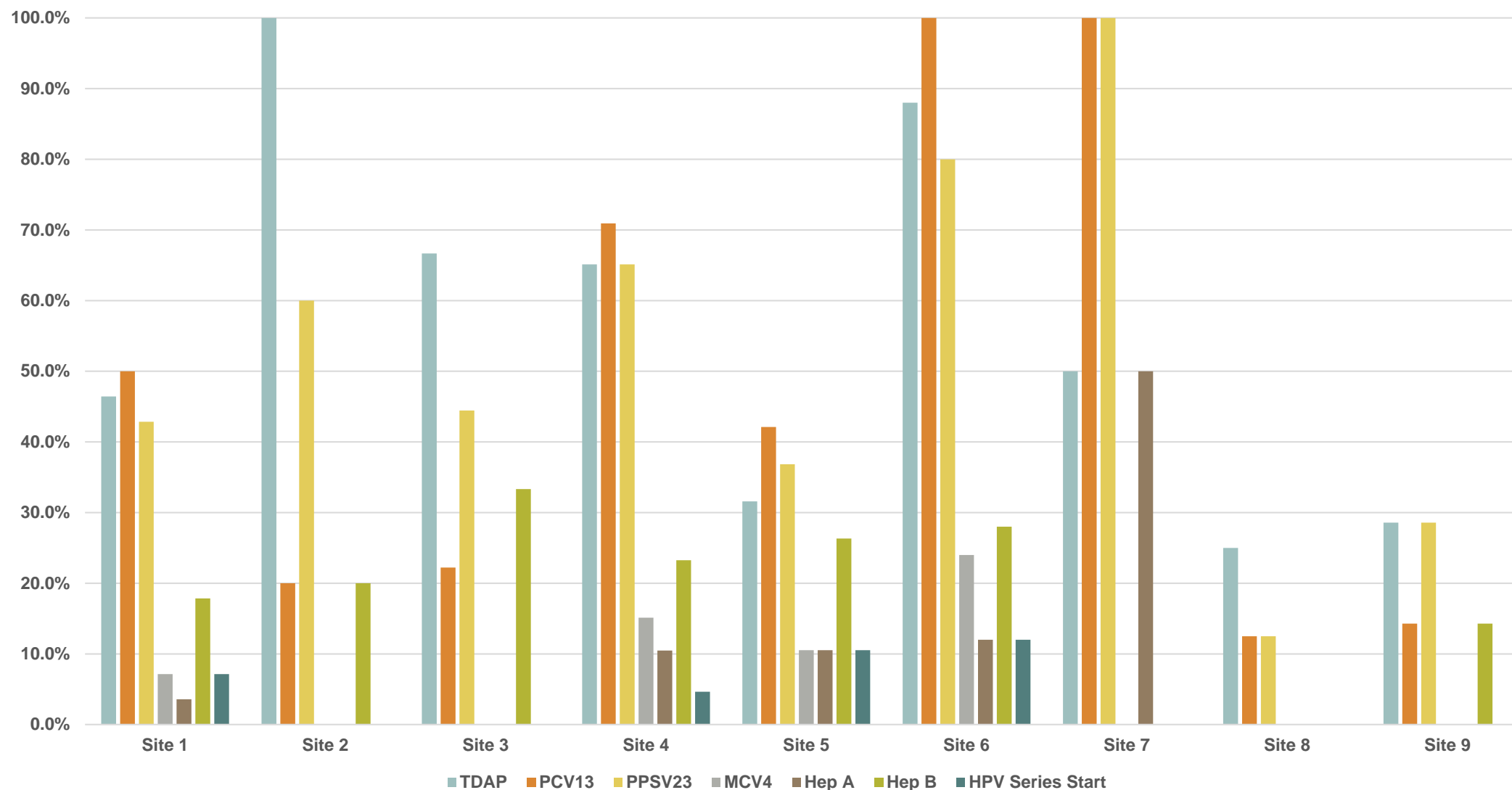
Baseline Immunization Rates for Ryan White Clients



Data source: North Dakota Immunization Information System (NDIIS) from 2017.



Baseline Immunization Rates for Ryan White Clients by Program Site



Ryan White Program

- Letters were provided to all of the Ryan White case managers for each of their clients.
 - Each letter provided details on:
 - the vaccine recommendations for individuals diagnosed with HIV/AIDS,
 - which vaccine the individual client still needs to receive,
 - where they could receive the recommended vaccines,
 - and information about insurance coverage of the vaccines.
- Immunization rates for Ryan White clients will be evaluated at 30, 60 and 90 days after the date the letters were sent to the case managers.
- Process for generating the client forecasts and assessing rates will be repeated every 6 months during program enrollment and re-enrollment.
- Benefits of this partnership:
 - Provides education to the Ryan White program about immunization recommendations for their clients.
 - Provides details to case managers about healthcare needs of their individual clients.
 - Provides an opportunity for case managers to educate their clients on immunization recommendations.



Cancer Coalition

- Since 2012, the NDIIS manager has actively participated in an HPV workgroup sponsored by the ND Cancer Coalition (NDCC).
- Working with members of the HPV workgroup, the NDIIS Manager co-developed educational materials for the Cancer Coalition and the Immunization Program to make available to healthcare providers and the general public.
 - NDIIS data was used to produce HPV vaccination rates for the educational materials.
 - Educational materials include:
 - Powerpoint presentations for healthcare providers
 - Powerpoint presentations for parents of teens
 - Informational documents on oral cancer for the ND Dental Association
- The Immunization Program and Cancer Coalition co-write news releases every year for cervical cancer awareness month.



Cancer Coalition

- NDHS immunization rate data is used to set HPV-related goals and benchmarks for Cancer Division grants.
- The Immunization Program and Cancer Coalition have worked together to provide funding for ND healthcare providers to implement programs and best practices for increasing HPV vaccination rates for their patients.
- Benefits of this partnership:
 - More detailed and well-rounded educational materials are produced that include information on HPV-related cancers as well as HPV vaccination as cancer prevention.
 - HPV workgroup provides opportunities for the immunization program to work with other types of healthcare providers, like dentists, to education the community about HPV vaccine and prevention of HPV-related cancers.



Cancer Registry

- The NDIIS team completed a data match project with the North Dakota State Cancer Registry (NDSCR) to:
 - assess baseline shared data between the two systems,
 - and to assess the vaccination status for human papillomavirus (HPV)-related cancer cases.
- Want to better understand HPV vaccination patterns among individuals diagnosed with a HPV-related cancer in North Dakota.
- Work on this project could help inform future tracking of HPV-related disease outcomes and vaccine efficacy in North Dakota.



Cancer Registry

- What we found:
 - There was a high rate of overall shared data between the two systems.
 - Looking at how many individuals with any diagnosed cancer in the NDSCR have a record in the NDIIS, found a match rate of 54%.
 - A high number of HPV-related cancer cases found a matching NDIIS record.
- Limitations:
 - Matching records between the two systems relied on variable text fields (i.e. first and last name) that may vary in format.
 - The lack of adult reporting mandate for the NDIIS means adult records may not be complete in the NDIIS.
 - Although cancer cases are required to be reported to the NDSCR, they don't mandate the reporting of pre-cancerous conditions.



Cancer Registry

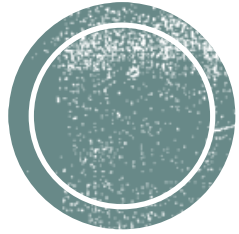
- Benefits of this partnership:
 - Establishment of the collaborative relationship between the NDIIS and the NDSCR is fundamental to the success of future projects.
 - Both the NDIIS and NDSCR belong to the ND Department of Health, so no data use agreements are needed in order for the two teams to collaborate.
 - There are a number of potential future projects that can be completed by the NDIIS and NDSCR teams.
 - New project currently underway to assess the influenza vaccination status of individuals diagnosed with cancer, specifically those with leukemia.



Partnerships

- All of these partnerships have led to new opportunities for the Immunization Program to provide education to healthcare providers and the public.
- Hopeful that continued collaboration with all of our partners will lead to increased vaccination rates, particularly in vulnerable populations like those diagnosed with cancer or HIV.
- Continued collaboration will help achieve our common goal of improving the health of North Dakotans.





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