

Conducting Statewide Recall Using the NDIIS

Successes, Challenges and Lessons
Learned

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DEPARTMENT *of* HEALTH

Background



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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.
- Established in 1988 as a modem, dial-up system
- The NDDoH contracted with Noridian Mutual Insurance Company (NMIC), formally Blue Cross/Blue Shield of North Dakota, in 1996 to develop the current web-based system.
- ND Century Code requires North Dakota providers enter all childhood (under 18 years of age) immunizations into the NDIIS.
- Beginning in January 2006, the NDIIS is populated by electronic birth certificate information from ND Vital Statistics.
 - The average amount of time between a child's birth and the establishment of an IIS record is 3.24 weeks.
- 66% of immunization data for children younger than 6 years of age is entered into the NDIIS within one day of administration.



NDIIS continued...

- In December 2010, the NDDoH Immunization Program implemented reminder/recall functionality in the NDIIS.
- The reminder/recall system is an automated report that uses the immunization forecaster to determine if clients in the NDIIS are past due for immunizations or have immunizations due in the future.
 - Forecasting is done according to the recommendations of the Advisory Committee for Immunization Practices (ACIP).
- Reminder function will pull clients in the NDIIS within the specified birth date/age range who are coming due for the selected vaccines.
- Recall function will pull clients in the NDIIS within the specified birth date/age range who are past due for the selected vaccines.
- Reminder/Recall can be done at a provider, state, county or district level and can be run by all users with read/write access to the NDIIS.



Benefits and Effectiveness

- According to the AIRA MIROW chapter on Reminder/Recall:
 - “The primary expected benefit of Reminder/Recall is to improve the timeliness and completion of recommended immunizations to prevent disease.”
 - Reminder/recall is effective for both children and adults, with increases in coverage rates from 5-20%.
 - Literature suggests that phone calls are more effective than postcards, although auto-dialers have smaller effects than live calls.
 - Letters are more effective than postcards.
 - Providing numerous notices is more effective than single notices.
 - Reminder/recall works whether from a provider office or health department.
 - Helps to improve IIS data quality through:
 - updated demographic information
 - the addition of missing historical immunization data to the IIS record
 - being able to mark IIS clients as Moved or Gone Elsewhere (MOGE) so they are no longer included as part of the IIS population
 - Strengthens relationships between IIS and providers by saving labor and cost when IIS performs reminder/recall for providers.
 - Strengthens relationships between providers and patients by reinforcing the idea of a medical home and bringing patients back in for care (immunizations).



Infant Recall Pilot Project



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2012 Pilot Project

➤ Project Specifics:

- Recall infants 19 – 35 months of age who are 30 or more days behind with one or more vaccines for the 4:3:1:3:3:1:4 vaccine series
 - Series = 4 DTaP (diphtheria, tetanus, pertussis), 3 polio, 1 MMR (measles, mumps, rubella), 3 hepatitis B, 3 Hib (*Haemophilus influenzae* type B), 1 varicella (chickenpox) and 4 PCV (pneumococcal conjugate vaccine)
- Conduct recall for counties in western North Dakota most affected by the influx of people associated with the state's oil boom
- Use the Call Em All automated calling system to make recall phone calls once per month
- Collect baseline data prior to first round of phone calls and monthly thereafter



Pilot Project continued...

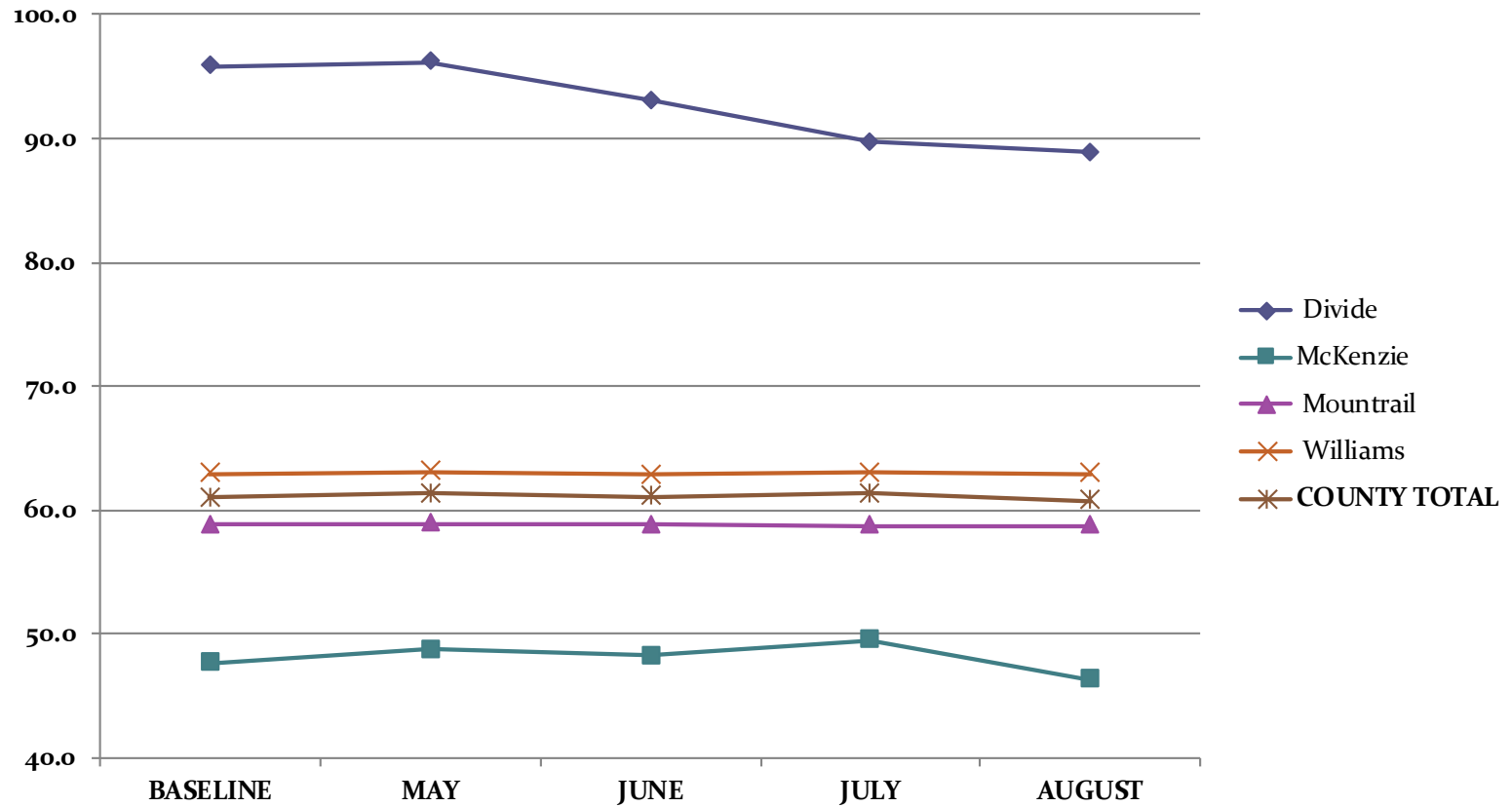
➤ Call Em All

- NDDoH has a business use agreement and contract in place with Call Em All to conduct the automated recall phone calls.
- Once per month, phone numbers collected from the NDIIS reminder/recall report are uploaded into the Call Em All system from an excel document.
- Pre-recorded message is used to let parents/guardians of kids not up-to-date know that they are behind on vaccinations.
 - **Message:** “This message is from the North Dakota Department of Health Immunization Program. According to our records your child is past due on one or more immunizations. Please contact your local public health unit or healthcare provider to schedule an appointment for your child to be vaccinated.”
- System does display a return phone number when making phone calls.
 - When phone number is called, it replays automated message
- Once calls are completed, Call Em All sends a report with call completion statistics to the primary contact on file.

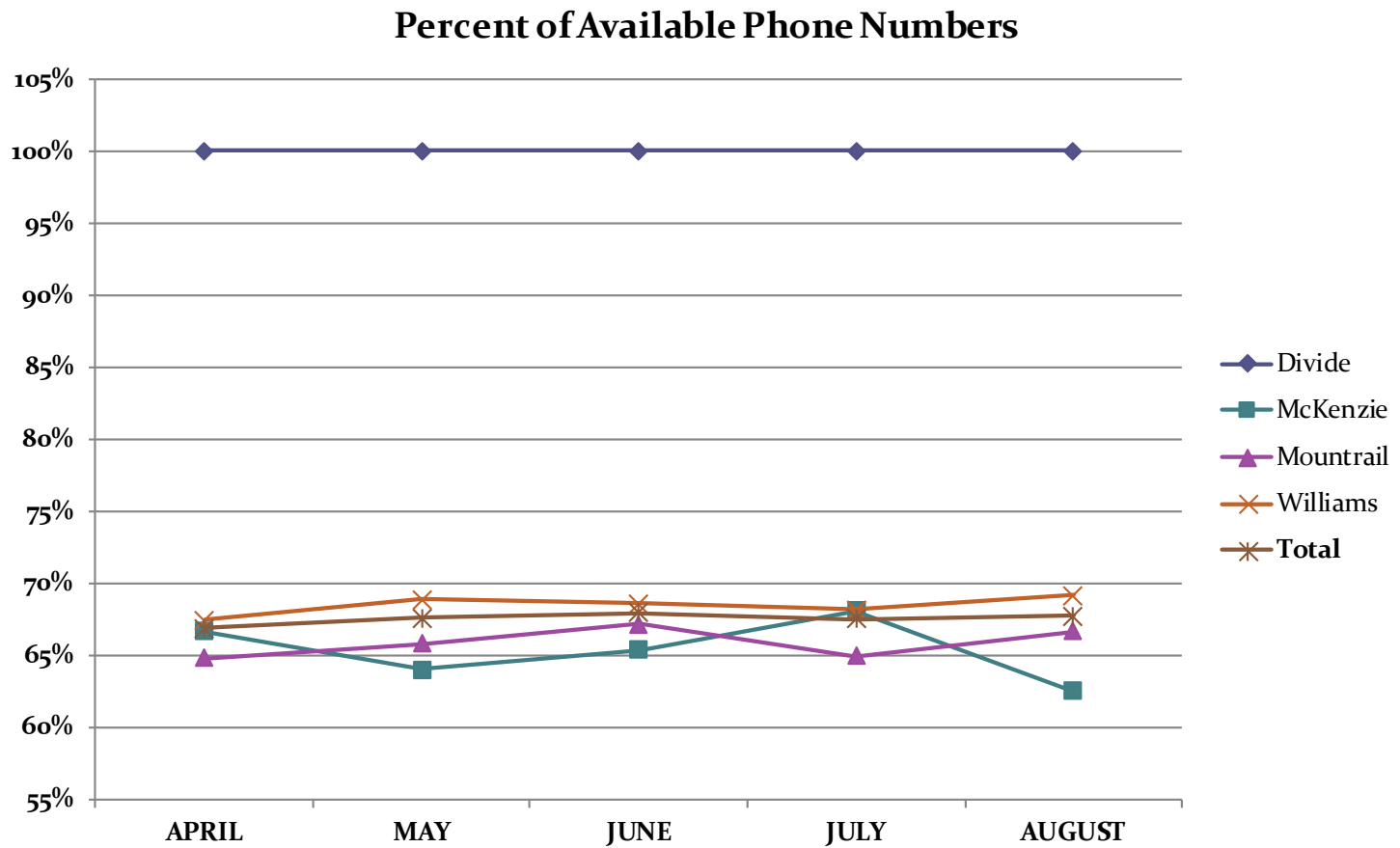


Pilot Project continued...

4:3:1:3:3:1:4 Series by County



Pilot Project continued...



Challenges and Lessons Learned

➤ Provider availability & workload

- Even if parents called to make an appointment to get their child(ren) immunized, the providers were not able to get them in to be seen.
- When immunizations were administered, provider workload was so large that they were behind on data entry.
 - Kids may have been up-to-date, but immunizations were not in the NDIIS so they were still pulling on monthly recall report.
 - Updated demographic information, including phone numbers, was not being entered into the NDIIS because of the back log of data entry.

➤ Mobility of population

- Infants may have been born in western ND, but left the state shortly after, not providing updated address information. This resulted in the infant having a record in the NDIIS but not knowing they needed to have their status updated to Moved or Gone Elsewhere (MOGE) and they were still included on the recall report.
- Some infants in Western ND may not have been able to get local addresses so they are not showing up on the recall report when they have.
- Infants coming in from out of state may have received immunizations prior to moving to ND but did not have a copy of their record.



Adolescent Recall Project



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Adolescent Recall

- **ND received Prevention and Public Health Funds (PPHF) to increase adolescent immunization rates**
 - Primary activity of grant was to conduct centralized, state-wide adolescent recall
- **The recall includes 12-15 year old adolescents who are 30 or more days past due for their:**
 - 1st or 2nd dose of varicella (chickenpox)
 - 2nd or 3rd dose of human papillomavirus (HPV)
 - 1st dose of meningococcal conjugate (MCV₄)
 - 1st dose of tetanus, diphtheria, and acellular pertussis (Tdap) vaccine
- **Recall of 16-17 year old adolescents is for those who are 30 or more days overdue for their:**
 - 2nd dose of varicella (chickenpox)
 - 2nd or 3rd dose of human papillomavirus (HPV)
 - 2nd dose of meningococcal conjugate (MCV₄)
 - 1st dose of tetanus, diphtheria, and acellular pertussis (Tdap) vaccine
- **Recall does not include adolescents who have never started the HPV vaccination series.**



Adolescent Recall continued...

- **Recall changes based on lessons learned from infant pilot project:**
 - Address clean-up prior to recall
 - Submitted NDIIS data files containing addresses for North Dakota adolescents to the US Postal Service National Change of Address (NCOA) system to update NDIIS demographic data prior to sending out recall postcards.
 - Phone number clean-up
 - Submitted one-time NDIIS data file containing phone numbers for North Dakota adolescents to Thompson-Reuters in an effort to obtain updated phone number data prior to conducting recall phone calls.
 - Pre-Sort Plus
 - Third party company that conducts mass mailings
 - Sends all addresses in file of postcard recipients through the NCOA
 - Provides the immunization program with file of updated addresses after mailing is complete
 - Provider notification via email
 - Immunization Program sends email notification to our providers prior to each recall mailing so they are aware the notices have gone out and can anticipate an increase in their calls from patients.



Adolescent Recall continued...

- **Automated phone calls were conducted monthly starting April 2013 and ended January 2014**
 - Approximately 137,592 phone calls were made
- **Recall postcards were mailed quarterly starting June 2013**
 - Approximately 229,312 postcards have been sent out



Immunization Program
2635 East Main Ave., P.O. Box 5520
Bismarck, ND 58506-5520
www.ndhealth.gov/immunize

According to our records, your
preteen or teen is **DUE** or **PAST**
DUE for immunizations.

Please contact your child's
health-care provider or local public
health unit to be immunized.

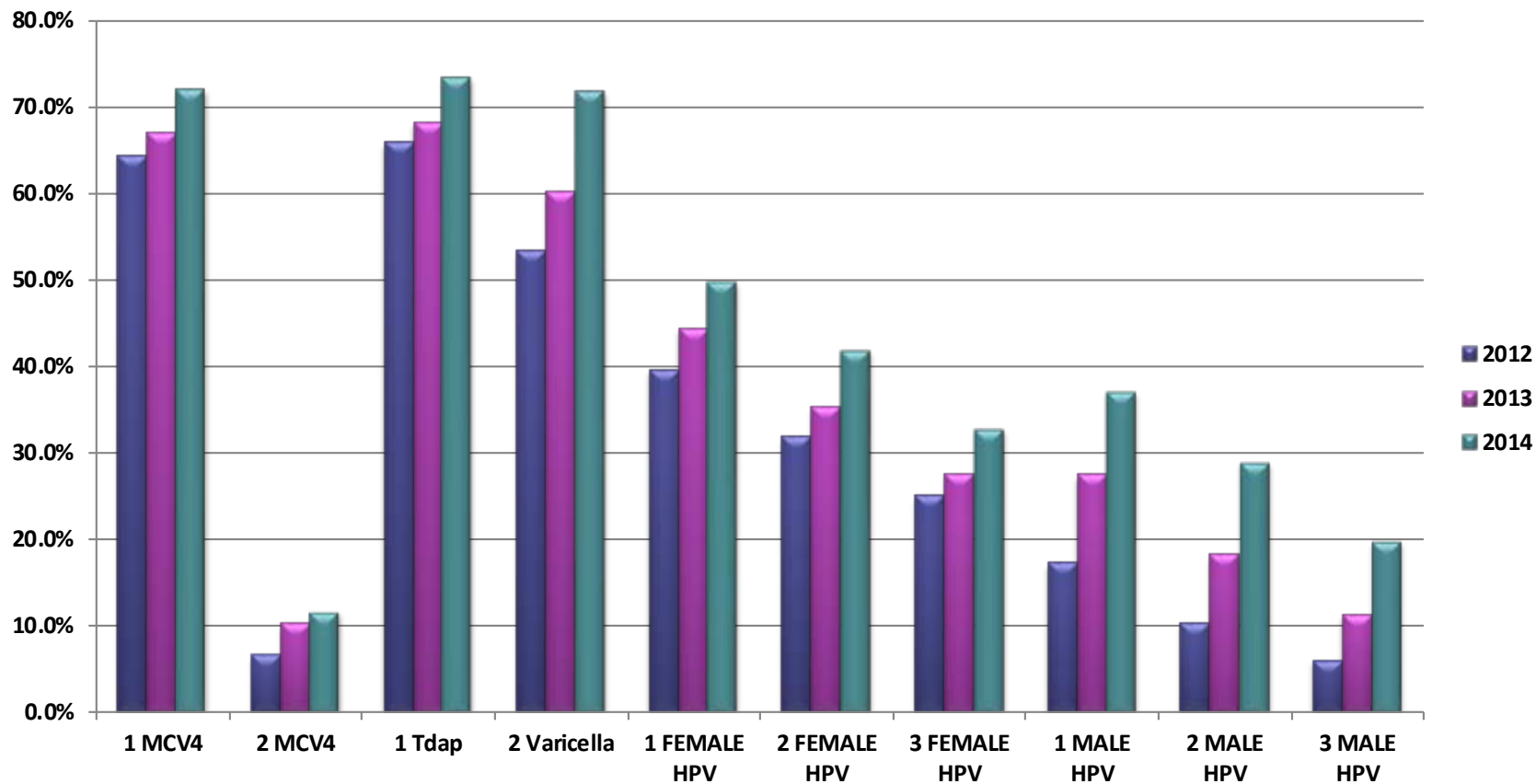
If you would like to opt-out of
receiving future recall notices, visit
www.ndhealth.gov/immunize.



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Adolescent Recall continued...

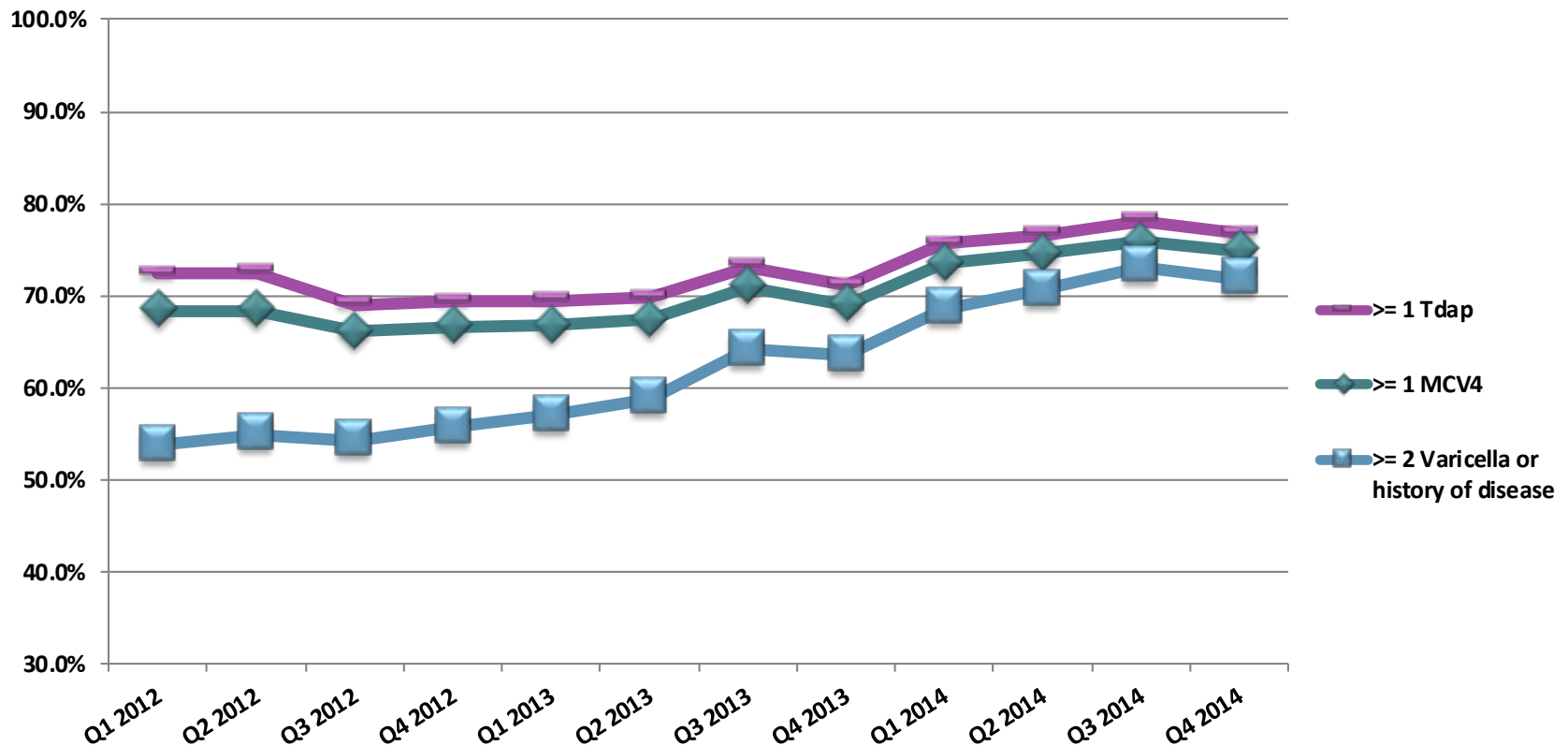
The graph below compares the percent of adolescents 12-17 years who are up-to-date with each vaccine in 2012, 2013 and 2014.



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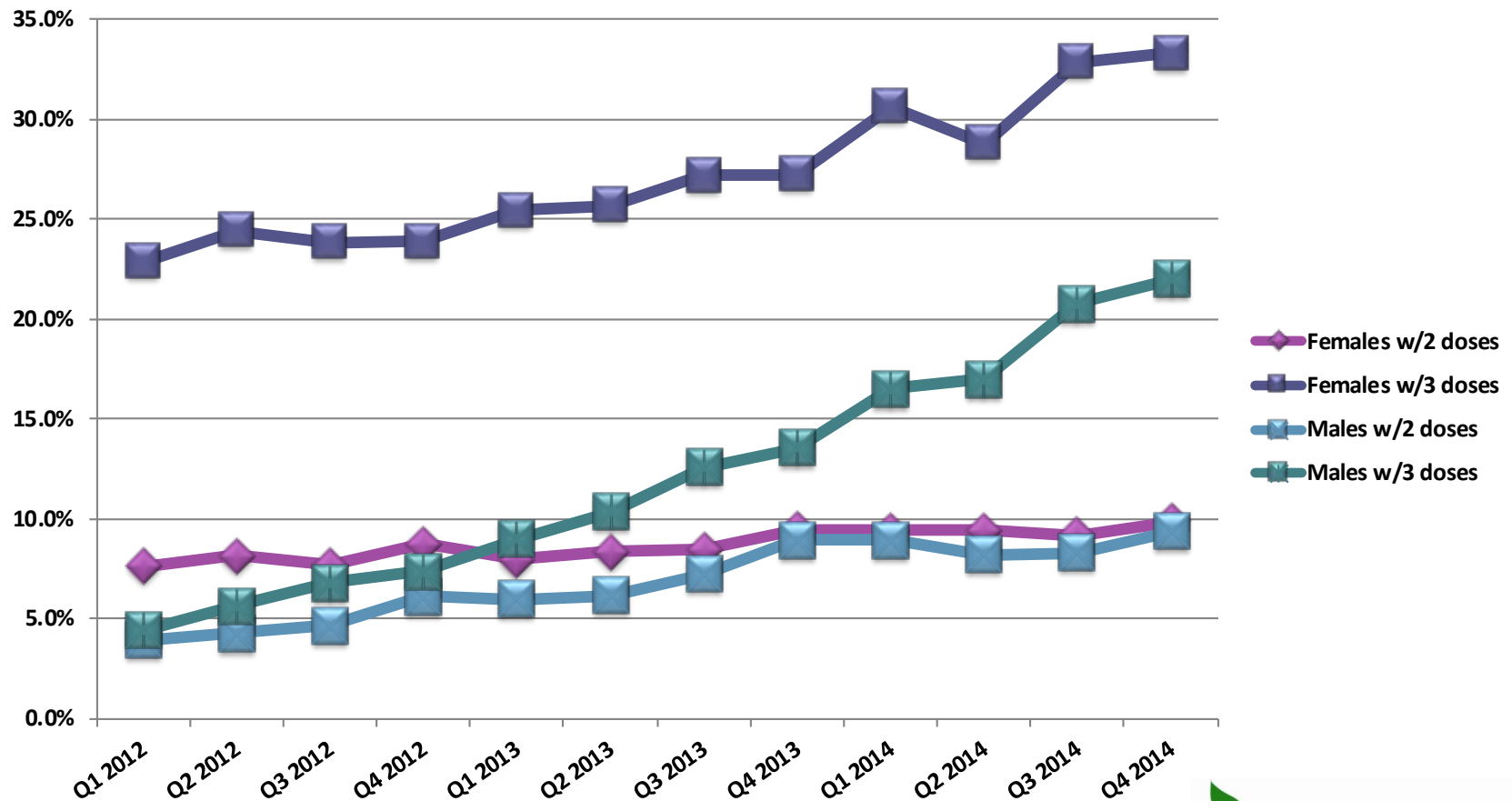
Adolescent Recall continued...

The graph below shows the percent of adolescents 13-15 years who have received the specified number of doses of the selected vaccine by the last day of the quarter.



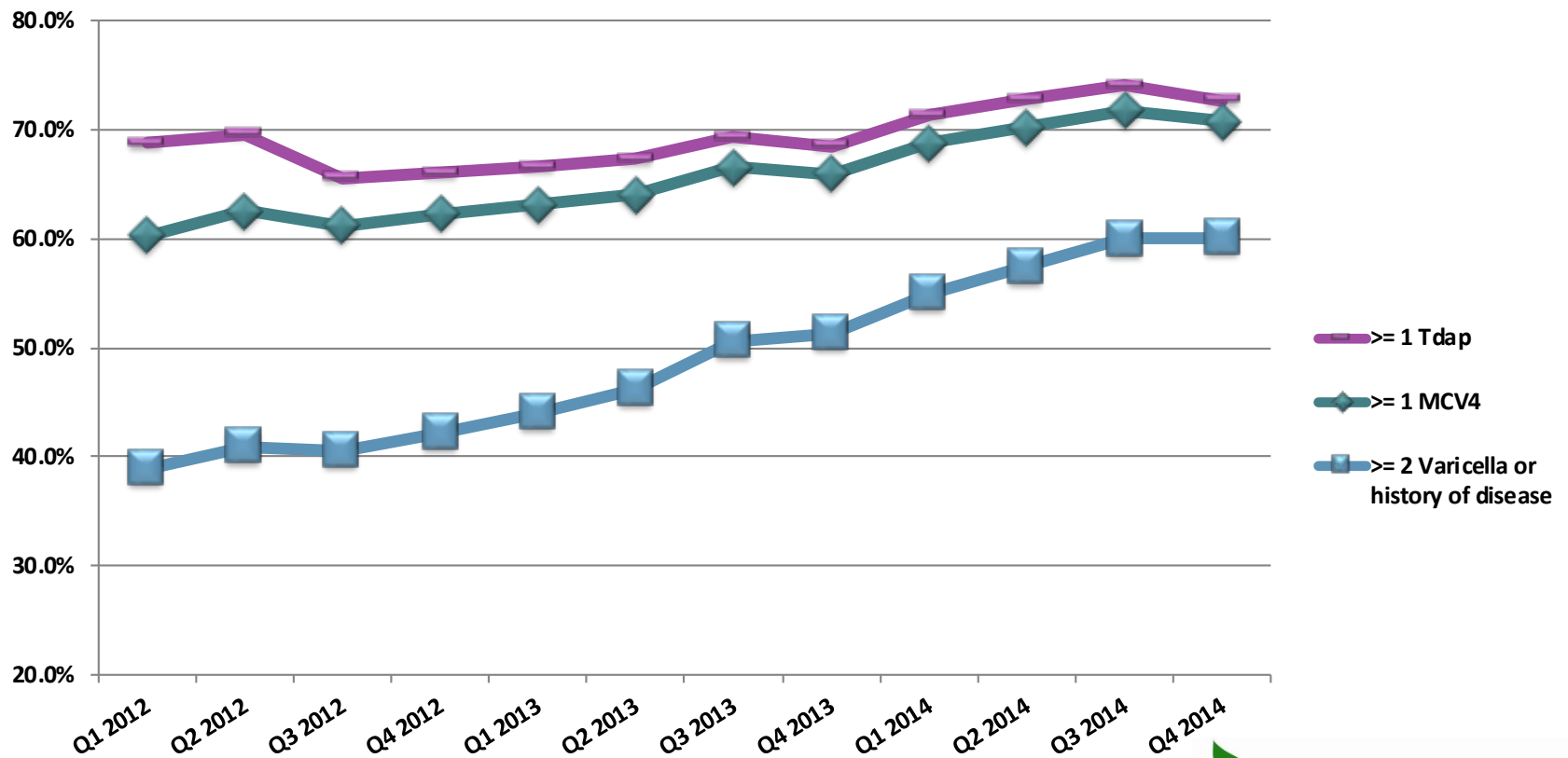
Adolescent Recall continued...

The graph below shows the percent of adolescents 13-15 years who have received the specified number of doses of HPV by the last day of the quarter.



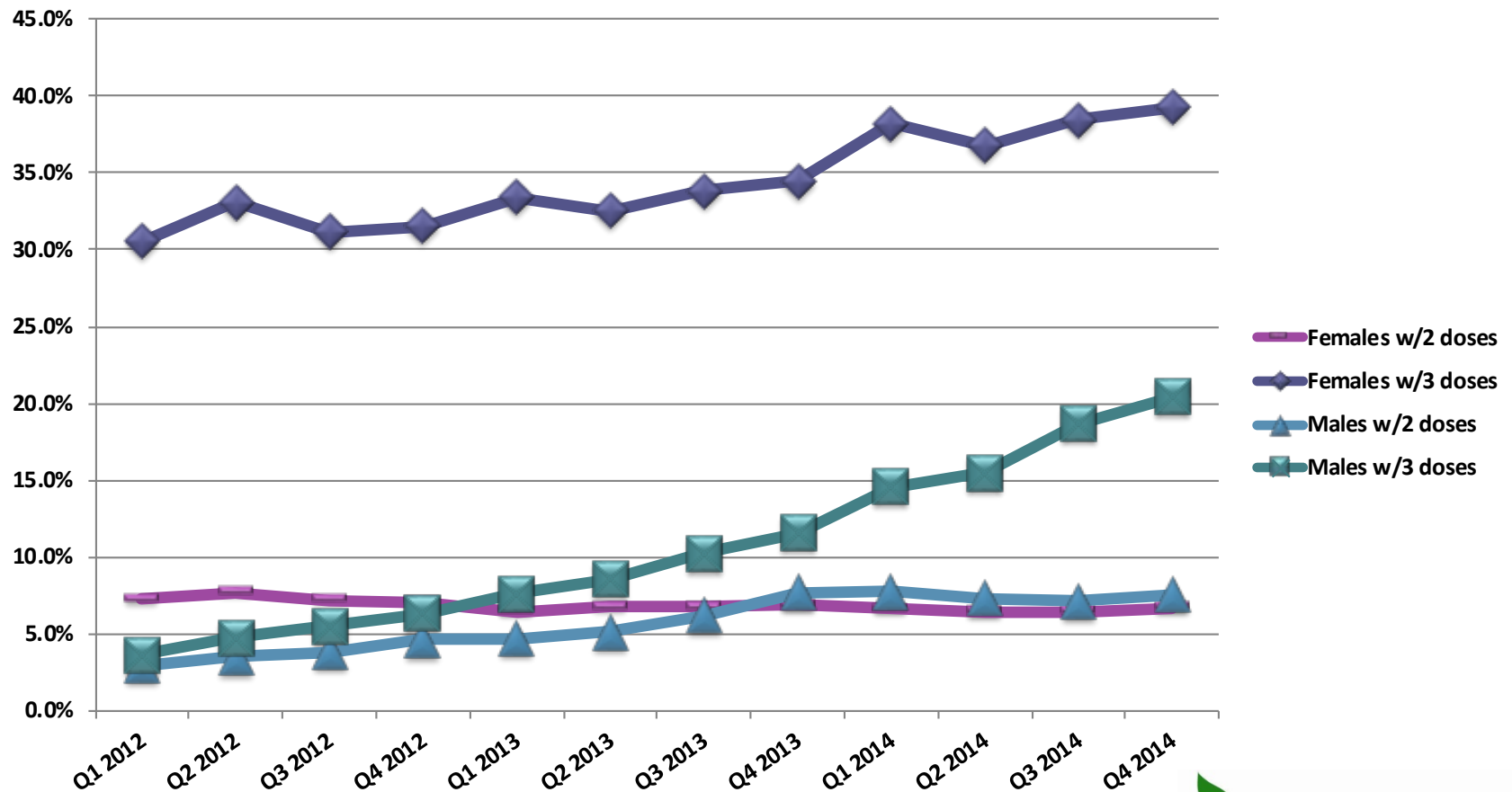
Adolescent Recall continued...

The graph below shows the percent of adolescents 16-18 years who have received the specified number of doses of the selected vaccine by the last day of the quarter.



Adolescent Recall continued...

The graph below shows the percent of adolescents 16-18 years who have received the specified number of doses of HPV by the last day of the quarter.



Adolescent Recall Lessons Learned

➤ Automated phone calls

- Families with multiple teens in selected age group in need of immunizations would only get one phone call.
- Discovered that North Dakota does not allow the use of an auto-dialer system to contact residents, even for public health purposes (“Do Not Call” law).
 - Had to discontinue the use of the auto-dialer for recall purposes.
- Contract with Thompson-Reuters took longer than anticipated so updated phone numbers were not obtained until after discontinuing phone calls.

➤ Provider feedback

- Received a lot of feedback from providers that they appreciate the immunization program sending notices, since a lot of the provider practices do not have the staff, time or resources to conduct reminder/recall for their own practice.
- Providers wanted to be notified when the recall notices would be sent so they could anticipate a larger call volume.
- Some wanted us to change the age group of adolescents being recalled.
- Some did not like that we were recalling for varicella since 2 doses are not required for these kids for school (ND requirement being grandfathered in) or the second dose of MCV4 since we weren't recalling 18 year olds and the recommendation says to receive the booster at age 16-18.



Adolescent Recall Lessons Learned

➤ Parent phone calls

- Most parents weren't aware their teen needed immunizations after early childhood.
- Providers will tell parents that the teen is up-to-date, but parents continue to get notices.
 - Providers are not checking teen's status using the NDIIS forecaster.
 - Teen needs HPV and provider doesn't give recommendation to parents.
 - Providers not administering booster dose of MCV₄ at 16, but are waiting until 18 so not making recommendation when parents call.
 - Question of whether or not to include 18 year olds and send notices directly to individual, not parent.

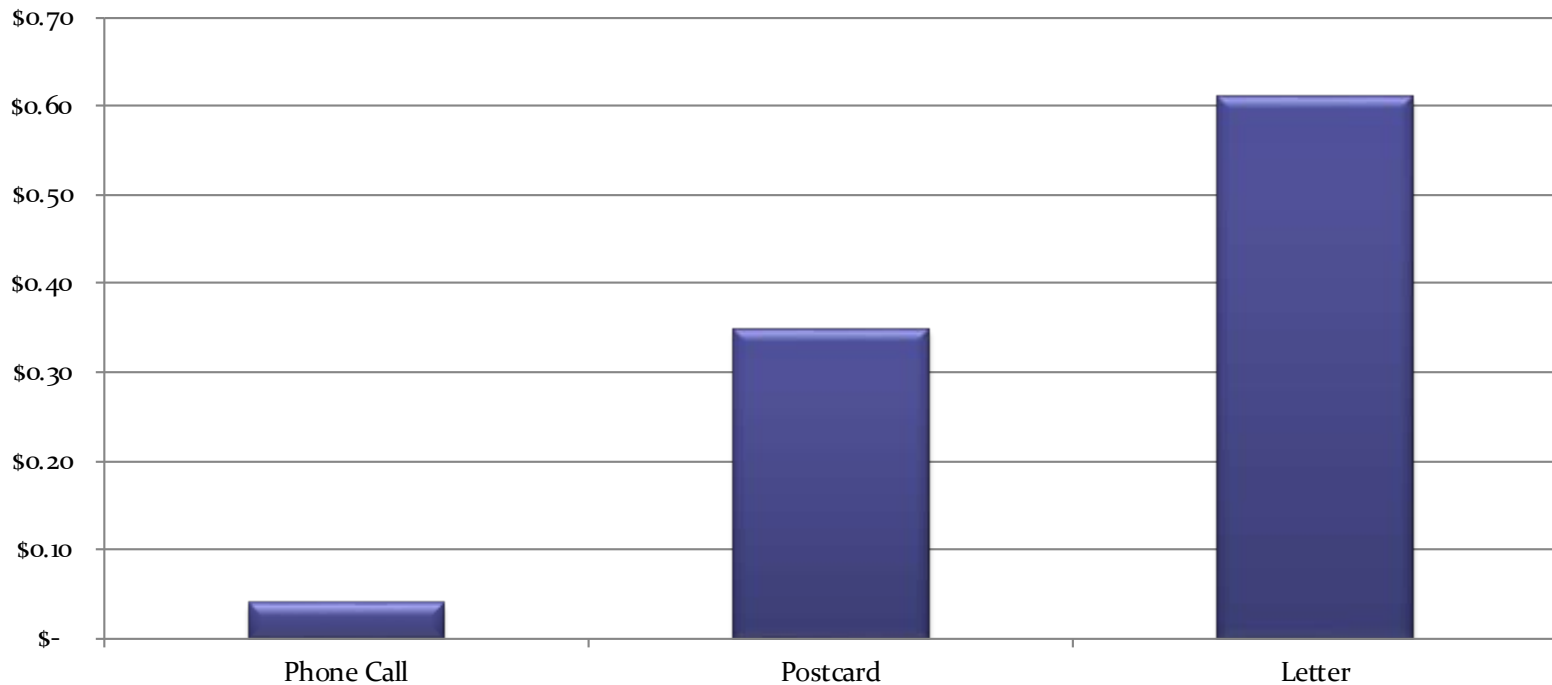
➤ Phone calls vs. letters vs. postcards

- Received feedback from parents and providers that they did not like the automated phone calls, since they did not mention the child's name or vaccines they needed.
- Received feedback from parents and providers that they would prefer a notice that listed the teens name and which vaccines they were due for.
- Final two recall notices for the PPHF 2012 grant as well as future adolescent recall will be done using letters, not postcards.



Recall Lessons Learned continued...

Cost per



* Phone calls were only charged if reached live person or voicemail.

** Postcard cost includes \$0.01 for printing and \$0.34 for mailing.

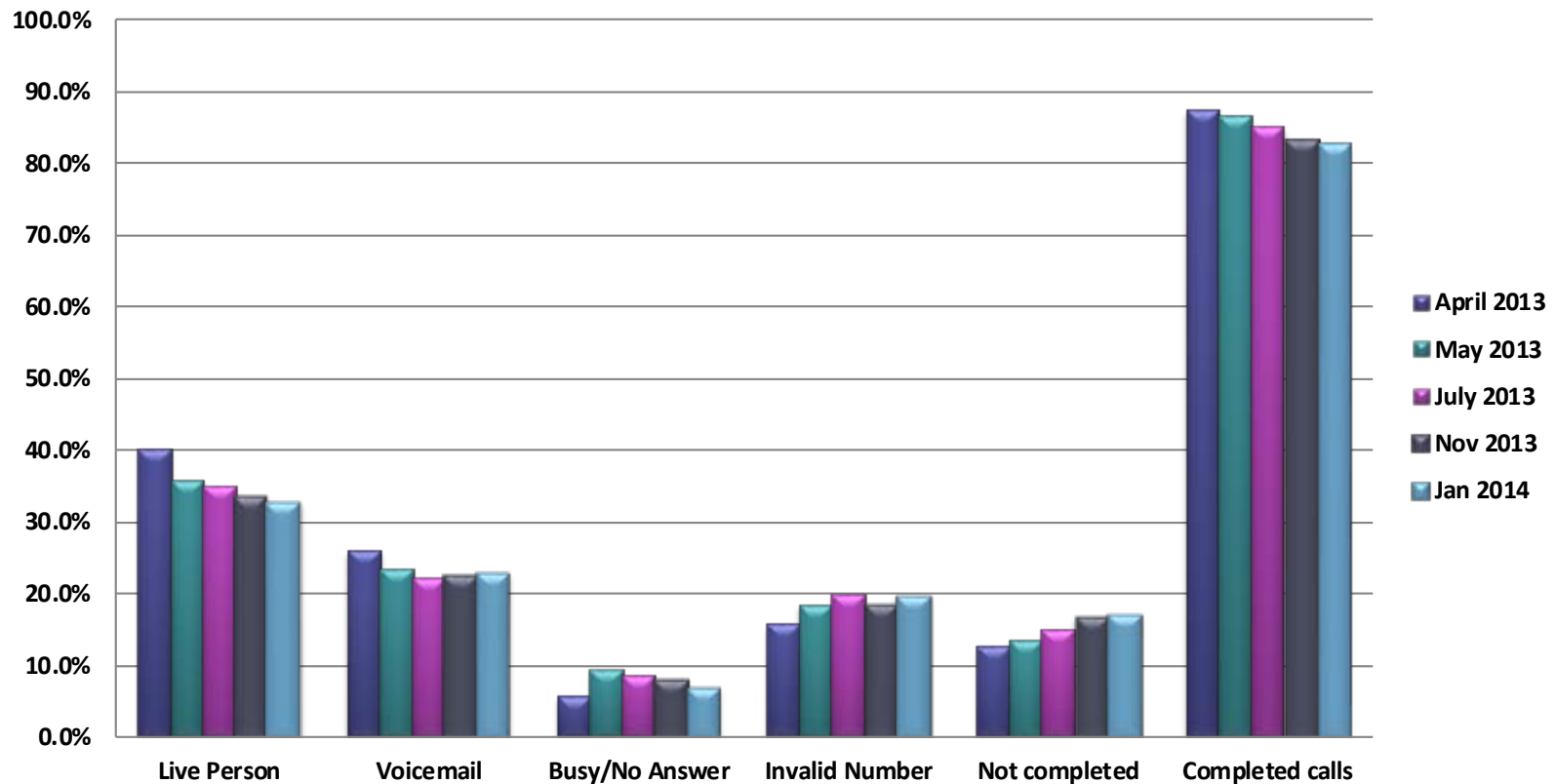
*** Letter cost includes \$0.03 per envelope, \$0.14 per letter for printing, folding, inserting and labeling and \$0.44 per letter for mailing.



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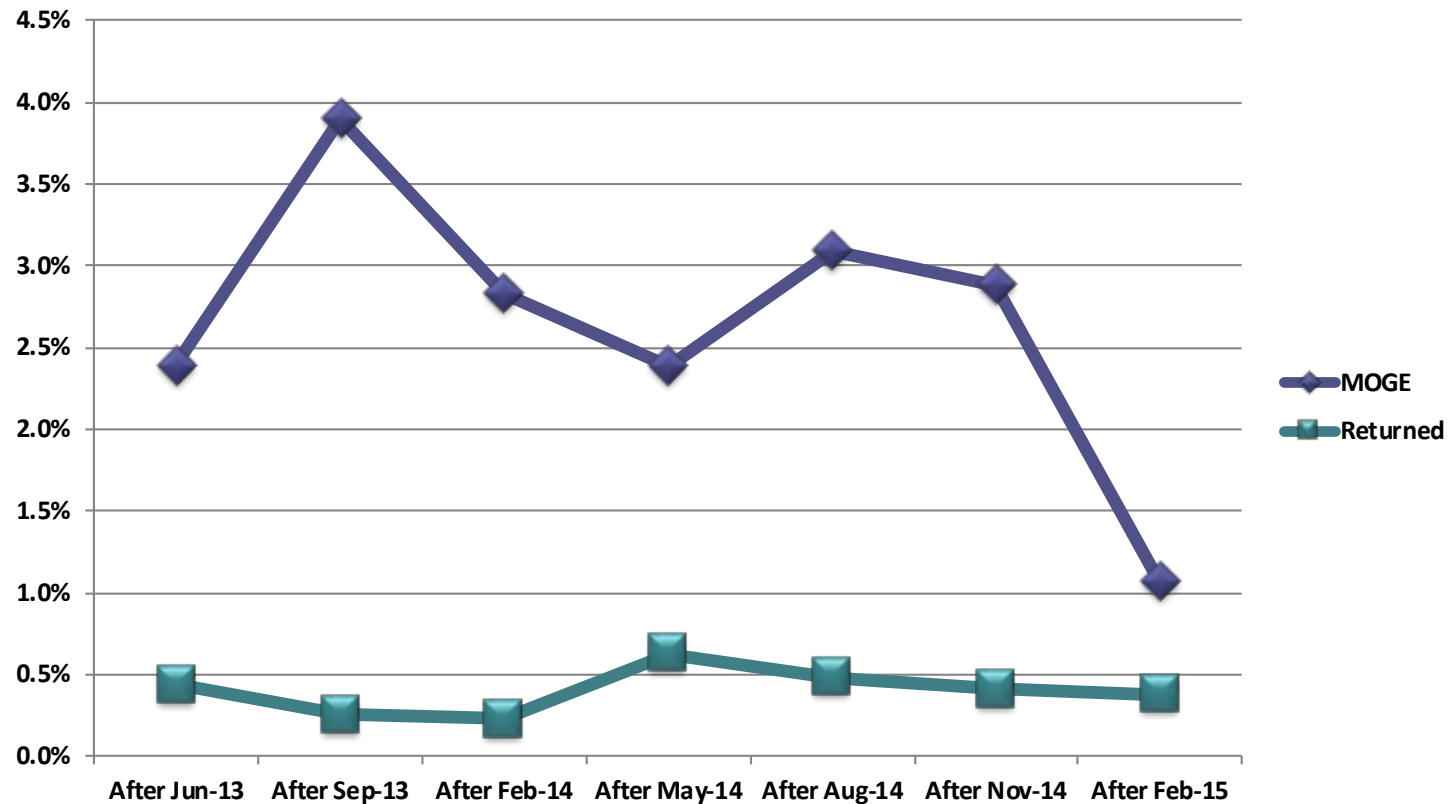
Lessons Learned continued...

The graph below shows the percent of phone calls reached a live person, voicemail, had no answer, an invalid phone number or were not completed and the total percent that were completed for each round of calls made.



Lessons Learned continued...

The graph below shows the percent of recall postcards that were returned undelivered and the percent of adolescent clients that were marked as MOGE after round of recall postcards were sent.



Back-to-School Recall Project



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Back-to-School Recall

- **In June 2014, sent recall letters to parents whose kids still needed immunizations required for school entry in North Dakota.**
- **Recall included kids entering kindergarten for the 2014-2015 school year who were 30 or more days past due for their school required immunizations:**
 - DTaP
 - Polio
 - Hepatitis B
 - MMR
 - Varicella (chickenpox)
- **Recall included kids entering 7th grade for the 2014-2015 school year who were 30 or more days past due for their school required immunizations :**
 - Polio
 - Hepatitis B
 - MMR
 - Varicella (chickenpox)
 - Tdap
 - MCV₄



Back-to-School Recall continued...

- **School recall letters were mailed in June 2014 to coincide with kids visiting their provider for sports physicals**
 - Approximately 4,642 letters were sent to parents of incoming kindergarteners
 - Approximately 4,500 letters were sent to parents of incoming 7th graders
- **Letters included child's name and which vaccines they were due for.**
- **Letters also encouraged parents to get their child any other ACIP recommended immunizations they still needed.**

Dear Parent/Guardian,

It's almost time for [Child's Name] to start school. In order for your child to learn in a healthy environment, North Dakota law requires that children be immunized prior to attending kindergarten. According to the North Dakota Immunization Information System, your child still needs one or more immunizations before attending school. The table below lists the vaccine(s) that your child requires before beginning kindergarten. Please contact your child's doctor's office or local public health unit to make an appointment for your child to be vaccinated.

Vaccine(s) Required Prior to School Entry

In addition to the required vaccines for school listed above, your child is recommended to receive the vaccines listed in the table below.

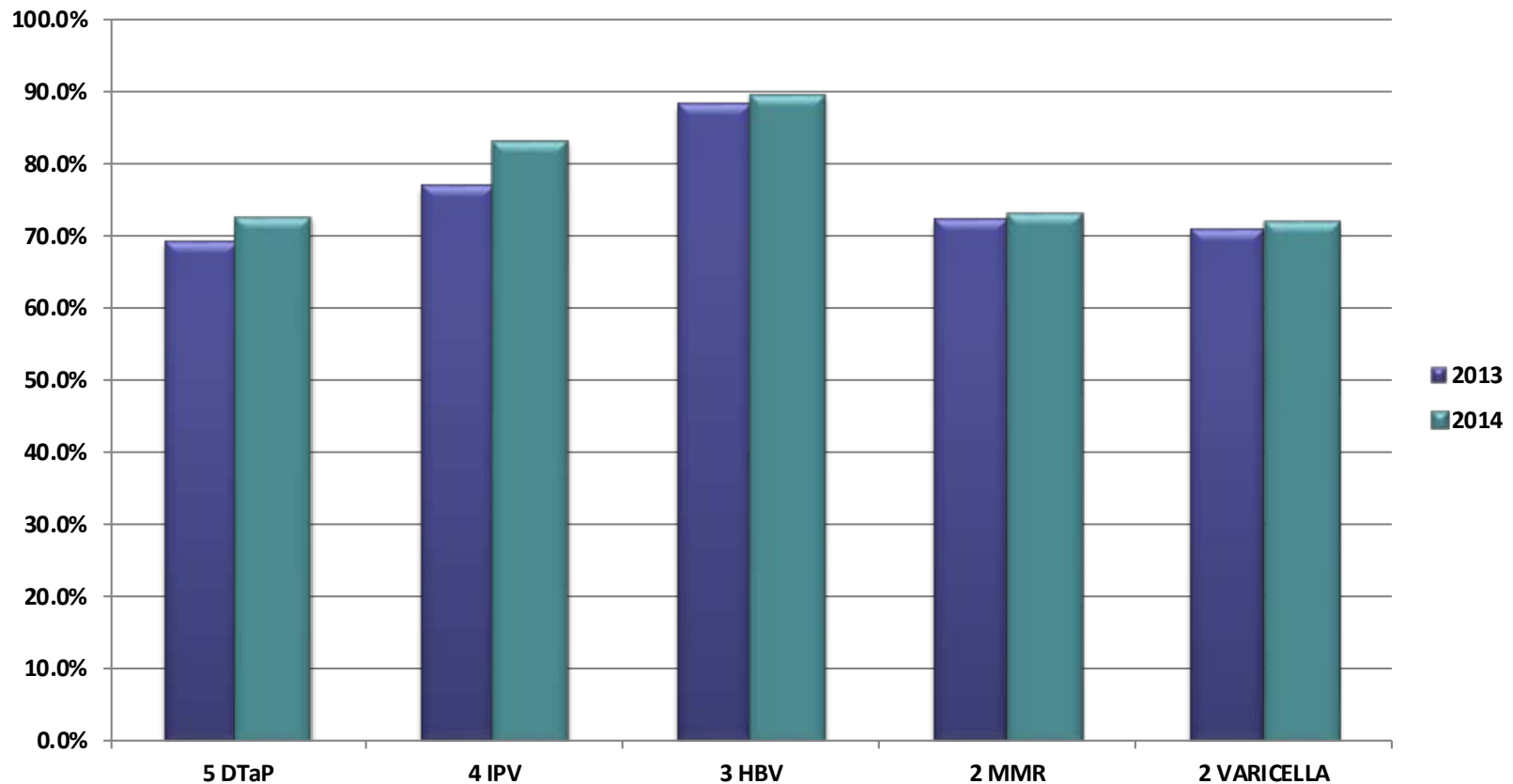
Vaccine(s) Recommended



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Back-to-School Recall continued...

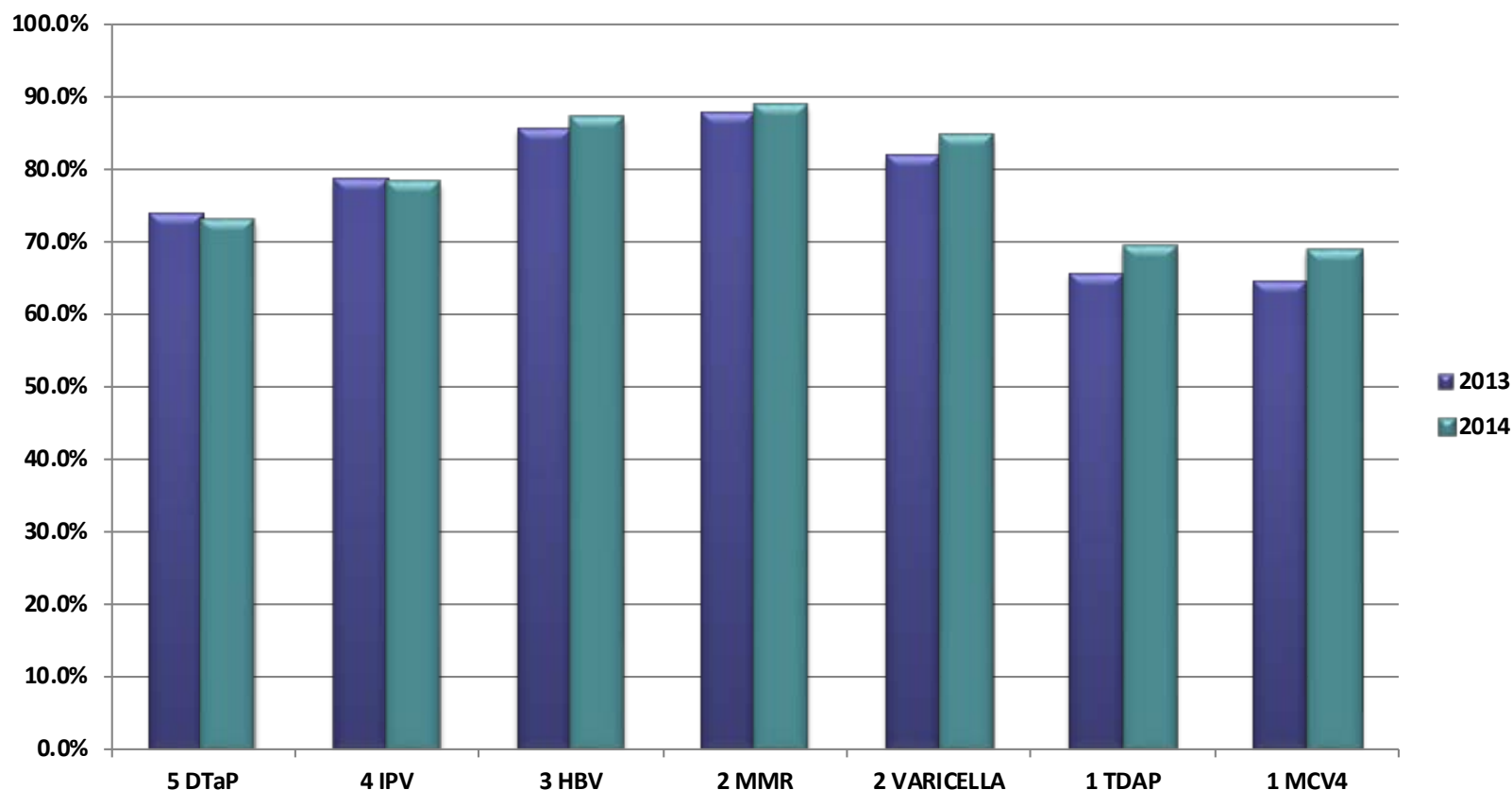
The graph below compares the percent of kindergarteners up-to-date with each vaccine in 2013 and 2014.



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Back-to-School Recall continued...

The graph below compares the percent of 7th graders up-to-date with each vaccine in 2013 and 2014.



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Back-to-School Recall Lessons Learned

➤ **Positive provider feedback**

- Immunization program will send back-to-school recall letters again for the 2015-2016 school year.

➤ **Change in timing of letters**

- Send out recall letters in April to align with kindergarten and middle school registration, instead of middle of the summer.

➤ **Letters vs. postcards**

- Using letters that detail which child needs the immunizations and listing which immunizations are needed for school reduces the need to rely on providers to determine what the child needs.
- Parents are more informed about what their child is missing when they call their provider for an appointment.



Infant Recall Project



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Infant Recall

- Immunization program received feedback from providers that it would be helpful to them to have centralized, state-wide recall notices sent out for infants, in addition to adolescents and school kids.
- Recall included infants 19-35 months of age at the time of the recall who were 30 or more days past due for their ACIP recommended immunizations:
 - DTaP
 - Hib
 - Polio
 - PCV₁₃
 - Hepatitis B
 - MMR
 - Varicella (chickenpox)
 - Hepatitis A



Infant Recall continued...

- **Infant recall letters were mailed in December 2014**
 - Approximately 5,661 letters were sent to parents of infants
- **Letters included child's name and which vaccines they were due for**
 - Vaccines included in recall were all ACIP recommended infant vaccines
- **Letters also encouraged parents to get their child vaccinated against influenza**

Dear Parent/Guardian,

The North Dakota Department of Health (NDDoH) recommends all children receive a series of vaccinations in order to stay protected against many serious illnesses. By age 2, all children should receive four doses of diphtheria, tetanus and acellular pertussis (DTaP), three doses of hepatitis B, one dose of measles, mumps and rubella (MMR), two or three doses of *haemophilus influenzae type B* (Hib), three doses of polio, one dose of varicella (chickenpox), four doses pneumococcal conjugate (PCV13) and two doses of Hepatitis A vaccines. According to the North Dakota Immunization Information System, [CHILD'S NAME] still needs one or more of their infant immunizations. The table below lists the vaccine(s) that are past due for your child. Please contact your child's doctor's office or local public health unit to make an appointment for your child to be vaccinated.

Vaccine(s) Recommended

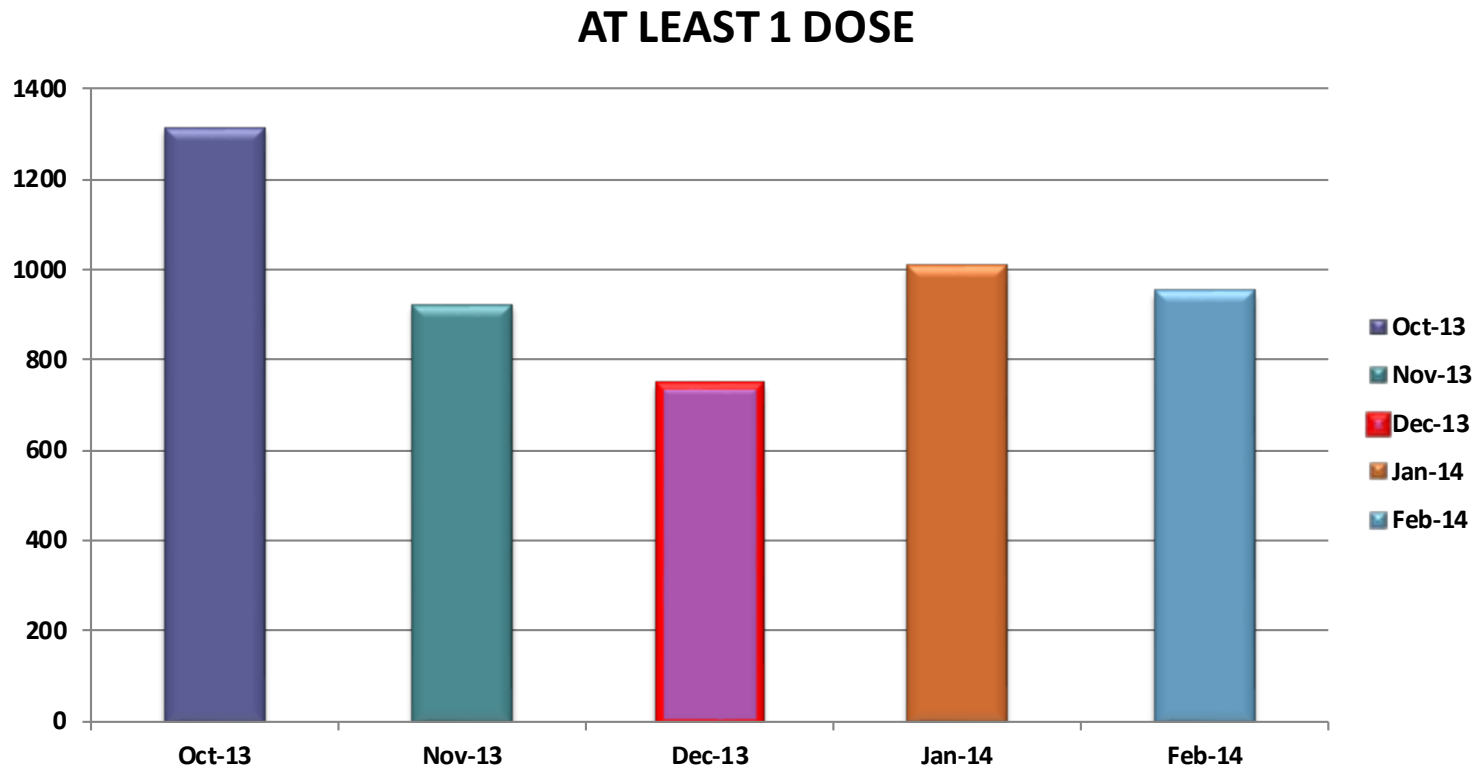
While at your child's doctor's office or local public health unit, please also get your child immunized against influenza. Some children will need two doses of influenza vaccine to be protected if it is their first year of vaccination. Each year in the United States, approximately 20,000 children under age 5 are hospitalized because of influenza complications.



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Infant Recall continued...

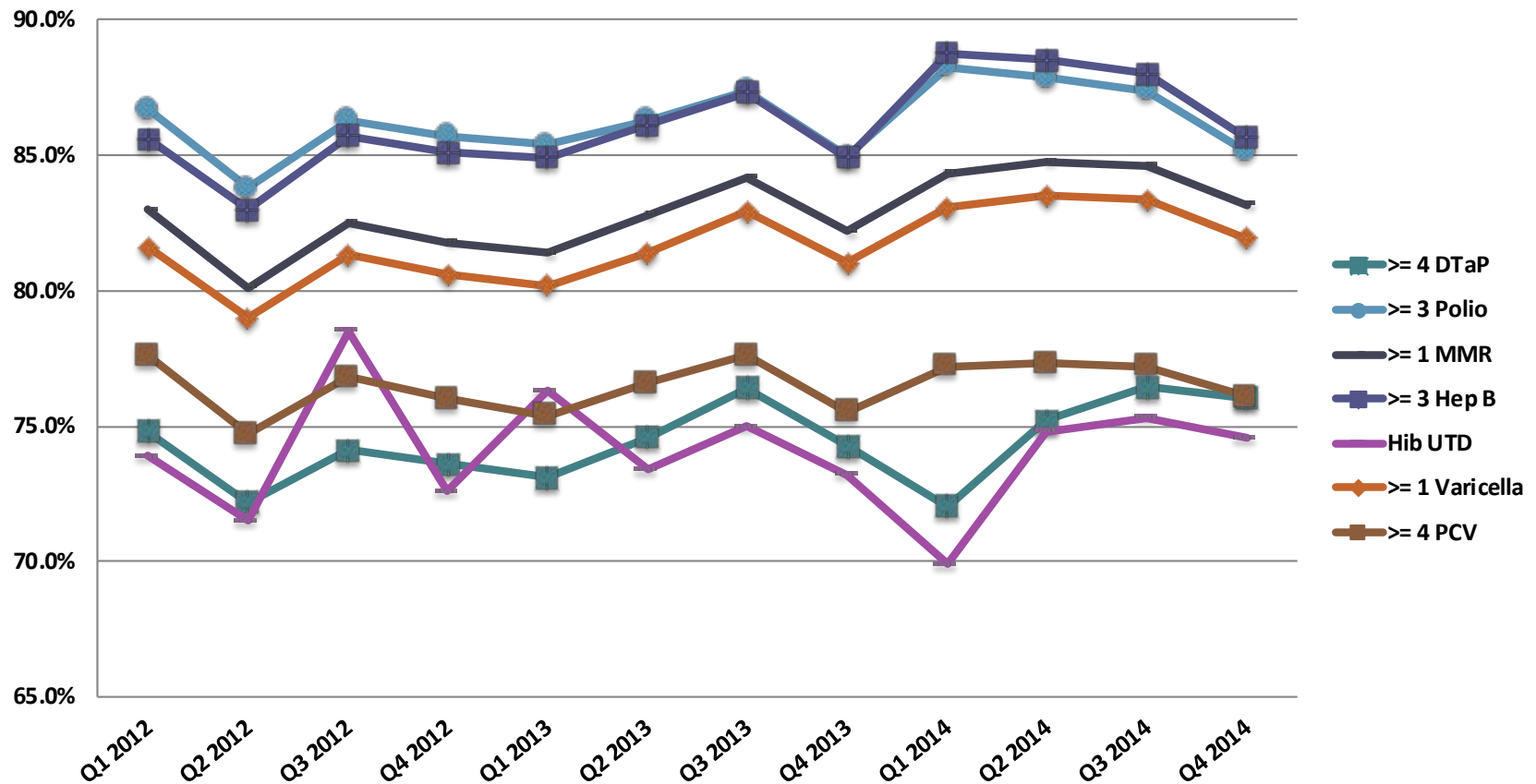
The graph below compares the number of infants who received at least one dose of vaccine each month before and after the recall letters.



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Infant Recall continued...

The graph below shows the percent of children 19-35 months who have received the indicated number of doses of the selected vaccine by the last day of the quarter.



Infant Recall Lessons Learned

➤ **Positive provider feedback**

- Recall was done at the request of providers and they asked that we continue.
- Infant recall will continue and letters will be sent out on a quarterly basis.

➤ **Parent feedback**

- Appreciate the letters that include their child's name as well as the vaccines that are needed.

➤ **Letters vs. postcards**

- Using letters that detail which child needs the immunizations and listing which immunizations are missing reduces the need to rely on providers to determine what the child still needs.
- Parents are more informed about what their child is missing when they call their provider for an appointment.



HPV Recall Project



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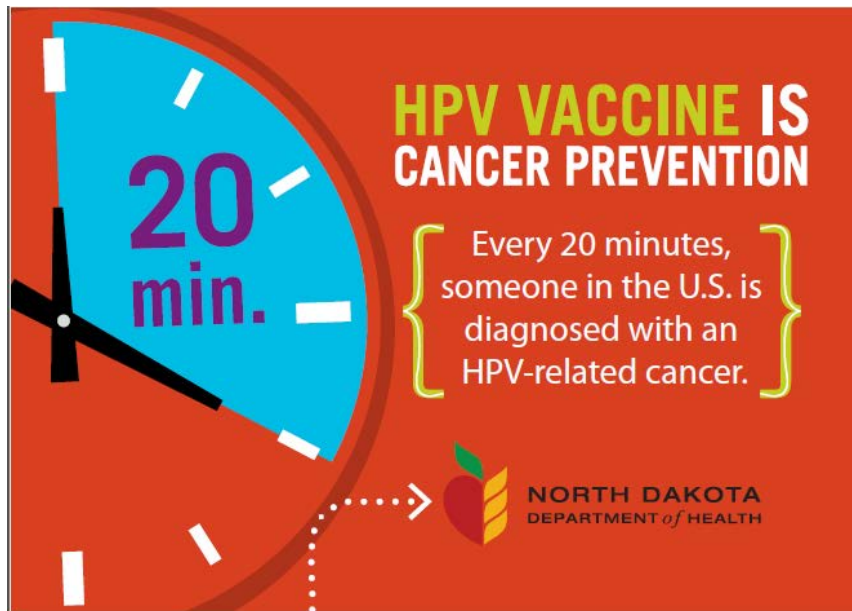
HPV Recall


- **In 2013, the immunization program applied for a PPHF grant to increase HPV immunization rates in North Dakota.**
 - The grant was approved but not funded in 2013.
 - North Dakota received funding for the HPV grant in 2014.
- **Initial reminder/recall will include all adolescents 11-17 years who have not started the HPV series.**
- **Subsequent reminder notices will be sent to parents of kids who turned 11 since the previous recall and have not yet started the HPV series.**
 - Adolescent recall will continue and will include those pre-teens and teens who have started, but not finished the HPV series.



HPV Recall continued...

- **First round of reminder/recall postcards will be sent out in May 2015.**
- **Subsequent rounds will be sent out quarterly.**
- **Opted for postcards instead of letters**
 - Since the postcards are specific to HPV, there is no need to send letters that include the vaccine name as with other recall projects.



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Immunization Program
2635 East Main Ave., P.O. Box 5520
Bismarck, ND 58506-5520

Save **YOUR CHILD** from HPV cancers.

- Human Papillomavirus (HPV) cancers affect both **GIRLS** and **BOYS**.
- The HPV vaccine works best and is recommended for boys and girls at age **11 or 12**.
- If your child is 13 or older, it is not too late to get them vaccinated.
- HPV vaccine is **SAFE**. More than 67 million doses have been distributed in the U.S.

The NDDoH urges you to contact your child's health care provider or local public health unit to have your child immunized.

For more information, visit
www.getHPVvaccine.com.



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Additional Challenges & Lessons Learned



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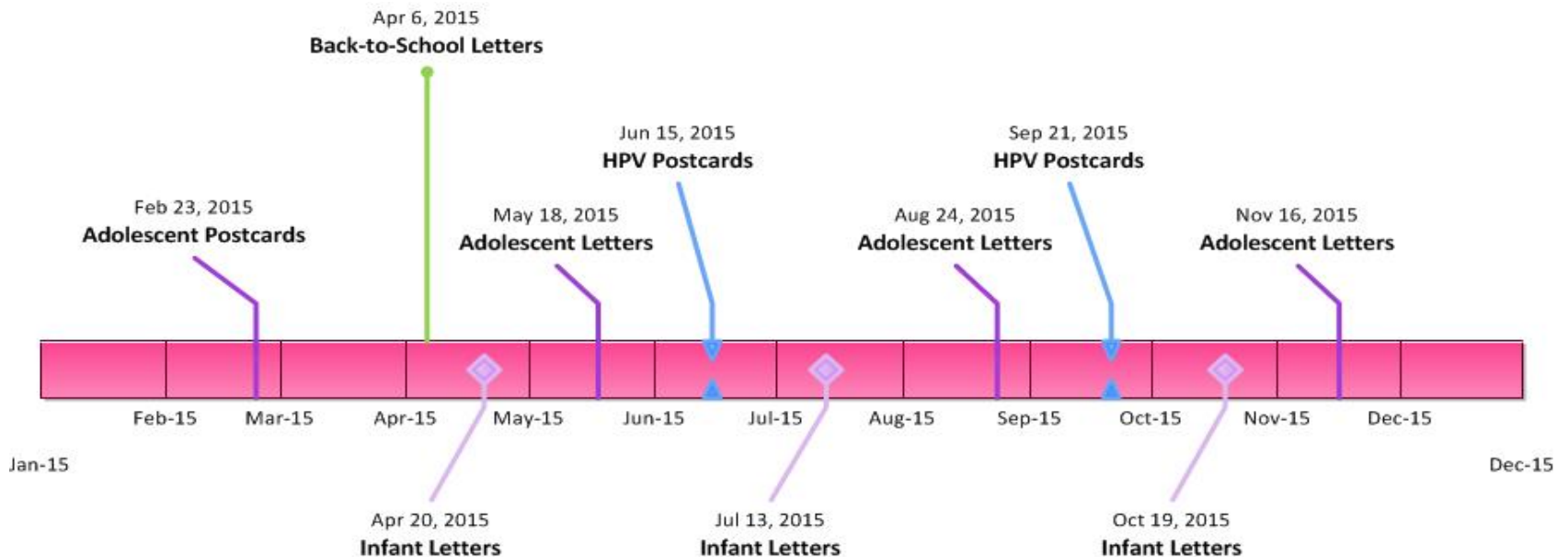
Additional Challenges

- **Quality of NDIIS demographic data**
 - Have to rely on users to update demographics
 - Need immunization program staff time to update addresses that are sent back from PreSort
- **Providers not recommending HPV when parents call after getting recall notice**
- **Providers not using NDIIS forecaster to see what child/teen needs**
- **North Dakota air force bases**
 - 2 bases in North Dakota do not enter immunizations in the NDIIS
 - Immunization Program does not know which kids are being immunized on the base so they are included in the NDIIS population and look like they are not up-to-date.



Additional Lessons Learned

- **Created a schedule so none of the recall letters or postcards overlap**
 - Do not want to overwhelm providers by sending out multiple recall notices at the same time
 - Sent schedule to providers so they are aware of future notices



Lessons Learned continued...

- **Continued communication to providers**
 - Email notification prior to recall notices being mailed so providers are aware that they are going out and know the exact dates.
- **Communication to the public**
 - Immunization Program web page provides details on all of the different recall projects.
 - Includes PDF of letters and post cards
 - Includes any memos or additional information related to recall projects or vaccine recommendations/requirements (i.e. school immunization requirements)
 - Prior to sending notices, the Immunization Program should have sent a news release to the public letting them know what was going to be sent and why.
- **Providing online form for parents to opt-out of receiving recall notices**
 - Immunization Program web page has a short online form that allows parents who receive recall notices for their child(ren) to opt out of recall.
 - Opts the child/teen out of recall only, not out of the NDIIS
 - Have had 173 kids/teens been opted out of receiving recall notices



Lessons Learned continued...

➤ **Data quality in the NDIIS**

- Being able to update client demographics with data from NCOA
- Identification of duplicate or incorrect records
- MOGE records for kids/teens that no longer live in ND

➤ **Streamlining Provider Process**

- Interoperability has eliminated dual data entry into provider EHRs and the NDIIS for over 200 ND providers.
- Some providers were unnecessarily documenting immunizations in multiple places.
 - By working with them to eliminate some of the excess documentation, their data entry workload should decrease.

➤ **Out-of-State Registry Access**

- Immunization program has worked with providers to get them access to the immunization registries for the states where the largest volume of infants/kids are coming to North Dakota from, so that they are able to look up immunization histories.



Conclusions

- **Recall efforts in North Dakota are working to increase immunization rates.**
 - Seen increases for all adolescent vaccines, as well as, back-to-school immunization rates.
 - Hope to see similar increases for infant and HPV immunization rates as these efforts are continued.
- **Approximately 381,707 recall postcards, letters and phone calls have gone out through all of our recall efforts and only approximately 0.05% of kids recalled have been opted out of receiving future recall notices.**



Questions?



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Contact Information

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