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Kyra Chamberlain

University of Southern Maine, Muskie School of Public Service

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Using CHIPRA Immunization Measures for Primary Care Quality Improvement:

Leveraging Registry Data from the State of Maine's Immunization Information System to Calculate Practice-level Quality Measures

Kyra Chamberlain

Capstone

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Advisor: Andrew F. Coburn, PhD

INTRODUCTION

This report describes key challenges and successes of a federally-funded, cross-organizational effort to use registry data from the State of Maine's Immunization Information System to calculate childhood and adolescent immunization measures in support of a nine-month, multi-practice learning collaborative which resulted in significant increases in immunization rates and adoption of recommended immunization-related office system procedures. Also highlighted are lessons learned about promoting the use of standardized immunization measures for quality improvement (QI), supporting primary care practices in using and understanding data for QI activities, and emphasizing the value of public-private collaboration in achieving shared goals.

BACKGROUND

As mandated by section 401(d) of the Child Health Insurance Program Reauthorization Act (CHIPRA) of 2009, the Centers for Medicare and Medicaid Services (CMS) released the Initial Core Set of Children's Health Care Quality Measures in 2010. Under this legislation, CMS also established the Pediatric Quality Measures Program (PMQP) whose charge it is to improve and strengthen the Initial Core Set; expand on and advance the development of existing pediatric quality measures used by public and private payers; and increase the portfolio of evidenced-based pediatric quality measures available to public and private payers, consumers, and providers.¹ After several revisions since its release in 2010, the Initial Core Set is now titled the CHIPRA Core Set of Children's Health Care Quality Measures. The CHIPRA Core Set is a collection of standardized, evidence-based measures which CMS has invited States to voluntarily report on as a component of the CHIP Annual Reporting Template System (CARTS)—a web-based reporting system that CMS and its contractors use to monitor the operations of State Medicaid and CHIP programs.

Also in 2010, the Office of MaineCare Services (Maine's Medicaid and CHIP program) at the State of Maine's Department of Health and Human Services was awarded a five-year CHIPRA Quality Demonstration Grant in partnership with Maine's Center for Disease Control and Prevention, the Muskie School of Public Service at the University of Southern Maine, the Department of Vermont Health Access (Vermont's Medicaid program), and the University of Vermont. According to CMS, the CHIPRA Quality Demonstration Grant Program funds States to test promising ideas for improving the quality of children's health care provided under Medicaid and CHIP programs with a specific aim of identifying "effective, replicable strategies for enhancing quality of care for children."² A total of 10 grants were awarded to 18 states that are implementing a variety of projects under one or more of five grant categories, listed below:

- Category A: Using quality measures to improve child health care
- Category B: Applying health information technology for quality improvement
- Category C: Implementing provider-based delivery models
- Category D: Investigating a model format for Pediatric electronic health records (EHRs)
- Category E: Assessing the utility of other innovative approaches to enhance quality

Known as Improving Health Outcomes for Children (IHOC), Maine’s CHIPRA grant conducts multiple projects under Categories A, B, and C with an overarching objective to test methods for collecting and reporting measures from the CHIPRA Core Set in support of quality reporting and practice improvement efforts. A brief description of IHOC’s work by grant category is presented in Table 1. The subject of this report is IHOC’s cross-category pilot to test data collection and reporting of practice-level CHIPRA immunization measures in support of the first phase of a multi-practice quality improvement initiative funded through IHOC called First STEPS (Strengthening Together Early and Periodic Screening).

Table 1. Maine’s CHIPRA Quality Demonstration Grant by Category	
Improving Health Outcomes for Children (IHOC)	
CATEGORY A	IHOC staff from the University of Southern Maine’s Muskie School of Public Service are testing the calculation and reporting of CHIPRA Initial Core Set measures. This work includes analyzing data and producing rates for measures with existing data sources; identifying and testing new methods for calculating rates for measures without existing data sources; and communicating challenges, potential solutions, and progress to CMS and child health stakeholders.
CATEGORY B	IHOC’s Health Information Technology (HIT) Team includes staff from the Muskie School, Maine Quality Counts, the Office of Information Technology at Maine’s Department of Health and Human Services, and the state’s Health Information Exchange (HealthInfoNet). The IHOC HIT Team coordinates multiple cross-organizational activities in support of IHOC’s measure reporting and practice improvement initiatives. A primary focus of this work is the design, development, and testing of electronic methods to calculate and report child health measures using data sources and environments including the electronic health record (EHR); MaineCare claims and eligibility data systems; Maine’s Health Information Exchange (HealthInfoNet); and the state’s immunization information system (ImmPact).
CATEGORY C	IHOC’s Category C team is led by the Director of Child Health Quality Improvement at Maine Quality Counts—an independent healthcare collaborative with a focus on quality improvement—with support from additional staff at Quality Counts and the Muskie School. Maine Quality Counts develops and implements the First STEPS (Strengthening Together Early Preventive Services) Learning Collaborative and the Maine Child Health Improvement Partnership (ME CHIP). The mission of ME CHIP is “To optimize the health of Maine children by initiating and supporting measurement-based efforts to enhance child health care by fostering public/private partnerships” towards a vision that “All practices providing health care to children will have the skills, support, and opportunities for collaborative learning needed to deliver high quality health care.” (From http://www.mainequalitycounts.org/page/2-700/mechip-documents).

Based on the Institute for Healthcare Improvement’s (IHI) learning collaborative model, First STEPS emphasizes measurement-based quality improvement (QI) and systems change. The aim of First STEPS is to improve rates of EPSDT (Early and Periodic Screening, Diagnosis, and Treatment) services required for children enrolled in MaineCare by promoting the *Bright Futures* curriculum adopted by the State of Maine as the EPSDT standard of care. First STEPS also focuses on incorporating Patient-Centered Medical Home (PCMH) principles into child-serving primary care practices. In selecting EPSDT-related

practice improvement topics for each of the three phases of First STEPS, IHOC engaged child health stakeholders in Maine to identify areas of concern and gaps in care. While Maine ranked 4th overall in the 2011 Commonwealth Fund State Scorecard on Child Health System Performance, Maine's rankings on specific Scorecard indicators revealed the following opportunities for improvement:

- 41st in immunization rates
- 14th in developmental screening
- 13th in preventive dental care
- 13th in healthy weight
- 11th in preventive medical careⁱ

As a CHIPRA-funded project, recruitment for First STEPS was targeted to practices serving a high volume (>1000) of children enrolled in Maine's Medicaid and CHIPⁱⁱ programs (collectively known as MaineCare) and to the pediatric practices participating in Maine's Multi-Payer Patient Centered Medical Home (PCMH) Pilot. A total of 28 practicesⁱⁱⁱ from across the state participated in one or more of the three topic-focused First STEPS phases:

- Phase I: Childhood and Adolescent Immunizations
- Phase II: Developmental and Autism Screening
- Phase II: Healthy Weight and Oral Health^{iv}

Each phase of First STEPS ran approximately nine months long and included two day-long learning sessions where participating practices came together to share ideas, progress, challenges, and successes. Content experts presented information in a variety of formats during these interactive learning sessions. Between the two learning sessions were contiguous monthly action periods during which practices implemented Plan-Do-Study-Act (PDSA) cycles, collected and reported specific data, met with their QI coaches and practice teams, and attended monthly webinars. Practices had access to their QI coaches, the Director of Child Health Quality Improvement at Quality Counts, and additional staff for data support and other needs throughout each of the phases. The QI coaches were also provided with resources and guidance through Coaches' Calls and communications with a QI consultant and other First STEPS personnel.

Prior to the first learning session of each phase, practices identified their multi-disciplinary teams consisting of a physician champion and nursing, clinical support, and administrative staff. During this preparation stage, practices met with their assigned Quality Improvement (QI) coach, completed a pre-learning session Office System Survey, began to develop their Aim statements, and participated in baseline data collection to support evaluation. Practices that participated fully in any of the First STEPS phases were eligible to earn Maintenance of Certification (MOC) credit at no charge to the providers. In

ⁱ Securing a Healthy Future: The Commonwealth Fund State Scorecard on Child Health System Performance, 2011

ⁱⁱ For more information about CHIP, visit <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Childrens-Health-Insurance-Program-CHIP/Childrens-Health-Insurance-Program-CHIP.html>

ⁱⁱⁱ These 28 practices collectively serve more than 30,000 children enrolled in MaineCare which is equivalent to approximately one-quarter of the total number of MaineCare-eligible children in the state.

^{iv} *First STEPS Charter Document 2012* available at <http://www.mainequalitycounts.org/page/2-700/mechip-documents>.

order to meet MOC requirements, practices submitted monthly data related to well-defined measures and participated in analysis of practice-level and state-level results throughout the duration of the learning collaborative. First STEPS also required that practices share data generated in support of their practice improvement changes and PDSA cycles, and participate in data collection for the First STEPS evaluation plan.

METHODS

First STEPS follows key principles of the IHI learning collaborative model including team formation, aim-setting, selecting and testing changes, and using measures of change in rapid Plan-Do-Study-Act (PDSA) cycles.⁴ Emphasizing quantitative measures of change depends on measure selection and data collection and reporting throughout the planning, implementation, and evaluation stages, including:

- National or state benchmarks and baseline rates for overall project target-setting
- Practice-level baseline rates for development of QI Aim statements
- Periodic assessments to track progress during rapid PDSA cycles and set/adjust interim goals
- Pre- and post-intervention rates for overall project evaluation

Selecting Quality Measures

The PQMP developed a set of criteria for evaluating measures during the group's periodic reviews of the CHIPRA Core Set. Based on the extent to which each of the existing and proposed measures meet these criteria, the PQMP makes recommendations for adoption, retirement, or revision of measures in the CHIPRA Core Set. The validity and reliability of the measure is evaluated for scientific acceptability, and feasibility of collecting and reporting the measure is determined based on the number of States currently reporting on the measure and the data sources utilized. Additional criteria include the importance of the measure related to the measure topic, such as prevalence or incidence, cost and utilization, and recent performance at the State or health plan level. The ability to improve performance on the measure is also a consideration.⁵ Child health quality measures were selected for each of the three First STEPS phases based on similar criteria, including relevance to the QI topic and project objectives; availability of baseline data; and feasibility of collecting the data from participating practices.^v Alignment with measure sets for state and national initiatives was an additional and important consideration. Based on a review of available immunization measures, feedback from stakeholders, and IHOC's overall objective to test CHIPRA measures, IHOC selected CHIPRA and additional immunization measures for Phase I data collection and reporting, presented in Table 2.

^v As of December 2013, Maine successfully calculated 18 of the 26 CHIPRA Core Set measures for inclusion in one or more of the State of Maine's CHIP Annual Reports to CMS for Federal Fiscal Years 2010, 2011, and 2012. However, due to challenges with calculating the measures using administrative data (i.e., data from claims and eligibility systems), Maine has not yet reported to CMS any of the three CHIPRA Childhood and Adolescent Immunization measures. Despite the inability to calculate accurate rates for the CHIPRA immunization measures on a statewide basis, IHOC included the CHIPRA immunization measures on its list of First STEPS Phase I measures due to stakeholder agreement that the measures are actionable and meaningful and based on their alignment with national quality measurement initiatives including HEDIS and Meaningful Use Stage 2.

Table 2. First STEPS Phase I Immunization Measures	
Childhood Immunization Status	Alignment
<p>The percentage of children who turned 2 years of age during the measurement year and received the following vaccine doses on or before their 2nd birthday:</p> <ul style="list-style-type: none"> ✓ 4 DTaP (diphtheria-tetanus-acellular pertussis) ✓ 3 IPV (inactivated polio vaccine) ✓ 1 MMR (measles-mumps-rubella) ✓ 3 HiB (haemophilus influenzae type B) ✓ 3 Hep B (hepatitis B) ✓ 1 VZV (varicella) ✓ 4 PCV (pneumococcal conjugate vaccine) ✓ 1 Hep A (hepatitis A) ✓ 2 or 3 RV (rotavirus) ✓ 2 Influenza (seasonal flu) 	<p>NCQA/HEDIS (CIS) CHIPRA (CIS) Meaningful Use NQF #0038</p>
Immunizations by 6 Years of Age	Alignment
<p>The percentage of children who turned 6 years of age during the measurement year and received the following vaccine doses on or before their 6th birthday:</p> <ul style="list-style-type: none"> ✓ 2 MMR (measles-mumps-rubella) ✓ 2 VZV (varicella) ✓ 5 DTaP (diphtheria-tetanus-acellular pertussis) ✓ 4 IPV (inactivated polio vaccine) 	<p>IHOC</p>
Immunization Status for Adolescents	Alignment
<p>The percentage of adolescents who turned 13 years of age during the measurement year and received the following vaccine doses on or before their 13th birthday:</p> <ul style="list-style-type: none"> ✓ 1 MCV (meningococcal conjugate vaccine) ✓ 1 Tdap OR 1 Td (tetanus-diphtheria-acellular pertussis booster OR tetanus-diphtheria booster) 	<p>NCQA/HEDIS (IMA) CHIPRA (IMA) NQF #1407</p>
HPV for Female and Male Adolescents	Alignment
<p>The percentage of adolescents who turned 13 years of age and received the following vaccine doses on or between their 9th and 13th birthdays:</p> <ul style="list-style-type: none"> ✓ 3 HPV (human papillomavirus vaccine) 	<p>NCQA/HEDIS (HPV) CHIPRA (HPV) NQF #1959</p>
Influenza Immunization	Alignment
<p>The percentage of children aged 6 months and older seen for a visit between October 1 and March 31 who received an influenza immunization OR who reported previous receipt of an influenza immunization.</p>	<p>AMA-PCPI Meaningful Use NQF #0041 Federal ACO #14</p>
Abbreviations	
AMA-PCPI	American Medical Association-Physician Consortium on Performance Improvement
ACO	Accountable Care Organization
NQF	National Quality Forum
NCQA	National Committee on Quality Assurance
HEDIS	Healthcare Effectiveness Data and Information Set

Selecting the Data Source

One of the most significant planning and implementation challenges for First STEPS Phase I was selecting optimal data sources based on criteria IHOC identified as necessary to support the needs of the quality improvement initiative, namely that a data source must produce reports inclusive of all vaccines in the

First STEPS Phase I measures, for all children regardless of payer, for the correct age ranges, and for specific practices participating in First STEPS. The reports must be generated frequently and consistently, and they must reflect almost real-time changes in rates based on rapid cycle quality improvement. Importantly, the reports must be understandable by practice teams so that they can use them to track their progress. Efforts were also made to select data sources that would place minimal burden on the practice teams (e.g., existing data within an EHR or registry system)^{vi}. Four potential data sources were evaluated based on these criteria, including Electronic Health Record (EHR) systems, administrative (claims and eligibility) data systems, the National Immunization Survey data, and data from the State's Immunization Information System (IIS). A summary of their characteristics is presented in Table 3.

Table 3. Characteristics of Potential Data Sources and Reporting Features					
	Administrative Data	Survey Data	Registry Data from State of Maine's Immunization Information System		
Rates are calculated...	Maine Integrated Health Management System (MIHMS)	Nat'l Immunization Survey (NIS)	AFIX Reports	Existing IIS Reports	IHOC IIS Reports
...based on CHIPRA birth date cut-off and dose counts	Yes	No	No	No	Yes
...for all vaccines in the First STEPS immunization measures	Yes	No	No	No	Yes
...accurately and consistently for a specific provider or practice	No	No	Yes	Yes	Yes
...for all patients in a practice, regardless of payer	No	No	Yes	Yes	Yes
...on demand and in close to real-time for monthly PDSA cycles	No	No	No	Yes	Yes
...that are reflective of QI efforts so that progress can be seen quickly	No	No	No	Yes	Yes

Electronic Health Record (EHR) Systems

While using data from an Electronic Health Record (EHR) system may seem ideal for generating practice-level reports, several barriers existed in leveraging this data for First STEPS Phase I. Although 53% percent of pediatric practices in Maine reported the use of an EHR to some extent⁵, not all practices use EHRs to enter immunization dose data. Even when immunization data exists within the EMR consistently, IHOC learned that not all EMRs can generate reports and for those that do have reporting functions, the associated reports are not designed to analyze the data according to the CHIPRA measure

^{vi} Due to technical challenges in calculating measures consistently and accurately across all the different EHRs employed by First STEPS practices, most of the data collection relied on manual chart review processes. However, the majority of immunization data collected for First STEPS Phase I was derived from the State of Maine's Immunization Information System (IIS).

specifications. The time, effort, and cost required to develop new EHR reports to align with CHIPRA measure specifications is substantial and the effort would need to be replicated for each of the many different EHRs employed by the First STEPS practices. Therefore, IHOC did not pursue the use of EHR data for First STEPS Phase I.

Administrative Data

As with most measures in the CHIPRA Core Set, CHIPRA immunization measures are designed for state Medicaid and CHIP programs to voluntarily report rates to CMS on a statewide, aggregate basis only for the population of children insured by Medicaid or CHIP.⁶ The specifications for the CHIPRA immunization measures reflect this level of reporting and define data analysis methods primarily for use with administrative data (i.e., Medicaid claims and eligibility systems) with a measurement look-back period of one year. Using an administrative data set is beneficial because it typically provides a complete set of data for the Medicaid population and can easily identify the continuous eligibility requirements needed to build the denominator.^{vii} However, the decision to expand the First STEPS target population to all children in Maine regardless of payer appeared to preclude data from one or more claims systems as a viable, reliable source for measure calculation. Depending on claims data alone can depict an incomplete assessment of quality because claims data excludes both the uninsured population as well as services that are prone to inaccurate or incomplete billing processes, such as immunizations.⁶ Indeed, analysis conducted by IHOC in 2012 found that the Maine Integrated Health Management Systems (MIHMS) claims data do not capture a significant portion of immunization doses delivered to MaineCare members, likely due to inconsistent billing practices. Another barrier to using administrative data to calculate CHIPRA immunization measures is the need for complete historical claims data for vaccine doses from previous years. This level of historical data may not always be available or maintained adequately in databases. Patients in the denominator may have received vaccines in previous years that weren't paid for by Medicaid; therefore, these doses will not exist in the Medicaid administrative data set and will not count towards the calculated rate even if the child received all the required doses in time.

First STEPS required a method for collecting and reporting measures at the practice level and for all children regardless of insurer. Furthermore, the frequency of data collection for monthly PDSA cycles was dependent on a quick turnaround time that could not be achieved using data from a claims system. Because of these barriers, IHOC did not pursue administrative data as a source for First STEPS reporting.

National Immunization Survey (NIS)

Sponsored by the Centers for Disease Control and Prevention (CDC) beginning in 1994, the National Immunization Survey (NIS) is used to assess progress towards national immunization goals for children and adolescents based on vaccine schedule recommendations from the Advisory Committee on

^{vii} The CHIPRA Technical Specifications Manual also provides instructions for applying a “hybrid” method for calculating these measures. With the hybrid method, a sample is drawn from the entire eligible population and the numerator is built using either administrative data or evidence from the medical record such as a note indicating the vaccine type and administration date or a certificate of immunization prepared by an authorized health care provider. This method would most likely be used in conjunction with a “chart review” process for individual practices and is not conducive to calculating statewide rates for the entire Medicaid population.

Immunization Practices (ACIP). Established in 1993 under Section 222 of the Public Health Service Act (42 U.S.C. § 217a), the ACIP is comprised of medical and public health experts and consumers who work with professional organizations—including the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), and the American College of Physicians (ACP)—to develop recommendations for childhood, adolescent, and adult vaccine schedules. The ACIP’s recommended schedules are reviewed annually by the Director of the CDC and, once approved, are published as the official CDC immunization recommendations in the Morbidity and Mortality Weekly Report (MMWR).^{viii} The NIS is a telephone survey followed by a mailed survey to immunization providers, with a target population of children between the ages of 19 and 35 months living in the United States at the time of the survey. The NIS data are helpful when looking at state and national trends and when looking at how a State is doing in comparison to other States. The NIS data are also used by local public health departments to identify pockets of low immunization rates which can inform decisions about where to target outreach programs. IHOC used NIS data to initially identify immunizations as an area in need of improvement in Maine. However, the NIS data are not useful for practice-level reporting or quality improvement because the rates are not specific to individual patients, providers, or practices, and because the results are generated on an annual basis only.

State of Maine’s Immunization Information System (IIS)—ImmPact

The national Childhood Immunization Initiative was formed in the wake of the United States measles epidemic of 1989 to 1991 which claimed the lives of 130 children and saw more than 55,000 documented cases of measles among our children. The initiative set a goal to increase childhood immunization status to 90% of the population, and comprised a five-part strategy to achieve this goal by 1996. Components of this multi-pronged approach included raising vaccine awareness among health professionals and the public, increasing community participation, building private-public partnerships, and increased monitoring of coverage levels and surveillance of disease.⁷ One example of early work to address these goals was the development of automated Immunization Information Systems (IIS). Funded initially through the Robert Wood Johnson Foundation, a requirement of these IIS grant projects was to engage the full participation of public and private health care communities in development and implementation of the IIS.⁷ Today, IIS is defined by the CDC as “confidential, computerized, population-based systems that collect and consolidate vaccination data from vaccination providers and provide important tools for designing and sustaining effective immunization strategies.”⁸ The IIS allows providers to screen a child’s immunization status at every visit, create parent reminder notices for upcoming vaccinations and recall notices for overdue vaccinations, and generate population-based immunization coverage rates (ICR).⁷ In addition to these functions, most IIS can also be used for vaccine inventory management, recording of product data, and reporting of adverse events.⁹

Recognizing the benefits of IIS utilization in achieving optimal immunization status for children living in the US, a *Healthy People 2020* objective is that 95% of children less than 6 years of age will have immunization records in a fully operational, population-based IIS by 2020.⁸ A major approach to reaching this goal is promoting the benefits of the IIS to providers to increase participation and

^{viii} <http://www.cdc.gov/vaccines/acip/recs/index.html>

therefore increase the number of children whose immunization records exist within an IIS.⁸ Health plans have also recognized the value of IIS in attaining optimal immunization status for their covered population. For example, a cost-benefit analysis of employing an IIS within a managed care plan with 480,000 members resulted in an \$8.06 return on every \$1.00 spent on immunization quality measurement activities utilizing IIS data in place of chart review or claims data.⁹ In addition, measures calculated using IIS data showed significant increases in demonstrated childhood and adolescent immunization rates when compared to rates calculated with claims data only. For example, the HEDIS childhood immunization combination rate was 35.09% based on claims data and 88.80% based on IIS data; the HEDIS adolescent immunization combination rate was 2.82% based on claims data and 74.62% based on IIS data. This analysis also found that providers must perceive data as accurate and reliable before buying in to the use of data for practice improvement and accountability initiatives. Furthermore, the use of IIS data to calculate immunization quality measures helps ameliorate concerns about data; for example, that claims data are not reflective of actual rates or quality of care.⁹

Based on local provider feedback that is consistent with national perspectives on the topic, IHOC learned that the IIS operated by the Maine CDC, known as ImmPact, is considered by many providers to be the gold standard of dose-level immunization data for children in Maine. A major benefit of ImmPact as a data source is its connectivity with most immunization providers including schools, hospitals, emergency departments, and physician offices. A child's immunization status in ImmPact reflects doses administered and recorded by any provider who enters per-patient doses in ImmPact. While vaccine doses are not recorded in ImmPact for every child, the Maine Immunization Program (MIP) estimates that 70% of children statewide have dose-level data recorded in ImmPact. Therefore, the information viewed in ImmPact is a more complete record of the child's immunization status than, for example, a practice-based Electronic Health Record (EHR) which typically only includes doses administered at that practice.

When considering ImmPact as a source of data for First STEPS, IHOC discovered some limitations despite its benefits. While most child-serving practices use ImmPact to enter patient-level dose data and all Maine practices manage their vaccine inventory through ImmPact, double data entry is still considered a major burden on providers and in some cases, a barrier to full participation (i.e., using the IIS to enter patient-level dose data as opposed to only using the required vaccine inventory management for state-supplied vaccines). Many child-serving practices in Maine enter vaccine doses exclusively in ImmPact and not in their own EHR, thereby reducing the burden of double-data entry while still having access to the child's immunization record. However, some practices enter doses in both their EHR and ImmPact which is not only cumbersome for providers but also promotes human error and can result in incomplete, inaccurate, or untimely record-keeping in one or both systems. Some health systems and practices have elected to not enter patient-level dose data into ImmPact until the double entry issue is resolved, which means that doses administered for patients at those practices are not currently captured in ImmPact^{ix}. IHOC also learned through its work with practices that failure to properly manage

^{ix} The Maine Immunization Program is currently working with health systems on technical solutions that will allow ImmPact to receive immunization data directly from practice EHRs, thereby removing the barrier of double entry

a provider's patient list in ImmPact leads to inaccurate reports since patients that are inactive at the practice are still included in the rates. In order to improve the quality of their data, several First STEPS practices engaged in major efforts to identify and remove inactive patients from their ImmPact lists. These efforts are time and resource intensive and in some cases required hiring temporary staff to complete the task.

Despite the challenges described above, IHOC recognized ImmPact as a viable source of quality data for First STEPS Phase I reporting. Selecting ImmPact as a data source also aligned with the good immunization practices promoted by First STEPS Phase I and aligned with national initiatives regarding increasing the use of IIS to improve coordinated care across immunization providers; reduce both missed opportunities and duplicated vaccines; and use data to support immunization surveillance and quality improvement efforts to raise immunization rates.

The Maine Immunization Program's AFIX Reports

The Comprehensive Clinical Assessment Software Application (CoCASA), sponsored by the US Centers for Disease Control and Prevention, is used to assess immunization practices within a clinic, private practice, or any other environment where immunizations are provided. The CoCASA software is designed for use in conjunction with the US CDC's AFIX (Assess, Feedback, Incentives, eXchange) strategy employed by public health and disease prevention programs across the country. The Maine CDC's Maine Immunization Program (MIP) leverages CoCASA and immunization dose data within ImmPact to support their statewide AFIX program which includes site visits, surveys, and reports. The AFIX assessment is performed on every primary care practice in the state on a two year cycle, and annually for the largest practices. In order to perform these assessments, MIP conducts a manual or electronic process to generate a rate report for each practice. The manual process is utilized for practices that do not use ImmPact to report vaccine dose data for their patients. In these cases, MIP conducts a site visit and records dose data for 100% of patients aged 24-35 months (or a cap of 100 charts, whichever is greater) for analysis via CoCASA. An electronic assessment is conducted for practices that utilize ImmPact to report dose data. In these cases, MIP identifies 100% of the practice's clients aged 24-35 months within ImmPact for analysis via CoCASA. The CoCASA rates do not include "late Up To Date" doses (i.e., doses that are given after the child's 2nd birthday but that are clinically valid according to ACIP-recommended alternate or catch up schedules). The AFIX reports are generated on an annual or biannual basis only and while they do generate rates for all children regardless of payer, they do not include rates for all vaccines in the First STEPS measures. For these reasons, the AFIX reports could not be employed for First STEPS reporting.

ACIP Immunization Coverage Reports (ICR)

The existing Immunization Coverage Reports (ICR) in ImmPact—known as "ACIP" reports—are generated using an analytical tool called the Forecaster which employs a complex algorithm to apply ACIP vaccine recommendations including alternate schedules, catch up schedules, and grace periods. The ICR cannot be used to calculate CHIPRA measures because although CHIPRA measures follow

and increasing the availability of dose data within ImmPact. MIP and a major health system began to pilot this technical solution in December 2013. Results were not available as of the time of the writing of this report.

standard ACIP-recommended vaccine schedules, the CHIPRA specifications employ a simpler dose count and a stricter birthdate cut-off, among other differences.

One example of the variations between CHIPRA and ACIP specifications is the minimum time interval between vaccine doses for multiple-dose series. For example, for IPV (inactivated polio vaccine), ACIP recommends a minimum interval of four weeks between the first and second IPV dose, and a minimum of six months between the 2nd and 3rd dose. The ACIP report counts *only* valid doses based on these time intervals, whereas the CHIPRA specification for IPV reads "At least three IPV vaccinations, with different dates of service on or before the child's second birthday..." Therefore, doses administered fewer than four weeks apart are counted in the rate for the CHIPRA measure but they are not counted in the rate for the ACIP report.

Another variation is seen in how rates are calculated for the rotavirus (RV) vaccine. ACIP recommends a minimum interval of four weeks between RV doses and also recommends that the vaccine not be administered to children older than eight months (32 weeks) of age.^x The CHIPRA specification for RV counts doses that have been administered fewer than four weeks apart as well as doses administered after eight months of age, whereas the ACIP report does not include any of those doses in the numerator of the rate.

One of the most significant differences between these specifications is that—similar to the AFIX reports generated by MIP for practice assessments described previously—CHIPRA uses the child's birthdate as an anchor for the rate and only counts doses that were given before or on the child's 2nd birthday (for Childhood Immunization Status) or 13th birthday (for Immunization Status of Adolescents). In contrast, the ACIP report uses the date of the report as an anchor and counts all clinically-valid, "Late Up To Date" doses in the rate.

Using Data from the IIS to Calculate Practice-level CHIPRA Measures

To meet the ongoing reporting needs of First STEPS Phase I, IHOC leveraged registry data from the State's IIS, ImmPact, to generate timely and useable practice-level reports based on CHIPRA and additional immunization measures. For practices that had been using the IIS for patient-level dose data entry^{xi} for at least one year prior to the start of the initiative (19 of the 22 practices participating in First STEPS Phase I), data from the IIS were analyzed and displayed in run charts. The remaining three practices used a manual chart review process to generate data for analysis and display in run charts.

Prior to the start of Phase I, IHOC investigated existing reporting functions within the IIS as described above, and determined that unique reports would need to be developed in order to calculate rates based on the CHIPRA measure specifications. The existing IIS reports calculate rates based on the American College of Immunization Practices' (ACIP) recommended vaccine schedules and include provisions for due-date grace periods and alternate or catch up schedules which are not included in the CHIPRA measure specifications. In addition, the CHIPRA immunization measures include additional

^x http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm?s_cid=rr6002a1_e#Tab1

^{xi} In Maine, all practices must use the IIS to order and manage vaccine inventory as part of the Vaccines for Children program, but they are not required to enter patient-level dose data into the IIS.

childhood and adolescent vaccines and also specify a simpler dose count when determining vaccine doses to be included in the rate.

IHOC partnered with the Maine Immunization Program (MIP) and the Office of Information Technology, both at the State of Maine's Department of Health and Human Services, to make technical changes to the IIS that would allow practices to produce on-demand reports based on CHIPRA measure specifications. These efforts involved the development and testing of complex technical changes to the IIS itself as well as frequent data analysis and measure specification review to ensure that technical changes met IHOC immunization measure requirements. The Muskie School of Public Service at the University of Southern Maine provided the data analysis and quality measure expertise for this work with technical support and project management from IHOC staff at the Office of Information Technology.

Making technical changes to the IIS proved more complicated than originally anticipated and depended on specialized skill sets high in demand and not always readily available. Delays in completing the technical changes necessitated a work-around reporting process to support the needs of First STEPS Phase I. This manually-driven process involved extracting dose data from the IIS for each participating practice, running the data through customized analytical reports, and compiling the aggregate data into run charts that were easy for practices to read and understand. These run charts were produced by IHOC staff at the Muskie School and the Office of Information Technology in collaboration with the Maine Immunization Program (the owner of the IIS) on a monthly basis for eight months during the learning initiative and then quarterly to support ongoing QI for another two years until technical changes to the IIS were completed and made available to providers in June 2013.

While the manual reports successfully met the data needs for First STEPS Phase I, IHOC faced challenges when transitioning the reporting process to practices, primarily related to messaging to providers. For example, rates in the manual reports did not match perfectly with rates in the ImmPact reports for a variety of technical reasons explained in detail in the Frequently Asked Questions document (Appendix A). This was confusing to practices and raised new concerns about the quality of the data which required extensive outreach to overcome. Providers also needed training on how to generate the IHOC Quick Pick reports independently; this education is currently ongoing. As a first step, IHOC partnered with MIP to develop an instructional document (Appendix B) which has been distributed to providers through multiple venues. To build on face-to-face relationship-building promoted through First STEPS, members of the IHOC team will co-present with MIP technical staff on the IHOC Quick Picks during regional provider trainings occurring the summer of 2014.

Despite challenges, generating manual reports provided unexpected opportunities to fine-tune the IHOC Quick Pick technical changes prior to their completion, based on lessons learned about the complexities of calculating CHIPRA measures using registry data. In addition, during this time period, CMS published changes to the CHIPRA childhood and adolescent immunization measures which were incorporated into the IHOC Quick Pick technical changes prior to their release into production.

IHOC Quick Pick Reports

Immunization measures included in First STEPS Phase I can now be generated by providers using the “IHOC Quick Pick” buttons found on the ImmPact Immunization Coverage Report (ICR) Criteria Page. The IHOC Quick Picks generate reports based on the CHIPRA childhood and adolescent immunizations measures plus an additional measure for children at 6 years of age. One of two types of reports is generated by the IHOC Quick Picks, based on user selection:

1. **Immunization Coverage Rates:** An aggregate report for the selected practice that includes denominator, numerator, and rate for each of the single vaccines as well as denominator, numerator, and combination rate for all vaccines included in the measure.
2. **Patient Listing:** A client level report for the corresponding Immunization Coverage Rates report for the selected practice, which shows a list of clients who counted for (Up To Date) the combination rate for all vaccines in the selected IHOC Quick Pick as well as a list of clients who counted against (not Up To Date) that combination rate, with the overdue vaccine specified.

VACCINES INCLUDED	NAME OF IMMUNIZATION REPORT USING DATA FROM IMPACT				
	AFIX MIP	ACIP ImmPact	IHOC At Age 2 ImmPact	IHOC At Age 6 ImmPact	IHOC At Age 13 ImmPact
DTaP	✓	✓	✓	✓	
Polio	✓	✓	✓	✓	
MMR	✓	✓	✓	✓	
Hib	✓	✓	✓		
HepB	✓	✓	✓		
Varicella	✓	✓	✓	✓	
Pneumococcal	✓	✓	✓		
HepA			✓		
RV			✓		
Flu			✓		
Meningococcal					✓
Tdap/Td					✓
HPV					✓

RESULTS

The First STEPS Phase I Evaluation Report produced by the Muskie School presented findings related to this work including those described in this report.³ Analysis of pre- and post-intervention First STEPS Phase I Office System Surveys showed an increase among participating practices in the use of 22 out of 31 recommended immunization-related office procedures. Statistically significant changes included

using recall and reminder systems for children due or past due for vaccines; reviewing and updating dose data in the IIS; and routinely reviewing practice vaccination rates. Interviews with practices revealed that two of the most effective office procedures for improving immunization rates were using data in the IIS to review and update patient records, and having data to track progress on a monthly basis. In addition to office system changes, significant increases in immunization rates were achieved. Overall immunization rates among practices participating in First STEPS Phase I increased from baseline by 5.1 percentage points at 12 months after project initiation, surpassing the Phase I goal to improve immunization rates by 4 percentage points within one year of project initiation. Ongoing increases were found several months after the end of Phase I as practices continued the QI work and as office system changes were fully adopted. At 15 months after project initiation, overall immunization rates among participating practices increased from baseline by 7.1 percentage points.

DISCUSSION

A qualitative analysis of immunization programs with sustained high immunization coverage rates between 2000 and 2005, conducted for the National Center for Immunization and Respiratory Diseases, found that the most frequently-cited aspects of effective initiatives were relationship-building, partnership development, and implementation and use of IIS. Respondents from both participant groups—internal partners (e.g., immunization program staff) and external partners (e.g., healthcare providers)—touted the benefits of IIS utilization for improving immunization rates beyond simple data collection. Both groups noted that education and communication efforts aimed at healthcare providers were especially important, as was infrastructure development related to promotion of medical home principles. Identifying and promoting a shared goal of healthy children was key to achieving increased and sustained immunization rates. External partners stated that providers must see the potential value to them when engaging in quality improvement partnerships, especially those that require additional actions or effort on their part. Finally, the use of data—particular data from an IIS—was acknowledged by both groups as an integral aspect of sustained high immunization coverage rates.¹⁰

Similar lessons were learned during IHOC regarding the importance of cross-organizational partnerships and the use of the State's IIS. Through First STEPS planning and implementation, important public-private partnerships were established that proved critical to the success of the project by identifying shared goals, developing common messaging, promoting the use of data and a standard set of quality measures, and helping to overcome data collection and reporting challenges. Partnerships with groups such as the Maine Immunization Coalition and the Maine Vaccine Board resulted in common messaging and shared goals so that the quality improvement work could continue past the end of the grant. In addition, the Maine Health Management Coalition adopted the CHIPRA immunization measures for their Pathways to Excellence (PTE) public reporting program, thereby enhancing alignment of efforts and creating additional emphasis on periodic, practice-level reporting for these measures.

The collaborative leadership provided by the Medical Director of Quality Counts for Kids was highly effective in emphasizing shared goals to promote sustainable results. In fact, the Medical Director was recognized by the US CDC as the 2014 Maine Childhood Immunization Champion for her work on First STEPS. Furthermore, IHOC's approach was aligned with the U.S. Centers for Disease Control and

Prevention's (CDC) Assessment, Feedback, Incentives, and eXchange (AFIX)^{xii} QI program which is employed by MIP, the owner of the State's IIS. This alignment helped gain internal support for the technical changes being made to the IIS through IHOC funds despite scarce human resources, and promoted dissemination of the new reporting functions to all users of the IIS regardless of their participation in First STEPS, and which is expected to continue as part of MIP's daily operations.

Maine faced important challenges while implementing practice-level CHIPRA and other immunization measures for First STEPS Phase I. Making technical changes to the IIS proved more complicated than originally anticipated and required a specialized skill set that was not always readily available. Issues with data quality and differences among available rate reports created confusion and inhibited provider trust in the data, which in turn made it more difficult to promote the value of using data for QI initiatives. Finding effective ways to explain the differences in quality measures and how to use different rate reports was challenging but vital when addressing these issues. IHOC identified the following lessons learned regarding the importance of selecting quality measures and data sources:

- Measures cannot be meaningfully operationalized without reliable methods for collecting, calculating, and reporting the data that are not unduly burdensome to providers
- Increasing provider use of a fully-operational Immunization Information System is an effective approach to data-driven QI aimed at increasing immunization coverage rates
- Providers must trust the data in order to buy in to utilizing data for QI

To support the use of quality measures and data, IHOC emphasizes the importance of data support and clear messaging to providers:

- Differences in measure specifications and rate calculations
- How and when to use each type of data or quality measure
- How to read, interpret, and use practice-level reports for QI efforts

Despite challenges, important achievements include completing technical changes to the IIS reporting functions; improving patient-level dose data entry and management by participating providers; promoting the use of standardized, practice-level reports for QI activities; and improving office system procedures related to raising immunization rates for children and adolescents. IHOC also used feedback from its stakeholders to identify questions and develop messaging in response to the needs of providers related to long-term adoption of office system changes and the use of data for ongoing quality improvement.

Finally, IHOC's experience in leveraging IIS data to calculate CHIPRA measures at the practice-level in a cross-organizational quality improvement effort to improve immunization rates resulted in lessons learned about cross-organizational collaboration:

- Bringing unassociated practices together in a joint learning collaborative fosters statewide momentum towards attaining common goals and creates potential for greater overall results (i.e., increasing provider participation in the State's IIS improves everyone's data).
- Collaborative leadership promotes effective cross-organizational partnerships which result in common messaging and alignment of efforts towards sustained improvements (i.e., PTE adoption of CHIPRA measures).

^{xii} <http://www.cdc.gov/vaccines/programs/afix/index.html>

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APPENDIX A

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

Why do we need the IHOC reports? Why can't we use the reports we can print out of ImmPact ourselves?

There are a number of important differences between the immunization rates in the IHOC reports and the rates displayed on the ImmPact Home Page and in the Immunization Coverage Reports. While it seems like these rates should align—especially when they are measuring the same vaccines—recognizing why they are different will help in selecting the right report for the right purpose and understanding what the different rates are saying.

The following Questions & Answers explain key features of the IHOC reports and how they may differ from what is available in ImmPact now. It's also important to note that changes to ImmPact are in process which will allow practices to generate reports similar to the IHOC reports. When those changes become available, providers will be notified by IHOC and the Maine Immunization Program.

Which Patients are Being Measured?

For the Two Year Old measures, the IHOC reports use ImmPact data to identify children in your panel who turned two years old during the measurement year. This is known as the 12 month cohort of two year olds. The same process is used to identify the 12 month cohort for 6 year olds and 13 year olds, depending on the measures and reports being generated. The measurement year is essentially the 12 months prior to the "As Of" date of the report. The "As Of" date is the day that the data is actually pulled from ImmPact.

To generate the IHOC reports, the 12 month cohort of, for example, two year olds is identified and rates are calculated using all of the doses that have been entered into ImmPact for these specific children by the "As Of" date. The rates include doses that were entered retroactively (historical data) as well as doses that were entered by other providers. Unlike rates currently calculated in ImmPact, they do not include doses given after the 2nd birthday (more on this later).

Example A:

- An IHOC report is generated with an "As Of" date of September 15th, 2012.
- The 12 month cohort of two year olds includes all the children in the panel who were born between September 16th, 2009 and September 15th, 2010. These children had their 2nd birthday between September 16th, 2011 and September 15th, 2012.
- The rates are calculated based on doses in ImmPact that were given to these children from birth all the way up to the 2nd birthday.
- In order to include all the doses that were given by September 15th, 2012, the data for the report is extracted from ImmPact about two weeks after the "As Of" date (in this case, September 15th). This wait period gives practices some additional time to get their doses entered into ImmPact.

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

If an IHOC report is generated for the same practice the following month, the 12 month cohort of two year olds will *drop* the children who turned 2 during the first month of the previous report, and *add* those who turned 2 during the month following the last month of the previous report.

Example B:

- An IHOC report is generated with an “As Of” date of October 15th, 2012.
- The 12 month cohort of two year olds includes all the children in the panel who were born between October 16th, 2009 and October 15th, 2010. These children had their 2nd birthday between October 16th, 2011 and October 15th, 2012.
- The rates are calculated based on doses in ImmPact that were given to these children from birth all the way up to the 2nd birthday.
- In order to include all the doses that were given by October 15th, 2012, the data for the report is extracted from ImmPact about two weeks after the “As Of” date (in this case, October 15th). This wait period gives practices some additional time to get their doses entered into ImmPact.
-

For practices who receive periodic reports from IHOC (monthly, quarterly, etc.), the series of rates presented in the reports give a “rolling rate” that can be helpful in tracking change over time. However, each IHOC report can also be viewed as a stand-alone snapshot in time—a picture of how your practice is doing *in general* regarding immunization rates for your 2 year old patients.

What does “Late Up To Date” mean? Why aren’t they counted in the IHOC reports?

The ImmPact Home Page calculates your practice’s overall immunization rates by including clinically valid “Late Up To Date” doses. These are doses that are considered clinically valid because they were given according to the frequency and interval rules of a number of acceptable vaccine schedules, including catch-up schedules. This rate reflects the *clinical* Up To Date status of your patient panel overall, but does not provide information about how many of the doses were given *on time* versus those that were given on a catch-up or alternate schedule.

In contrast, the IHOC reports follow the CHIPRA measure specifications for childhood and adolescent vaccines which are based on the recommended vaccine schedules for 0 to 6 year olds and 7 to 18 year olds. The CHIPRA measure does not accommodate for alternate or catch-up schedules, and so Late Up To Date doses are not counted in the rates. This means that any doses given after the 2nd birthday, 6th birthday, or 13th birthday (depending on the report) will not be counted in the rate even if they were *clinically* valid. So, the IHOC rates reflect the *on time* Up To Date status of your patient panel overall, which may differ from the *clinically* Up To Date status of the same patient panel.

So, it is not uncommon for your IHOC rates to look different than the rates you see on the ImmPact Home Page. The difference between these two rates could be significant for practices that have been doing a lot of recent catch-up work. In these cases, you will see improvement reflected in your ImmPact Home Page rates sooner than you will in your IHOC rates.

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

Why does it take so long to see our rates go up in the IHOC reports? Our ImmPact rates are great!

Seeing how the rolling rate is generated can help explain why it takes a while to see the rates improve in the IHOC reports, despite all the catch-up work and data entry you may be engaging in. The rolling rate in IHOC monthly reports is measuring the same group of children each time except for the first month and last month. This means that the biggest possible rate increase in one month's time is 8%, which could only be achieved if the month that is dropped off had an Up To Date rate of 0% and the new month had an Up To Date rate of 100% (highly unlikely). Therefore, even small improvements in these rolling rates should be viewed as significant. However, you may see a faster and more dramatic change in rates when running reports in ImmPact which include clinically valid "Late Up To Date" doses in the rate.

The graphs below illustrate that for three consecutive *monthly* IHOC reports, the majority of the rolling rate is accounted for by the same individuals. For three consecutive *quarterly* IHOC reports, half of the rolling rate is accounted for by the same individuals.

Three Monthly IHOC Reports (December, January, February)

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN		
		MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	

Three Quarterly IHOC Reports (December, March, June)

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC						
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR			
						JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

Why *doesn't* CHIPRA count Late Up To Date doses?

This is a complicated question and is beyond IHOC's ability to answer fully, but providing some background information may help. The Maine Immunization Program (under Maine's Center for Disease Control and Prevention) is required to report immunization rates in a certain way to the US CDC. The US CDC is concerned with the clinical immunization status of a population so that they can identify areas that are under-protected as well as areas that have high rates of protection. Understandably, the Maine CDC also uses this information to inform its outreach and raising rates activities. ImmPact (as with other state immunization registries) has been developed to meet those data requirements and program needs, which is why it is important for the reports to capture *clinically valid* Late Up To Date doses. The CHIPRA measures, on the other hand, are quality measures adopted by the Centers for Medicare and Medicaid Services (CMS) which CMS has asked states to report on annually. The CHIPRA immunization measure for childhood vaccines also aligns with meaningful use (NQF #0038) and HEDIS immunization measures.

ImmPact and IHOC both employ the US CDC's software program—the Comprehensive Clinic Assessment Software Application (CoCASA)—which is designed to take dose data imported from a registry (like ImmPact) and calculate rates based on a variety of complex algorithms that are selected according to the needs of the user. For example, the user can select “Apply ACIP Recommendations” to create a report that identifies valid doses according to recommended standard, catch-up, and alternate schedules from the Advisory Committee on Immunization Practices (ACIP). If the user does not select “Apply ACIP Recommendations,” then every dose is considered valid and total dose count is used to determine Up To Date status. The CHIPRA measures were specified so that they could be calculated using claims data rather than data from a registry system (like ImmPact). The level of complexity that claims-based calculations can achieve in terms of identifying valid doses for vaccines is somewhat lower than what can be achieved using software programs and electronic calculation. These differences mean that although similar vaccines are being measured for similar populations, the resulting rates will not be identical.

The table below compares the methodology and specifications of common immunization reports.

Name of Report	Nat'l Immunization Survey (NIS)	ImmPact Home Graph	CoCASA (ME CDC)	CoCASA/IHOC (First STEPS & PTE)
Level of Data	Statewide	ImmPact Provider	ImmPact Provider	Practice
Rate Methodology	Lenient	Most Lenient	Stringent	Most Stringent
Includes Late Up to Date Doses	YES	YES	NO	NO
Includes Additional Recommended Vaccines	NO	NO	NO	YES

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

Can we use the IHOC report for reminder/recall activities?

While the CHIPRA measures are often used to give an overall picture of how states are doing over time, the *on time* Up To Date rate they reflect can also be useful in setting improvement targets at a statewide level and at the practice level. Having a sense of the *on time* rate can help practices pin point opportunities for improvement that will raise their overall Up To Date rates. However, it is important to understand that the IHOC reports are *not* ideal for reminder/recall activities that require identification of specific children who are Up To Date, Coming Due, or Overdue for vaccines, because:

- The IHOC reports present an aggregate rate for the practice and do not identify individual patients
- The IHOC reports do not include clinically valid “Late Up To Date” doses

Instead, practices should use the Patient List that is generated through the ImmPact Immunization Coverage Report to identify individuals who are coming due (or who are overdue) for vaccines. For identifying a child’s immunization status at the time of a visit, the Up-To-Date status on the ImmPact client page should be used.

IHOC Immunization Reports

Frequently Asked Questions—December 14, 2012

ROTAVIRUS

For a rotavirus dose to be counted as valid and included in the rate for this measure, the dose had to be given after 42 days of age and before 32 weeks of age. Doses given outside of that range are not included in the rate.

Because rotavirus is given before 32 weeks of age, the rate is based on doses given between 16 and 24 months ago, not on doses given now. Catch-up work will be reflected in the IHOC rates, over time.

Practices can choose to give the 3-dose series vaccine or the 2-dose series vaccine for rotavirus. When we surveyed practices in First STEPS, all had used the 3 dose series 2 years ago so the current reports base their calculations on the 3 dose series. In the spring of 2010, the 3-dose series vaccine was recalled for several months and rates may have been skewed for practices that had to switch to the 2-dose series for a few months. As we move farther out from that recall period, this effect on rates will diminish.

Some Practices have switched to the 2-dose series due to the Universal Vaccines for Children law of January 2012. Remember that the IHOC reports that have been generated so far have not measured the cohort of children that will be affected by a switch in January 2012, because they haven't yet turned two years old. IHOC will continue to monitor the use of the two-dose series and will adjust the calculations accordingly, for future reports.

HEP A

For a child to be counted as Up To Date in the IHOC rate for HepA, the first dose must be given after 1 year of age and the second dose must be given six months after the first dose. Remember, though, that both doses must be given by the 2nd birthday in order to be included in the rate. Some practices have not been routinely giving HepA until recently, and so doses are commonly given after the 2nd birthday for this particular vaccine. As catch-up work continues, these rates should improve over time.

HPV for Girls and Boys

For a child to be counted as Up To Date in the IHOC rate for HPV, all three doses must have been given by the 13th birthday. Until recently, it was not possible to calculate separate rates for both boys and girls. The IHOC reports are able to do that, but because HPV for Boys has not yet been put into practice consistently, low rates are not unexpected for now. Also, it was very difficult to establish a target rate for boys since little data exists as of yet. Therefore, the IHOC report identifies a rate for girls and a rate for boys, but the rate for boys is not included in Good, Better, Best scoring for Pathways to Excellence. As practices engage in catch-up for HPV, rates for both boys and girls will improve over time, and targets may be re-assessed.

APPENDIX B

Immunization Rates Generation Using ImmPact

Immunization measures included on the Maine Improving Health Outcomes for Children (IHOC) Master List of Pediatric Measures can be generated using the “IHOC Quick Pick” feature found on the ImmPact Immunization Coverage Report Criteria Page. The IHOC Quick Picks generate reports based on the CHIPRA¹ childhood and adolescent immunizations measures plus an additional IHOC measure for children at 6 years of age. ImmPact users can also run an immunization report to capture their influenza vaccine rates for children ages 6 months and older, which aligns with the CMS Accountable Care Organization (ACO) measure. The reports produced using these Quick Pick features may be especially useful to practices engaging in “raising rates” quality improvement efforts.

The table below describes these immunization measures. Details about the following topics are presented in the remainder of this document:

- Comparison of IHOC Quick Picks with ACIP Quick Picks
- How to use the IHOC Quick Picks to generate corresponding reports
- How the IHOC Quick Pick reports compare with previous reports provided to practices by IHOC

Measure Name & Description ²	Alignment
Childhood Immunization Status The percentage of children who turned 2 years of age during the measurement year and received the following vaccine doses on or before their 2nd birthday: <ul style="list-style-type: none"> • 4 DTaP (diphtheria-tetanus-acellular pertussis), • 3 IPV (inactivated polio vaccine) • 1 MMR (measles-mumps- rubella) • 3 Hib (Haemophilus influenzae type B) • 3 Hep B (hepatitis B) • 1 VZV (varicella) • 4 PCV (pneumococcal conjugate vaccine) • 1 Hep A³ (hepatitis A) • 2 or 3 RV⁴ (rotavirus) • 2 Influenza (seasonal flu) 	NCQA/HEDIS (CIS) CHIPRA (CIS) Meaningful Use NQF #0038

¹ Improving Health Outcomes for Children (IHOC) is a five-year child health quality improvement project paid for by a grant from the Centers for Medicare and Medicaid Services (CMS) through Section 401(d) of the Child Health Insurance Program Reauthorization Act (CHIPRA) of 2009. Maine’s Department of Health and Human Services’ Office of MaineCare was awarded this grant in February 2010, in partnership with the Maine Center for Disease Control and Prevention, the Muskie School of Public Service at the University of Southern Maine, the Department of Vermont Health Access (Vermont’s Medicaid program), and the University of Vermont. The CHIPRA Quality Demonstration Grant Program includes a focus on using quality measures to improve child health care. In 2011, CMS released the Initial Core Set of Pediatric Quality Measures for voluntary use by State Medicaid and CHIP programs, including immunization measures for children and adolescents. In Maine, IHOC expanded on the CHIPRA Core Set and included an immunization measure for six year olds in the Maine IHOC Master List of Pediatric Measures.

² All the measures in the table below calculate a rate for each vaccine and a combination rate (if applicable).

³ CHIPRA and Stage 1 Meaningful Use (2011-2013) both required 2 Hep A doses. CHIPRA 2013 and Stage 2 Meaningful Use (effective 2014) now both require only 1 Hep A dose.

⁴ “2 or 3 RV” can be 2 doses of 2-dose RV OR 1 dose of 2-dose RV plus 2 doses of 3-dose RV OR 3 doses of 3-dose RV.

Immunization Rates Generation Using ImmPact

Immunizations by 6 Years of Age: The percentage of children who turned 6 years of age during the measurement year and received the following vaccine doses on or before their 6th birthday: <ul style="list-style-type: none"> • 2 MMR (measles-mumps-rubella) • 2 VZV (varicella) • 5 DTaP (diphtheria-tetanus-acellular pertussis) • 4 IPV (inactivated polio vaccine)⁵ 	IHOC
Immunization Status for Adolescents: The percentage of adolescents who turned 13 years of age during the measurement year and received the following vaccine doses on or before their 13th birthday: <ul style="list-style-type: none"> • 1 MCV (meningococcal conjugate vaccine) • 1 Tdap (tetanus-diphtheria-acellular pertussis booster) OR 1 Td (tetanus-diphtheria booster) 	NCQA/HEDIS (IMA) CHIPRA (IMA) NQF #1407
HPV for Female and Male Adolescents: The percentage of adolescents who turned 13 years of age and received the following vaccine doses on or before their 13th birthdays: <ul style="list-style-type: none"> • 3 HPV (human papillomavirus vaccine)⁶ 	NCQA/HEDIS (HPV) CHIPRA (HPV) NQF #1959 (all are females only)
Influenza Immunization: The percentage of children aged 6 months and older seen for a visit between October 1 and March 31 ⁷ who received an influenza immunization OR who reported previous receipt of an influenza immunization.	AMA-PCPI ⁸ Meaningful Use NQF #0041 Federal ACO #14

Generating Immunization Rates Using the IHOC Quick Picks

Each of the four immunization measures shown below (also in the table above) can be calculated using the IHOC Quick Pick functionality on the Immunization Coverage Report Criteria Page. When selected, the IHOC Quick Pick produces a report that displays single vaccine rates as well as combination rates for the corresponding immunization measure:

- Childhood Immunization Status (by Two Years of Age)
- Immunizations by 6 Years of Age
- Immunization Status for Adolescents (by Thirteen Years of Age)
- HPV for Female and Male Adolescents (by Thirteen Years of Age)

It is important to note that influenza vaccine is included in both the **Childhood Immunization Status** measure and the **Influenza Immunization** measure (shown in the table above). However, the **Childhood Immunization**

⁵ ImmPact counts 4 doses of DTaP and 3 doses of IPV as up to date depending on the timing of the vaccine booster.

⁶ Must be at least three doses with different dates of service. HPV Quadrivalent (Gardasil) vaccine administered prior to the 9th birthday cannot be counted. HPV Bivalent (Cervarix) vaccine administered prior to the 10th birthday cannot be counted.

⁷ "Visit between October 1 and March 31" is not a criterion in the ImmPact Immunization Coverage Report. The ImmPact Immunization Coverage Report counts any valid influenza immunization.

⁸ AMA-PCPI = American Medical Association-Physician Consortium on Performance Improvement

Immunization Rates Generation Using ImmPact

Status that corresponds to the Meaningful Use measure only counts influenza vaccines for children by 2 years old, while the CMS ACO **Influenza Immunization** measure counts influenza vaccines for all clients aged 6 months and older, within the age range specified when running that report. Please see “Generating Influenza Immunization Rates through ImmPact Reporting Functionality” on Page 10 of this document for more information about the separate **Influenza Immunization** measure.

Measure Selection and Criteria

The IHOC Quick Picks are displayed as radio buttons on the Immunization Coverage Report Criteria page (see **Figure 3**). When one of the four IHOC radio buttons is clicked, parameters are automatically selected to generate an immunization report based on the criteria of the corresponding immunization measure. These four IHOC immunization measures mimic the “CoCASA” immunization reports that IHOC has been providing to First STEPS and other practices⁹, following the **criteria** below:

- The report includes clients who meet the age criteria as of the 15th of the month prior to the month during which the report is run. For example, a Childhood Immunization Status report that is run on any day between 10/01/2013 and 10/31/2013 will include clients who turned two years of age between 09/15/2012 and 09/15/2013. In other words, this report will include all children who were born between 09/15/2010 and 09/15/2011.
- The report counts vaccines as Up-To-Date (also known as Dose Count Met, or DCM) based on the number of required VALID¹⁰ doses given.
- The report includes only doses given by or on the child’s corresponding birthday (2nd, 6th, or 13th).
- Late-Up-To Date doses are NOT included in the count and DO count against the displayed rate.

Output (Report) Selection

One of two types of output (report) is generated by the IHOC Quick Picks, based on which option is selected on the Immunization Coverage Report Criteria page under “Output Type Options” (see **Figure 3**):

Coverage Rates: An aggregate report for the selected practice.

The aggregate report includes denominator, numerator, and rate for each of the single vaccines as well as denominator, numerator, and combination rate for all vaccines included in the measure.

⁹ Between 2012 and 2014, IHOC generated periodic immunizations reports using ImmPact dose data and the “CoCASA” analytical tool for practices participating in the First STEPS Phase I learning collaborative. These reports were also generated for additional practices in Maine for the purpose of reporting to the Maine Health Management Coalition’s Pathways to Excellence program. For more information on the First STEPS initiative, go to <http://www.mainequalitycounts.org/page/2-922/first-steps-immunizations>. For more information on the Pathways to Excellence immunizations reports, go to <http://www.mehmc.org/providers/pte-resources/pediatric-technical-specifications/>.

¹⁰ The ImmPact Forecasting tool counts VALID doses as the right vaccine, given at the right age, at the right interval.

Immunization Rates Generation Using ImmPact

Patient Listing: A client level report for the corresponding Coverage Rates report for selected practice.

The client level report shows a list of clients who counted for (Up To Date) the combination rate for all vaccines in the selected IHOC Quick Pick as well as a list of clients who counted against (not Up To Date) that combination rate, with the overdue vaccine specified.

Please Note: The children who count against the single or combination vaccine rates in the Coverage Rates report and who appear on the Patient Listing report as being overdue for vaccines are those who did not have their immunizations Up To Date by or on their corresponding birthday (i.e., 2nd, 6th, 13th) based on the age criteria defined in each IHOC Quick Pick. Therefore the Patient List should not be used for Recall/Reminder because children on the list may have received immunizations after their birthday, which means they could be Up To Date *clinically* at the time of the report. Practices who would like to generate a Recall/Reminder list to the corresponding IHOC Quick Picks should use the new IHOC Quick Picks on the Reminder/Recall Request page in ImmPact (see **Figure 1**).

Immunization Rates Generation Using ImmPact

Figure 1. IHOC Quick Picks on Reminder/Recall Request Page in ImmPact

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Org: IHOC TEST CENTER • Site: IHOC 11/ • User: Jin Liao

Reminder/Recall Request

Select the Organization, Sites and/or Lot...

Organization: **IHOC TEST CENTER**

Sites: **IHOC 22**, **IHOC 33** | **Add All >>** | **IHOC 11** | **Add >** | **< Remove** | **<< Remove All**

Association: **Primary or Secondary**

MaineCare: **MaineCare and Non-MaineCare**

Gender: **All Clients**

Enter the Date Criteria ...

☐ Target Date Range: NOTE: If Target Date is blank, today's date will be used.

☐ Birth Date Range

☐ Patient Age

Weeks Since Last Notice

Exclude clients more than

Exclude from

From: [] To: []

From: [] To: []

Month(s) Overdue

☐ Today's Date

☐ Target From Date

Select the Lot # or Vaccine Group(s) ...

☐ Recall by Lot

NOTE: Lot is for use when there is a manufacturer recall.
Other criteria on this page will be ignored, except for the Target Date Range.

☐ Use All Vaccine Groups

☐ Use Vaccine Groups Selected

Adeno
Anthrax
BCG
Cholera
Convax

Add All >> | **Add >** | **< Remove** | **<< Remove All**

☐ ACIP: DTaP-Polio-MMR-Hib-HepB (4-3-1-3-3)

☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella (4-3-1-3-3-1)

☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumococcal (4-3-1-3-3-1-4)

☐ **IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-Flu**

☐ IHOC: At Age 6 - DTaP-Polio-MMR-Varicella

☐ IHOC: At Age 13 - Meningococcal-TdaP/Td

☐ IHOC: At Age 13 - HPV

☐ Use Deferred Status Only

Select the Primary Care Provider ...

Provider (PCP): []

Enter Additional Demographic Criteria ...

City: [] Zip Code: [] County: []

Specify How to Sort the Report Data ...

Sort 1st By: **Last Name** | **Ascending**

Sort 2nd By: **First Name** | **Ascending**

Sort 3rd By: [] | []

Sort 4th By: [] | []

Generate | **Cancel**

Immunization Rates Generation Using ImmPact

Gender Selection

This feature allows users to generate any Immunization Coverage Report based on the gender of the client that is indicated in ImmPact. This function is useful in calculating rates for Human Papillomavirus Vaccine (HPV) for adolescent males and females, according to CHIPRA measure specifications. Using the drop down box (see **Figure 2**), users can select one of three options:

- All Clients
- Female
- Male

Please note that “All Clients” includes female clients, male clients, and those clients with gender unspecified in ImmPact.

Figure 2. Immunization Coverage Report Criteria - Gender Label and Dropdown

The screenshot shows the ImmPact web application interface. The sidebar on the left contains navigation links for Clients, Inventory, Manage Locations, and Manage Operations. The main content area is titled 'Immunization Coverage Report Criteria'. It includes a header with user information: 'Org: IHOC TEST CENTER • Site: IHOC 11/ • User: Jin Liao'. Below this, there are several dropdown menus and input fields for selecting report criteria. A red box highlights the 'Gender' dropdown menu, which is currently set to 'All Clients'. Other criteria include 'Organization(s)' (IHOC TEST CENTER), 'Site(s)' (IHOC 22, IHOC 33), 'Association' (Primary), 'MaineCare' (MaineCare and Non-MaineCare), 'County' (Female), and 'Birth Date Range' (From 11/15/1999 To 11/15/2000). A 'Generate Report' button is located in the top right corner.

Steps for Generating Immunization Reports Using the IHOC Quick Picks

Below are the steps for generating IHOC measure reports with the IHOC Quick Picks feature. The example provided is for the Childhood Immunization Status measure on 12/26/2013 using “IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-RV-Flu.” The selected criteria for this example are marked in the green box of **Figure 3**:

1. Select any **Organization** and **Site** for which you are authorized to run reports.
2. Leave the **Association**, **MaineCare**, **Gender**, and **County** dropdowns as Default.

Last updated 2/25/2014

6 of 15

Immunization Rates Generation Using ImmPact

3. *Please note that you can change these options as needed. (See **Operational Steps for Generating HPV Reports Using the IHOC Quick Pick below**)*
4. Click the IHOC radio button labeled “**IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-RV-Flu**” and the following fields will be automatically filled in to meet the criteria (Figure 1, green boxes):
 - **Birth Date Range From** 11/15/2010 To 11/15/2011 (dose count based on 15th of the prior month)
 - **Immunized As Of** ‘N/A’
5. Select **Output Type** at the bottom of the page (**Coverage Rates** or **Patient Listing**)
6. Click **Generate Report** at the top right corner of the page.
7. Wait until the report is 100% completed.
8. Select either the **.csv** or **.pdf** format to open the report file. A sample Excel (.csv) report is partially displayed below (**Figure 4**).

Immunization Rates Generation Using ImmPact

Figure 3. Immunization Coverage Report Criteria - IHOC Quick Picks

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Org: IHOC TEST CENTER • Site: IHOC 11/ • User: Jin Liao

Immunization Coverage Report Criteria

Organization(s)*: IHOC TEST CENTER

Sites: IHOC 22, IHOC 33

Site(s)*: [Add >] [< Remove]

Association*: Primary

MaineCare*: MaineCare and Non-MaineCare

Gender: All Clients

County: []

Birth Date Range: From* 11/15/2010 To* 11/15/2011

UTD Rule to Apply:

- ☐ CASA Rules (Valid By Age Two)
- ☒ ACIP Schedule (Valid By Schedule)
 - Effective Date: Immunized as of* N/A

Coverage Level:

- ☐ By Vaccine Group
 - Vaccine Groups: DTaP, Polio, MMR, Hib, Hep B, Varicella
 - [Add >] [< Remove]
 - Selected Vaccine Groups: []
- ☐ ACIP: DTaP-Polio-MMR-Hib-HepB (4-3-1-3-3)
- ☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella (4-3-1-3-3-1)
- ☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumococcal (4-3-1-3-3-1-4)
- ☒ IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-RV-Flu
- ☐ IHOC: At Age 6 - DTaP-Polio-MMR-Varicella
- ☐ IHOC: At Age 13 - Meningococcal-Tdap/Td
- ☐ IHOC: At Age 13 - HPV
- ☐ Single antigen required to be up-to-date

Output Type Options:

- ☐ Patient Listing
- ☒ Coverage Rates

Generate Report

Selected Sites: IHOC 11

Immunization Rates Generation Using ImmPact

Figure 4. Sample Excel (.csv) Report of “IHOC At Age 2” Measure

	A	B	C	D	E	F	G	H	I	J
1	Overall Coverage Rate									
2										
3	Organizati Site	Total Clients	Number Dose Count Met	Number Off Schedule	Percent Dose Count Met	Percent Off Schedule	Report Run On	Immunized	Birth Date Start	Birth Date End
4	IHOC TEST IHOC 11	107	11	96	10%	90%	12/26/2013 10:30	N/A	11/15/2010	###
5										
6	Individual Antigen Rate									
7										
8										
9	Organizati Site	Total Clients	Total DCM%	DTP/aP 4	Polio 3	MMR 1	Hib 3	HepB 3	Varicella 1	Pneumonia
10	DCM Clients	107	10%	54	101	80	102	91	77	
11	DCM Percentile		10%	50%	94%	75%	95%	85%	72%	
12										

Legend for Sample Excel (.csv) Report of “IHOC At Age 2” Measure

Please Note that this is a partial view of the Excel report. The actual report includes more columns than this. The actual report includes the following two sections:

- Overall Coverage Rate section from Row 1 to Row 4, including data fields from left to right: Organization, Site, Total Client, Number Dose Count Met, Number Off Schedule, Percent Dose Count Met, Percent Off Schedule, Report Run On, Immunized As Of, Birth Date Start, Birth Date End and Selected Vaccines.
- Individual Antigen Rate section from Row 6 to Row 11, including data fields from left to right: Organization, Site, Total Clients, Total DCM % and Antigen 1 with dose number, Antigen 2 with dose number, Antigen 3 with dose number... (each of the antigens in the selected Vaccines).

DCM—Dose Count Met

Total DCM%—Percentage of children who are up-to-date for all the vaccines (groups) listed in this measure based on the number of valid doses given by the child’s birthdate.

Steps for Generating HPV Reports Using the IHOC Quick Pick

Below are the steps for generating reports for HPV female or male with the IHOC Quick Picks feature. The example is for the HPV for Female Adolescents measure on 12/26/2013 using “IHOC: At Age 13 – HPV.” The selected criteria for this example are marked in the green box of **Figure 5**.

Immunization Rates Generation Using ImmPact

1. Select any **Organization** and **Site** for which you are authorized to run reports.
2. Leave the **Association**, **MaineCare**, and **County** dropdowns as Default.
3. Select "**Female**" from the **Gender** dropdown.
4. Click the IHOC radio button labeled "IHOC: At Age 13 – HPV" and the following fields will be automatically filled in to meet the criteria (Figure 1, green boxes):
 - **Birth Date Range From** 11/15/1999 **To** 11/15/2000 (count based on the 15th of the prior month)
 - **Immunized As Of** 'N/A'
5. Select **Output Type** at the bottom of the page (**Coverage Rates** or **Patient Listing**)
6. Click **Generate Report** at the top right corner of the page.
7. Wait until the report is 100% completed.
8. Select either the **.csv** or **.pdf** format to open the report file.

Immunization Rates Generation Using ImmPact

Figure 5. Immunization Coverage Report Criteria - IHOC HPV Quick Pick

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Org: IHOC TEST CENTER • Site: IHOC 11/ • User: Jin Liao

Immunization Coverage Report Criteria

Organization(s): IHOC TEST CENTER Generate Report

Sites: IHOC 22, IHOC 33 Add > < Remove

Site(s): IHOC 11 Selected Sites

Association: Primary

MaineCare: MaineCare and Non-MaineCare

Gender: Female

County:

Birth Date Range: From: 11/15/1999 To: 11/15/2000

UTD Rule to Apply:

- ☐ CASA Rules (Valid By Age Two)
- ☒ ACIP Schedule (Valid By Schedule)
 - Effective Date: Immunized as of: N/A

Coverage Level:

☐ By Vaccine Group

Vaccine Groups: DTaP, Polio, MMR, Hib, Hep B, Varicella Add > < Remove

☐ ACIP: DTaP-Polio-MMR-Hib-HepB (4-3-1-3-3)

☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella (4-3-1-3-3-1)

☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumococcal (4-3-1-3-3-1-4)

☐ IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-RV-Flu

☐ IHOC: At Age 6 - DTaP-Polio-MMR-Varicella

☐ IHOC: At Age 13 - Meningococcal-TdaP/Td

☒ IHOC: At Age 13 - HPV

☐ Single antigen required to be up-to-date

Output Type Options:

- ☐ Patient Listing
- ☒ Coverage Rates

If you have any questions related to this new functionality, or if you experience issues not listed above, please call the Maine Immunization Program's ImmPact Support Line @ 1-800-906-8754.

Immunization Rates Generation Using ImmPact

Generating Influenza Immunization Rates Using ImmPact Reporting Functionality

Measure Selection and Criteria

The Influenza Immunization measure is one of the CMS ACO measures that were originally meant to be calculated using claims data but practices can generate an estimate of their rates through ImmPact reporting functionality that had been implemented prior to the IHOC Quick Pick functions. Please note that this reporting functionality (vs. IHOC Quick Picks) allows the birth date range of clients to be filled in by the user. Please note that the system limits the user to select clients who were born less than 120 years ago.

Steps for Generating Influenza Immunization Report Using ImmPact Reporting Functionality

Below are the detailed steps for generating Influenza Immunization Rate with the pre-existing ImmPact Reporting Functionality (see **Figure 6**). The example is for Influenza Immunization Report on 12/26/2013.

1. Select any **Organization** and **Site** for which you are authorized to run reports.
2. Leave the **Association**, **MaineCare**, **Gender**, and **County** dropdowns as Default.
Please note that you can change these options as needed.
3. Fill in the **Birth Date Range From** (the birth date of the oldest client in your practice) **To** 06/26/2013.
4. The **Immunized As Of date** defaults to the report run date (*user cannot change*).
5. In the block titled **Coverage Level**: Click the **By Vaccine Group** radio button and select Influenza from **Vaccine Groups** Swap box.
6. Select **Output Type** at the bottom of the page (**Coverage Rates** or **Patient Listing**)
7. Click **Generate Report** at the top right corner of the page.
8. Wait until the report is 100% completed.
9. Select either the **.csv** or **.pdf** format to open the report file.

Immunization Rates Generation Using ImmPact

Figure 6. Immunization Coverage Report Criteria – Influenza

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Org: IHOC TEST CENTER • Site: IHOC 11/ • User: Jin Liao

Immunization Coverage Report Criteria

Organization(s): IHOC TEST CENTER Generate Report

Sites

Site(s)*
IHOC 22
IHOC 33

Add >
< Remove

Selected Sites
IHOC 11

Association* Primary

MaineCare* MaineCare and Non-MaineCare

Gender All Clients

County

Birth Date Range:
From* To* 06/26/2013

UTD Rule to Apply:
☐ CASA Rules (Valid By Age Two)
☒ ACIP Schedule (Valid By Schedule)
 Effective Date: Immunized as of* 12/26/2013

Coverage Level:
☒ By Vaccine Group

Vaccine Groups

MCV4
Td
Tdap
H1N1
Hep A
Rotavirus

Add >
< Remove

Selected Vaccine Groups
Influenza

☐ ACIP: DTaP-Polio-MMR-Hib-HepB (4-3-1-3-3)
☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella (4-3-1-3-3-1)
☐ ACIP: DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumococcal (4-3-1-3-3-1-4)
☐ IHOC: At Age 2 - DTaP-Polio-MMR-Hib-HepB-Varicella-Pneumo-HepA-RV-Flu
☐ IHOC: At Age 6 - DTaP-Polio-MMR-Varicella
☐ IHOC: At Age 13 - Meningococcal-Tdap/Td
☐ IHOC: At Age 13 - HPV
☐ Single antigen required to be up-to-date

Output Type Options:
☐ Patient Listing
☒ Coverage Rates

Navigation Menu:
Clients
 manage client
 last client
Inventory
 manage inventory
 reconcile inventory
 manage cold chain
 cold chain report
 manage orders
 manage transfers
 request transaction sum
 request vaccine usage
Manage Locations
 switch organizations
 switch sites
Manage Operations
 manage clinicians
 manage providers
 manage sites
 provider agreement
Reports - Coverage
 request imm coverage
 check imm rpt status
 request casa extract
 check request status
 (nv) validation report
Reports - R/R
 request reminder
 request callback
 check reminder status
Administration
 change password
 system user manual
Mass Immunization
 new registration
 manage registration
 manage clinics
Data Exchange
 data exchange survey
 job monitor
 des-dec sum rpt
 des-dec detail rpt
 des-dec fix tool

Immunization Rates Generation Using ImmPact

Comparing the IHOC Quick Pick Reports to the ACIP Quick Pick Reports

Vaccines Included in Report	Name of Quick Pick Button						
	ACIP 4-3-1-3-3	ACIP 4-3-1-3-3-1	ACIP 4-3-1-3-3-1-4	IHOC At Age 2	IHOC At Age 6	IHOC At Age 13 (MCV/Tdap/Td)	IHOC At Age 13 (HPV)
DTaP	✓	✓	✓	✓	✓		
Polio	✓	✓	✓	✓	✓		
MMR	✓	✓	✓	✓	✓		
Hib	✓	✓	✓	✓			
HepB	✓	✓	✓	✓			
Varicella		✓	✓	✓	✓		
Pneumococcal			✓	✓			
HepA				✓			
RV				✓			
Flu				✓			
Meningococcal						✓	
Tdap/Td						✓	
HPV							✓

Comparing the IHOC Quick Pick Reports to the IHOC CoCASA Reports

In the CoCASA immunization reports provided to First STEPS practices by IHOC, rates could only be run using either the 2 or 3 dose series of **Rotavirus** and these rates were generally calculated based on the 3-dose series. In contrast, the IHOC Quick Pick report in ImmPact calculates the rate according to the type of Rotavirus vaccine given (i.e., Rotarix or Rotateq). For example, if Rotateq (3-dose series) was administered, three total Rotavirus doses will need to be given to be considered Up To Date (UTD). If Rotarix (2-dose series) were administered, two Rotarix Rotavirus vaccines will need to be given to be considered UTD. In the case where a trade name is not specified:

- 2 unspecified = Dose Count NOT Met
- 1 Rotateq and 1 unspecified = Dose Count NOT Met
- 1 Rotarix and 1 unspecified = Dose Count Met
- 3 unspecified = Dose Count Met

In addition, Rotavirus is included in the combination rate for the IHOC Quick Pick report in ImmPact, but it was not included in the combination rate for the IHOC CoCASA reports due to initial issues with data accuracy for those rates. It was, however, provided to practices as a separate rate in the IHOC CoCASA reports.

Immunization Rates Generation Using ImmPact

Tdap/Td counts either group vaccine Tdap or group vaccine Td. In the IHOC CoCASA reports, only Tdap was counted for the Age 13 measure.

The IHOC CoCASA reports for the Childhood Immunization Status measure included rates for each separate Two Year Old vaccine in one report except for **Influenza vaccine**, which was reported separately for the previous flu season. In contrast, the Childhood Immunization Status report produced by the IHOC Quick Pick in ImmPact does include the **Influenza** rate.

The IHOC CoCASA reports for the Childhood Immunization Status measure provided a **Combination Rate** which included all of the Two Year Old vaccines *except* for Influenza and Rotavirus. In contrast, the **Combination Rate** produced by the IHOC Quick Pick in ImmPact does include **Rotavirus** and **Influenza**, in addition to the other Two Year Old vaccines.