

FORECASTER HANDBOOK

Approved By	Ministry of Health
Forecaster Version	3.0
Revision Date	April 2018

REVISION

Date	Revision Description
April 2018	<ul style="list-style-type: none">• Vaccines mixed with expired diluents will not show as invalid in the forecaster and must be overridden to invalid upon discovery.• Risk Factor added - Special Population – Potential Exposure -Hepatitis A.• Updated Risk Factor documentation request for Special Population – Pregnancy for Tdap in pregnancy.• Influenza only forecasts for children 6 months - 8 years of age.• Varicella interval 4 weeks.• HPV for Grade 6 boys.• HPV for immune compromised males 9-26.• RotaTeq® added to Rotavirus vaccine section.

TABLE OF CONTENTS

REVISION 2

WHAT IS THE FORECASTER?5
 WHAT THE FORECASTER IS NOT5

FORECASTER FUNDAMENTALS..... 5
 FORECASTING NOTES TO BE AWARE OF7

WHAT SCHEDULES WILL I SEE FORECASTED IN PANORAMA?10

HOW DOES THE FORECASTER WORK?10
 HOW DOES THE FORECASTER VALIDATE IMMUNIZATION HISTORY?10
 HOW DOES THE FORECASTER RECOMMEND FUTURE DOSES?11

WHAT INFORMATION DOES THE FORECASTER USE?.....13

TRANSLATING SIM INTO THE PANORAMA FORECASTER RULES.....14

HOW TO READ THE IMMUNIZATION FORECAST15
 WHAT DOSE NUMBER MEANS15
 WHAT DATE MEAN15
 WHAT STATUS MEANS.....16

UNDERSTANDING THE IMMUNIZATION HISTORY16
 NOTES ABOUT DOSE NUMBERS ON THE IMMUNIZATION DETAIL SCREEN17
 NOTES ABOUT STATUS ON THE IMMUNIZATION DETAIL SCREEN18

INVALID DOSES19
 UNDERSTANDING WHY A DOSE IS SHOWN AS INVALID19

IMMUNIZATIONS RECORDED IN SIMS.....20

FORECASTER-RELATED SECTIONS OF THW IMMUNIZATION MODULE21

RISK FACTORS24

INTERVALS29

REFORECASTING29
 HOW IS A CLIENT’S IMMUNIZATION FORECAST KEPT UP TO DATE?29
 WHAT IS REFORECAST ON DEMAND?29
 WHEN SHOULD REFORECAST ON DEMAND BE USED?29

OVERRIDING STATUS.....31
 WHEN SHOULD I USE OVERRIDE STATUS?31

REVISED DOSE.....32
 WHEN SHOULD I USE REVISED DOSE?32

APPENDIX A: GENERAL TERMS AND DEFINITIONS33

APPENDIX B: ANTIGEN-SPECIFIC SCHEDULE DEFINITIONS	35
DIPHTHERIA, TETANUS AND PERTUSSIS.....	35
HIB.....	37
HA.....	39
HB.....	41
HPV-9.....	45
INFLUENZA	46
MEN-B	46
MEN-C-ACYW-135.....	48
MEN-C-C.....	49
MMR.....	52
NOTE: For MMRV, please refer to MMR and VARICELLA pages.	
PNEU-C-13	52
PNEU-P-23	55
POLIO	56
RABIES.....	58
ROT-1 AND ROT-5.....	59
VARICELLA.....	61
APPENDIX C: IMMUNIZATION PROGRAM CHANGES RESULTING FROM FORECASTER WORK.....	62
APPENDIX D: FUTURE ENHANCEMENTS FOR IMPLEMENTATION.....	64

TABLES

<i>Table 1: Risk Factors</i>	<i>24</i>
------------------------------------	-----------

FIGURES

<i>Figure 1: Translating SIM into the Forecaster Rules - Rotavirus Example</i>	<i>14</i>
<i>Figure 2: Relating the Forecaster Rules to what is Seen on the Client Immunization Profile - Rotavirus Example ...</i>	<i>14</i>
<i>Figure 3: Client Immunization Profile Sections - Forecaster Specific</i>	<i>23</i>

THE FORECASTER: A DECISION SUPPORT TOOL, NOT A DECISION MAKER

WHAT IS THE FORECASTER?

The Panorama Immunization Forecaster is a rules-based decision support tool to assist clinicians with assessing historical and administered immunizations, and planning future immunizations. The Forecaster assesses immunizations recorded for a client in Panorama as valid or invalid, and forecasts when the client is eligible and due (based on predetermined requirements) for future immunizations.

The Forecaster schedules future immunizations for a client by considering certain information about the client, and a set of logical rules about the Saskatchewan immunization schedules that define when it is appropriate to administer immunizations. The logical rules are divided into two types – **Schedule Dose Rules** that address the **timing** of immunizations according to the age specific programs, and **Interaction Rules** that address the **interactions** between vaccines.

What the Forecaster is Not

The Forecaster is not a decision maker and does not/cannot replace clinical judgment. The Forecaster recommends when future immunizations **should** occur for the majority of clients. However, the Forecaster is not designed to deal with every eventuality – the unusual histories from out of country, the presence of certain risk factors or parents prescribing their own unique schedule which may include variations that it becomes impossible to predict future immunizations using rules. The clinician is expected to follow current practice by referring to the Saskatchewan Immunization Manual (SIM) (<http://www.ehealthsask.ca/services/manuals/Pages/SIM.aspx>) for assistance with these situations.

FORECASTER FUNDAMENTALS

- The Forecaster is not intended as a replacement for clinical judgement; it is only a tool for clinicians to use.
- Vaccine reconstituted with expired diluents will not be ‘caught’ as invalid doses.
- While it currently includes some complex logic, it will be improved over time. Please provide the regional Key User with feedback, comments and suggestions for improvement. They will forward this information to the Ministry of Health.
- The current version of the Forecaster rules forecasts publicly funded vaccines as per the SIM for all age groups, in particular preschool, school-age and Grade-based programs, as well as children and adults with (most) risk factors.
- Real time vaccine forecasting for a client will show **as of the date the client presents**. This means that if a client is overdue for a certain vaccine, the Forecaster rules will consider **the client’s current age, not the age** they were originally eligible/due for a dose of that vaccine. This applies to vaccines where the dose schedule changes based upon the age of the client.
- “Overdue” is 1 day past the Due Date, a decision made by members of the Immunization Forecaster Working Group (IFWG) early in the Forecaster rules configuration process. The implications and desirability of that decision may need to be rethought in the future, along with assessment of the other means of achieving the intended objectives.
 - Note that for Grade-based schedules, “Overdue” is calculated as 1 year past the due date (to accommodate the school immunization clinics).
- For vaccines or age groups for which there are no forecasting rules developed, the Forecaster will validate historical doses from the Saskatchewan Immunization Management System (SIMS).

- Not all Risk Factors will interact with the Forecaster rules at this time. Refer to bulletin 0022 *Publicly Funded Vaccine Eligibility and Risk Factor Category* posted at:
<http://www.ehealthsask.ca/services/panorama/immun/Pages/Bulletins.aspx>

WHAT SHOULD I DO IF I DISAGREE WITH THE FORECASTER SETTING A DOSE'S STATUS TO INVALID OR VALID?

- If a dose is assessed as "Invalid" by the Forecaster, do a clinical assessment and consider why the Forecaster rules would have invalidated it. Consultation with a Key User is recommended. If it is assessed that it should be a valid dose, there are instructions in the Forecaster Handbook as to how to change the status ([Overriding Status – When Should I Use Override Status?](#)).
- If the Forecaster has assessed a dose to be "Valid" and it is assessed that it should be "Invalid", think through the process and attempt to understand why the Forecaster would have assessed the dose as Valid before you change the status to Invalid ([Overriding Status – When Should I Use Override Status?](#)).
- It is recommended that each region develop a regional policy about how Status Overrides are done e.g., after a second opinion or with the agreement of a Key advisor, for instance.
- Inform the Key User regarding any issues where you assess that the rules should be altered to support validation or invalidation of a particular dose.

WHAT SHOULD I DO IF I DISAGREE WITH THE FORECASTER ABOUT A SCHEDULE?

- Evaluate why the Forecaster would have come to a different conclusion than you have, including reviewing the latest version of the Forecaster Handbook and SIM.
- Both validation and forecasting of doses consider Interaction Rules with other vaccines. Ensure you review any issues you find with the schedules to determine if they might be due to an Interaction Rule.
- An important point to note about Interaction Rules is they are only considered if a dose of a vaccine (where an Interaction Rule applies) has been provided in the past. Interaction Rules will not be considered if there are zero doses in history of interacting vaccines.
- In the end, assess the most appropriate date based on your clinical judgement.
- Inform the Key User regarding any issues you assess where the rules should be altered to support the scheduled dates you see for a particular dose.

WHAT ABOUT BLANK FORECASTING FOR RISK FACTORS?

- For certain Risk Factors, there could be such variation possible for a given client's immunization schedule that we have opted to display a "Blank Forecast" for the client. This means that you will do your own "forecasting", or schedule future doses, just as you always did in the past for these clients.
- Currently there is Blank Forecasting for the following Risk Factors:
 - Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
 - Immunocompromised - Transplant Candidate or Recipient - Islet Cell
 - Immunocompromised - Transplant Recipient - HSCT For these situations, forecasts for future doses will not be provided, but historical doses will be validated (or invalidated) based on satisfying minimum intervals.
- As with any Risk Factors, there are **no flags or Client Warnings automatically provided** for the presence of the Blank Forecasting Risk Factors. A Client Warning may be added to Panorama to identify who to contact for support in addressing an immunization schedule for a client with blank forecasting.

HOW IS FORECASTING DIFFERENT FROM VALIDATION?

- Forecasting and validation are separate but related. Forecasting schedules the next valid dose required for a client based on historical and/or administered doses received, considering both Valid and Invalid doses when calculating dose spacing. Doses are validated or invalidated based on minimum intervals, age-dependent criteria, and Interaction Rules.
- One important limitation to the forecasting function is that it does not apply Interaction Rules between two vaccines where there has not yet been history of either vaccine provided for a client.
- This underlines the need for the same clinical judgment that you have been using in the past. Under these circumstances, use your assessment to space different live injectable vaccines appropriately, and for antigens for which there are both a polysaccharide and conjugate vaccine, to build in appropriate intervals.

Forecasting Notes to Be Aware Of

Grade School-Based Programs

- **Grade 6:** Eligible at the minimum age and forecasted for due date as September 1st of the year child is 11 years.
 - HPV-9 - Minimum Age is 9 years.
 - Varicella and Men-C-ACYW-135 - Minimum Age is 10 years.
 - HB - Minimum Age is 11 years to accommodate the 1.0 mL 2-dose series.
 - Varicella intervals 4 weeks.
- **Grade 8:** Eligible at the minimum age and forecasted for due date as September 1st of the year child is 13 years.
 - Tdap - Minimum Age = 11 years.
- Overdue Date is September of the following year for Grade-based programs.

Influenza

- Forecasts for children until they are 9 years old.
- Doses will validate for those 9 years and older.
- In the Forecaster rules, the flu season runs from October 1st to March 31st. If a child < 9 years of age receives their first dose before April 1st, they will still be forecasted for their second dose 4 weeks later up until April 30th. Otherwise they will be forecasted for their next dose as of the following October 1st (i.e. the next flu season).
- All individuals are considered “Overdue” as of December 31st each flu season.

Tdap

- Adult Tdap dose
 - The adult Tdap booster dose (pertussis component) will not forecast; instead, Td will forecast and if a dose of Pertussis is also provided as Tdap, it will be validated.
 - If an individual has not received their adolescent Tdap booster, it will forecast until 18 yrs. – 1 d. Once the individual becomes 18 yrs. old, pertussis will no longer forecast.
 - If an adult presents with a complete childhood series but does not have a record of it in Panorama, the user shall revise this dose number from ‘1’ to ‘4’ to allow for the correct validation and forecasting.
- Those ≥ 18 years presenting with 0, 1 or 2 previous tetanus- and diphtheria-containing vaccine doses (administered in childhood and/or adulthood) will forecast sufficient doses to complete a 3-dose tetanus and diphtheria primary series as per SIM chapter 5. Only Td will be forecasted, so a clinical decision as to when to offer Tdap is required, as for all adults.
- All pregnant women are eligible to receive Tdap during pregnancy. The risk factor Special Population – Pregnancy is to be start dated as per the immunization date and then end-dated for the same day.
- A “cocooning” special population is now a forecasting schedule, similar to the Adult Tdap schedule. This schedule has been created for the “Special Population - Parents/Caregivers of Newborns” risk factor. Clients with this risk factor will not require any minimum interval between doses of Tetanus-containing vaccine in order to provide a dose of Tdap as part of this program.

Men-C-C

- *There is a 4-day grace period exception for this vaccine only.* The forecaster will show the client as “eligible” and “due” at 12 months of age. However, for those who receive a dose of Men-C-C at four or less days before turning 12 months of age, this dose will be validated as meeting the criteria for the 12 month dose, an additional dose will not forecast.

Men-C-ACYW-135

- Once one dose of Men-C-ACYW-135 is received by a client \geq 12 months of age, they are complete for the Men-C-C series, so Men-C-C is removed from their forecast. **However, at this time Men-C-ACYW-135 for children 0-17 who have HIV is not built into the rules; refer to SIM Chapter 7 & 10 for details.**
- **Men-C-ACYW-135 schedules for high-risk clients \geq 8 weeks old are affected by this rule:**
 - Chronic Medical Condition - CSF Disorder
 - Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
 - Immunocompromised - Congenital Immunodeficiency
 - Immunocompromised - Acquired Complement Deficiency
 - Chronic Medical Condition - Cochlear Implant
 - Contact - IMD Case: serogroup A, Y, or W-135
 - Chronic Medical Condition - Sickle Cell Disease

HB

- When a client's documented immunization record does not show the HB-containing vaccine volumes administered for previous doses in which a minimum 3-dose series has not been completed, it is recommended that:
 - 0.5 mL HB doses are administered to clients younger than 20 years of age at appropriate intervals to complete a 3-dose series (except for school-based program).
 - 1 mL HB doses are administered to clients 20 years of age and older at appropriate intervals to complete a 3-dose series.
- If a dose of HB is provided outside of the Grade 6 program (including adults), additional years are forecasted in order to complete the series; dosage volume forecasted will vary depending on the age the client is at.
- Dosage volume **MUST** be specified for HB-containing vaccines for the correct Forecaster rules to be applied. If no dose volume is specified, the forecast assumes 0.5 mL was administered
- For healthy individuals born January 1, 1984 or later who are 16 years of age or older but were not immunized in the school based program the forecaster will continue to forecast a 3-dose series.
- **Special Population forecasting has been added for the following Risk Factors (these are in addition to the Neonate schedules already in place):**
 - Immunocompromised - HIV
 - Chronic Medical Condition - Renal Disease
 - Chronic Medical Condition - Liver Disease - Hepatitis C
 - Contact - Hepatitis B
 - Special Population - Children of Immigrants - Hepatitis B
- Forecasting for Chronic Medical Condition – Renal Disease is based on the 3-dose Recombivax HB dialysis formulation schedule, with the expectation that the clinician will choose the correct formulation. There are validation rules to support a 4-dose Engerix-B schedule if that product is used, but the 4-dose schedule is not forecasted.

HAHB

- For clients with appropriate HA-related risk factors, if they have received a dose of HAHB, the remaining HA and HB doses will forecast as separate vaccines.
- Note that the appropriate dosage volumes will be indicated depending on the age of the client; this includes the 2-dose HAHB program for children between 12 months and 15 years of age inclusive.
- **Dosage volume MUST be specified for HAHB products in order for the correct Forecaster rules to be applied.** For instance, for the 2-dose program, please ensure you include “1.0” and “mL” for Dosage and Dosage UOM.

HPV

- Immune compromised males have the same eligibility parameters as immune compromised risk females (see SIM).
- HPV-2 is only valid for female as it is not approved for use in males.

Rotavirus

- A Rotavirus dose given beyond 8 months of age is invalid.
- A Rotavirus dose given beyond 15 weeks of age is invalid. It must be manually overridden to valid, in order for the next dose in the series to forecast.

Hib

- One Hib dose is recommended for specific medical high risk factors at ≥ 5 years old regardless of previous immunization history. There is a 1 year minimum interval between the last dose and the dose to be given at 5 years of age or older.

Risk Factors

- There are eight Risk Factor categories. Clients may have multiple risk factors and all should be entered to ensure correct forecasting.
- Risk Factors must be entered with a Response value of “Yes” for the Risk Factor to be listed in the Immunization Profile and to affect the Immunization Forecast.

Adult forecasting

- Adults appear as overdue for age-appropriate vaccines if they present with no immunization history. Refer to SIM, Chapter 5 for further information:
<http://www.ehealthsask.ca/services/manuals/Documents/sim-chapter5.pdf>

Rabies

- Rabies will forecast for post-exposure clients.

Men-B

- Men-B rules will forecast for close contacts.
- Additional risk factors have been added for the same forecasting as close contacts
 - - Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
 - - Chronic Medical Condition - Sickle Cell Disease
 - - Immunocompromised - Acquired Complement Deficiency
 - - Immunocompromised - Congenital Immunodeficiency

Polio

- New forecasting schedule for a 3 dose series for those ≥ 18 yrs with no doses in history.

WHAT SCHEDULES WILL I SEE FORECASTED IN PANORAMA?

Only publicly funded schedules will forecast in Panorama. There are a number of caveats where forecasting might not appear. This may include situations where variation in scheduling may be required resulting in the forecaster being unable to accurately be predicted (e.g. HSCT clients) or when there might only be one dose in a series (i.e. Hepatitis A close contact schedules). How does the Forecaster work?

How Does the Forecaster Validate Immunization History?

- The Forecaster assesses by *validating* client immunizations that have been recorded in Panorama – both as previous historical doses, and as those administered by Nurses documenting in Panorama.
- When an immunization (dose) is recorded in Panorama, the Forecaster automatically assesses certain information about the Client (Age, Gender, Risk Factors, and Immunization History) and the Dose (including interactions with other vaccines) to determine if the dose is valid according to SIM.
- When determining if the dose is Valid, the Forecaster looks at the individual antigens within an agent (e.g. Measles within the MMR-Var agent) and determines which are valid according to the immunization Schedule Dose Rules. If an antigen dose is determined to be invalid according to these rules, it is marked as Invalid (refer to General Terms and Definitions for more information).
- If the antigens are found to be Valid according to the Schedule Dose Rules, the Forecaster then reviews the antigen against the Interaction Rules to determine if it is invalid because of an interaction with another antigen that violates a set interval.
- When all antigens within an agent have been validated, the Forecaster “rolls up” the antigens into the agent they were administered as. The agent will then be displayed on the client record with an overall status. When one or more of the antigens within an agent is Invalid, the overall status of the agent is displayed in the Client Immunization Profile as Invalid and visually marked with an “X”:

Client Immunization Profile		✓ Contains Data	
Immunizing Agent			
DTaP-HB-IPV-Hib	X 2014 Jun 01		
DTaP-IPV-Hib	2014 May 01		
HB	2014 Mar 01	2014 Apr 01	

- The statuses of the individual antigens for each agent are displayed on the Immunization Detail screen:

Immunization Detail		
* Immunizing Agent:	DTaP-HB-IPV-Hib	Status: Invalid
Antigen Description	Dose Number	Status
Diphtheria (D)	2	Valid
Haemophilus influenzae type b (Hib)	2	Valid
Hepatitis B (HB)		Invalid
Pertussis (aP)	2	Valid
Polio (IPV)	2	Valid
Tetanus (T)	2	Valid
* Date Administered:	2014 Jun 01	
Time Administered:		
Age at Administration:	3 mos 0 days	
Historical:	Yes	

How Does the Forecaster Recommend Future Doses?

- The Forecaster recommends future doses based on the same set of Schedule Dose Rule and Interaction Rules that are used during the Validation process.
- During the first stage of the Forecasting process, the Forecaster calculates the eligible and recommended dates for antigens the client requires. The Forecaster determines this list based on the Schedule Dose Rules, and then applies Interaction Rules, as well as **Special Considerations (Exemptions or Contraindications)** only, not Precautions) to the antigens; this then adjusts the list of antigens the client is eligible to be forecasted for.
- In the second stage of the Forecasting process, the Forecaster rules determine how the antigens will be “rolled up” to be forecasted as agents (i.e. vaccine products) that are verified to be administered in Saskatchewan (i.e. only products available for publicly funded administration will be forecasted).
- When the antigens are “rolled up” into an agent, the Forecaster may make the following adjustments, where appropriate, to ensure the recommended agent is the most appropriate for the client:
- Align the eligible and recommended dates of an antigen to allow it to group better with the other antigens in the agent, affecting the overall Eligible and Due dates for the product.
 - For example, if separate doses of MMR and Varicella are given, MMR-Var (the 2nd doses of MMR and Varicella) will be forecasted with a minimum eligible date that matches the latest of the minimum intervals of Measles, Mumps, Rubella and Varicella. In this case, Varicella has the longest forecasted minimum interval at 3 months (vs. 4 weeks with Measles, Mumps, Rubella), so the MMR-Var agent will be forecasted out at this interval:

Client Immunization Profile	
Immunizing Agent	
MMR	2014 Jun 01
Var	2014 Jun 01

Date of Birth / Age:
2013 Jan 15 / 1 yrs 8 mos

Last forecast ran on: 2014 Oct 01 [Only available for clients who have forecasted agents or antigens] Refresh Forecast

Forecast status as of date: 2014 Oct 01

Immunizing Agent	Dose	Volume	Brand	Due	Eligible	Status
Men-C-C	1			2014 Jan 15	2014 Jan 15	Overdue
Pneu-C-13	1			2014 Jan 15	2014 Jan 15	Overdue
DTaP-IPV-Hib	1			2014 Apr 15	2014 Apr 15	Overdue
MMR-Var	2			2014 Sep 01	2014 Sep 01	Overdue

- Allow validation of doses given prior to forecasted dates, based on acceptable minimum intervals
 - For example, if two doses of MMR-Var are given 4 weeks apart (acceptable minimum interval for Varicella) for a client < 13 years of age (born on or after Nov 1, 2009), even though the recommended interval is 3 months, both doses will be considered valid and the series will be considered complete (i.e. no more MMR-Var forecasted, refer to diagram below):

Client Immunization Profile ✓ Contains Data

Date of Birth / Age:
2013 Jan 15 / 1 yrs 8 mos

Immunizing Agent	Due Date	Forecasted Date
MMR-Var	2014 Jun 01	2014 Jul 13

6"Weeks"Apart

Last forecast ran on: 2014 Oct 02 [Only available for clients who have forecasted agents or antigens] Refresh Forecast

Forecast status as of date: 2014 Oct 02

Immunizing Agent	Dose	Volume	Brand	Due	Eligible	Status
Men-C-C	1			2014 Jan 15	2014 Jan 15	Overdue
Pneu-C-13	1			2014 Jan 15	2014 Jan 15	Overdue
DTaP-IPV-Hib	1			2014 Apr 15	2014 Apr 15	Overdue

MMR.Var'Series'Complete

- Recommend an additional antigen to facilitate delivery of an agent
 - For example, if a Measles dose was first provided to a client, then a dose of MMR, the Forecaster would recommend a second dose of MMR with Measles marked as “Extra Dose Safe” in order to provide the recommended product:

Client Immunization Profile

Date of Birth / Age:
2013 Jan 15 / 1 yrs 8 mos

Immunizing Agent	Due Date
M	2014 Jan 15
MMR	2014 Jun 01

Last forecast ran on: 2014 Oct 01 [Only available for clients who have forecasted agents or antigens] Refresh Forecast

Forecast status as of date: 2014 Oct 01

Immunizing Agent	Dose	Volume	Brand	Due	Eligible	Status
Men-C-C	1			2014 Jan 15	2014 Jan 15	Overdue
Pneu-C-13	1			2014 Jan 15	2014 Jan 15	Overdue
DTaP-IPV-Hib	1			2014 Apr 15	2014 Apr 15	Overdue
MMR-Var (Measles (M)*)	M			2014 Jun 29	2014 Jun 29	Overdue

- If there is a choice between two products (e.g. “MMR” + “Var” separately vs. “MMR-Var”), the Forecaster will choose to forecast the product that provides the client with the most antigens given the fewest number of injections (e.g. “MMR-Var” will be chosen in this example).

- All of the antigens that can be delivered as part of an agent are recommended in the Immunization Forecast section under **Immunizing Agent** in the “Immunization Forecast (by Agent)” section of both the Client Immunization Profile and the Client Immunization View/Add screens. The remaining antigens that are not rolled up into an agent appear in the Immunization Forecast as single antigens in the Immunization Forecast section, also known as “Leftover Forecasted Antigens”:

Leftover Forecasted Antigen	Dose	Volume	Brand	Due	Eligible	Status
Pertussis (aP)	4			2015 Feb 16	2015 Feb 16	Up to Date

- All recommended immunizations are displayed with recommended (Due) and minimum (Eligible) dates.

WHAT INFORMATION DOES THE FORECASTER USE?

The Forecaster uses certain information recorded in Panorama about the client when validating and recommending future immunizations. The Forecaster will produce the most accurate and appropriate validation and future dose recommendations when all the following information is available:

- Gender, Date of Birth and Jurisdiction** are used to determine which antigens the client can receive, and which age-appropriate schedule and agents should be used. If one of these fields is blank in the client record the forecaster will not be able to function.
- Risk Factors** determine which schedule should be used, (e.g. Post-exposure - Infant Born to HBsAg+ Mom or High Risk for HB - Less than 2000 grams, Special Population - Hepatitis A Program - Targeted Community, etc.; refer to **Risk Factors** section for more information).
- Special Considerations (Exemptions and Contraindications)** are used to identify when certain antigens are not recommended for a client, and are therefore removed from a client forecast.
- Previous **Immunization History** (comprising both historical and recently administered doses) is used to determine which doses of an antigen are required next or if the client has completed a series.

NOTE – The Forecaster does not directly consider the following information:

- Allergies, Precautions** (Special Consideration), **Deferrals, Consent** (or Refused Consent), **TST** (TB skin test) information or information entered into the Immunization History Interpretation screen.
 - Allergies to latex** or to specific vaccine ingredients are not dealt with by the Forecaster rules. They cut across many products and change over time. Latex allergies in particular should be dealt with entering a **Client Warning** for the client; this means that it will be up to the clinician to ultimately decide if a particular product or format should be given to that client.

TRANSLATING SIM INTO THE PANORAMA FORECASTER RULES

The Forecaster Rules bring together information from the SIM, Chapters 5, 7 and 10. This information defines the details for when a dose should be recommended in Panorama – such as the minimum age, the minimum interval given the previous valid or invalid dose, and the usual timing of the dose. An example of how SIM is translated into the rules is outlined using Rotavirus below:

Government of Saskatchewan
Saskatchewan Immunization Manual
Chapter 10 – Biological Products
April 2014
Page 1 of 2

Rotavirus vaccine (human rotavirus, live, attenuated, oral vaccine) (Rot-1)
ROTARIX™ (GlaxoSmithKline 2014 monograph available at: <http://gsk.ca/english/docs-pdf/product-monographs/Rotarix.pdf>)

- UNDER NO CIRCUMSTANCES SHOULD ROTARIX™ BE INJECTED.
- ROTARIX™ MUST NOT BE MIXED WITH OTHER NUTRITIVE OR NON-NUTRITIVE LIQUIDS OR MEDICINAL PRODUCTS.

INDICATIONS ¹	DOSE / PRIMARY SERIES ^{2, 3, 4, 5, 6}
ROTARIX™ is indicated for the prevention of infant gastroenteritis caused by circulating rotavirus strains.	<p>Dose 1: 1.5 mL PO (entire contents of applicator) at 2 months of age.</p> <ul style="list-style-type: none"> • Dose 1 must be received between 6 weeks and 14 weeks 6 days of age. <p>Dose 2: 1.5 mL PO (entire contents of applicator) at 4 months of age.</p> <ul style="list-style-type: none"> • Dose 2 must be received by 8 months 0 days of age.
REINFORCEMENT	Not indicated at this time.

Saskatchewan Ministry of Health
Saskatchewan Immunization Manual
Chapter 5 – Immunization Schedules
May 2012
Page 11

2.1 Minimum Intervals for Specific Vaccine Series

- Refer to Chapter 10, Biological Products for specific vaccine information.
- When the client is up-to-date for age at presentation, return to the routine age-appropriate schedule.

Vaccine Series and Required Doses	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP-IPV-Hib ¹ or DTaP-IPV	4 weeks	4 weeks	6 months ¹	6 months ¹
Rot-1	4 weeks			

6 There are no data on the interchangeability of RotaTeq® and ROTARIX™ vaccines. Whenever possible, the series should be completed with the same product. However, if the product used for a previous dose is not known, complete the series with the available product. If any dose in the series was RotaTeq®, a total of 3 doses of vaccine should be administered provided the age limit of 8 months 0 days is not exceeded.

Saskatchewan Ministry of Health
Saskatchewan Immunization Manual
Chapter 5 – Immunization Schedules
November 2012
Page 1

1.0 ROUTINE IMMUNIZATION SCHEDULES

1.1 Routine Immunization Schedule for Infants, Children and Adolescents

- Refer to Chapter 10, Biological Products for specific vaccine information.
- When there is a delay in initiating or completing the vaccine series, use the recommended minimum interval schedule (SIM, Chapter 5, Section 2.1, Minimum Intervals for Specific Vaccine Doses).
- Denotes special population application; refer to Chapter 10, Biological Products for information.

Vaccine and age/grade	2 mo.	4 mo.	6 mo.	12 mo.	18 mo.	4-6 yrs.	Gr. 6	Gr. 8
Rot-1 ¹¹	*	*						

	Minimum Age	Minimum Interval	Due
Dose 1	42 days	4 weeks from invalid dose	2 months of age
Dose 2		4 weeks	4 months of age
Dose 3		4 weeks* See footnote 6	Dose 2 + 4 weeks

Figure 1: Translating SIM into the Forecaster Rules - Rotavirus Example

The information (shown in the grid) is applied by the Forecaster to calculate the **Eligible** and **Due** dates of the agent to be forecasted for the client. The Eligible date represents the minimum date to get a valid dose, and is calculated based on the minimum interval from the date of the last valid or invalid dose received by the client taking into account minimum age requirements when appropriate. The Due date represents the recommended timing of the dose based on the Saskatchewan immunization schedule, and is calculated from the client's Date of Birth (if on the routine infant schedule), or by an interval from the last valid or invalid dose either if delayed or for older clients:

	Minimum Age	Minimum Interval	Due
Dose 1	42 days	4 weeks from invalid dose	2 months of age
Dose 2		4 weeks	4 months of age
Dose 3		4 weeks* See footnote 6	Dose 2 + 4 weeks

Immunization Forecast (by Agent) ✓ Contains Data Hide Immunization Forecast (by Agent)

Last forecast ran on: 2014 Oct 01 [Only available for clients who have forecasted agents or antigens] Refresh Forecast

Forecast status as of date: 2014 Oct 01

Immunizing Agent	Dose	Volume	Brand	Due	Eligible	Status
DTaP-IPV-Hib	2			2014 Nov 01	2014 Oct 29	Up to Date
Pneu-C-13	2			2014 Nov 01	2014 Oct 29	Up to Date
Rot-1	2			2014 Nov 01	2014 Oct 29	Up to Date
Men-C-C	1			2015 Jul 01	2015 Jul 01	Up to Date
MMR-Var	1			2015 Jul 01	2015 Jul 01	Up to Date

Client Immunization Profile

Immunizing Agent	Date
DTaP-IPV-Hib	2014 Oct 01
Pneu-C-13	2014 Oct 01
Rot-1	2014 Oct 01

Date of Birth / Age:
2014 Jul 1 / 3 mos 0 days

Figure 2: Relating the Forecaster Rules to what is Seen on the Client Immunization Profile - Rotavirus Example

Panorama Forecaster Handbook

Note that a given client's forecast may be adjusted from what is expected based upon the current age of the client.

- For example, if a client is behind on her immunizations for DTaP-IPV-Hib, the forecasted dates for this product will appear based on the Hib component as there are different dose rules depending on the age the client represents at:

Client Immunization Profile		✓ Contains Data
Immunizing Agent		
DTaP-IPV-Hib	2013 Jun 01	2014 Mar 01

Date of Birth / Age:
2013 Apr 1 / 1 yrs 6 mos

Last forecast ran on: 2014 Oct 02 [Only available for clients who have forecasted agents or antigens]

Refresh Forecast

Forecast status as of date: 2014 Oct 02

Immunizing Agent	Dose	Volume	Brand	Due	Eligible	Status
DTaP-IPV-Hib	3			2014 Jul 01	2014 Jul 01	Overdue

Due Date Driven by Minimum Date for Booster Dose of Hib (as all other antigens are overdue)

Eligible for Booster Dose of Hib at 12 months of age

HOW TO READ THE IMMUNIZATION FORECAST

The Immunization Forecast (by Agent) section displays the recommended future immunizations for a client. There are several things to note in this section:

What Dose Number means

- The dose number displayed indicates the dose number for the agent, and infers how many previous doses the client has had.
 - For example, if a client has one documented MMR-Var dose, then the forecasted dose of MMR-Var will be "2";
- Sometimes an "M" displays for dose numbers: this indicates a "Mixed Dose" number, meaning that the client has received a different number of doses of the antigen components for the forecasted agent.
 - For example, if a client has a single Varicella in history, but no MMR, the MMR-Var forecasted will show "M" because it is the 1st dose of Measles, Mumps and Rubella but the 2nd dose of Varicella.

What Date mean

- Eligible** date – The minimum date on which a forecasted agent can be given. This date takes into account the minimum intervals and minimum age for all antigens that make up the forecasted agent.
 - Note that for certain vaccines, like Varicella, there are different acceptable minimum intervals for validation than there are for forecasting. This means that doses can be validated prior to the stated Eligible dates, depending on the vaccine. This Handbook outlines the vaccines where this early validation can occur (see Appendix B: Antigen-Specific Schedule Definitions for details).
- Due** date – The recommended date of vaccination set out by SIM.

What Status means

- **Up to Date** – Not yet Eligible for a specific agent (i.e. “Eligible in the future”) as a minimum interval and/or minimum age has not yet been satisfied.
- **Eligible** – The Eligible date has been reached, but the Due date is in the future; **minimum interval and/or minimum age have been satisfied.**
- **Due** – The optimum date for vaccine administration according to current schedule; **implies minimum intervals and/or minimum age have been satisfied.**
- **Overdue** – Forecasted agents are considered “Overdue” one day over the Due date. Overdue statuses also consider minimum intervals: if a client is behind/delayed on their immunizations, their status will remain “Up to Date” until the minimum interval has passed, and then it will become “Overdue”. This is frequently seen with children who are delayed in starting routine immunizations or much delayed in continuing a series where future dates may also show as overdue.

UNDERSTANDING THE IMMUNIZATION HISTORY

The **Client Immunization Profile** section displays high-level information about the client history. Various aspects of the dose are indicated (e.g. validity, override status, etc.) in addition to the dates the agent was administered:

Client Immunization Profile		✓ Contains Data	⌵ Hide Client Immunization Profile
Immunizing Agent			
DTaP-HB-IPV-Hib	X 2014 Jun 01		
DTaP-IPV-Hib	2014 May 01		
HB	2014 Mar 01	2014 Apr 01	
Pneu-C-13	2014 May 01		
Rot-1	2014 Jul 01	2014 Sep 06	
Rot-5	2014 Jun 01		

O - The status for this immunization has been overridden.
X - Some or part of the vaccine did not meet local schedule.

- **Valid or Invalid** – When a date has an “X” beside it, this indicates that at least one antigen in the dose is Invalid. This does not necessarily mean the vaccine agent is invalid. For more information see the *Invalid Doses* section below.
- **Incomplete history known** – When a date has an “OR” beside it, this indicates that the dose has been recorded using a Revised Dose Number. This is often the case when the client has incomplete documentation for their previous immunization history (e.g., a Canadian born adult who states they received a complete childhood tetanus series and is now presenting for a Td booster). This often explains why a client is not forecasted for an expected agent, and has very few doses in history. To find out more about why the dose number was revised, and what it was changed to, click the date hyperlink and review the information on the Immunization Detail screen.
- **Forecaster validation was overridden** – When a date has an “O” beside it, this indicates that the status of the dose that was assigned by the Forecaster (Valid or Invalid) has been changed (or “overridden”) by a clinician. To find out more about why the status was changed, click the date hyperlink and review the information on the Immunization Detail screen. User comments should be documented to explain the override reason.
- **The Immunization Detail** screen, that is displayed when you click the date hyperlink for a given dose, contains pertinent information about the dose.

- The **Status** of the dose and the **Dose Number** are displayed in two different ways – once for the agent (circled in red below), and once for each antigen component in what is called the antigen-breakdown or “Antigen Mini-Grid” (circled in blue below):

Immunization Detail		
* Immunizing Agent:	DTaP-IPV-Hib	Status: Valid
Antigen Description	Dose Number	Status
Diphtheria (D)	1	Valid
Haemophilus influenzae type b (Hib)	1	Valid
Pertussis (aP)	1	Valid
Polio (IPV)	1	Valid
Tetanus (T)	1	Valid
* Date Administered:	2014 May 01	
Time Administered:		
Age at Administration:	2 mos 0 days	
Historical:	Yes	
Information Source:		
Lot Number:		
Trade Name:		
Manufacturer:		
Publicly Funded:	No	
Dose Number:	1	

Notes About Dose Numbers on the Immunization Detail Screen

- When the Dose Number for the agent is blank, this indicates that at least one antigen component is invalid. This is because Invalid doses are not counted towards the completion of a series.

Immunization Detail		
* Immunizing Agent:	DTaP-HB-IPV-Hib	Status: Invalid
Antigen Description	Dose Number	Status
Diphtheria (D)	2	Valid
Haemophilus influenzae type b (Hib)	2	Valid
Hepatitis B (HB)		Invalid
Pertussis (aP)	2	Valid
Polio (IPV)	2	Valid
Tetanus (T)	2	Valid
* Date Administered:	2014 Jun 01	
Time Administered:		
Age at Administration:	3 mos 0 days	
Historical:	Yes	
Information Source:		
Lot Number:		
Trade Name:		
Manufacturer:		
Publicly Funded:	No	
Dose Number:		

- When the Dose Number for the agent is shown as an “M”, this indicates that the dose is a Mixed Dose Number. This means that the individual antigen components have different dose numbers – the antigen Dose Numbers can be seen in the Antigen Mini-Grid at the top of the page. A difference in Dose Numbers is often explained by the previous history of the client, where he/she may have received a single dose of one of the antigens at an earlier time:

Immunization Detail		
* Immunizing Agent:	MMR	Status: Valid
Antigen Description	Dose Number	Status
Measles (M)	2	Valid
Mumps (Mu)	1	Valid
Rubella (R)	1	Valid
* Date Administered:	2014 Apr 01	
Time Administered:		
Age at Administration:	1 yrs 1 mos	
Historical:	Yes	
Information Source:		
Lot Number:		
Trade Name:		
Manufacturer:		
Publicly Funded:	No	
Dose Number:	M	
Dosage:		Dosage UOM: NA

Notes About Status on the Immunization Detail Screen

- While the Immunization History section on the Client Immunization Profile screen shows if the dose is Valid or Invalid using an “X” beside the date, when looking at the details of the dose on the Immunization Detail screen, more specific statuses are displayed:
 - Valid** – The dose is Valid, and indicates that the validation has been set by the Forecaster
 - Valid (override)** – Indicates that a user chose to override the status to Valid
 - Invalid** – The dose is invalid, and indicates that the invalidation has been set by the Forecaster
 - Invalid (override)** – Indicates that a user chose to override the status to Invalid
 - Invalid (dose invalidated)** – Indicates that the “Invalidate Vaccine” function (accessible from the left-hand navigation) was used to invalidate this dose
- The “X” will appear beside the date of an agent in the Client Immunization Profile section, the agent Dose Number will be blank on the Immunization Detail screen, and the agent status will be Invalid even if only one antigen is invalid, e.g. if the HB within the DTaP-HB-IPV-Hib is invalid, but all others are valid

Client Immunization Profile	
Double-click in any date field below to enter the default date:	
Immunizing Agent	Date
DTaP-HB-IPV-Hib	X 2014 Jun 01

- If the dose Status has been changed over time, the “Comments” sections will reflect the history of the changes.

INVALID DOSES

Understanding Why a Dose is Shown as Invalid

Doses are marked as Invalid when the antigen dose has broken a scheduling rule and is clinically ineffective because:

- A Risk Factor was added to the client’s record. For example, an adult who completed a grade 6 HB series and now has renal disease will show that the grade 6 doses are invalid, when in fact they are valid and should be overridden to valid.
- A minimum interval has not been met.
- A minimum age has not been met.
- Based on the client’s age and/or dose history, they should not have received this product.
- Another user chose to override the validation and mark the dose as Invalid. These doses have a status of Invalid (override).

The Forecaster will not invalidate doses in the following cases:

- A higher (or lower) than recommended vaccine “Dosage” was administered.
- The dose was received by a “Route” other than the recommended route.
- If less than a full dose of vaccine was given because of a syringe or needle malfunction.
- Additional doses beyond a series end were administered.
- The vaccine is reconstituted with expired diluents.

Invalid doses will not be counted towards the series when planning future doses. However, invalid doses will be considered when calculating minimum intervals for future forecasted doses.

More information is shown in the Invalid/Uncounted Immunizations section of the Client Immunization Profile or Client Immunization View/Add screens. This section will list each of the invalid antigen components (within an agent dose) and a brief reason as to why it is invalid. Invalid reasons are:

- **Client administered with same agent on same day:** if two doses of the same agent/antigen are given on the same day (e.g. ‘mechanical malfunction while administering dose’) the 1st dose is shown as valid and the 2nd dose is shown as invalid. Override the first dose to invalid and then ensure second dose is overridden to valid is it does not become valid automatically.
- **Additional dose resulting from use of a multi-antigen agent:** if an antigen in a multi-antigen agent is not “Extra Dose Safe” (EDS), and is provided as an additional dose as part of this agent, this reason will display for the invalid antigen.
- **Administered date is less than or greater than eligibility date:** if neither of the above two reasons are given, the dose will have this reason. This is what will be seen most often, meaning that a minimum interval, minimum age or maximum age was violated.

An example of the Invalid/Uncounted Immunizations section with data regarding an invalid antigen:

Invalid/Uncounted Immunizations ✓ Contains Data ⬆ Hide Invalid/Uncounted Immunizations			
Some or part of these vaccines did not meet local schedule.			
Invalid/Uncounted Immunizations	Date of Immunization	Invalid/Uncounted Antigens	Reason
DTaP-HB-IPV-Hib	2014 Jun 01	Hepatitis B (HB)	Administered date is less than or greater than eligibility date.

IMMUNIZATIONS RECORDED IN SIMS

Immunization details that were documented in SIMS and data converted to Panorama are available in the “Comments” of each immunization record in Panorama. Click the date hyperlink of any dose to see the Comments:

- Information from the SIMS vaccine code and dose text was used to populate the Panorama **Immunizing Agent**, **Date Administered**, **Dosage** and **Dosage UOM** (unit of measurement) fields
- **Dose Number** and **Status** will be assigned automatically by the Forecaster for each dose converted from SIMS
- Each dose will have a **Comment** with the following information derived from SIMS:
 - administered vaccine display text
 - adverse reaction flag (0 for regular, 1 for adverse) which shows up as a message box
 - data entry staff and associated organization
 - facility name
 - immunization partial date - partial date entered in the Date field.
 - population subgroup
 - service provider and associated organization
 - vaccine dose volume and unit of measure
 - vaccine lot number
 - vaccine route description (abbreviated)
 - vaccine site

FORECASTER-RELATED SECTIONS OF THE IMMUNIZATION MODULE

There are several sections or antigen grids within the Immunization module that have information related to Forecasted doses and validated immunization history.

Client Immunization Profile or Client Immunization View/Add screens include the following sections related to the Forecaster (please refer to

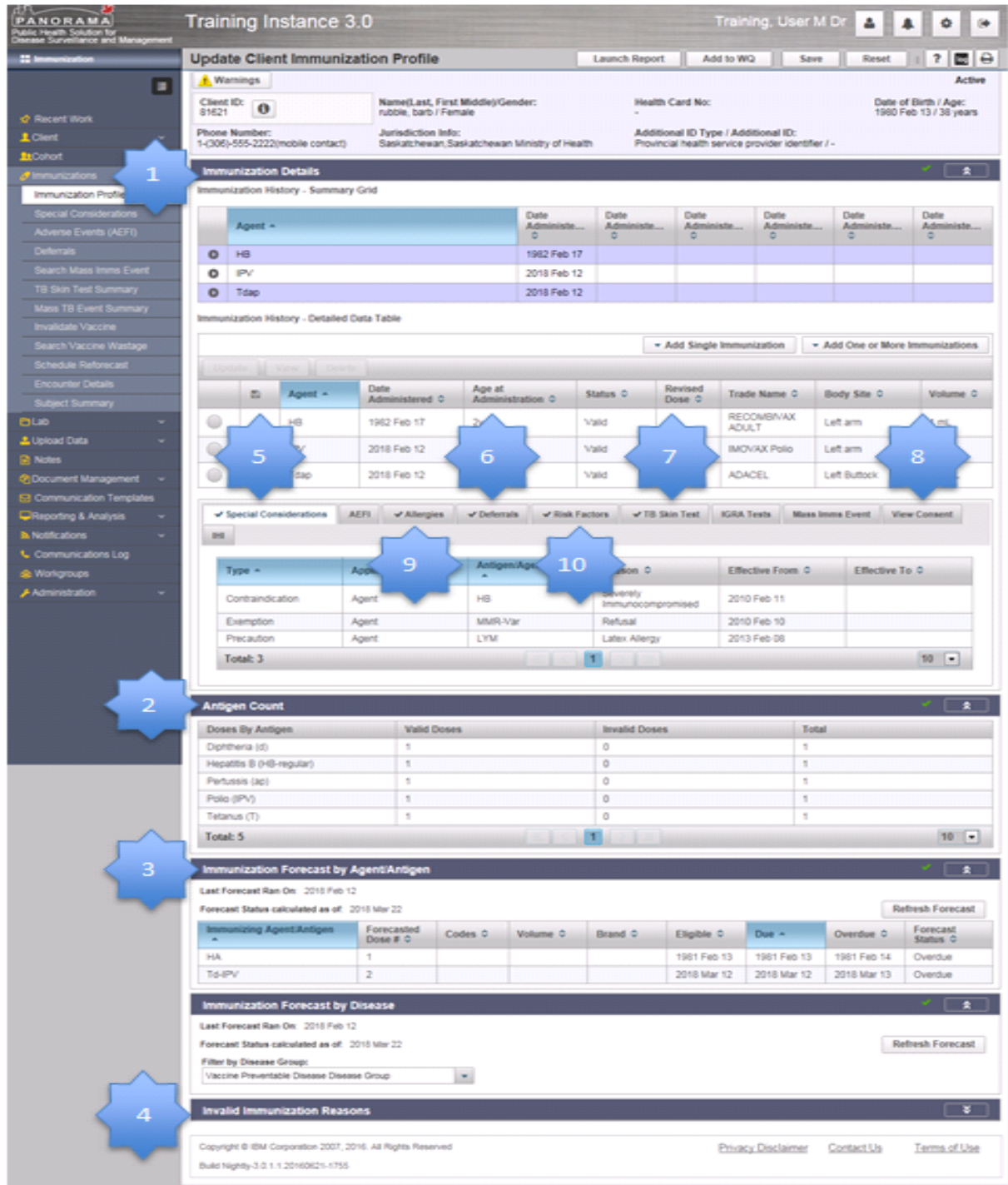


Figure 3 below):

1. Client Immunization Profile

- The complete history for a client, with an overall status of each dose shown in this section.
- For each dose of an Agent in the client’s history, full details can be seen on the Immunization Details Screen (accessed by clicking the date hyperlink from the “Client Immunization Profile” section). The

Panorama Forecaster Handbook

details include a breakdown of the dose number and status of each antigen, and other details document when and how the dose was administered.

2. Antigen Count

- An overall summary of the number of doses (Valid vs. Invalid) for each antigen the client has received can be seen in this section.
- Revised Dose numbers are reflected here; this means if a client has a single documented dose of HPV-4, but the dose has been revised to dose 3, then the antigen count will show 3 valid doses of HPV-4.

3. Immunization Forecast (by Agent)

- Information on when the Forecaster was last run against this client is viewable here, as is the ability to manually refresh the forecast by clicking the “Refresh Forecast” button.
- The forecast for the next dose of all vaccines the client is eligible for is shown in this section.

4. Invalid/Uncounted Immunizations

- For any Invalid antigens, these are listed in this section and the Reason the antigen was deemed Invalid is specified.

5. Special Considerations

- This section lists the Contraindications, Exemptions, Precautions and AEFI records for the client. Note that only Contraindications and Exemptions affect the Forecaster.
- **SPECIAL NOTE:** Special Considerations are applied **at the antigen-level only**, not the agent-level. This means that when applying a Special Consideration, one must ensure that they include all related antigens that might forecast if the intent is to prevent forecasting of certain products from occurring. For example, if a client has a contraindication to the DTaP-IPV product, the clinician must not only enter a contraindication for the DTaP-IPV antigens, but also ensure to enter a contraindication for the Diphtheria-d (“little d”) and Pertussis-ap (“little ap”) antigens.

6. Deferrals

- Provides a summary of which agents the client has deferred.

7. TB Skin Tests and Follow Ups

- Provides a summary of the TSTs administered to the client.

8. Consent

- Go to the Consent screen (via the left-hand navigation) to view which agents have been consented to or refused.

9. Allergies

- This section is not being used for the immunization module at this time

10. Risk Factors

- You must go to the Risk Factors screen (via the left-hand navigation) to add, update, remove or view the Risk Factors that are documented for the client. Note that no Client Warning will display automatically based on the presence of a Risk Factor for a Client.

Figure 3

Update Client Immunization Profile

Client ID: S1421 | Name: rubie, barb / Female | Health Card No: - | Date of Birth / Age: 1980 Feb 13 / 38 years

Phone Number: 1-(306)-555-2222(mobile contact) | Jurisdiction Info: Saskatchewan, Saskatchewan Ministry of Health | Additional ID Type / Additional ID: Provincial health service provider identifier / -

Immunization History - Summary Grid

Agent	Date Administered	Date Administered	Date Administered	Date Administered	Date Administered	Date Administered
HB	1982 Feb 17					
IPV	2018 Feb 12					
Tdap	2018 Feb 12					

Immunization History - Detailed Data Table

Agent	Date Administered	Age at Administration	Status	Revised Dose	Trade Name	Body Site	Volume
HB	1982 Feb 17	2	Valid		RECOMBIVAX ADULT	Left arm	1ml
IPV	2018 Feb 12		Valid		IMOVIAK Polo	Left arm	0.5ml
Tdap	2018 Feb 12		Valid		ADACEL	Left Buttock	0.5ml

Special Considerations

Type	Applicable	Antigen/Agent	Reason	Effective From	Effective To
Contraindication	Agent	HB	Severely Immunocompromised	2010 Feb 11	
Exemption	Agent	MMR-Var	Refusal	2010 Feb 10	
Precaution	Agent	LYM	LateX Allergy	2013 Feb 08	

Antigen Count

Doses By Antigen	Valid Doses	Invalid Doses	Total
Diphtheria (D)	1	0	1
Hepatitis B (Hb-regular)	1	0	1
Pertussis (aP)	1	0	1
Polo (IPV)	1	0	1
Tetanus (T)	1	0	1
Total:	5	0	5

Immunization Forecast by Agent/Antigen

Last Forecast Ran On: 2018 Feb 12 | Forecast Status calculated as of: 2018 Mar 22

Immunizing Agent/Antigen	Forecasted Dose #	Codes	Volume	Brand	Eligible	Due	Overdue	Forecast Status
HA	1				1981 Feb 13	1981 Feb 13	1981 Feb 14	Overdue
Td-IPV	2				2018 Mar 12	2018 Mar 12	2018 Mar 13	Overdue

Invalid Immunization Reasons

Copyright © IBM Corporation 2007, 2016. All Rights Reserved. Build Nightly-3.0.1.1.20160621-1755

Figure 3: Client Immunization Profile Sections - Forecaster Specific

RISK FACTORS

Risk Factors provide special antigen forecasting and/or validation schedules that are specific to certain medical conditions or populations. Note that not all Risk Factors have a forecasting/validation impact to a client's forecast.

Table 1: Risk Factors

Immunization Risk Factor	Antigens	Details
Chronic Medical Condition – Bleeding Disorders	HA HB	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>HAHB</u> –(validation-only) If dose 1 provided, forecast additional HA & HB doses: 2 dose series starting from 12 mos. – 15 yrs. of age for Twinrix Adult and 3-dose series starting at 12 mos. of age for Twinrix Junior (adjusts to Adult formulation once client is 19 yrs. of age)
Chronic Medical Condition – Cardiac Disease	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13 naïve <u>Pneu-P</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Cochlear Implant	Hib Men-C-ACYW-135 Pneu-C-13 Pneu-P-23	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>Men-C-ACYW-135</u> – 4-dose series starting at 2 mos. of age, 3-dose series starting at 6 mos. of age, 2-dose series starting at 12 mos. of age <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia	Hib Men-C-ACYW-135 Men-B Pneu-C-13 Pneu-P-23 Rab	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>Men-C-ACYW-135</u> – Age-based schedule. Booster 3-5 years later based on age at first dose. <u>Men-B</u> – Age-based schedule. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Chronic Medical Condition – CSF Disorder	Men-C-ACYW-135 Pneu-C-13 Pneu-P-23	<u>Men-C-ACYW-135</u> – 4-dose series starting at 2 mos. of age, 3-dose series starting at 6 mos. of age, 2-dose series starting at 12 mos. of age <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Cystic Fibrosis	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Diabetes Mellitus	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Liver Disease	HA HB Pneu-C-13 Pneu-P-23	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>HAHB</u> – If dose 1 provided (validation-only), forecast additional HA & HB doses: 2 dose series starting from 12 mos. – 15 yrs. of age for Twinrix Adult and 3-dose series starting at 12 mos. of age for Twinrix Junior (adjusts to Adult formulation once client is 19 yrs. of age) <u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age with additional booster dose forecasted based on age of first dose
Chronic Medical Condition – Liver Disease – Hepatitis B	HA Pneu-C-13 Pneu-P-23	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose.

Panorama Forecaster Handbook

Immunization Risk Factor	Antigens	Details
Chronic Medical Condition – Lung Disease	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Liver Disease – Hepatitis C	HA HB Pneu-C-13 Pneu-P-23	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>HAHB</u> – If dose 1 provided (validation-only), forecast additional HA & HB doses: 2 dose series starting from 12 mos. – 15 yrs. of age for Twinrix Adult and 3-dose series starting at 12 mos. of age for Twinrix Junior (adjusts to Adult formulation once client is 19 yrs. of age) <u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose.
Chronic Medical Condition - Malignancies/Cancer	Hib Pneu-C-13 Pneu-P-23	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose.
Chronic Medical Condition - Neurological conditions that impede the clearance of respiratory/oral secretions	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Chronic Medical Condition – Renal Disease	HB Pneu-C-13 Pneu-P-23	<u>HB</u> – 3-dose HB (1.0 mL) series starting at birth and 3 dose HB Dialysis (1.0 mL) series starting at 20 years <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose.
Chronic Medical Condition – Sickle Cell Disease	Hib Men-C ACYW-135 Men-B Pneu-C-13 Pneu-P-23 Rab	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>Men-C-ACYW-135</u> – Age-based schedule. Booster 3-5 years later based on age at first dose. <u>Men-B</u> – Age-based schedule. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Contact – Hepatitis A	HA Ig	Note: No special forecasting at this time
Contact – Hepatitis B	HB HBIG	<u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 2-dose 1.0 mL for those 11-15 as per school program parameters. 3-dose 1.0 mL series for those ≥ 20 years, including those born before January 1, 1984.
Contact - IMD Case: serogroup A, Y, or W-135	Men-C-ACYW-135	<u>Men-C-ACYW-135</u> – 4-dose series starting at 2 mos. of age, 3-dose series starting at 6 mos. of age, 2-dose series starting at 12 mos. of age; 1 dose series starting at 2 years of age
Contact - IMD Case: serogroup B	Men-B	<u>Men-B</u> – 4-dose series starting at 2 mos. of age, 3-dose series starting at 6 mos. of age, 2-dose series starting at 12 mos. of age
Contact - IMD Case: serogroup C	Men-C-C (or Men-C-ACYW-135)	<u>Men-C-C</u> – 3-dose series starting at 2 mos. of age. If partially immunized < 12 mos. of age and become contact of Men-C-C, require 1 dose < 12 mos. of age + additional dose ≥ 12 mos.
Contact – Measles	MMR or MMRV Ig	No special forecasting at this time
Contact - Pertussis Outbreak – Defined Community	Age appropriate pertussis	No special forecasting at this time
Immunocompromised – Acquired Complement Deficiency	Hib HPV Men-C- ACYW-135 Men-B	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>HPV</u> - eligible for 3-dose series <u>Men-C-ACYW-135</u> – Age-based schedule. Booster 3-5 years later based on age at first dose. <u>Men-B</u> – Age-based schedule.

Panorama Forecaster Handbook

Immunization Risk Factor	Antigens	Details
	Pneu-C-13 Pneu-P-23 Rab	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age with additional booster dose forecasted based on age of first dose <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – Congenital Immunodeficiency	Hib HPV Men-C-ACYW-135 Men-B Pneu-C-13 Pneu-P-23 Rab	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>HPV</u> - eligible for 3-dose series <u>Men-C-ACYW-135</u> – Age-based schedule. Booster 3-5 years later based on age at first dose. <u>Men-B</u> – Age-based schedule. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – HIV	HB Hib HPV MenB Men-C-ACYW-135 Pneu-C-13 Pneu-P-23 Rab	<u>HB</u> – 3-dose 1.0 mL series starting at birth and 4-dose HB-Dialysis 1.0 mL series starting at 18 yrs. of age <u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>HPV</u> – eligible for 3-dose series <u>Men-B</u> – Age-based schedule for children. <u>Men-C-ACYW-135</u> – Age-based schedule for children ≥ 17 years. Booster 3-5 years later based on age at first dose. <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> - 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – Related to Disease	Hib HPV Pneu-C-13 Pneu-P-23 Rab	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>HPV</u> - eligible for 3-dose series <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – Transplant Candidate or Recipient - Islet Cell	Various Rab	<u>Blank Forecasting</u> – There is such variation possible for these clients that no forecast of any antigens will be displayed <u>HPV</u> - eligible for 3-dose series <u>Rab</u> – 5-dose series starting when client is exposed (must have Post-exposure - Rabies risk factor as well)
Immunocompromised – Transplant Candidate or Recipient - Solid Organ/Tissue	Various Rab	<u>Blank Forecasting</u> – There is such variation possible for these clients that no forecast of any antigens will be displayed <u>HPV</u> - eligible for 3-dose series <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – Transplant Recipient – HSCT	Various Rab	<u>Blank Forecasting</u> – There is such variation possible for these clients that no forecast of any antigens will be displayed <u>HPV</u> - eligible for 3-dose series <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Immunocompromised – Treatment - Specify	Hib HPV Pneu-C-13 Pneu-P-23 Rab	<u>Hib</u> – 1-dose series starting at 5 yrs. of age <u>HPV</u> - eligible for 3-dose series <u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age, with booster dose 5 years after first dose. <u>Rab</u> – 5-dose series (must have Post-exposure - Rabies risk factor)
Occupation - Child Care		No special forecasting at this time
Occupation - Health Care – Non-RHA Employee		No special forecasting at this time
Occupation - Health Care - RHA/SCA/FNJ Employee	HB IPV Var MMR	<u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>IPV</u> – 3 dose primary series if unimmunized <u>Varicella</u> – 2-dose series if unimmunized/no serological evidence of VZV IgG antibodies (need to enter exemption if serology is positive) <u>MMR</u> – 2-dose series if unimmunized/no serological evidence of Measles, Mumps or Rubella IgG antibodies (need to enter exemption if serology is positive)

Panorama Forecaster Handbook

Immunization Risk Factor	Antigens	Details
Occupation - Health Care – Student	HB IPV Var MMR	<u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>IPV</u> – 3 dose primary series if unimmunized <u>Varicella</u> – 2-dose series if unimmunized/no serological evidence of VZV IgG antibodies (need to enter exemption if serology is positive) <u>MMR</u> – 2-dose series if unimmunized/no serological evidence of Measles, Mumps or Rubella IgG antibodies (need to enter exemption if serology is positive)
Post-exposure – Blood and Body Fluids	HB HBIG	No special forecasting at this time
Post-exposure - Infant Born to HBsAg+ Mom or High Risk for HB - Greater than or equal to 2000 grams	HB HBIG	<u>HB</u> – 3-dose series starting at birth
Post-exposure - Infant Born to HBsAg+ Mom or High Risk for HB - Less than 2000 grams	HB HBIG	<u>HB</u> – 4-dose series starting at birth
Post-exposure – Rabies	Rab RabIG	<u>Rab</u> – 4-dose series starting when client is exposed; 5-dose series for Immunocompromised individuals
Post-exposure - Tetanus-prone Wound - TIG Required	TIG	Note: No special forecasting at this time
Post-exposure - Varicella	VarIG	Note: No special forecasting at this time
Special Population - Children of Immigrants - Hepatitis B	HB	<u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years.
Special Population - Hepatitis A Program - Targeted Community	HA	<u>HA</u> – 2-dose series starting at 12 mos. of age
Special Population - Homeless	Pneu-P-23	<u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Special Population - Household member of an Immunocompromised person		No special forecasting at this time
Special Population – Illicit Drug Use	HA HB Pneu-P-23	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years. <u>HAHB</u> – If dose 1 provided (validation-only), forecast additional HA & HB doses: 2-dose series starting from 12 mos. – 15 yrs. of age for Twinrix Adult and 3-dose series starting at 12 mos. of age for Twinrix Junior (adjusts to Adult formulation once client is 19 yrs. of age) <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Special Population – LTC Facility	Pneu-C-13 Pneu-P-23	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age
Special Population – MSM	HA	<u>HA</u> – 2-dose series starting at 12 mos. of age <u>HAHB</u> – If dose 1 provided (validation-only), forecast additional HA dose
Special Population – Non-responder - Hepatitis B	HB (HBIG)	<u>HB</u> – 2 nd age appropriate HB series
Special Population – Non-responder - Specify		No special forecasting at this time
Special Population - Parents/Caregivers of Newborns (incl. expectant mothers)	Tdap	<u>Tdap</u> – Validation-only dose acceptable with no minimum interval from last dose of Tetanus-containing vaccine
Special Population – Potential Exposure -Hepatitis B	HB	<u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years.
Special Population – Potential Exposure -Hepatitis A		<u>HA</u> – 2-dose series starting at 12 mos. of age
Special Population - Pregnancy	Tdap	Does not forecast Tdap during pregnancy. This RF is to be applied to each Tdap dose given in each pregnancy. Start and end date this RF for the same date that vaccine is given.
Special Population-Non-immune woman childbearing age	Var	<u>Var</u> - 2-dose series

Panorama Forecaster Handbook

Immunization Risk Factor	Antigens	Details
Special Population - Resident - Group Home <ul style="list-style-type: none"> Does not apply to youth centres. 	Pneu-C-13 Pneu-P-23 HB	<u>Pneu-C-13</u> – 4-dose series for < 12 mos. of age. 1-dose series for those 5 yrs. - 17 yrs. of age are Pneu-C-13-13 naïve <u>Pneu-P-23</u> – 1-dose series starting at 24 mos. of age <u>HB</u> – 3-dose 0.5 mL series forecast at birth for those <11 yrs. or ≥ 16 yrs. 3-dose 1.0 mL series for those ≥ 20 years.
Special Population - Resident - Provincial Correctional Facility	HB	No special forecasting at this time
Travel - Publicly Funded		No special forecasting at this time
Travel - Sales Program		No special forecasting at this time
Treatment - Botulism - Greater than or equal to one year of age	BAT	No special forecasting at this time
Treatment - Botulism - Less than one year of age	BAT	No special forecasting at this time
Treatment - Diphtheria	DAT	No special forecasting at this time
Treatment - Tetanus	Tlg and age-appropriate tetanus-containing vaccine	No special forecasting at this time

Best Practices when using Risk Factors:

- Date Reported – This automatically defaults to the today’s date and can be accepted as that.
- Response – Risk Factors must be entered with a Response value of “Yes” for the Risk Factor to be listed in the Immunization Profile and to affect the Immunization Forecast.
- Comments – Comments are not required or recommended and should only be used if deemed necessary.
- NOTE: A RF can be end dated (without a start date ever having been documented) and any vaccine doses given for that RF will not invalidate. An example is Rabies exposure where a vaccine series does not warrant continuation because the lab data is negative for the offending animal.

INTERVALS

Intervals are one of the fundamental aspects of the Panorama Forecaster rules – for both validation and forecasting. The intervals define when a forecast dose is appropriate, and therefore play a large part in deciding if a dose is Valid or Invalid, and when the next dose should be forecasted.

There are two types of intervals for Forecaster rules: **Minimum Intervals** and **Due Intervals**.

Per SIM (Chapter 5, Section 2.0), the **Minimum Interval is the shortest time between two doses of a vaccine in a multi-dose series in which a protective response to the subsequent dose can be expected**. Minimum intervals are used to assess the validity of a dose received, and to plan when the next dose should be given:

- For both Inactive and Live antigens, Minimum Intervals are calculated from the last administered dose, whether it was a valid OR an invalid dose.
- Note that for **most** Live Injectable Antigens, there is a 4-week minimum interval between any doses. This means that if, for example, a dose of Yellow Fever is provided to a client, it will push out the Eligible and Due dates by 4 weeks for the MMR-Var. This is referred to as the **Live Interval**.
- Minimum Intervals for antigens will be calculated in terms of weeks (e.g. 4 weeks = 1 month; 8 weeks = 2 mos.; 12 weeks = 3 months; 20 weeks = 5 months, 24 weeks = 6 months).
- When looking at the Client Immunization Profile, the Minimum Interval dictates the Eligible Date (otherwise, it is typically age). Before the Minimum Interval has elapsed, the status will display as “Up to Date”; once this interval has elapsed, the status will display as “Eligible”.

The **Due Interval** is the recommended time between two doses of a vaccine in a multi-dose series.

- The Due Interval is the period of time that encompasses when a dose is recommended, until it is considered overdue.
- When looking at the Client Immunization Profile, the Due Interval often dictates the Due Date. Once the Due Interval has been reached, the status will change from “Eligible” to “Due”.
- When a client is delayed or on a catch-up schedule, or is overdue in the regular schedule (currently set at one day or more past the Due date in the Forecaster rules), Minimum Intervals will be used to forecast future doses until the client is up-to-date for age. (SIM, Chapter 5, Section 2.0).
 - **Please Note:** For antigens where the age at presentation is relevant, this will affect the Eligible and Due dates overall for the agent.
 - For example, if a 2-year-old client missed her 6-month dose of DTaP-IPV-Hib, the Eligible and Due Dates for the next dose is based on the dose rule for Hib for the current age of the client. Since the client is now ≥ 15 months of age, the Eligible and Due Dates for DTaP-IPV-Hib were set to the date the client became 15 months old (the minimum date the client can be to receive the booster Hib dose). The minimum date for Hib is selected for Due Date (in addition to Eligible Date) since Diphtheria, Tetanus, Pertussis and Polio are significantly overdue as well (and at this age, there are no other age-specific rules for these antigens in effect).
- When the due interval has passed, thereby meeting the “Overdue” date, the status of the product in the client’s forecast is set to “Overdue”.
- To encourage clients or their parents (if applicable), to receive immunizations on time, the Overdue Date has been set to one day past the Due Date. This means:
 - The Due Interval is one day in duration
 - The Overdue Interval begins one day after the Due Date
 - The only exception to this is for Grade-based schedules where Overdue Dates are set to an age.
 - **Note that “Overdue” status does not show on the Profile Report.**

REFORECASTING

How is a Client's Immunization Forecast Kept up to Date?

The Forecaster runs for the first time when a client is created and their initial Forecast is created. After that, there are several different ways the Forecast is re-run (also called Reforecasting, or Refreshing the Forecast) to ensure the Forecast is accurate. However, **clients are not automatically re-forecasted when the Immunization record is opened** (i.e. when the Client Immunization Summary or Client Immunization View/Add screens are opened) because Panorama assumes that the client's forecast is accurate as of the date of the last automatic reforecast.

Many of the actions you take with the client record will trigger a Reforecast, such as:

- Updating the **Date of Birth**
- Updating the **Gender**
- Adding or removing a **Special Consideration (Exemption or Contraindication)**
- Adding or removing a **Risk Factor**
- Entering an immunization record for a client (both historical and administered)

There are several ways that the Forecast is triggered to refresh that happen automatically. A client will be re-forecasted automatically under the following conditions:

1. On their 2nd, 7th and 17th Birthdays – these are “milestone dates” set as part of the Panorama application and are configurable.
2. On the earliest of the Maximum Dates for any Agent in a client's Forecast. For example, a client with Rotavirus in their forecast is using a rule with a maximum age of 8 months; as soon as the client hits this Maximum Date, the Forecaster will automatically rerun producing a new forecast for the client (and thereby removing Rotavirus from the client's forecast).
3. Whenever a new version of the Panorama Forecaster Rules is loaded into Production, the Panorama Team ensures that forecasts are refreshed for all clients so that any new or modified rules apply. Note that it can take a few days to one week to process all the clients that exist in Panorama.

What is Reforecast on Demand?

The Reforecast on Demand functionality allows a user to trigger the update of a client's Forecast on demand **and should be applied every time a user investigates a forecasting issue**. This is used when Clinicians feel that the forecast for a client may have changed since the last automatic reforecast (i.e. the Client's eligibility may have changed and a different product may be required now that they have aged into an older age cohort). This functionality is available from the Client Immunization Profile or Client Immunization View/Add screens via the “Refresh Forecast” button:



Note that the Reforecast on Demand function:

- Applies to one client at a time
- The re-forecasting is immediate.

When Should Reforecast on Demand be Applied?

The Reforecast on Demand section displays the date that the Forecast was last refreshed for the client – i.e. how current the forecast is. You can choose to use the Reforecast on Demand based on your clinical judgment.

OVERRIDING STATUS

When Should I Use Override Status?

The Override Status functionality can be used to:

- Change an Invalid dose to Valid
- Change a Valid dose to Invalid
- Reverse a previous status override (by having the Forecaster assign a status)

Changing the immunization status has a significant impact on a client's forecasting and is considered a clinical function. Follow your local business practice guidelines if a second clinical opinion is required or if a different user should be completing the override.

Changing the status of an administered agent requires clinical judgment, so when using the Override Status function, remember to enter a comment explaining why you decided the dose was actually invalid, or valid.

Note that records converted from SIMS would have had the status assigned by the Forecaster, so upon review some doses may need to have the status overridden.

By manually overriding the status, you will trigger the Forecaster to consider that status if any future forecasting is required. This means that if there are future doses still required as part of a series, forecasting will be based on the dates and status of previous doses, if either manually overridden or set by the Forecaster.

SCENARIOS TO OVERRIDE TO INVALID

- Cold Chain Break
- Partial dose administered (SIM, Chapter 5, Section 4.4)
- If a client receives a partial dose (syringe or needle malfunction, or other circumstance), and opts not to be immunized again on the same day, override the status to Invalid
- If the client is re-immunized the same day with the same agent or antigens, the Forecaster will automatically mark one of the recorded doses as invalid
- A vaccine administered was expired
- A client's historical record shows this dose was invalid

SCENARIOS THAT SHOULD NOT BE OVERRIDDEN TO INVALID

- Client received a vaccine by a route other than recommended (SIM, Chapter 5, Section 4.3)
 - Note: this applies to most vaccines given subcutaneously instead of intramuscularly
- Client received a larger than recommended vaccine dosage (SIM, Chapter 5, Section 4.4)

SCENARIOS TO OVERRIDE TO VALID

- Use of a vaccine in an unusual schedule in the context of travel for which rules have not been built into the Forecaster. For example, an accelerated schedule of HAHB at 0, 7, and 21-30 days and 12 months

SCENARIOS THAT SHOULD NOT BE OVERRIDDEN TO VALID

- A health care provider should not override an invalid status without carefully considering why the Forecaster would have labeled it as invalid in the first place. Be aware that overriding an invalid dose to valid will affect the client's forecast, and in several cases, **may stop the forecasting of future doses or antigens indefinitely. This is not wrong according to the forecaster rules.**
- Users are encouraged to consult with their regional Key User prior to changing an Invalid dose to Valid

When Should I Use Revised Dose?

Revised Dose is functionality that allows a user to override the system-generated dose number and automatically sets the status of the dose to Valid (override). Because changing the dose number (and making it a Valid dose) has a significant impact on the client's history, always enter a comment explaining why you revised the dose number.

Users should use the Revised Dose functionality only when there is an incomplete history for a client, or documentation of previous doses has been received and entered as historical data. This is often the case when the client has incomplete documentation for their previous immunization history (e.g., a Canadian born adult who states they received a complete tetanus series in childhood and is now presenting for a Td booster. In this case the user would record the Td as dose 4).

- Note that records converted from SIMS will have the dose number automatically assigned by the Forecaster so on review some doses may need to have the dose number revised as per the user clinical assessment. The dose details recorded in SIMS can be seen in the Comments section on the Immunization Detail screen. Use this information to assess the correct dose number for the agent, and then enter that number in the "Revised Dose Number" field.

APPENDIX A: GENERAL TERMS AND DEFINITIONS

Agent: Currently (or historically) available vaccine formulations combining specified antigens e.g., MMR, Tdap

Agent “Roll Up”: A step in the forecasting algorithm that reviews all required Antigens and forecasts the most appropriate Agent.

Antigen: Component of an agent; a chemical structure that induces immunity e.g., Diphtheria (D), Measles (M)

Contraindication: A situation in which a drug, such as a vaccine, should not be used because the risk outweighs any potential therapeutic benefit. Contraindications will remove the vaccine they are associated to from a client forecast.

Deferral: A deferral is created when a condition or situation exists that prevents the client from receiving a scheduled immunization (for a specific immunizing agent and dose). Recording a deferral indicates to other clinicians why an immunization was not administered at the recommended time. The client will continue to be forecast for the immunizing agent that is deferred. The deferral will remain on the client record until the deferral end date is reached.

Exemption: An exemption to an immunizing agent may be recorded for clients due to immunity (e.g., the client has previously been immunized or had the disease) or refusal by the client (e.g., for medical, religious, or philosophical reasons) in the rare instance that a client insists they do not want to receive any reminders for any vaccine(s) in the future. Exemptions will remove the vaccine they are associated to from a client forecast

Extra Dose Safe (EDS): An extra Antigen is included in the forecast to support the provision of the recommended Agent. E.g., a client is complete for Measles, but needs Mumps and Rubella. The Immunization rules will allow MMR to be forecasted, providing the additional Measles is the only way to support the client to receive the required Mumps and Rubella.

Forecast: The cumulative list of recommended Agents that form a client’s future immunization schedule. The Forecast for any given Agent includes the relevant dates – Eligible, Due and Overdue. The Overdue date is not displayed but if the date has been met, the Status of the forecasted Agent is “Overdue”.

Interaction Rules: Additional rules that ensure specific spacing between doses of different Agents; a dose of an Agent received too early will be marked as Invalid. E.g., an interval of 4 weeks between any two live vaccines; no Men-C-C doses for 6 months following a Men-P-ACYW-135 dose; 8 weeks between doses of Pneu-C-13 and Pneu-P-23 for a child.

Invalid: An Antigen or Agent that does not meet the recommended guidelines from the Immunization Schedule Dose Rules. Clinical decision by the appropriate healthcare practitioner will determine if the dose must be repeated. Invalid doses will not be counted when forecasting required future doses, but future dose intervals will be counted from these doses. E.g., MMR given at 10 months of age is invalid. Dose 1 will be forecasted at 12 months of age.

Leftover Forecasted Antigens: Single Antigens that are still required, but did not get Rolled Up into a recommended Agent in the forecast (because there is either no Agent to roll up to, or the corresponding Agent that the Antigen might be a part of is not forecastable). These are rarely seen. If they are seen, it is usually because of cases of unusual histories from out of country, or parents dictating a unique schedule for their child.

Minimum Intervals : In general, intervals up to and including 6 months are converted to 4-week periods for the purposes of validation, but you will also see these reflected in the “Eligible” dates for forecasted vaccines. NOTE: All delayed schedules will be brought to minimum intervals.

Mixed Dose Number: A Mixed Dose Number is the situation where a client has received a different number of doses of the Antigens in an Agent. This is indicated with an “M” in the Forecast and on the Immunization Detail screen. E.g., a client with one dose of Polio in history is forecasted for DTaP-IPV-Hib with a Mixed Dose Number because it is the 2nd dose of Polio, but the 1st of all the other antigens.

Override Status: User function allowing forced override of the dose Status assigned by the Forecaster. This function is separate from Revised Dose, and does not involve altering the Dose Number. Status can be changed from Valid to Invalid or from Invalid to Valid. This update can be reversed by choosing to change the status back to “Set by Forecaster”. This is indicated with “O” in the Client Immunization Profile.

Precaution: A condition that may increase the risk of an adverse reaction following immunization or that may compromise the ability of the vaccine to produce immunity. In general, vaccines are deferred when a precaution is present. However, there may be circumstances when the benefits of giving the vaccine outweigh the potential harm, or when reduced vaccine immunogenicity may still result in significant benefit to a susceptible, immunocompromised host. Precaution will not stop the forecast for an associated vaccine.

Record Immunization: User function allowing input of immunization information – “Add Historicals” or “Add Administered”.

Reforecast – Automated: Refresh of the client immunization record – affects both validation and forecasting. Automatically triggered by: Change in DOB or Gender; addition or correction to immunization records; Special Considerations being added or removed – Exemptions and Contraindications (not Precautions); Risk Factors being added or removed.

Reforecast – On Demand: User function allowing the re-forecast of a client record on demand. Triggered through the “Refresh Forecast” button:



Revised Dose: User function allowing forced override of the system-generated Dose Number, also automatically sets the status of the dose to Valid (override). This is indicated with “OR” in the Client Immunization Profile.

Risk Factor: An attribute, characteristic or exposure of an individual who has an existing health condition or is at risk of developing a disease.

Valid: An Antigen or Agent that was given within the recommended guidelines (meeting the minimum or maximum age/interval requirements) and is deemed to have provided protection. The dose will be counted when forecasting required future doses. E.g., a MMR given at 12 months of age is valid and a second dose will be forecasted at 18 months.

Validation: The steps performed by Panorama to evaluate the client’s immunization history against the Immunization Forecaster rules.

APPENDIX B: ANTIGEN-SPECIFIC SCHEDULE DEFINITIONS

The Forecaster Rules have been completed for all age groups and special population risk factor categories. The following sections include forecasting and/or validation details (by antigen) that are relevant to understanding the forecasts (or lack thereof) that appear for clients in Panorama.

Diphtheria, Tetanus and Pertussis

1. BASIC SCHEDULE FOR WHEN STARTING < 7 YEARS

Dose #	Eligible	Due	Overdue
Dose 1	42 d	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d
Dose 3	4 wks	6 mos	Due Date + 1 d
Dose 4	24 wks. and 12 mos.	18 mos	Due Date + 1 d
Dose 5	24 wks. + last dose < 4 yrs. of age + client is now ≥ 4 yrs.	4 yrs	Due Date + 1 d
Dose 6	24 wks. + 11 yrs.	Sept 1 st + 12 yrs.	Sept 1 st offollowing yr

- If dose 4 is given ≥ 4 years of age, no further preschool booster needed.
- If dose 3 is received ≥ 7 years, dose 4 will forecast as the Gr. 8 Booster

Other Schedules Supported

2. There is a schedule for children starting ≥ 7 years to ≥ 17 years of age, with dose 1 and dose 2 separated by a minimum interval of 4 weeks, and dose 2 and dose 3 separated by a minimum of 24 weeks. Dose 4 is the Grade 8 dose. In a similar fashion to the schedule for children who start < 7 years, if a Tdap dose is given at 11 years or older, it is considered valid as the adolescent booster.
3. If client starts immunization on time but is presenting at ≥ 7 years of age for dose 2, min interval of 24 weeks between dose 2 and 3.
4. Those ≥ 18 years presenting with 0, 1 or 2 previous tetanus- and diphtheria-containing vaccine doses (administered in childhood or adulthood) will have forecasted sufficient doses to complete a 3-dose tetanus and diphtheria primary series as per SIM chapter 5. Only Td will be forecasted.
5. Booster doses of Td are forecasted for adults, with a minimum age of 18 and minimum interval of 5 years from the previous dose. The due date is 10 years after the previous dose. If Pertussis as Tdap is provided, it will be validated.
6. Cocooning Program – Doses of Tdap given to caregivers of newborns will be validated without regard to minimum intervals. 3-A dose forecasting series is in place to ensure appropriate doses are given to adults. Note that clients must have the following risk factor assigned to ensure this dose is validated correctly:
 - Special Population - Parents/Caregivers of Newborns
7. Validation rules cover extra doses of Tetanus, Diphtheria and Pertussis antigens with a minimum interval of 5 years for future booster doses and due intervals will be 10 years. If Td/Tdap is given (off schedule at <5 years) for an animal bite, there is no risk factor to enter and the dose will show as invalid solely because it doesn't meet the Panorama scheduling rules. This does not mean that it was a wrong clinical decision and such doses should **NOT** be overridden to valid, as this will impact future forecasting of tetanus antigens for the client.
8. DTWP-HB-IPV - as the forecaster does not yet recognize DTWP-HB-Hib as valid antigens, enter a Client Warning *“DTWP-HB-Hib antigens are not counted in the Antigen Count, but are valid doses; ignore the forecaster & provide appropriate number of doses of these antigens”*

Panorama Forecaster Handbook

9. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell
- Please Note: Only “d” and “ap” will be forecasted at 7 years of age or older, although “D” and “aP” will be validated at 7 years or older if given.
- If “d” and “ap” are given between 4 years and 7 years of age, the doses will be validated as of dose 5 if all previous doses contain “D” or “aP”. In other words, Tdap will be validated for preschool booster if child has received four valid doses of “D”- and/or “aP”-containing vaccine before.
- If an individual has not received their adolescent Tdap booster, it will continue to be forecasted until 18 yrs. – 1 d. Once the individual becomes 18 yrs. old, Pertussis will no longer be forecasted. A completely unimmunized adult will be forecast for Tdap/Td/Td as per SIM, Chapter 5.
- Diphtheria “d” and Pertussis “ap” – Doses of “d” and “ap” can be given as young as 4 years of age as long as at least 4 doses of “D” and “aP” have been given already; these doses are acceptable (validated by the Forecaster rules), but are not preferred (forecasted).
- DTaP-IPV before 4th birthday removes Grade 8 Tdap from forecaster. This is a known issue – create Warning to flag that Grade 8 Tdap needed.

Hib

1. BASIC SCHEDULE FOR CHILDREN < 5 YEARS (STARTING IMMUNIZATION < 7 MONTHS OF AGE)

Dose #	Eligible	Due	Overdue
Dose 1	42 d	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d
Dose 3	4 wks	6 mos	Due Date + 1 d
Dose 4	8 wks + 12 mos	18 mos	Due Date + 1 d

- Schedule rules adjust (i.e. minimum and due dates will change) depending on the age the child presents/re-presents at.

OTHER SCHEDULES SUPPORTED

2. Basic Schedule for Children starting ≥ 7 months and < 12 months of age and not Immunized for Hib (includes children with high-risk conditions in this age group).
3. Basic Schedule for Children starting ≥ 12 months and < 15 months of age and not Immunized for Hib (includes children with high-risk conditions in this age group).
4. Basic Schedule for Children starting ≥ 15 months and not immunized for Hib (includes children with high-risk conditions in this age group).
5. Validation rules cover extra doses of the Hib antigen for those already immunized with a minimum interval of 4 weeks between doses.
6. Special Forecasting Schedule for client's ≥ 5 years of age.
 - a. Includes 1-dose schedule for specified high-risk conditions whether or not the client was previously immunized.

Risk Factors:

- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
 - Chronic Medical Condition - Cochlear Implant
 - Chronic Medical Condition - Sickle Cell Disease
 - Immunocompromised - Acquired Complement Deficiency
 - Immunocompromised - Congenital Immunodeficiency
 - Immunocompromised - HIV
 - Immunocompromised - Related to Disease
 - Immunocompromised - Treatment - Specify
 - Chronic Medical Condition - Malignancies/Cancer
7. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- The earliest validation age of a booster dose (e.g., the fourth dose) of Hib is 12 months. It will still forecast for 18 months, and the number of doses required in the age-specific schedules has not changed.
- The extra dose at age ≥ 5 years for individuals with high-risk conditions reflects recommendations in the current version of CIG.
- The current release of the forecaster concentrates on routine schedules for children including the school-based program. Forecasting special population risk factors has also been included.

1. SPECIAL POPULATION - HEPATITIS A PROGRAM - TARGETED COMMUNITY

People born since Jan. 1, 1982 who live in Keewatin Yatthé, Athabasca or Mamawetan Churchill River Health Authorities or on reserves in Saskatchewan (with the exception of Air Ronge, La Ronge and Creighton).

Risk Factors: Special Population - Hepatitis A Program - Targeted Community

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	24 wks	18 mos	Due Date + 1 d

- In order for these children to be forecasted for HA, clinicians must assign clients the “Special Population - Hepatitis A Program - Targeted Community” Risk Factor; it will not be automatically assigned.
- If the first dose provided is invalid, a minimum interval of 4 weeks (not 24 weeks) is used to schedule dose 1.

A. HAHB schedule for Hepatitis A Pediatric Program – 2-dose series for Adult formulation (1.0 mL):

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	24 wks	18 mos + Dose 1 + 6 mos	Due Date + 1 d

- 2-dose schedule for those 12 months – 15 years inclusive, receiving 1.0 mL HAHB.
- Dose 1 of HAHB will be validated but will not be forecasted. Once a client has received a first dose of HAHB, the second dose of HAHB will be forecasted.

B. HAHB schedule for Hepatitis A Pediatric Program – 3-dose series for Junior formulation (0.5 mL) and Adult formulation ≥ 19 years:

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	4 wks	Dose 1 + 1 mo	Due Date + 1 d
Dose 3	24 wks. from Dose 1 + 8 wks. from Dose 2	Dose 1 + 6 mos	Due Date + 1 d

- 3-dose schedule for those 12 months – 18 years inclusive, receiving 0.5 mL HAHB, and those ≥ 19 years receiving 1.0 mL HAHB at 0, 1 and 6 months.
- Dose 1 of HAHB will be validated but will not be forecasted. Once a client has received a first dose of HAHB, the second dose of HAHB will be forecasted.

OTHER SCHEDULES SUPPORTED

2. High-risk ongoing exposure: 2-dose schedule for unimmunized individuals. Support is provided for receipt of HAHB products, and HA&/or HB is forecasted for second and/or third doses if it was received prior. A first dose of HAHB is never forecasted – only validated.

Risk Factors:

- Potential Exposure – Hepatitis A
 - Special Population - MSM
 - Special Population - Illicit Drug Use
 - Special Population – Potential Exposure - HA
 - Chronic Medical Condition - Bleeding Disorders
 - Chronic Medical Condition - Liver Disease
 - Chronic Medical Condition - Liver Disease - Hepatitis B
 - Chronic Medical Condition - Liver Disease - Hepatitis C
3. Schedule to support receipt of the HA vaccine for reasons such as travel, etc. for unimmunized individuals with no HA-specific Risk Factors. Support is provided for receipt of HAHB products.
 4. Validation rules cover extra doses of the HA antigen for those already immunized with a minimum interval of 24 weeks between doses.
 5. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- The clinician will need to enter the Risk Factor (“Special Population - Hepatitis A Program - Targeted Community”) manually, after which the Forecaster rules will forecast the HA product for the client.
- The current Forecaster rules are appropriate for HA vaccine. The schedules here do not accommodate an “accelerated” schedule for HAHB vaccine.
- Dosage volume and unit of measure must be entered for HAHB vaccine in order for the correct products to be validated and forecasted.
- Minimum interval for HA will be 24 weeks rather than 6 months. Please note that dosage volume is considered in the HA schedules for Twinrix products only. Dosage volume is unspecified for HA products because there are several different products available with different minimum and maximum ages; it has been decided that product and dosage volume recommendations are best left up to the clinician in these cases.

1. AND 2. BASIC SCHEDULES – NEONATES < 2000 g AND ≥ 2000 g

Risk Factor:**A. Post-exposure - Infant Born to HBsAg+ Mom or High Risk for HB - Greater than or equal to 2000 grams:**

Dose #	Eligible	Due	Overdue
Dose 1	0 d	0 d	Due Date + 1 d
Dose 2	4 wks	1 mo	Due Date + 1 d
Dose 3	16 wks. from Dose 1 + 8 wks. from Dose 2 + 24 wks.	6 mos	Due Date + 1 d

B. Post-exposure - Infant Born to HBsAg+ Mom or High Risk for HB - Less than 2000 grams:

Dose #	Eligible	Due	Overdue
Dose 1	0 d	0 d	Due Date + 1 d
Dose 2	4 wks	1 mo	Due Date + 1 d
Dose 3	4 wks	2 mos	Due Date + 1 d
Dose 4	8 wks. + 24 wks. old	6 mos	Due Date + 1 d

3. ROUTINE GRADE 6 PROGRAM

Dose #	Eligible	Due	Overdue
Dose 1	11 yrs	Sept 1 + 11 yrs	Due Date + 1 yr
Dose 2	16 wks	Dose 1 + 6 mos	Due Date + 1 d

- 2-dose schedule of 1.0 mL (the volume is specified).
- There is a rule to handle a child receiving a second dose of 0.5 mL, then forecast for a third dose of 0.5 mL, and rules to deal with children who are delayed for their second dose (converted to a “normal” schedule).
- Children 11-15 years old who receive 0.5 mL as their first dose will automatically forecast according to the 3-dose 0.5 mL HB series. Refer to SIM Chapter 10 *Hepatitis B Completion Scenarios* for more information.
- There will be a small number of children in Grade 6 who are younger than 11 years old. They are to receive the 1.0 mL 2-dose series; their second dose of 1.0 mL will forecast ≥ 16 weeks from dose 1 which will complete the grade 6 1.0 mL 2-dose series.

HAHB Schedule – 2-dose HB series for Adult formulation (1.0 mL):

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	24 wks	Dose 1 + 6 mos	Due Date + 1 d

- 2-dose schedule for those born ≥ Jan 1, 1984 and 12 months - 15 years inclusive, receiving 1.0 mL HAHB.
- Dose 1 of HAHB will be validated but will not be forecasted. Once a client has received a first dose of HAHB, the second dose of HAHB will be forecasted.

- **HAHB schedule – 3-dose HB series for Junior formulation (0.5 mL) and Adult formulation ≥ 19 years:**

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	4 wks	Dose 1 + 1 mos	Due Date + 1 d
Dose 3	24 wks. from Dose 1 + 8 wks. from Dose 2	Dose 1 + 6 mos	Due Date + 1 d

- 3-dose schedule for those 12 months – 18 years inclusive, receiving 0.5 mL HAHB, and those ≥ 19 years receiving 1.0 mL HAHB at 0, 1 and 6 months.
- Dose 1 of HAHB will be validated but will not be forecasted. Once a client has received a first dose of HAHB, the second dose of HAHB will be forecasted.
- HAHB Dose 3 - The third HB dose will validate at 16 weeks from dose 1 provided that the correct interval between doses 2 and 3 have been met.

4. CLIENTS WHO ARE HIV POSITIVE

Risk Factor: Immunocompromised - HIV:

Dose #	Eligible	Due	Overdue
Dose 1	0 d	0 d	0 d
Dose 2	4 wks	Dose 1 + 1 mos	Due Date + 1 d
Dose 3	20 wks	Dose 1 + 6 mos	Due Date + 1 d

- Children < 18 years of age receive a 3-dose schedule of HB 1.0 mL at 0, 1 and 6 months.
- Adults ≥ 18 years receive a 4-dose schedule of HB Dialysis 1.0 mL at 0, 1, 2 and 6 months.

5. CLIENTS WHO WITH RENAL DISEASE

Risk Factor: Chronic Medical Condition - Renal Disease:

Dose #	Eligible	Due	Overdue
Dose 1	0 d	0 d	0 d
Dose 2	4 wks	Dose 1 + 1 mo	Due Date + 1 d
Dose 3	20 wks	Dose 1 + 6 mos	Due Date + 1 d

- Adults ≥ 20 years receive a 3-dose schedule of HB Dialysis 1.0 mL at 0, 1 and 6 months.
- Schedule is based on the 3-dose Recombivax HB dialysis formulation schedule, with the expectation that the clinician will choose the correct formulation. There are validation rules to support a 4-dose Engerix-B schedule if that product is used, but the 4-dose schedule is not forecasted.

OTHER SCHEDULES SUPPORTED

6. Eligible at birth and due at birth when a risk factor is entered.
7. Schedule to cover others < 11 years or ≥ 16 years who have one of the risk factors identified below but have not yet started a series. The series completion follows a 0, 1, 6 month schedule (with minimum age for dose 3 of 24 weeks of age) and are eligible at birth.

Risk Factors: (if applicable)

- Chronic Medical Condition – Bleeding Disorder
- Chronic Medical Condition – Liver Disease
- Special Population – Illicit Drug Use
- Special Population – Potential Exposure – Hepatitis B

8. For healthy individuals born January 1984 or later who are 16 years of age or older but were not immunized in the school based program the forecaster will continue to forecast a 3-dose series.
9. Schedule to cover others < 11 years or ≥ 16 years who started on a series for other reasons (e.g. out of province infant programs, or born to an illicit drug user, or adults); series completion follows a 0, 1, 6 schedule (with minimum age for dose 3 of 24 weeks of age). For healthy individuals born January 1984 or later who are 16 years of age or older but were not immunized in the school based program the forecaster will continue to forecast a 3-dose series.

Risk Factors: (if applicable)

- Chronic Medical Condition – Bleeding Disorder
- Chronic Medical Condition – Liver Disease
- Special Population – Illicit Drug Use
- Special Population – Potential Exposure – Hepatitis B

10. Validation rules cover other clients who have received HB antigens based on minimum intervals of 4 weeks between doses 1 and 2, and 8 weeks between doses 2 and 3.
11. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

12. Schedule for special populations, forecasting a three dose series at 0, 1 and 6 months.

Risk Factors:

- Chronic Medical Condition - Liver Disease - Hepatitis C
- Contact - Hepatitis B
- Special Population - Children of Immigrants - Hepatitis B
- Occupation - Health Care - RHA/SCA/FNJ Employee
- Occupation - Health Care – Student
- Resident – Group Home
- Resident – Provincial Correctional Facility

13. Schedule for clients who are non-responders **and** HIV positive. Forecasts an additional 3- or 4-dose series depending on age.

Risk Factors:

- Immunocompromised - HIV
AND
- Special Population - Non-responder - Hepatitis B

14. Schedule for clients who are non-responders **and** have renal disease. Forecasts an additional 3-dose series based on the routine renal schedule of 0, 1 and 6 months.

Risk Factors:

- Chronic Medical Condition - Renal Disease
AND
- Special Population - Non-responder - Hepatitis B

15. Schedule for general non-responders. Forecasts an additional 3-dose series based on the standard 0, 1 and 6-month schedule.

Risk Factors:

- Special Population - Non-responder - Hepatitis B

PLEASE NOTE

- To ensure a consistent provincial approach, when a client's documented immunization **record does not show the HB-containing vaccine volumes** administered for previous doses in which a minimum 3-dose series **has not been completed**, it is recommended that:
 - 0.5 mL HB doses are administered to clients younger than 20 years of age at appropriate intervals to complete a 3-dose series.
 - 1 mL HB doses are administered to clients 20 years of age and older at appropriate intervals to complete a 3-dose series.
- Young children who received DTaP-IPV-HB-Hib or DTwP-HB-Hib and do not have risk factor, the HB doses may show as invalid. If they have completed a 3 doses series of a HB containing vaccine, an exemption should be documented if appropriate (e.g., have serological evidence of immunity) or a warning should be added to the client's record.
- First dose for neonates is not forecasted, but is validated. This is because the first dose is assumed to be given at birth, so there is no need to forecast this dose.
- **If client has multiple risk factors where HB vaccine is indicated, HIV and renal disease will trump other risk factors so that HB-D is forecasted once either of these RFs is entered.** As a result, previous HB doses may appear as invalid. These doses should be overridden to valid.
- For clients with renal disease, the generic product will be forecast even if Engerix-B was received; will forecast the 3-dose schedule, though the 4-dose schedule is acceptable.
- Dosage volume and unit of measure must be entered for HB vaccine in order for the correct products to be validated and forecasted.
- If a child has received HAHB doses younger than 1 year of age, their Antigen Count will show HA and HB antigens from HAHB vaccine as invalid. **The HB antigens can be overridden by users to validate these doses to ensure that correct forecasting of future HB doses is accurate.**
- For healthy individuals born January 1, 1984 or later who are 16 years of age or older but were not immunized in the school based program the forecaster will continue to forecast a 3-dose series.
- Note: The forecaster doesn't always validate HB (on separate line) and HB part of HAHB – doesn't add these 2-HB's together as part of the same series.
- Clinicians will make adjustments to these schedules where appropriate. Validation rules are included to handle the various options needed in clinical practice. For those situations where it might not have been possible to include all combinations of products and dosages, clinicians may choose to override a dose status. Please consult a regional Key User to confirm when it is appropriate to override a dose.

HPV

1. GRADE 6 PROGRAM (HPV-9)

Dose #	Eligible	Due	Overdue
Dose 1	9 yrs	Sept. 1 & 11 yrs	Due Date + 1 yr
Dose 2	Dose 1 + 24 wks	Dose 1 + 6 mos	Due Date + 1 d

- Birth cohorts eligible are females born since Jan. 1 1996 and males born since Jan. 1 2006.
- Maximum age for forecasting of this dose in eligible cohorts is 27 years -1 day.
- There will be a small number of children in Grade 6 who are younger than their peers, and it is expected that the nurse will immunize them according to provincial policy.

Other Schedules Supported

2. Validation rules cover HPV-2 schedules for females only.
3. For females who have incomplete immunization with HPV-2, valid doses of HPV-2 are accepted as equivalent to valid doses of HPV-9, with schedules to be completed with HPV-9
4. Validation rules for females ≥ 46 years – 1 day of age and males ≥ 27 years – 1 day of age and for extra doses received.
5. Validation rules for the 2-dose HPV program are in effect now; if a person receives 2 doses of HPV vaccines 24 weeks apart, they are considered complete for HPV and will not be forecasted for a third dose.
6. 3-dose HPV schedule for those ineligible to begin or complete the 2-dose HPV-9 schedule based on their age at first dose.
7. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

Eligible females and males who have the risk factors below are ineligible for the 2-dose schedule, thus the 3-dose HPV schedule will forecast for them.

Risk Factors:

- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Immunocompromised – HIV)
- Immunocompromised - Related to Disease
- Immunocompromised - Treatment – Specify

Dose #	Eligible	Due	Overdue
Dose 1	9 years	9 years	Due Date + 1 day
Dose 2	Dose 1 + 4 wks	Dose 1 + 2 mos	Due Date + 1 day
Dose 3 ¹	Dose 2 + 12 wks ¹	Dose 2 + 4 mos	Due Date + 1 day

¹ 24 weeks is required between doses 1 and 3

Influenza

1. BASIC SCHEDULE FOR CHILDREN < 9 YEARS OF AGE

Dose #	Eligible	Due	Overdue
Dose 1	Oct 1 + 6 mos	Oct 1 + 6 mos	Dec 31
Dose 2	Dose 1 + 4 wks	Dose 1 + 4 wks	Dose 1 + 4 wks + 1 day

- Basic Schedule for Children starting < 9 years of age, presenting in the summer months (April – September) will be forecasted to the beginning of the flu season, Oct 1.
- Basic Schedule for Children starting < 9 years of age, presenting in the flu season (October – April) will be forecasted for their vaccine as of today. They should receive their dose as soon as possible in the flu season.

2. OTHER SCHEDULES SUPPORTED

- Validation rules cover doses of FluMist for those ≥ 2 years and < 60 years. 2-dose series for those < 9 years never immunized with a minimum interval of 4 weeks between doses. 1-dose series for those ≥ 9 years.
- Validation rules cover doses of influenza for those 9 years and older.
- Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- Flu season is Oct 1 to March 31. Clients < 9 will be forecasted up until April 30 to receive Dose 2 with 4 weeks from Dose 1, as long as Dose 1 is given before April 1.

Men-B

1. BASIC SCHEDULE

Risk Factor:

- Contact - IMD Case: serogroup B
- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Immunocompromised – HIV (children up to and including 17 years of age)
- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
- Chronic Medical Condition - Sickle Cell Disease

Dose #	Eligible	Due	Overdue
Dose 1	8 wks	2 mos	Due Date + 1 d
Dose 2	8 wks	4 mos	Due Date + 1 d
Dose 3	8 wks	6 mos	Due Date + 1 d
Dose 4	12 mos	Max of 12 mos + Dose 3 + 8 wks	Due Date + 1 d

- Basic Schedule for those starting ≥ 6 months and < 11 months of age and not immunized for Men-B complete 3-dose series.
- Basic Schedule for those starting ≥ 12 months and < 11 years of age and not Immunized for Men-B complete 2-dose series with 8 weeks minimum interval between dose 1 and dose 2.
- Basic Schedule for those starting ≥ 11 years of age and not Immunized for Men-B complete 2-dose series with 4 weeks minimum interval between dose 1 and dose 2.

OTHER SCHEDULES SUPPORTED

2. Validation rules cover those who receive Men-B without Contact - IMD Case: serogroup B risk factor.
3. Validation rules cover extra doses of the Men-B antigen for those already immunized with a minimum interval of 4 weeks between doses.

PLEASE NOTE

- No Blank Forecasting schedule exists for Men-B.
- No Interaction Rules are applied between Men-B and other meningococcal vaccines.

Men-C-ACYW-135

1. ROUTINE GRADE 6 PROGRAM

Dose #	Eligible	Due	Overdue
Dose 1	10 yrs	Sept 1 + 11 yrs	Due Date + 1 yr

- If a dose has been received within the previous 3 years, this adolescent dose is forecast for Grade 8.
- Birth cohorts eligible are ≥ Jan 1 2000.
- Maximum age for forecasting of this dose in eligible cohorts is 22 years – 1 day.

2. MEDICALLY HIGH-RISK CLIENTS OR CLOSE CONTACTS

Risk Factors:

- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
- Chronic Medical Condition - CSF Disorder
- Chronic Medical Condition - Cochlear Implant
- Chronic Medical Condition - Sickle Cell Disease
- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Contact - IMD Case: serogroup A, Y, or W-135

Dose #	Eligible	Due	Overdue
Dose 1	24 mos	2 yrs	Due Date + 1 d
Dose 2	Dose 1 + 4 wks	Dose 1 + 8 wks	Due Date + 1 d

- Forecasts a 2-dose series for medically high-risk clients ≥ 24 months of age, and a 1-dose series for close contacts.

Dose #	Eligible	Due	Overdue
Dose 1	8 wks	2 mos	Due Date + 1 d
Dose 2	Dose 1 + 8 wks	4 mos old + Dose 1 + 2 mos	Due Date + 1 d
Dose 3	Dose 2 + 8 wks	6 mos old AND Dose 2 + 2 mos	Due Date + 1 d
Dose 4	12 mos + Dose 3 + 8 wks	Max of 12 mos old + Dose 3 + 8 wks	Due Date + 1 d

- If client is < 2 years of age, forecasts an age-appropriate schedule for MENVEO product (4-dose series for those starting < 6 months of age shown):
 - Basic Schedule for Children starting ≥ 6 months and < 11 months of age and not Immunized complete 3-dose series with 8 weeks minimum and due intervals between doses.

Panorama Forecaster Handbook

- Basic Schedule for Children starting ≥ 12 months and < 24 months of age and not Immunized complete 2-dose series with 8 weeks minimum and due intervals between doses.
- Basic Schedule for Children starting ≥ 24 months of age and not Immunized complete 2-dose series with 4 weeks minimum interval between doses, and due interval of 8 weeks between doses.

OTHER SCHEDULES SUPPORTED

3. Validation rules cover other situations including doses of MENVEO ≥ 2 months of age, all Men-C-ACYW135 ≥ 2 years of age, doses ≥ 22 years of age, and extra doses of Men-C-ACYW135 for those already immunized with a minimum interval of 4 weeks between doses.
4. Booster dose schedule for medically high-risk individuals already immunized for Men-C-ACYW-135. Forecasts an additional dose every 3 or 5 years, depending on whether the last dose was received $<$ or ≥ 7 years of age, respectively.

Risk Factors:

- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
 - Chronic Medical Condition – Sickle Cell Disease (planned future deployment)
 - Immunocompromised - Acquired Complement Deficiency
 - Immunocompromised - Congenital Immunodeficiency
5. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient – HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- Men-C-C at 12 months of age will forecast as overdue for a child until they become 10 years old. At 10 years old, Men-C-ACYW-135 automatically forecasts as part of the grade 6 program eligibility and Men-C-C disappears from the forecast. As per SIM, the child remains eligible to receive the Men-C-C vaccine if they present before starting grade 6 even if they are 10 years old.
- There will be a small number of children in Grade 6 who are younger than their peers and it is expected that the nurse will immunize them according to provincial policy.
- Special population forecasting has been included for medically high-risk individuals and close contacts for serogroups A, Y or W-135 for Men-C-ACYW-135. When doses of Men-C-ACYW-135 have been received for clients who are ≥ 12 months of age, with a Risk Factor, they are no longer forecasted for the Men-C-C vaccine at 12 months of age.
- In addition, support and forecasting for MENVEO has now been incorporated for those starting their Men-C-ACYW-135 series ≥ 8 weeks of age. If no risk factor can be entered for Men-C-ACYW135 given before Grade 6 (e.g., for travel purposes), Men-C-C still forecasts (which they don't need). Can over-ride the Men-C-ACYW135 to remove the Men-C-C from the forecaster. Statement in Comments "Dose accepted as one-year MCC"
- A minimum interval of 4 weeks is included between Men-C-C and Men-C-ACYW135 in either direction.
- **Currently no interaction rules for Men-P are built into the forecaster.** If a client with a qualifying RF received Men-P-ACWY-135 in the past and is not eligible for their meningococcal booster dose, the forecaster does not recognize the Men-P-ACYW-135 vaccine. Panorama will forecast an age-appropriate primary Men-C-ACWY-135 series for the RF.
- There is no maximum age for validation of any brand of Men-C-ACYW135.

Men-C-C Notes

1. BASIC SCHEDULE FOR CHILDREN

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d

- Some provincial programs provide a routine 2- or 3-dose schedule starting at 2 months of age so rules have been built in to accommodate these schedules (i.e. to ensure dose forecasted at ≥ 12 months of age).
- A 4-dose program is supported in the rules: if 3 doses are received < 12 months of age, forecast an additional dose at 12 months of age.
- Maximum age for forecasting of early childhood dose is up to 10 years old in cohorts eligible for adolescent Men-C-ACYW135.

OTHER SCHEDULES SUPPORTED

2. A schedule covers cohorts eligible for Men-C in Grade 6 but too old for Men-C-ACYW-135 (Jan. 1, 1993 – Sept. 30, 2000 inclusive), they will continue to be forecast until they turn 22 years of age.
3. Special Forecasting Schedule – Close Contacts of Cases of Men-C-C: 3-dose schedule for unimmunized infants 2-11 months inclusive, and 1-dose schedule for unimmunized individuals ≥ 12 months of age.
Risk Factor:
 - Contact - IMD Case - serogroup C
4. Special validation-only schedule exists for close contacts that are already immunized for Men-C-C.
5. Validation rules cover extra doses of Men-C-C antigens for those already immunized with a minimum interval of 8 weeks between doses.
6. Validation-only schedule for medically high-risk clients who are forecasted for Men-C-ACYW-135. Prevents forecasting but allows for validation of Men-C-C.
Risk Factors:
 - Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
 - Chronic Medical Condition - CSF Disorder
 - Chronic Medical Condition - Cochlear Implant
 - Immunocompromised - Congenital Immunodeficiency
 - Immunocompromised - Acquired Complement Deficiency
 - Chronic Medical Condition - Sickle Cell Disease
 - Contact - IMD Case: serogroup A, Y, or W-135
7. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.
Risk Factors:
 - Immunocompromised - Transplant Recipient - HSCT
 - Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
 - Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- Men-C-C at 12 months of age will forecast as overdue for a child until they become 10 years old. At 10 years old, Men-C-ACYW-135 automatically forecasts as part of the grade 6 program eligibility and Men-C-C disappears from the forecast. **As per SIM, the child remains eligible to receive the Men-C-C vaccine if they present before starting grade 6.**
- Note: For those who receive a dose of Men-C-C at four or less days before turning 12 months of age, this dose will be validated as meeting the criteria for the 12 month dose, an additional dose will not forecast.
- Special population forecasting has been included for medically high-risk individuals and close contacts for serogroup A, Y or W-135 for Men-C-ACYW-135. When doses of Men-C-ACYW-135 have been received for clients who are ≥ 12 months of age, they are no longer be forecasted for the Men-C-C vaccine at 12 months of age. In addition, support and forecasting for MENVEO has now been incorporated for those starting their Men-C-ACYW-135 series ≥ 8 weeks of age.
- **Currently no interaction rules for Men-P are built into the forecaster.** If a client with a qualifying RF received Men-P-ACWY-135 in the past and is not eligible for their meningococcal booster dose, the forecaster does not recognize the Men-P-ACYW-135 vaccine. Panorama will forecast an age-appropriate primary Men-C-ACWY-135 series for the RF.
- A minimum interval of 4 weeks is included between Men-C-C and Men-C-ACYW-135 in either direction.
- Men-C-C will not be forecasted for children who received Men-C-ACYW-135 at 12 months or older.

MMR

1. BASIC SCHEDULE

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	4 wks	18 mos	Due Date + 1 d

OTHER SCHEDULES SUPPORTED

- Validation rules cover extra doses of MMR antigens for those already immunized with a minimum interval of 4 weeks between doses.
- Health Care Workers – For health care workers who are non-immune, they will be forecasted for a 2-dose series of MMR with a minimum interval of 4 weeks between doses.

Risk Factors:

- Occupation - Health Care - RHA/SCA/FNJ Employee
- Occupation - Health Care – Student

- Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- The default vaccine forecasted for those younger than 13 years old will be MMR-Var, and thus forecasting of the minimum interval between MMR-Var doses will be driven by the requirement of a minimum interval of 3 months between doses of Varicella for children < 13 years of age; validation will be driven also by the Varicella component – minimum interval for validation is 4 weeks.
- The default forecasting interval between doses of MMR-Var (and doses of Varicella) is 3 months for those younger than 13 years although doses will validate at 4 weeks.
- MMR-Var does not forecast for those ≥ 13 years of age; MMR & Varicella forecast separately.
- If someone ≥ 13 years receives MMR-Var as a first dose, it will validate. MMR and Var will forecast separately for the person’s second doses.
- If someone ≥ 13 years receives MMR-Var as a second dose, it will validate providing 4 weeks have passed since their first MMR and Var (or MMR-Var) doses.
- There is a live injectable antigen interaction rule in the Forecaster that requires that live vaccines be either given at the same time or separated by 4 or more weeks. Note that this does not include live oral vaccines.
- For now, there is not a special schedule for immunosuppressed individuals, and it is expected that the clinician will enter Exemptions for live vaccines after appropriate consultation in such cases.
- Although one rubella dose at 1 year of age or later is required to confer immunity, the forecaster will forecast a second dose even if additional measles and mumps doses are not required (may be noted as extra safe doses).

Pneu-C-13

1. BASIC SCHEDULE FOR CHILDREN < 5 YEARS (STARTING IMMUNIZATION < 12 MONTHS OF AGE)

Dose #	Eligible	Due	Overdue
Dose 1	42 days	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d
Dose 3	8 wks. + ≥ 12 mos. old	12 mos	Due Date + 1 d

- If additional dose provided < 12 months of age (dose 3), forecast dose 4 at 12 months of age (with minimum interval of 8 weeks).
- If dose 1 provided <12 months of age and now presenting between 24-60 months of age, only one dose is needed.
- No Pneu-C-13 Risk Factors apply to this schedule – see Special Forecasting schedules for those where Pneu-C-13 Risk Factors apply below.

OTHER SCHEDULES SUPPORTED

- 2-dose schedule for children who start immunization ≥ 12 months and < 24 months of age (healthy and high-risk children).
- 1-dose schedule for children who start immunization ≥ 24 months and < 5 years of age (healthy and high-risk children).
- 3- or 4-dose schedule for medically high-risk children starting immunizations < 12 months of age.

Risk Factors:

- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
- Chronic Medical Condition - CSF Disorder
- Chronic Medical Condition - Cardiac Disease
- Chronic Medical Condition - Lung Disease
- Chronic Medical Condition - Renal Disease
- Chronic Medical Condition - Liver Disease
- Chronic Medical Condition - Liver Disease – Hepatitis B
- Chronic Medical Condition - Liver Disease – Hepatitis C
- Chronic Medical Condition - Cochlear Implant
- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Chronic Medical Condition - Cystic Fibrosis
- Chronic Medical Condition - Diabetes Mellitus
- Immunocompromised - HIV
- Immunocompromised - Related to Disease
- Immunocompromised - Treatment - Specify
- Chronic Medical Condition - Malignancies/Cancer
- Chronic Medical Condition - Neurological conditions that impede the clearance of respiratory/oral secretions
- Special Population - LTC Facility
- Chronic Medical Condition - Sickle Cell Disease
- Special Population - Resident - Group Home

5. Validation rules cover extra doses of the Pneu-C-13 antigen for those already immunized with a minimum interval of 4 weeks between doses.
6. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- **(Planned future fix)** 1-dose schedule for medically high-risk (see Risk Factors list in #4 above) children ≥ 5 to ≤ 17 years of age who are Pneu-C-13 'naïve', regardless of whether they have completed or received doses of other pneumococcal conjugate vaccines in the past. **Currently, eligible clients must be assessed individually and a dose of Pneu-C-13 provided as per eligibility guidelines in SIM.**
- Validation occurs for all Pneu-C agents, **including Pneu-C-unspecified**, but Pneu-C-13 is the agent that will be forecasted.
- If 3rd Pneu-C-13 given before 1st birthday (and validated), it will continue to forecast according to the Panorama rules.
- Interaction Rules apply: a minimum interval of 8 weeks between doses of Pneu-C-13 and Pneu-P-23 is enforced for those < 18 years.
 - The interaction rules do not affect forecasting when no doses have been received in the past: health care providers will need to build in minimum intervals between conjugate and polysaccharide products as they do now, and give Pneu-C-13 vaccine first if there are zero doses of both Pneu-C-13 and Pneu-P-23 in history.
 - There are no interaction rules that apply when the type of pneumococcal vaccine is not known.
- No interaction rules exist to support intervals between Pneu-C-13 and Pneu-P-23 for those ≥ 18 years at this time.

1. AND 2. BASIC SCHEDULES INDIVIDUALS AT VERY HIGH RISK

SCHEDULE 1 - 2-dose schedules for those individuals at very high risk of invasive pneumococcal disease.

Risk Factors:

- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
- Chronic Medical Condition - Sickle Cell Disease
- Chronic Medical Condition - Renal Disease
- Chronic Medical Condition - Liver Disease
- Chronic Medical Condition - Liver Disease – Hepatitis B
- Chronic Medical Condition - Liver Disease – Hepatitis C
- Chronic Medical Condition – Malignancies/Cancer (must currently have cancer when presenting for either dose)
- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Immunocompromised - HIV
- Immunocompromised - Related to Disease
- Immunocompromised - Treatment – Specify

Dose #	Eligible	Due	Overdue
Dose 1	2 yrs	2 yrs	Due Date + 1 d
Dose 2	Dose 1 + 5 yrs	Dose 1 + 5 yrs	Due Date + 1 d

- If a child received their first dose BEFORE March 16, 2015 and was 2-10 years old at the time, their second dose will validate if it was given 3 years later and be of end series to accommodate the previous booster recommendations for children 10 years of age and younger. If a child receives their first dose AFTER March 16, 2015, 5 years is needed between doses.

SCHEDULE 2. - 1-dose schedule for Pneu-P-23 risk factors (for those not eligible for a booster dose).

Risk Factors:

- Chronic Medical Condition - CSF Disorder
- Chronic Medical Condition - Cardiac Disease
- Chronic Medical Condition - Cochlear Implant
- Chronic Medical Condition - Cystic Fibrosis
- Chronic Medical Condition - Diabetes Mellitus
- Chronic Medical Condition – Lung Disease
- Chronic Medical Condition – Neurological conditions that impede the clearance of respiratory/oral secretions
- Special Population - Homeless
- Special Population - Illicit Drug Use
- Special Population - LTC
- Special Population – Resident – Group Home

Dose #	Eligible	Due	Overdue
Dose 1	2 yrs	2 yrs	Due Date + 1 d

OTHER SCHEDULES SUPPORTED

3. Forecasting 1-dose schedule for those ≥ 65 years of age who have never received a dose.
4. No forecasting for those ≥ 65 years who received a previous valid dose at younger than 65 years and who do not have risk factors that would make them eligible for a second dose.
5. Schedule for validating doses received by healthy individuals (no forecasting).
6. Validation rules cover extra doses of the Pneu-P-23 antigen for those already immunized with a minimum interval of 5 years between doses.
7. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- Interaction Rules apply:
 - A minimum interval of 8 weeks between doses of Pneu-C-13 and Pneu-P-23 is enforced for those 2 year of age and older.
 - The interaction rules do not affect forecasting when no doses have been received in the past: health care providers will need to build in minimum intervals between conjugate and polysaccharide products as they do now, and give Pneu-C-13-first if there are zero doses of both Pneu-C-13 and Pneu-P-23 in history.
 - There are no interaction rules that apply when the type of pneumococcal conjugate vaccine is unknown.
 - No interaction rules exist to support intervals between Pneu-C-13 and Pneu-P-23 for those ≥ 18 years at this time.

Polio

1. BASIC SCHEDULE FOR CHILDREN WHEN STARTING < 7 YEARS

Dose #	Eligible	Due	Overdue
Dose 1	42 d	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d
Dose 3	4 wks	6 mos	Due Date + 1 d
Dose 4	24 wks + 12 mos	18 mos	Due Date + 1 d

- If dose 3 is given after age 4, no further preschool dose is needed.
- Other rules accommodate starting late, completing a 3-dose series with the last dose after 4 years of age.

OTHER SCHEDULES

- Schedule for children starting ≥ 7 years of age, at present, are validation-only schedules, with dose 1 and dose 2 separated by a minimum interval of 4 weeks, dose 2 and dose 3 separated by a minimum of 24 weeks.
- Validation rules cover extra doses of Polio antigens for those already immunized with a minimum interval of 4 weeks between doses.
- Health Care Workers – For health care workers who are unimmunized, they will be forecasted for a 3-dose series of Polio with dose 2 given 8 weeks after dose 1, and dose 3 given 24 weeks after dose 2.

Risk Factors:

- Occupation - Health Care - RHA/SCA/FNJ Employee
- Occupation - Health Care – Student

- Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- For those starting immunizations ≥ 1 yr. of age, if the 3rd dose is received at ≥ 4 yrs. of age, forecasting for further doses does not occur.
- If client receives any combination of IPV, OPV, Polio-u and their third dose is given ≥ 4 years old, their IPV series will be completed.
- Forecasting 3 dose series will occur for those ≥ 18 years old.

Rabies

1. RABIES POST-EXPOSURE SCHEDULE FOR IMMUNOCOMPETENT INDIVIDUALS WHO ARE UNIMMUNIZED

Risk Factor: Post-exposure - Rabies:

Dose #	Eligible	Due	Overdue
Dose 1	0 d	Today	Today
Dose 2	Dose 1 + 3 d	Dose 1 + 3 d	Dose 1 + 3 d
Dose 3	Dose 2 + 4 d	Dose 1 + 7 d	Dose 1 + 7 d
Dose 4	Dose 3 + 7 d	Dose 1 + 14 d	Dose 1 + 14 d

- Forecasts a 4-dose series at 0, 3, 7 and 14 days after exposure.

2. RABIES POST-EXPOSURE SCHEDULE FOR IMMUNOCOMPROMISED INDIVIDUALS WHO ARE UNIMMUNIZED

- Forecasts a 5-dose series at 0, 3, 7, 14 and 28 days after exposure.
- Note that the post-exposure Risk Factor should be removed or end-dated as soon as the series is complete.

Risk Factor: Post-exposure - Rabies

AND

- Immunocompromised - Acquired Complement Deficiency
- Immunocompromised - Congenital Immunodeficiency
- Immunocompromised - HIV
- Immunocompromised - Related to Disease
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Treatment - Specify
- Chronic Medical Condition - Congenital or Acquired, or Functional Asplenia
- Chronic Medical Condition - Sickle Cell Disease

Dose #	Eligible	Due	Overdue
Dose 1	0 d	Today	Today
Dose 2	Dose 1 + 3 d	Dose 1 + 3 d	Dose 1 + 3 d
Dose 3	Dose 2 + 4 d	Dose 1 + 7 d	Dose 1 + 7 d
Dose 4	Dose 3 + 7 d	Dose 1 + 14 d	Dose 1 + 14 d
Dose 5	Dose 4 + 14 d	Dose 1 + 28 d	Dose 1 + 28 d

OTHER SCHEDULES SUPPORTED

3. Validation-only schedule for those already immunized for Rabies. The Risk Factor must be end-dated after the final dose is provided or this schedule will continue to forecast additional doses of Rabies every 3 days.

Risk Factors:

- Post-exposure – Rabies
4. Validation rules support doses for pre-exposure prophylaxis. Doses will validate according to the 0, 7, 21 day schedule.
 5. Schedule for those already immunized for Rabies, with no documented history. Validation-only schedule that validates additional doses with a minimum interval of 3 days. Note that the clinician should revise the dose number from 1 to 5 to indicate that the client should be on this schedule (since there is no documented history).

PLEASE NOTE

- No Blank Forecasting schedule exists for Rabies. They are incorporated as part of the Schedule 2 Risk Factors group.
- Doses given early are invalidated and repeated with the required interval from the previous dose. Doses given late are validated, and the usual recommended interval is maintained between the late dose and the subsequent dose (refer to CIG, online version for more information).

Rotavirus

1. BASIC SCHEDULE FOR INFANTS BORN BEFORE APRIL 1, 2018 (DEFAULT OF Rot-1)

Dose #	Eligible	Due	Overdue
Dose 1	42 d	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d

- Dose 1 maximum age is 14 weeks, 6 days of age for forecasting
- Dose 2 maximum age is 8 months – 1 day s of age for forecasting

2. BASIC SCHEDULE FOR INFANTS BORN AS OF APRIL 1, 2018 (DEFAULT OF Rot-5)

Dose #	Eligible	Due	Overdue
Dose 1	42 d	2 mos	Due Date + 1 d
Dose 2	4 wks	4 mos	Due Date + 1 d
Dose 3	4 wks	6 mos	Due Date + 1 d

- Dose 1 maximum age is 14 weeks, 6 days of age for forecasting
- Dose 3 maximum age is 8 months – 1 day of age for forecasting

OTHER SCHEDULES SUPPORTED

- Validation rules cover extra doses of either Rotavirus vaccines for those already immunized with a minimum interval of 4 weeks between doses.
- Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
- Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
- Immunocompromised - Transplant Candidate or Recipient - Islet Cell

PLEASE NOTE

- If dose 1 is received after 14 weeks, 6 days of age it is invalid. However, remaining doses in the series will forecast upon manual override to validation this dose. **This will be a training issue for staff!**
- If any dose received is Rot-5 or an unknown Rotavirus vaccine (Rot-u), the series is to be completed as 3 doses. Forecasting for this schedule switch is automatic in the rules.

POSSIBLE IMMUNIZATION SCENARIOS (EX. DUE TO ADMINISTRATION ERROR **OR** FORECASTED VACCINE IS UNAVAILABLE)

Dose	Possible Rotavirus vaccine combinations						
1 st	Rot-5	Rot-5	Rot-5	Rot-5	Rot-1	Rot-1	Rot-1
2 nd	Rot-5	Rot-5	Rot-1	Rot-1	Rot-5	Rot-5	Rot-1
3 rd	Rot-5	Rot-1	Rot-5	Rot-1	Rot-1	Rot-5	N/A
Status	Done	Done	Done	Done	Done	Done	Done

Varicella

1. BASIC SCHEDULE

- For those born on or after Oct. 1, 2009 the 2-dose schedule below applies.

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 d
Dose 2	3 mos	18 mos	Due Date + 1 d

2. ROUTINE GRADE 6 PROGRAM –

- For those born between Jan. 1, 2004 and Sept. 30, 2009, the 2-dose schedule below will forecast the first dose at 1 year old and the second dose in Grade 6.

Dose #	Eligible	Due	Overdue
Dose 1	12 mos	12 mos	Due Date + 1 yr
Dose 2	Dose 1 + 10 yrs	Dose 1 + Sept. 1 + 11 years	Due Date + 1 d

- The minimum interval between dose 1 and dose 2 is 4 weeks for validation, but the recommended minimum interval of 3 months will be used for forecasting eligibility for those < 13 years of age.
- For those ≥ 13 the minimum interval between dose 1 and dose 2 is 4 weeks for forecasting and validation.
- If the first dose provided is invalid, a minimum interval of 4 weeks (not 3 months) is used to reschedule dose 1.
- There are a series of rules to cover older cohorts of children who were eligible only under a one dose program:
 - Jan. 1, 1993 – Dec. 31, 2003 ▪ School-based 1-dose program
 - Jan. 1, 2004 – Sept. 30, 2009 ▪ Original preschool 1-dose program
 - ~~≥ Oct. 1, 2009~~ ▪ ~~2 dose preschool program~~
- For cohort eligible individuals who have not received the appropriate Varicella dose(s) by age 13, they automatically default forecast for the 2-dose program (separated by a forecasting and validation minimum interval of 4 weeks).
- Validation rules for those born prior to Jan. 1, 1993 exist to ensure doses of Varicella vaccine recorded for these age groups are validated if given at least 4 weeks apart.

OTHER SCHEDULES SUPPORTED

3. Validation rules cover extra doses of the Varicella antigen for those 12 months and older who already immunized with a minimum interval of 4 weeks between doses.
4. Health Care Workers – For health care workers who are documented as non-immune, they will be forecasted for a 2-dose series of Varicella with a minimum interval of 4 weeks between doses.

Risk Factors:

- Occupation - Health Care - RHA/SCA/FNJ Employee
- Occupation - Health Care - Student

5. Blank Forecasting – For clients with such variation possible in their immunization schedules that forecasting is not feasible, no forecast of any agents will appear for these clients. Validation rules based on minimum intervals and ages will apply, however.

Risk Factors:

- Immunocompromised - Transplant Recipient - HSCT
 - Immunocompromised - Transplant Candidate or Recipient - Solid Organ/Tissue
 - Immunocompromised - Transplant Candidate or Recipient - Islet Cell
-

PLEASE NOTE

- **The default vaccine forecasted for those younger than 13 years old will be MMR-Var**, and thus forecasting of the minimum interval between MMR-Var doses will be driven by the requirement of a minimum interval of 3 months between doses of Varicella for children < 13 years of age; validation will be driven also by the Varicella component – minimum interval for validation is 4 weeks.
- The default forecasting interval between doses of MMR-Var (and doses of Varicella) is 3 months for those younger than 13 years although doses will validate at 4 weeks.
- MMR-Var does not forecast for those ≥ 13 years of age; MMR & Varicella forecast separately.
- If someone ≥ 13 years receives MMR-Var as a first dose, it will validate. MMR and Var will forecast separately for the person's second doses.
- If someone ≥ 13 years receives MMR-Var as a second dose, it will validate providing 4 weeks have passed since their first MMR and Var (or MMR-Var) doses.
- There is a live injectable antigen interaction rule in the Forecaster that requires that live vaccines be either given at the same time or separated by 4 or more weeks. Note that this does not include live oral vaccines.
- For now, there is not a special schedule for immunosuppressed individuals, and it is expected that the clinician will enter Exemptions for live vaccines after appropriate consultation in such cases.

APPENDIX C: IMMUNIZATION PROGRAM CHANGES RESULTING FROM FORECASTER WORK

Version	Date	Revision Description
1.0	2014-10-03	<ul style="list-style-type: none"> Created
1.1	2014-10-26	<ul style="list-style-type: none"> Replaced Global Village logo with new Gevity logo Revised to include updated “Forecaster Fundamentals” section and new “Additional Forecasting Notes To Be Aware Of” subsection to reflect addition of Grade-based schedule support (i.e. forecasting) Updated “What Schedules will I See Forecasted in Panorama?” to reflect Grade-based schedule support Updated Table 2 to reflect additional products forecasted for Grade-based schedule support
1.2	2014-11-15	<ul style="list-style-type: none"> Updated Appendix C to reflect updates for Grade-based schedule support
1.3	2014-12-31	<ul style="list-style-type: none"> Updated Forecaster Fundamentals section and Appendix C to reflect updates for Influenza, Men-C-C, Men-C-ACYW135, HA, HB, Men-B and Rabies. Added/replaced risk factors based on revised list provided by Ministry of Health
1.4	2015-01-19	<ul style="list-style-type: none"> Updated Forecaster Fundamentals section and Appendix C to reflect updates for Tetanus, Diphtheria, Pertussis, and HB. Incorporated final Ministry of Health feedback
1.5	2015-03-12	<ul style="list-style-type: none"> Updated applicable sections with post go-live enhancements. These included the addition of various risk factors, HB forecasting for over 16 yrs., the max age for Pertussis as 18 yrs. – 1 d, 4-day grace period for Men-C, and a change in the Men-B schedule.
1.6	2015-04-28	<ul style="list-style-type: none"> HB - For individuals born since January 1, 1984 who are 16 years of age or older, do not have risk factors and were not immunized at an earlier age, a 3-dose series will forecast for them. HB – Forecasting first dose at birth for those not yet eligible for Grade 6 dose and have risk factors for which HB vaccine is indicated. HB – If client has multiple risk factors where HB vaccine is indicated, HIV and renal disease will trump others so that HB-D is forecasted. Tdap - If an individual has not received an adolescent Tdap booster, it will forecast until they are 18 yrs. – 1 d old. Once they become 18 yrs. old, Pertussis will no longer forecast. Td – if client is presenting >18 yrs., Td will forecast at the age of 18 instead of being overdue for adolescent doses. Tdap - If client starts immunization on time but is presenting at ≥ 7 years of age for dose 2, min interval of 24 weeks between dose 2 and 3. Men-B - Schedule for those starting ≥ 12 months and < 11 years of age is a 2-dose series with 8 weeks minimum interval between dose 1 and dose 2. Schedule for those starting ≥ 11 years of age is a 2-dose series with 4 weeks minimum interval between dose 1 and dose 2. Men-C-C – There is a 4-day grace period exception. For those who receive a dose of Men-C-C at 4 or less days before turning 12 months of age, an additional dose will not forecast. They will still be ‘eligible’ and ‘due’ at 12 months of age in the forecaster. Pneu-C – Validation and forecasting is being re-evaluated to align with SIM, especially for children presenting between 24 to 59 months of age. IPV - For those starting immunizations ≥ 1 yr of age, if the 3rd dose is received at ≥ 4 yrs. of age, forecasting for further doses does not occur. Pneu-P - 1-dose series starting at 24 mos of age as per High Risk factor eligibility, with 1 additional booster dose forecasted for some high risk factors 5 years later. Pneu-P – 1 dose series for those >65yrs
1.4.6	2015-08-26	<ul style="list-style-type: none"> Men-B – New RFs - congenital immunodeficiency, acquired complement deficiency, asplenia and sickle cell disease. R – One dose for those ≥ 1 yrs. of age (CIG, 2012). The second dose is considered extra dose safe and will appear as MMR* for dose 2 of IPV - If dose 3 is given after age 4, no further dose is forecasted Inf - Updated for those who turn 9 during the season they will be forecasted next Oct. 1st Td – 3 dose series, 0, 1, 6 months for those > 18 yrs. Pertussis will not forecast over 18 but will validate if given with Td. Var – Forecasting for second dose for those entering grade 6 this year. Born between Jan 1/04 to Sept 30/09. 3 months between dose 1 and dose 2

Panorama Forecaster Handbook

		<ul style="list-style-type: none">• School Program changes:<ul style="list-style-type: none">○ Tdap - Min age 11, due Sept 1 + 12 yrs.○ Var, HPV-4, Men-C-C, Men-C-ACYW135 - Min age 10, due Sept 1 + 11 yrs.• HB - Min age 11, due Sept 1 + 11 yrs.
1.5.3	2015-10-10	<ul style="list-style-type: none">• HPV dose validation for those who received a complete series• Men-C-C at 12 months of age will forecast as overdue for a child until they become 10 years old. At 10 years old, Men-C-ACYW-135 automatically forecasts as part of the grade 6 program eligibility and Men-C-C disappears from the forecast. AS per SIM, the child remains eligible to receive the Men-C-C vaccine if they present before starting grade 6.• When an eligible person who commences a Varicella series at 13 years of age or older, their second dose will forecast automatically 6 weeks after the first dose• Forecaster fix for individuals 16 yrs. to 20 yr-1d receiving a dose of HB when dose amount is not specified. Doses will appropriately validate]
1.6.4	2015-11-18	<ul style="list-style-type: none">• HPV-4 for immunocompromised RF forecasts the 3-dose series for eligible females.• HB - forecasting corrected for those 10 years of age who receive a 1.0 mL dose before 11 yrs. of age will show as eligible for final dose of 1.0 mL at 16 weeks and due at 6 months.• HB – for those 11-15 years who receive 0.5 ml for first dose, the 0.5 mL 3-dose series will forecast for remaining doses.• Hib - correction of 15 month forecasting as eligible date for fourth dose; now 12 months of age as in SIM.

APPENDIX D: FUTURE ENHANCEMENTS FOR IMPLEMENTATION

- Develop interaction rules for Men-P-ACYW-135 and Men-C-ACYW-135.
- Un-clumping of the Pneu-C vaccines. At this time, a HR child 5-17 who is Pneu-C-13 naïve will not show this vaccine in their forecast because Pneu-C-7 and Pneu-C-10 have all been clumped together and the forecaster sees that they completed an age-appropriate Pneu-C series in the past. Once they are un-clumped, the rules to show Pneu-C-13 to forecast because of their RF will be enabled.
- Develop interaction rules for Pneu-P-23 and Pneu-C-13 for adults
- DTaP-IPV before 4th birthday removes Grade 8 Tdap from forecaster. Create a Warning to flag that Grade 8 Tdap needed.
- Note: The forecaster doesn't always validate HB (on separate line) and HB part of HAHB – forecaster may not add these 2-HB's together as part of the same series.