

FORECASTER FUNDAMENTALS

REV. 2015-05-06

- The Forecaster is not intended as a replacement for clinical judgement; it is only a tool for clinicians to use.
- While it currently includes some complex logic, it will be improved over time. Please provide the regional Super 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).
- Risk Factors in Panorama have completed initial development, but the list of available Risk Factors still may change. 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:
<https://www.ehealthsask.ca/services/panorama/Pages/Bulletins.aspx>

WHAT DO 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 Super 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 supervisor, for instance.
- Inform the Super User regarding any issues where you assess that the rules should be altered to support validation or invalidation of a particular dose.

WHAT DO 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.
- 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 Super 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

1. Grade 6 and 8 School-Based Programs

- The Grade based programs are based on client age in the Forecaster
- Grade 6:
 - Minimum Age = 10 years + 8 months
 - Forecasted for Due Date = the September 1st of the year child is 10 years + 8 months of age (to cover those born September through December of their Grade 6 year)
- Grade 8:
 - Minimum Age = 12 years + 8 months
 - Forecasted for Due Date = the September 1st of the year child is 12 years + 8 months of age (to cover those born September through December of their Grade 8 year)
- Overdue Date is September of the following year for Grade-based programs.
- There will be a small number of children in each Grade who are younger than the Minimum Age built into the forecaster

2. Influenza

- 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 1st each flu season.

3. Tdap

- Minimum Interval and Minimum Age changes for Grade 8 dose
 - If a dose of Tdap is given at 11 years of age or older, it is validated and counted as the adolescent booster.
 - This does not change the fact that the Grade 8 program is where children receive the adolescent booster generally, but deals with a few exceptional circumstances in a manner similar to other provinces.
 - There is also a minimum interval of 24 weeks introduced for validation.
- 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.
 - This leaves the timing of the single adult booster dose of Pertussis-containing vaccine to the discretion of the nurse after a discussion with the client. This will usually occur at the time the client would otherwise receive a routine Td booster.
 - If an individual has not received their adolescent Tdap booster, it will forecast until 18yrs – 1d. Once the individual becomes 18yrs 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.
- A future enhancement will ensure that 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, so a clinical decision as to when to offer Tdap is required, as for all adults.
- A “cocooning” special population **validation-only** 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.

4. 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.

5. Men-C-ACYW135

- Once a dose of Men-C-ACYW-135 is received by a client ≥ 12 months of age, they are considered complete for the Men-C-C series as well, so Men-C-C is removed from their forecast.
- Men-C-ACYW-135 schedules for high-risk clients ≥ 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

6. HB

- 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.
- Grade 6 program runs from 10 years + 8 months of age (minimum age), due at Sept 1 of Grade 6 year and will forecast up to 16 years (not beyond).
- If a dose of HB is provided outside of the Grade 6 program (including adults), however, 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.** For instance, for the Grade 6 program, please ensure you include "1.0" and "mL" for Dosage and Dosage UOM.
- 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.

7. HAHB

- For clients with appropriate Hepatitis A-related risk factors (i.e. who require Hepatitis A vaccine), if they receive dose 1 of HAHB, they will be forecasted for their remaining separate Hepatitis A and B vaccines as part of the HAHB product.
- 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.

8. HPV

- There are rules for the HPV program that include accepting a dose of HPV-2 and HPV-u as equivalent to HPV-4, and validation rules for doses given to boys (but no forecasting).
- The 2-dose HPV program will go into effect Sept 1, 2015. If two doses of HPV are provided 24 weeks apart starting before September 1, 2015 these doses will be validated as part of the 2-dose program and the client will not be forecast for a third dose.

9. Rotavirus

- A Rotavirus dose given beyond 8 months of age is Valid but there is no further forecasting.

10. Hib

- One Hib dose is recommended for those with medical high risk factors for Hib 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.

11. Risk Factors

- The Ministry of Health has grouped Risk Factors into eight categories – please refer to the Risk Factors section for details.
- For the Forecaster to work properly, risk factors must be entered. Some clients may have multiple risk factors.
- There is a defect in the Panorama application with respect to entering Start and End Dates for risk factors. **Please DO NOT use Risk Factor Start or End Dates until this defect is resolved.**
 - **The impact of entering a risk factor start and end date now is that the Forecaster will invalidate previous doses of vaccine.**

12. Adult forecasting

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

13. Rabies

- Rabies will forecast for post-exposure clients.

14. Men-B

- Men-B rules will forecast for close contacts.