NOVA SCOTIA PANORAMA

Forecaster & Validation Rules

February 2020

TABLE OF CONTENTS:

PURPOSE OF THE DOCUMENT

The purpose of this document is to present the defined rules and logic that determine what is displayed by the Panorama forecaster. The document also presents the rules that determine whether an immunization is considered valid (status displayed on the immunization detail screen).

The rules were defined by a small subgroup of the Panorama Immunization Working Group. They were defined based on the NS Publicly Funded Immunization Schedules, the Canadian Immunization Guide, the National Advisory Committee on Immunization, and in consideration of vaccine product monographs.

The intended users of this document are:

- Panorama Immunization Module users. The document will provide a reference to understand why a client's immunization forecast is displayed the way it is.
- Epidemiologists. The document will provide a reference to support the calculation of immunization coverage rates.

The rules are presented by immunizing agents or series of agents. The forecaster rules are captured in the tables and the rules for validation (where different or in addition to forecaster rules) are captured in the notes below the tables.

WHAT IS THE PANORAMA FORECASTER?

The forecaster is a tool within the Panorama application that assesses client immunizations as valid or invalid, and forecasts when the client is eligible and due for future immunizations (based on a defined set of rules and requirements).

The forecaster is a decision support tool. **It does not and should not replace clinical judgement.** While the defined rules and requirements are very comprehensive they cannot encompass every unique situation (individual combinations of immunization histories, risk factors, etc.).

WHAT IMMUNIZATION SCHEDULES/AGENTS ARE COVERED BY THE FORECASTER?

All routine, publicly-funded childhood, school and adult schedules have been configured in the forecaster.

This includes:

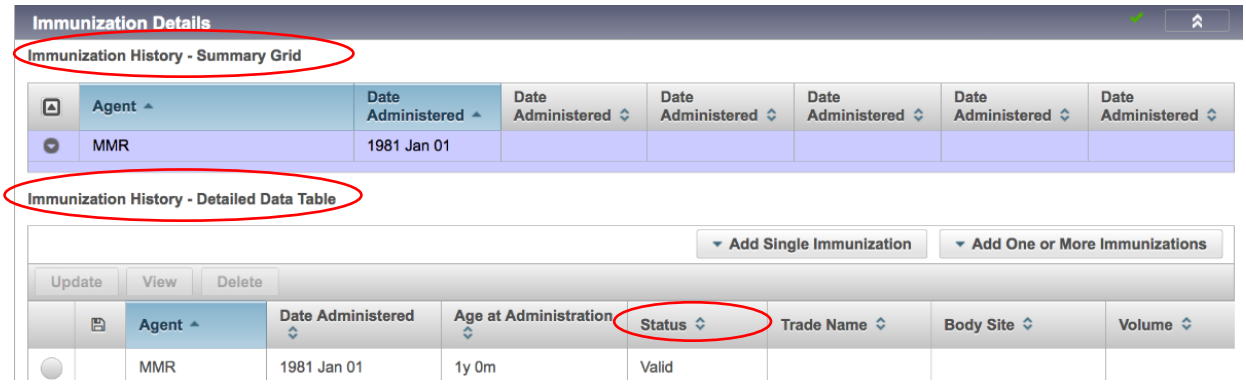
- DTaP-IPV-Hib, Tdap, IPV, Td
- HB-Regular
- HPV-9 (validation for HPV-2 and HPV-4)
- Men-C-C
- Men-C-ACYW-135
- MMRV, MMR, Var
- Pneu-C-13 (validation for Pneu-C-7 and Pneu-C-10)
- Pneu-P-23
- Influenza

The forecaster has not been configured for high risk schedules and agents (e.g. Men-B, HA, etc.) or non-publicly funded schedules (e.g. HAHB, travel vaccines, etc.).

IMMUNIZATION DETAILS DISPLAY

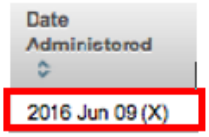
The details of a client's immunizations are displayed in the following two sections under the Immunization Details header:

- Immunization History - Summary Grid, and
- Immunization History - Detailed Data Table



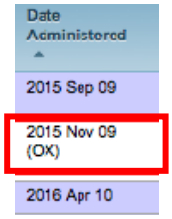
When an immunization is entered into Panorama the forecaster and validation rules are considered and Panorama assesses whether or not the immunization is valid.

- For valid immunizations, **Valid** will display in the ***Status* column** of the Detailed Data Table.
- For immunizations that do not meet the forecaster and validation rules, **Invalid** will display in the ***Status* column** of the Detailed Data Table. In the Summary Grid the date of the invalid immunization will be displayed with an **'X'** beside it (in the Date Administered Column).

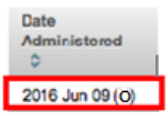


Invalid immunizations do not count towards series completion by the forecaster. However, the forecaster does consider minimum intervals from invalid immunizations.

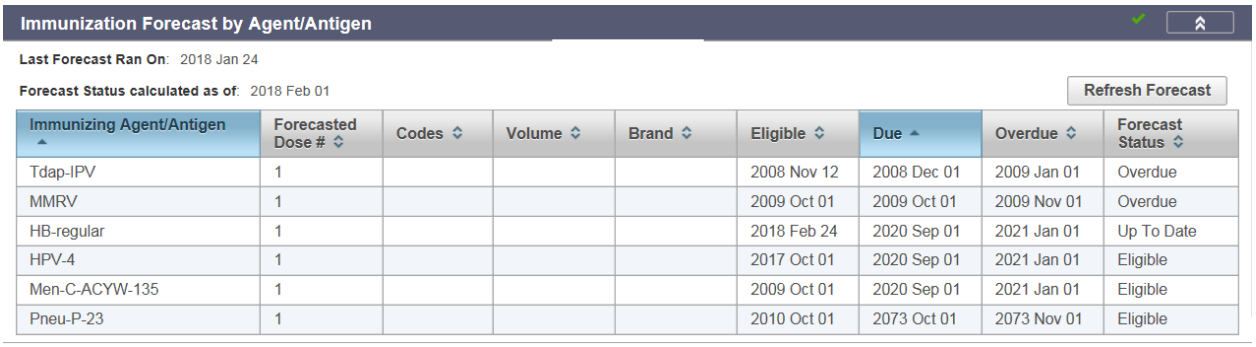
There may be specific clinical circumstances where an administered immunization dose should not follow the forecaster and validation rules. In such instances the immunization status can be manually changed from *valid* → *invalid* or *invalid* → *valid*. When an immunization status has been changed from ***valid* → *invalid*** the date of administration will be displayed with an '**OX**' next to it.



When an immunization status has been changed from ***invalid* → *valid*** the date of administration will be displayed with an '**O**' next to it.



FORECASTER COLUMN DEFINITIONS



Immunization Forecast by Agent/Antigen

Last Forecast Ran On: 2018 Jan 24

Forecast Status calculated as of: 2018 Feb 01 — Refresh Forecast

Immunizing Agent/Antigen	Forecasted Dose #	Codes	Volume	Brand	Eligible	Due	Overdue	Forecast Status
Tdap-IPV	1				2008 Nov 12	2008 Dec 01	2009 Jan 01	Overdue
MMRV	1				2009 Oct 01	2009 Oct 01	2009 Nov 01	Overdue
HB-regular	1				2018 Feb 24	2020 Sep 01	2021 Jan 01	Up To Date
HPV-4	1				2017 Oct 01	2020 Sep 01	2021 Jan 01	Eligible
Men-C-ACYW-135	1				2009 Oct 01	2020 Sep 01	2021 Jan 01	Eligible
Pneu-P-23	1				2010 Oct 01	2073 Oct 01	2073 Nov 01	Eligible

Forecasted Dose #:
The **Forecasted Dose #** column displays the dose number for the forecasted immunizing agent. The dose # is calculated based on the number of documented valid doses of the agent in the client history. For example, "1" displayed in the forecasted dose # column indicates that no previous valid doses have been received and the first dose is being forecast for the client. "2" displayed in the forecasted dose # column indicates that one previous valid dose has been received and the second dose is being forecast for the client.

Sometimes an "M" will display in the forecasted dose # column instead of a number. This stands for "Mixed Dose" and indicates 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 IPV in history, but no Tdap, the forecasted dose for Tdap will show "M" because it is the first dose of Tdap but the second dose of IPV.

Codes:
Occasionally values may be displayed in the **Codes** column.

- **EDS** stands for *Extra Dose Safe*. This indicates that for a particular forecasted agent, one of the component antigens may not be required but is considered safe. For example, if DTaP-IPV-Hib is the forecasted agent for dose 2 but based on the age of the client at dose 1 Hib is not required, DTaP-IPV-Hib will still forecast for dose 2 and EDS will appear in the codes column.
- **LOA** stands for *Left Over Antigen*. This code appears when the forecasted immunizing agent does not contain all of the forecasted antigens. For example, if Tdap is forecasted for Tdap-IPV.

Volume: Volume is not forecast in the Nova Scotia Panorama forecaster. Nothing is displayed in this column.

Brand: Brand is not forecast in the Nova Scotia Panorama forecaster. Nothing is displayed in this column.

Eligible: Displays the earliest date the client is **clinically** eligible to receive the forecasted dose. Note: this term is not the same as eligibility from the publicly funded policy.

Due: Displays the date the client is due (based on the publicly-funded schedule) to receive the forecasted dose.

Overdue: Displays the date the client is considered overdue to receive the forecasted dose.

Forecast Status: This column displays one of four status options.

- **Up to date:** The client is not yet eligible for a specific agent. Client will be eligible in the future. **Caution: This status option does NOT indicate that the client has received all doses! If all doses have been received an agent will not be displayed on a client's forecast.**
- **Eligible:** The eligible date has been reached but the client has not reached the due date.
- **Due:** The due date has been reached, but the client has not reached the overdue date.
- **Overdue:** The client has reached the date set as overdue.

PANORAMA FORECASTER BASICS

- Only publicly-funded vaccine schedules are forecast. High risk schedules are not forecast unless they are part of a regular routine schedule. The validation rules may influence the forecast for routine publicly funded programs.
- Trade/brand names are not forecasted.
- Immunizations for which no schedule has been configured will always validate.
- Once a series is complete, the agent will be removed from the client's forecast.
- The forecaster will show information based on a client's current age.
- Invalid immunizations will not count towards series completion by the forecaster. However, the forecaster does consider minimum intervals from invalid immunizations.
- The forecaster doesn't forecast due dates before minimum eligibility has been reached.
- The forecaster can't use grade as a criteria so to forecast a school dose the following logic is used:
  September 1 **and** 11 years of age if born between September 2 and December 31 **OR**
  September 1 **and** 12 years of age if born between January 1 and September 1
- School-based immunizations will no longer be forecast after 19 years of age.
  Reminder: If a School Based immunization series is started prior to 18 years of age, but not completed, once the student reaches 19 years of age, they are no longer eligible to receive publicly funded further doses.
- The forecaster is configured at the antigen level, so a forecast agent can have multiple antigen components that each have different requirements. The forecaster will consider all relevant rules and roll up to a forecastable agent, displaying EDS (extra dose safe) where applicable.
- Validation rules for all immunizing agents are configured to accommodate extra doses.
- When establishing the forecaster and validation rules, if there were differences between CIG/NACI and the product monograph, CIG/NACI was considered the source of truth.
- For non-school-based schedules, forecasted overdue dates are configured to be: 'due date + 1 month'.
- For school-based schedules forecasted overdue dates are configured to be: 'due date + 4 months'.
- Forecaster rules for influenza have not been configured. Influenza will not be forecast.
- A forecast is only generated for clients in the Panorama system. If a client is not preexisting in the system and needs to be added, the forecast will be generated once the client has been added.
- Interaction rules for immune globulins are configured based on the longest recommended intervals.

DISEASES: DIPHTHERIA, TETANUS, PERTUSISS, POLIO, HAEMOPHILUS INFLUENZAE TYPE B
FORECAST AGENTS: DTaP-IPV-Hib, Tdap-IPV, Tdap, Td
SCHEDULE: Age at Dose 1: < 7 Years

DOSE 1	
Agent	**DTaP-IPV-Hib**
Due	2 months of age
Eligible	6 weeks of age
Overdue	Due date + 1 month
Notes	• DTaP-IPV-Hib will appear on the forecast at birth
DOSE 2	
Agent	**DTaP-IPV-Hib**
Due	4 months of age or dose 1 + 4 weeks
Eligible	Dose 1 + 4 weeks
Overdue	Due date + 1 month
Notes	• Hib is not required if dose 1 was given at ≥ 15 months.
DOSE 3	
Agent	**DTaP-IPV-Hib**
Due	6 months of age **AND** dose 2 + 2 months
Eligible	Dose 2 + 4 weeks
Overdue	Due date + 1 month
Notes	• Hib not required if dose 1 is given at ≥ 12 months AND dose 2 is given at dose 1+2 months • Hib not required if dose 2 is given at ≥ 15 months
DOSE 4	
Agent	**DTaP-IPV-Hib**
Due	18 months of age **AND** dose 3 + 12 months
Eligible	Dose 3 + 6 months **AND** ≥ 12 months of age
Overdue	Due date + 1 month
Notes	• If dose 4 is given at ≥ 4 years of age then next dose will be school immunization program dose (see dose 6) • Hib is not required if dose 1 is given at ≥7 months and dose 3 is given at ≥ 12 months • Hib is not required if dose 3 given at ≥ 15 months
DOSE 5	
Agents	**Tdap, IPV (forecast as separate agents)**
Due	4 years of age
Eligible	Dose 4 + 6 months **AND** ≥ 4 years of age
Overdue	Due date + 1 month
Notes	• Dose 5 is only forecast if dose 4 is given at < 4 years of age • aP not required if dose 4 given at ≥ 18 years (Td and IPV will be forecast separately) • IPV – due 4 years AND last dose + 12 months? • IPV overdue at later of 7 years AND due date + 1 month
DOSE 6	
Agent	**Tdap**
Due	September 1 **and** 11 years of age if born between September 2 and December 31 **OR** September 1 **and** 12 years of age if born between January 1 and September 1
Eligible	Previous dose + 5 years
Overdue	Due date + 4 months
Notes	• If dose 4 is given at ≥ 4 years of age then this forecasts as dose 5
DOSE 7	
Agent	**Tdap**
Due	Previous dose + 10 years
Eligible	Previous dose + 10 years
Overdue	Due date + 1 month
Notes	• This is dose 6 when dose 4 was given at ≥ 4 years of age • For ap, if previous dose given at < 18 years 1 booster dose is required
DOSE 8 +	
Agent	**Td**
Due	Previous dose + 10 years
Eligible	Previous dose + 10 years
Overdue	Due date + 1 month

Notes:

- The number of doses in the series is dependent on the age of first dose and time elapsed between doses.
- In situations where Hib may not be required, DTAP-IPV-Hib will still forecast with (Hib*) which indicates extra dose safe.

DISEASE: DIPHTHERIA, TETANUS, PERTUSISS, POLIO
FORECAST AGENTS: Tdap-IPV, Tdap, Td
SCHEDULE: Age at Dose 1: ≥ 7 Years to < 18 Years

DOSE 1	
Agent	**Tdap, IPV (forecast as separate agents)**
Due	2 months of age
Eligible	6 weeks of age
Overdue	Due date + 1 month
Notes	• Minimum of 8 weeks required between a previous invalid dose
DOSE 2	
Agent	**Tdap, IPV (forecast as separate agents)**
Due	4 months of age
Eligible	Dose 1 + 8 weeks
Overdue	Due date + 1 month
DOSE 3	
Agent	**Tdap, IPV (forecast as separate agents)**
Due	Dose 2 + 6 months
Eligible	Dose 2 + 6 months
Overdue	Due date + 1 month
Notes	• ap not required if dose 2 given ≥ 18 years. Td will forecast.
DOSE 4	
Agent	**Tdap**
Due	Dose 3 + 10 years
Eligible	Dose 3 + 10 years
Overdue	Due date + 1 month
Notes	• ap not required if dose 3 given ≥ 18 years • IPV not required if dose 1 given at ≥ 7 years and dose 3 given ≥ 6 months after dose 2
DOSE 5 and 6	
Agent	**Td**
Due	Previous dose + 10 years
Eligible	Previous dose + 5 years
Overdue	Due date + 1 month
DOSE 7+	
Agent	**Td**
Due	Previous dose + 10 years
Eligible	Previous dose + 10 years
Overdue	Due date + 1 month

DISEASE: **DIPHTHERIA, TETANUS, PERTUSISS, POLIO**
FORECAST AGENTS: **Tdap-IPV, Td, IPV**
SCHEDULE: **Age at Dose 1: ≥ 18 Years**

DOSE 1	
Agent	**Tdap, IPV (forecast as separate agents)**
Due	2 months of age
Eligible	6 weeks of age
Overdue	Due date + 1 month
Notes	• Minimum of 8 weeks required between a previous invalid dose
DOSE 2	
Agent	**Td, IPV (forecast as separate agents)**
Due	Dose 1 + 8 weeks
Eligible	Dose 1 + 8 weeks
Overdue	Due date + 1 month
DOSE 3	
Agent	**Td, IPV (forecast as separate agents)**
Due	Dose 2 + 6 months
Eligible	Dose 2 + 6 months
Overdue	Due date + 1 month
DOSE 4	
Agent	**Td**
Due	Dose 3 + 10 years
Eligible	Dose 3 + 10 years
Overdue	Due date + 1 month
Notes	• IPV not required if dose 1 given at ≥ 7 years and dose 3 given ≥ 6 months after dose 2
DOSE 5+	
Agent	**Td**
Due	Previous dose + 10 years
Eligible	Previous dose + 5 years
Overdue	Due date + 1 month

Validation of Diphtheria Immunogens:

- d is valid from ≥ 4 years to forever
- D is valid from ≥ 6 weeks until forever
- For dose 1:
    - If age at dose 1 is < 7 years then a minimum of 4 weeks is required between a previous invalid dose
    - If age at dose 1 ≥ 7 years then a minimum of 8 weeks is required between a previous invalid dose
- if dose 4 given at ≥ 4 years then an interval of 0 days is valid between any subsequent doses
- if dose 4 given at < 4 years then a minimum interval of 24 weeks is valid between next dose

Validation of Tetanus Immunogens:

- For dose 1:
    - If age at dose 1 is < 7 years then a minimum of 4 weeks is required between a previous invalid dose
    - If age at dose 1 is ≥ 7 years then a minimum of 8 weeks is required between a previous invalid dose
- If dose 4 is given at ≥ 4 years then an interval of 0 days is valid between any subsequent doses
- If dose 4 is given at < 4 years then a minimum interval of 24 weeks is valid between next dose

Validation of Pertussis immunogens:

- ap is valid from ≥ 4 years to forever
- aP and P are valid from ≥ 6 weeks to forever
- For dose 1:
    - If age at dose 1 is < 7 years then a minimum of 4 weeks is required between a previous invalid dose
    - If age at dose 1 is ≥ 7 years then a minimum of 8 weeks is required between a previous invalid dose
- For age at dose 1 < 7 years:
    - If dose 4 is given at ≥ 4 years then an interval of 0 days is valid between any subsequent doses
    - If dose 4 is given at < 4 years then a minimum interval of 24 weeks is valid between next dose

Validation of Polio Immunogens:

- OPV, IPV, and IPV-unspecified are valid forever
- For dose 1:
    - If age at dose 1 is < 7 years then a minimum of 4 weeks is required between a previous invalid dose
    - If age at dose 1 is ≥ 7 years then a minimum of 8 weeks is required between a previous invalid dose
- Once the series is complete, any subsequent doses are valid if given a minimum of 4 weeks after the previous dose

Validation of Haemophilus influenza type b Immunogens:

- Hib valid from 6 weeks of age until forever
- Once the series is complete, any subsequent doses are valid if given a minimum of 4 weeks after the previous dose

DISEASE: HEPATITIS B
FORECAST AGENT: HB-regular (Adult products)

DOSE 1	
Due	September 1 **and** 11 years of age if born between September 2 and December 31 **OR** September 1 **and** 12 years of age if born between January 1 and September 1
Eligible	11 years of age
Overdue	Due date + 4 months
Notes	• Dose 1 will appear on the forecast at birth for those born ≥ 1986-01-01 • Dose 1 will be removed from the forecast at 19 years – 1 day • If a complete/valid series of HAHB has been received, HB-regular will not forecast. HB-Regular will forecast if HAHB series is incomplete.
DOSE 2 (Forecaster considers brand of previous dose)	
Due	• Dose 1 + 1 month (if dose 1 was given at < 11 years or ≥ 16 years) **OR** • Dose 1 + 168 days (if dose 1 was Energix-B Adult or HB-regular AND given at ≥ 11 years to < 16 years) **OR** • Dose 1 + 4 months (if dose 1 was Recombivax Adult AND given at ≥ 11 years to < 16 years)
Eligible	• Dose 1 + 1 month (if dose 1 was given at < 11 years or ≥ 16 years) **OR** • Dose 1 + 168 days (if dose 1 was Energix-B Adult or HB-regular AND given at ≥ 11 years to < 16 years) **OR** • Dose 1 + 4 months (if dose 1 was Recombivax Adult AND given at ≥ 11 years to < 16 years)
Overdue	• Due date + 1 month (if dose 1 given at < 11 years or ≥ 16 years) **OR** • Due date + 4 months (if dose 1 given at ≥ 11 years to < 16 years)

Notes	• Dose 2 will be forecast from 11 years until:
	  ○ 19 years – 1 day, if dose 1 given < 16 years
	  ○ 19 years + 1 month, if dose 1 given ≥ 16 years
	• Series is complete if dose 1 & 2 given at ≥ 11 years to < 16 years and:
	  ○ Dose 1 and Dose 2 were Recombivax, and Dose 2 given at ≥ 4 months after Dose 1; or
	  ○ Dose 1 was Engerix, Recombivax, or HB-regular agent (no trade name specified) and Dose 2 was Engerix, Recombivax, HB-regular agent (no trade name specified) and Dose 2 given at ≥ 168 days after Dose 1

DOSE 3	
Due	Dose 2 + 5 months
Eligible	Dose 2 + 5 months
Overdue	Due date + 1 month
Notes	• Dose 3 will be forecast from 11 years until 19 years + 6 months. Doses after 19 years are no longer publicly funded.

Validation:

- No birth cohort restrictions on validation
- Dose 1 is valid following a minimum of 4 weeks from a previous invalid dose
- Engerix-B-Adult 1.0 mL valid from 0 years to forever
- Engerix-B-Adult 2.0 mL valid from 16 years to forever
- Recombivax Adult valid from 11 years to forever
- Dose 2 is valid 4 weeks after Dose 1 to accommodate the 0, 1 month, 6 month schedule.
- Dose 3 is valid if given 8 weeks after dose 2 (for Engerix-B Adult or HB-regular [no trade name specified])
  - For Recombivax dose 3 is valid if given ≥ 1 month after dose 2
- Dose 4 is valid if given 10 months after dose 3
- Doses beyond 4 are valid if given ≥ 4 weeks after previous dose
- For Historical Immunizations, Trade Name is a free text field. HB brands should be recorded as follows to ensure the correct validation and forecasting rules are triggered:
  - Engerix-B Adult
  - Recombivax Adult
  - Engerix-B Jr
  - Recombivax Ped

RULES FOR OTHER HB AGENTS:

Notes:

- The agents below will never forecast. The rules are for validation only.
- A complete series (HB immunity) of the following agents will remove the school-based (grade 7) 2-dose HB-regular series from the forecast.
- An incomplete series of these agents will not impact the HB-regular forecast**.**
- Schedules are not coded for HA antigen, only HB antigens. This means that the HA antigen will always be validated. HAHB agents will only validate against HB antigen rules.

HB-Pediatric

- Valid if given between 0 years and < 20 years (for Engerix-B Jr and Recombivax Ped **0.5** mL)
    - If Recombivax Ped **0.25** mL given then valid between 0 to < 11 years
- Doses are valid if given a minimum of 1 month apart
- For Recombivax:
    - Dose 4 is Not required if dose 3 is given ≥ 1month after dose 2
- For Engerix:
    - Dose 4 is required if dose 3 is given < 6 months after dose 1
    - Dose 4 is valid if given 10 months after dose 3

HB-Dialysis

- Valid if given ≥ 20 years
- 3 doses are required
- Dose 1 and 2 must be given a minimum of 1 month apart
- Dose 2 and 3 must be given a minimum of 5 months apart

HB-Unspecified

- Valid if given at any age
- Dose 1 and 2 must be given a minimum interval of 1 month apart
- Series is complete after 2 doses if dose 1 & 2 are given between ≥ 11 years to < 16 years and ≥ 6 months apart
- Dose 2 and 3 must be given a minimum of 5 months apart

HAHB – regular

- Valid if given ≥ 6 months of age
- If Dose 1 is given at ≥ 6 months to < 19 years, doses 1 and 2 must be given a minimum of 28 days apart
- If Dose 1 is given at ≥ 19 years, Doses 1 and 2 must be given a minimum of 7 days apart
- If Dose 1 and Dose 2 were given at ≥ 6 month to < 16 years and ≥ 168 days apart, Dose 3 is not required
- If Dose 2 is given at ≥ 6 months to < 19 years, Dose 3 must be given a minimum of 140 days after Dose 2
- If Dose 2 is given at ≥ 19 years and < 4 weeks after Dose 1, Dose 3 must be given a minimum of 14 days after Dose2
- If Dose 2 is given at ≥ 19 years and ≥ 4 weeks after Dose 1, Dose 3 must be given a minimum of 140 days after Dose2
- Dose 4 is not required if Dose 2 is given ≥ 28 days after Dose 1 and Dose 3 is given 140 days after Dose 2

HAHB – pediatric

- Valid if given between ≥ 6 months to < 19 years
- If Dose 1 is given at ≥ 6 months to < 19 years, Doses 2 must be given a minimum of 28 days after Dose 1
- Dose 2 and 3 must be given a minimum interval of 140 days apart

HAHB – unspecified

- Valid if given ≥ 6 months of age
- If Dose 1 is given at ≥ 6 months to < 19 years, Dose 2 must be given a minimum of 28 days after Dose 1
- If Dose 1 is given at ≥ 19 years, Dose 2 must be given a minimum of 7 days after Dose 1
- If Dose 2 is given at ≥ 6 months to < 19 years, Dose 3 must be given a minimum of 140 days after Dose 2
- If Dose 2 is given at ≥ 19 years and < 4 weeks after Dose 1, Dose 3 must be given a minimum of 14 days after Dose 2
- If Dose 2 is given at ≥ 19 years and ≥ 4 weeks after dose 1, Dose 3 must be given a minimum of 140 days after Dose 2

DTaP-HB-IPV-Hib

- Valid if given between ≥ 6 weeks to < 7 years
- Doses must be given 2 months apart

DISEASE: **HUMAN PAPILLOMA VIRUS (HPV)**
FORECAST AGENT: **HPV-9**

DOSE 1	
Due	September 1 **and** 11 years of age if born between September 2 and December 31 **OR** September 1 **and** 12 years of age if born between January 1 and September 1
Eligible	9 years of age
Overdue	Due date + 4 months if < 15 years of age **OR** Due date + 1 month if ≥ 15 years of age

Notes	• HPV-9 will appear on the forecast at birth for:
	  ○ Females born ≥ January 1, 1999 and
	  ○ Males born ≥ January 1, 2003
	• Dose 1 will stop being forecast at 19 years – 1 day

DOSE 2	
Due	Dose 1 + 168 days if dose 1 given at < 15 years of age **OR** Dose 1 + 2 months if dose 1 given at ≥ 15 years of age
Eligible	Dose 1 + 168 days if dose 1 given at < 15 years of age **OR** Dose 1 + 4 weeks if dose 1 given at ≥ 15 years of age
Overdue	Due date + 4 months if dose 1 given at < 15 years of age **OR** Due date + 1 month if dose 1 given at ≥ 15 years of age
Notes	• After valid dose 1, subsequent doses are forecasted only for the birth cohorts identified above • If dose 1 given as HPV-4, dose 2 will be forecast as HPV-4 • Dose 2 completes the series if dose 1 was given at < 15 years • If 2-dose series (dose 1 was given at < 15 years), dose 2 forecasting stops at 19 years – 1 day • If 3-dose series (dose 1 given at ≥ 15 years of age), dose 2 forecasting stops at 19 years + 2 months
DOSE 3	
Due	Dose 2 + 4 months
Eligible	Dose 2 + 12 weeks AND Dose 1 + 24 weeks
Overdue	Due date + 1 month
Notes	• Dose 3 is forecasted if dose 1 was given at ≥ 15 years or if interval between dose 1 and dose 2 is < 24 weeks • Dose 3 forecasting stops at 19 years + 6 months

NOTES:

- Doses given beyond 19 years are no longer publicly funded.

Interchangeability:

- Doses of HPV-2 do not count towards completion of HPV-9 series. HPV-9 is forecasted even if HPV-2 series complete.
- HPV-unspecified does not count towards the completion of the HPV-9 series.
- Doses of HPV-4 will count towards completion of HPV-9 series.

Validation:

- HPV-4, HPV-9 and HPV-unspecified are valid for all genders.
- A minimum interval of 4 weeks is required between any doses of HPV-4, HPV-2, HPV-unspecified, HPV-9 for the doses to be valid
- Doses up to 46 years – 1 day are valid
- HPV-2 is not forecasted, but valid for:
  - Females only
  - ≥ 9 years to < 46 years
  - Minimum of 4 weeks between doses 1 and 2
  - Minimum of 12 weeks from dose 2 and 24 weeks from dose 1
  - 3 doses if dose 1 was given at ≥ 15 years
  - 2 doses if dose 1 was given < 15 years
- Once series is complete a minimum interval of 4 weeks is considered valid for any subsequent doses

DISEASE: **INVASIVE MENINGOCOCCAL DISEASE – SEROGROUP C**
FORECAST AGENT: **MEN-C-C**

DOSE 1	
Due	12 months of age
Eligible	2 months of age
Overdue	Due date + 1 month
Notes	• Men-C-C will appear on the forecast at birth for those born ≥ 2004-01-01 • Men-C-C remains on the forecast until 5 years of age + 1 month or until Men-C-ACYW-135 is given (whichever comes first).

NOTES:

Interchangeability:

- If men-C-unspecified or Men-C-ACWY-135 is given at ≥ 12 months Men-C-C is removed from the forecast

Validation:

- Any number of doses given between ≥ 2 months to < 1 year, *and* given the minimum interval (see table below) apart, will be valid, but will not remove the dose due at 12 months from the forecast.
- No birth cohort restriction on validation. Doses are validated for anyone ≥ 2 months.
- If Men-C-ACYW-135 is given at ≥ 12 months, Men-C-C is removed from the forecast, but doses of Men-C-C will still be valid as long as minimum interval is met.

- For Historical Immunizations, Trade Name is a free text field. Men-C-C brands should be recorded as follows to ensure the correct validation and forecasting rules are triggered:
    - Menjugate
    - NeisVac-C

Minimum Intervals between Agents/Vaccine:

Agent/Vaccine 1	Agent/Vaccine 2	Min. Interval	Source
Men-C-C, Men-C-ACYW-135, Men-C-unspecified	Any other meningococcal vaccine	1 day	No support for a minimum interval in the clinical guidelines, CIG, NACI, or product monograph. 1 day was used as per interaction rule: Men polysaccharides and Men Conjugates cannot be given on the same day.
Neisvac	Neisvac	6 months	Product monograph
Neisvac	Menjugate, Men-C-unspecified, and Men-C-C no brand specified	4 weeks	Canadian Immunization Guide
Menjugate, Men-C-unspecified, Men-C-C	Neisvac	4 weeks	Canadian Immunization Guide
Men-C-C, Men-C-ACYW-135, Men-C-unspecified	Men-B	No minimum interval	
Men-P-ACYW-135, Men-P-A, Men-P-AC, or Men-P-unspecified	Men-C-C, Men-C-ACYW-135, or Men-C-unspecified	24 weeks	Canadian Immunization Guide

DISEASE: **INVASIVE MENINGOCOCCAL DISEASE – SEROGROUPS A,C,Y,W-135**
FORECAST AGENT: **MEN-C-ACYW-135**

DOSE 1

Due September 1 **and** 11 years of age if born between September 2 and December 31 **OR** September 1 **and** 12 years of age if born between January 1 and September 1

Eligible ≥ 9 months of age

Overdue Due date + 4 months

Notes

- Men-C-ACYW-135 will appear on the forecast at birth for those born ≥ 1994-01-01
- If a dose is given at ≥ 8 years of age then the dose at 11-12 will not be forecasted
- Men-C-ACYW-135 will stop being forecast at 19 years – 1 day
- *see below for product specific validation

NOTES:

- Any number of doses given between ≥ 2 months of age to < 8 years of age *and* given the minimum interval (see table below) apart, will be valid, but will not remove the dose due at age 11-12 years (grade 7) from the forecast.
- Any number of doses given < 56 years are valid as long as the minimum interval and age criteria are met.
- *Product specific minimum age for validation:
  - Menveo: ≥ 2 months
  - Menactra or no brand specified: ≥ 9 months
  - Nimenrix: ≥ 6 weeks
- For Historical Immunizations, Trade Name is a free text field. The Men-C-ACYW-135 brands should be recorded as follows to ensure the correct validation and forecasting rules are triggered:
  - Menactra
  - Nimenrix
  - Menveo

Minimum Intervals between Agents/Vaccine:

Agent/Vaccine 1	Agent/Vaccine 2	Min. Interval	Source
Men-C-C, Men-C-ACYW-135, Men-C-unspecified	Any other meningococcal vaccine	1 day	No support for a minimum interval in the clinical guidelines, CIG, NACI, or product monograph. 1 day was used as per interaction rule: Men polysaccharides and Men Conjugates cannot be given on the same day.
Men-C-C, Men-C-ACYW-135, Men-C-unspecified	Men-B	No minimum interval	
Menactra or no Trade Name specified	Men-C-ACYW-135 no Trade Name specified	3 months	
Menveo	Men-C-ACYW-135 no Trade Name specified	2 months	
Nimenrix	Men-C-ACYW-135 no Trade Name specified	4 weeks	
Men-P-ACYW-135, Men-P-A, Men-P-AC, or Men-P-unspecified	Men-C-C, Men-C-ACYW-135, or Men-C-unspecified	24 weeks	Canadian Immunization Guide

DISEASE: **MEASLES, MUMPS, RUBELLA, VARICELLA**
FORECAST AGENT: **MMRV**

SCHEDULE: **Routine 2-dose schedule for those born ≥ 2006**

DOSE 1	
Due	12 months of age
Eligible	12 months of age
Overdue	Due date + 1 month

Notes	• MMRV will appear on the forecast from birth to 13 years – 1 day
	  ○ MMRV is forecast if < 13 years
	  ○ MMR and V forecast separately if ≥ 13 years

DOSE 2	
Due	18 months of age
Eligible	18 months of age AND Dose 1 + 4 weeks
Overdue	Due date + 1 month

Notes:	• If dose 1 given < 12 months then dose 2:
	  ○ Due: 12 months of age AND dose 1 + 4 weeks
	  ○ Eligible: 12 months of age AND dose 1 + 4 weeks
	  ○ Overdue: due date + 1 month

DOSE 3	*Only relevant if dose 1 received < 12 months*
Due	18 months of age AND dose 2 + 4 weeks
Eligible	18 months of age AND dose 2 + 4 weeks
Overdue	Due date + 1 month

VALIDATION:

- MMRV will be valid from 12 months until forever
- MMRV given prior to 12 months will be marked as invalid
  - However, the M, Mu, R antigen components will be valid from 6 months to forever; the Var antigen will validate at 12 months
- Due to a limitation with the forecaster, min and max eligibility for validation cannot be applied at the Agent level. For example, a validation max age of <13 cannot be applied to the MMRV agent. This is because the MMR, MMRV and Var agents all share the same antigens. This limitation only impacts validation. The forecasting rules can be specified at the agent level (e.g. MMRV will only be forecast if <13 years).

INTERACTION RULES:

- MMRV not valid if administered on same day as any immune globulin.
- MMRV is valid if administered 11 months after any Ig. This is based on the longest recommended interval. However, depending on the Ig dose given a clinical decision re: a shorter interval may be required.
- Ig must be recorded first in Panorama to trigger these interaction rules.
- MMRV is valid if administered on same day as other live antigens. If not administered on same day, MMRV valid if administered 4 weeks after other live antigens.

DISEASE: **MEASLES, MUMPS, RUBELLA, VARICELLA**
FORECAST AGENTS: **MMR, Var**

SCHEDULE: **Born between 1996 and 2005**

DOSE 1	
Agent(s)	**MMR, Var**
Due	12 months of age
Eligible	12 months of age
Overdue	Due date + 1 month
Notes	• MMR will appear on the forecast from birth to forever • Dose 1 of Var will appear on the forecast until it is received
DOSE 2	
Agent	**MMR**
Due	18 months of age
Eligible	18 months of age AND dose 1 + 4 weeks
Overdue	Due date + 1 month

SCHEDULE: **Born between 1970 and 1996**

DOSE 1	
Agent	**MMR**
Due	18 years
Eligible	6 months of age
Overdue	Due date + 1 month
Notes	• MMR will remain on the forecaster until received • Var will not forecast • If client born < 1970 dose 1 will validate
DOSE 2	
Agent	**MMR**
Due	Dose 1 + 4 weeks
Eligible	Dose 1 + 4 weeks
Overdue	Due date + 1 month
Notes	

Notes:

Validation:

- If born < 1970 dose 1 and 2 will not be forecast but will validate based on the criteria above
- Additional doses of MMR are valid if 4 weeks from previous dose
- MMR is valid from 6 months until forever
- M, Mu, R are valid from 6 months to forever
- Var is valid from 12 months to forever
- Additional doses of Var are valid if 4 weeks from previous doses

Interaction Rules:

- MMR not valid if administered on same day as any immune globulin.
- MMR is valid if administered 11 months after any Ig. This is based on the longest recommended interval. However, depending on the Ig dose given a clinical decision re: a shorter interval may be required.
- Ig must be recorded first in Panorama to trigger these interaction rules.
- MMR is valid if administered on same day as other live antigens. If not administered on same day, MMR valid if administered 4 weeks after other live antigens.

DISEASE: **INVASIVE PNEUMOCOCCAL DISEASE**
FORECAST AGENT: **PNEU-C-13**

DOSE 1	
Due	2 months of age
Eligible	6 weeks of age
Overdue	Due date + 1 month
Notes:	• Pneu-C-13 series will be forecasted from birth to < 5 years
DOSE 2	
Due	4 months of age
Eligible	Dose 1 + 8 weeks
Overdue	Due date + 1 month
Notes:	• Dose 2 is forecasted if dose 1 is given at < 2 years of age
DOSE 3	
Due	12 months of age
Eligible	Dose 2 + 8 weeks
Overdue	Due date + 1 month
Notes:	• Dose 3 is forecasted if dose 1 is given at < 1 year of age • Dose 3 is not forecasted if dose 2 is given at ≥ 2 years
DOSE 4	
Due	12 months of age
Eligible	Dose 3 + 8 weeks
Overdue	Due date + 1 month
Notes:	• Dose 4 is only forecasted if all previous doses given at < 1 year of age

Notes:

- The number of doses is dependent on age at first dose and the client's current age

Interchangeability:

- Pneu-C-7, Pneu-C-10, Pneu-C-unspecified will count towards the completion of the Pneu-C-13 series

Validation:

- The minimum valid interval after a dose of Pneu-P-23 or Pneu-P-Unspecified is 1 year
- Additional doses are accepted as valid with a minimum interval of 8 weeks between doses

DISEASE: **INVASIVE PNEUMOCOCCAL DISEASE**
FORECAST AGENT: **PNEU-P-23**

DOSE 1	
Due	65 years of age
Eligible	2 years of age
Overdue	Due date + 1 month
Notes:	• Pneu-P-23 will be forecasted from birth until given at ≥ 65 years of age

Notes:

Validation:

- Doses given at < 65 years of age and additional doses will be counted as valid if they meet the minimum interval requirements:
    - 3 years: if previous dose given at < 11 years AND ≤ 2014-12-31
    - 5 years: if previous dose given at ≥ 11 years AND ≤ 2014-12-31 OR previous dose given ≥ 2015-01-01
- The minimum valid interval after a dose of any Pneu-C-7, Pneu-C-10, Pneu-C-13, and Pneu-C-unspecified is 8 weeks.

DISEASE: **INFLUENZA**
AGENT: **Influenza-quad, Influenza-trivalent, Influenza-unspecified**

- Influenza agents will not forecast. The rules below are for validation only.
- Children < 9 years, with no previous dose require a 2 dose series.
- Children < 9 years, with a previous dose require only 1 dose annually.
- Any of the following Influenza Agents will be validated (must meet product min and max rules below):
  - Influenza-quad
  - Influenza-trivalent
  - Influenza-unspecified

Product Minimum and Maximum ages for validation:

Agent	Product	Minimum	Maximum
Influenza-quad	FluLaval Tetra	6 months	forever
	Fluzone Quad	6 months	forever
	Flumist	2 years	59 years
Influenza-trivalent	Agriflu	6 months	forever
	Fluad	65 years	forever
	Fluad Pediatric	6 months	23 months
	Fluviral	6 months	forever
	Fluzone	6 months	forever
	Fluzone High-dose	65 years	forever
	Influvac	18 years	forever
	Vaxigrip	6 months	forever
Influenza-unspecified		6 months	forever

- Any number of doses recorded will be validated if they meet 4 week minimum interval eligibility

DISEASE: **ROTAVIRUS**
FORECAST AGENT: **ROT-5**

DOSE 1	
Due	2 months of age
Eligible	6 weeks of age
Overdue	Due date + 1 month
Notes	• Dose 1 will appear on the forecast at birth for those born on or after November 1, 2019 • Dose 1 will be removed from the forecast at 15 weeks of age
DOSE 2	
Due	4 months of age **AND** dose 1 + 2 months
Eligible	Dose 1 + 4 weeks
Overdue	Due date + 1 month
Notes	• Dose 2 will be removed from the forecast at 8 months of age
DOSE 3	
Due	6 months of age **AND** dose 2 +2 months
Eligible	Dose 2 + 4 weeks
Overdue	Due date + 1 month
Notes	• Dose 3 will be removed from the forecast at 8 months of age

Validation:

- No birth cohort restrictions on validation.
- No validation rules are set for Rot-1 therefore Rot-1 will not count towards Rot-5 schedule.

Agent Interchangeability:

- Rot-5 and Rot-unspecified are interchangeable. Doses of Rot-unspecified will count towards Rot-5 schedule.
- Rot-5 and Rot-1 are NOT interchangeable. Rot-1 will not count towards Rot-5 schedule. If a client has historical or out of province doses of Rot-1 recorded, the Rot-5 schedule will not be impacted (e.g. a client has a complete 2 dose series of Rot-1, Rot-5 series will still forecast).

Agent Interactions:

- There must be 4 weeks between a recorded dose of Rot-1 and a dose of Rot-5 or Rot-unspecified.

PARKING LOT FOR ADDITIONAL INFORMATION TO INCORPORATE INTO THE DOCUMENT

- Forecasting vs. validation
- Add school years cheat sheet