

# CoCASA Algorithm Reference

This document describes the algorithms that CoCASA uses to produce reports. If “Apply ACIP Recommendations” is not checked on the report criteria screen when the report is run, every dose is considered valid and a dose count is the only thing that determines whether or not the patient is complete and up to date for an antigen. Otherwise the rules listed below are applied for each antigen.

Unless otherwise noted, the following definitions apply to all of the algorithms:

## Complete and Up To Date:

The patient has received all of the selected vaccinations by either the compliance date or the compliance age as chosen by the user. If, when using compliance age, the patient’s date of birth causes his/her compliance age to fall after the assessment date, the patient is not included in the report, even if he/she falls within the age range chosen for the report. In other words, if you choose compliance by a specified age (e.g., 24 months), any patients that have not yet reached that age at the assessment date will be excluded from the report.

## Complete But Late Up To Date:

The patient is not up to date at the compliance date or the compliance age requested for the report, but he/she becomes up to date according to the rules of the algorithm between the compliance date/age and the assessment date.

## Bring Up To Date with One Visit:

The patient is not currently up to date by the assessment date, but is one dose shy of being complete for the particular antigen in question. If a report is run against a series of antigens and all of the remaining vaccinations could be given on the same day, then the patient could still be brought up to date with one visit.

## Missed Opportunity On the Last Immunization Visit:

On the patient’s last visit for an immunization he/she received a dose of a different antigen than the antigen in question, or there was a reason a different antigen was not given, and at the time of that visit a valid dose of the antigen in question could have been administered in keeping with the patient’s age and the time interval from the previous valid or invalid dose.

## Missed Opportunity On All Immunization Visits:

During any of the patient’s immunization visits he/she received a dose of a different antigen than the antigen in question, or there was a reason a different antigen was not given, and at the time of that visit a valid dose of the antigen in question could have been administered in keeping with the patient’s age and the time interval from the previous valid or invalid dose.

## Missed Opportunity On All Previous Visits:

During any of the patient’s visits, not just immunization visits, he/she received a dose of a different antigen than the antigen in question, or there was a reason a different antigen was not given, or there was a non-immunization visit of some kind, and at the time of that visit a valid dose of the antigen in question could have been administered in keeping with the patient’s age

and the time interval from the previous valid or invalid dose. Dates when only Influenza was given are not considered as a Missed Opportunity for other antigens.

Missed Opportunity On Only Non-Immunization Visits:

During any of the patient's non-immunization visits, a valid dose of the antigen in question could have been administered in keeping with the patient's age and the time interval from the previous valid or invalid dose.

Eligible for Immunization:

Those patients who are not complete and up to date as of the assessment date and have no missed opportunities and, based on the rules of the antigen in question, could receive a valid dose of that antigen at the assessment date.

Last Visit < 12 Months Ago or Last Visit >= 12 Months Ago:

Only patients who are eligible for immunization are counted in these totals. Both immunization visits and non-immunization visits are counted.

Note: When running reports, the user can choose more or fewer than the number of doses required by the algorithm for completeness. CoCASA will count the patient as complete for that particular antigen based on the lesser of the dose counts. For instance, if the algorithm requires 5 doses of an antigen, but the user chooses 2, then the patient will be counted as complete with 2 doses. Conversely, if the algorithm requires 2 doses but the user chooses 5, then the patient will still be counted as complete with 2 doses. Also note that when ACIP recommendations are applied, the intervals for compliance, missed opportunities, eligibility, and for coming due are calculated from the last valid *or* invalid dose.

## **DTaP**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 6 weeks or later.
- Dose 2 must be given at 10 weeks or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 14 weeks or later and at least 4 weeks after dose 2.
- Dose 4 must be given at 12 months or later and at least 6 months after dose 3.
- Dose 5, if given, must be given at 4<sup>th</sup> birthday or later and at least 6 months after dose 4.

Note: DTwP, DTP and DT are all valid substitutes for DTaP.

CoCASA will count a patient as complete and up to date if:

- 5 doses were given and ACIP recommendations are not applied or
- 4 valid doses were given and dose 4 was given on or after the 4<sup>th</sup> birthday or
- 5 valid doses were given and dose 4 was given before the 4<sup>th</sup> birthday.

## **Hepatitis A**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 1 year or later.
- Dose 2 must be given at 18 months or later and at least 6 months after dose 1.

CoCASA will count a patient as complete and up to date if:

- 2 valid doses were given.

## **Hepatitis B**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 can be given at birth.
- Dose 2 must be given at 4 weeks or later and at least 4 weeks after the previous dose.
- Dose 3 must be given at 24 weeks or later and at least 8 weeks after the previous dose. Dose 3 must also be given at least 16 weeks after dose 1.
- Dose 4, if given, must be given at 24 weeks or later and at least 16 weeks from dose 1. There is no minimum interval between dose 4 and the previous dose.

CoCASA will count a patient as complete and up to date if:

- 3 valid doses were given.

## **Herpes Zoster (Shingles)**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 60 years of age or later and cannot be given within 1-27 days after receiving MMR, varicella, smallpox, laiv (Flumist), yellow fever, monovalent measles, mumps or rubella.

CoCASA will count a patient as complete and up to date if:

- 1 valid dose was given.

## **HIB**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 6 weeks or later.
- Dose 2 must be given at 10 weeks or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 14 weeks or later and at least 4 weeks after dose 2.
- Dose 4 must be given at 12 months or later and at least 8 weeks after dose 3.

CoCASA will count a patient as complete and up to date if:

- 4 doses were given and ACIP recommendations are not applied or
- the patient's age at compliance date was greater than 59 months or
- the patient has 4 valid doses or
- the patient's first valid dose given after 15 months of age or
- the patient's second valid dose was given after 12 months of age and it was given more than 8 weeks after dose 1 or
- the patient's third valid dose was given after 12 months of age and it was given more than 8 weeks after dose 2

## **HPV**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 9 years of age or later.
- Dose 2 must be given at 9 years plus 4 weeks of age or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 9 years plus 16 weeks of age or later and at least 12 weeks after dose 2 and at least 24 weeks after dose 1.

Note: If a user selects HPV on a report (with the exception of the Adolescent Coverage Report), the report will be limited to female patients only.

CoCASA will count a patient as complete and up to date if:

- 3 valid doses were given.

## **Influenza**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Doses must be given between September 1 and April 30 to be valid.
- Dose 1 must be given at 6 months or later.
- Dose 2, if required, must be given at 6 months plus 4 weeks or later and at least 4 weeks after dose 1.

CoCASA will count a patient as complete and up to date if:

- 2 doses were given and ACIP recommendations are not applied or
- 1 dose was given within the influenza season and either the patient was 9 years of age or more at the time of the dose or it was not the first dose of life or
- 2 doses were given in a season and dose 1 was the first dose of the patient's life and the patient was less than 9 years of age at the time of dose 1.

## **MMR**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 12 months or later and cannot be given within 1-27 days after receiving varicella, smallpox, laiv (Flumist), yellow fever, monovalent measles, mumps or rubella.
- Dose 2 must be given at 13 months or later and at least 4 weeks after dose 1 and cannot be given within 1-27 days after receiving herpes zoster (shingles), varicella, smallpox, laiv (Flumist), yellow fever, monovalent measles, mumps or rubella.

CoCASA will count a patient as complete and up to date if:

- 2 doses were given and ACIP recommendations are not applied or
- the patient was born before 1957 and is not a health care worker or
- the patient was born during or after 1957, or is a health care worker, and 2 valid doses were given.

## **Meningococcal**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given greater than or equal to 2 years of age. Any dose after the first dose must be given at least 5 years after any previous dose.

CoCASA will count a patient as complete and up to date if:

- 1 dose was given and ACIP recommendations are not applied or
- there was at least one valid dose of any variety of meningococcal given on or after the 11<sup>th</sup> birthday or
- the patient has no risk factors and the compliance date is on or after the 2<sup>nd</sup> birthday and before the 11<sup>th</sup> birthday (risk factors are asplenia, terminal complement component deficiency, military recruits of the U.S., contacts in a meningococcal outbreak, travel (internationally) to a risk area, lab exposure to meningococcal, and college student in dormitory) or
- the patient has a risk factor, the compliance date is on or after the 2<sup>nd</sup> birthday and the patient was given at least 1 dose of meningococcal.

## **Pneumococcal Conjugate Vaccine (PCV)**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 6 weeks or later.
- Dose 2 must be given at 10 weeks or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 14 weeks or later and at least 4 weeks after dose 2.
- Dose 4 must be given at 12 months or later and at least 8 weeks after dose 3.

CoCASA will count a patient as complete and up to date if:

- 4 doses were given and ACIP recommendations are not applied or
- the patient's age was greater than 59 months at the compliance date or
- 4 valid doses were given or
- the patient's first valid dose given after 24 months of age or
- the patient's second valid dose was given after 12 months of age and it was given more than 8 weeks after dose 1 or
- the patient's third valid dose was given after 12 months of age and it was given more than 8 weeks after dose 2

## **Polio**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 6 weeks or later.
- Dose 2 must be given at 10 weeks or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 14 weeks or later and at least 4 weeks after dose 2.
- Dose 4 must be given at 18 weeks or later and at least 4 weeks after dose 3.

CoCASA will count a patient as complete and up to date if:

- 4 doses were given and ACIP recommendations are not applied or
- 3 valid doses were given and the 3<sup>rd</sup> dose was given on or after the 4<sup>th</sup> birthday or
- 4 valid doses were given and the 3<sup>rd</sup> dose was given before the 4<sup>th</sup> birthday.

## **Pneumococcal Polysaccharide Vaccine (PPV)**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 2 years or later.
- Dose 2, if given, must be given at 7 years or later and at least 3 years after dose 1 if the patient is under 10 years of age at the time of the second dose, or at least 5 years after dose 1 if the patient is 65 or older at the time of the second dose.

CoCASA will count a patient as complete and up to date if:

- 2 doses were given and ACIP recommendations are not applied or
- the patient was greater than or equal to 2 years of age and less than 65 years of age at the compliance date and had no risk factors (heart disease; lung disease – chronic, not asthma; sickle cell disease; diabetes mellitus; alcoholism; liver disease – chronic or cirrhosis; Hodgkins disease; renal disease/nephrotic syndrome; asplenia; organ transplant; lymphoma; leukemia; HIV infection; steroids, long term; radiation therapy; cancer drugs; American Indian or Alaskan Native) or
- 1 valid dose was given and the patient was greater than 10 years of age and less than 65 years of age at the compliance date and had a risk factor or

- 2 valid doses were given and the patient was less than 10 years of age at the compliance date and he/she had a risk factor or
- 1 valid dose was given and the patient was over 65 years of age at the time of the first dose or
- 2 valid doses separated by 5 years were given and the patient was under 65 years of age at the time of the first dose and was over 65 years of age at the compliance date.

## **Rotavirus**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 6 weeks or later.
- Dose 2 must be given at 10 weeks or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 14 weeks or later and at least 4 weeks after dose 2.

CoCASA will count a patient as complete and up to date if:

- 3 doses were given and ACIP recommendations are not applied or
- the patient was greater than or equal to 32 weeks of age at the compliance date or
- 3 valid doses were given.

## **Td**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 7 years or later.
- Dose 2 must be given at 7 years or later and at least 4 weeks after dose 1.
- Dose 3 must be given at 7 years or later and at least 6 months after dose 2.
- Boosters after dose 3 must be given at least 5 years after the previous dose.

Note: Tdap is a valid substitute for Td, except on the Adolescent Coverage Report.

CoCASA will count a patient as complete and up to date if:

- at least 3 valid doses were given and at least 1 valid dose was given sometime in the ten years prior to the compliance date (even if ACIP recommendations are not applied).

## **Tdap**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 10 years of age or later.

CoCASA will count a patient as complete and up to date if:

- 1 valid dose was given.

## **Varicella**

For validity (if ACIP recommendations are applied; otherwise all doses are valid):

- Dose 1 must be given at 12 months or later and cannot be given within 1-27 days after receiving herpes zoster (shingles), MMR, smallpox, laiv (Flumist), yellow fever, monovalent measles, mumps or rubella.
- Dose 2, if required, must be given after 12 months plus 90 days and at least 90 days after dose 1 if the patient was under 13 years of age at the time of dose 2, or at least 28 days after dose 1 if the patient was greater than or equal to 13 years of age at the time of dose 2. Dose 2 cannot be given within 1-27 days after receiving herpes zoster (shingles), MMR, smallpox, laiv (Flumist), yellow fever, monovalent measles, mumps or rubella.

CoCASA will count a patient as complete and up to date if:

- 2 doses were given and ACIP recommendations are not applied or
- there is a “reason not given” entry before the compliance date that specifies “History of Varicella”, “Lab Evidence of Positive Serology for Varicella”, or “Parent/Patient Report of Disease” as the reason not given or
- 2 valid doses were given.