
APPENDIX SUR XIV Records Completeness Algorithms

This document describes the algorithms used to determine when a TIMS Surveillance record is complete. Completeness of a surveillance record is determined primarily by whether the record fields are empty or not and whether data in the field is valid (Refer to *Appendix SUR XVI Surveillance Validations* for a description of the validations appropriate to the questions and a listing of acceptable valid values). This document concentrates primarily on the qualifications necessary to complete each of the following records: Report of Verified Case of TB; Initial Drug Susceptibility Report; and Case Completion Report. Additionally, the specifications necessary to complete a Case Verification record and a Client Data record are provided. The Completed RVCT Record Report and the Incomplete RVCT Records Report use these criteria.

RVCT Record Completeness Criteria

*TIMS stores dates in the reverse format than is shown on the TIMS screen (i.e. Date Submitted is in the format MM/DD/YYYY on screen, but TIMS stores the date in the format YYYY/MM/DD). Please see Appendix SUR XVI Surveillance Validations.

The following criteria are used to determine when a Report of Verified Case of Tuberculosis (RVCT) record is complete.

1. "Soundex" cannot be blank ("Soundex" must equal a value – This will always happen because soundex is generated by the system) or equal ' 000'. If "Soundex" is blank or equals ' 000' then the RVCT record is NOT complete.
2. The appropriate "Case Number" (State or City/County) for the level generating the report cannot be blank ("Case Number": State or City/County must equal a value). If the "Case Number" is blank, then the RVCT record is NOT complete.
3. "Date Submitted" (Q3) must be a valid date in the format MM/DD/YYYY (month, day and year are all known). If the date is blank then the RVCT record is NOT complete.
4. "Address for Case Counting" specifications are as follows:
 - "City" (Q4a) must have a valid value from the City pick list (found on the address window of the TIMS application).
 - "Within City Limits" (Q4b) is not included in the algorithm.
 - "County" (Q4c) must have a valid value from the County pick list (found on the address window of the TIMS application).
 - "Zip Code" (Q4d) and "Zip Code Suffix" (Q4e) are not included in the algorithm.
5. "Month-Year Reported" (Q5) must be a valid date in the format MM/YYYY (month and year are both known). If the date is blank then the RVCT record is NOT complete.
6. "Month-Year Counted" (Q6) is not included in the algorithm used to determine if the RVCT record is complete.
7. "Date of Birth" (Q7) must be a valid date in the format MM/DD/YYYY (month, day and year are all known or marked as unknown). If "Date of Birth" is blank then the RVCT record is NOT complete.
8. "Sex" (Q8) must have a valid value (1, 2, or 9). If "Sex" is blank then the RVCT

- record is NOT complete.
9. "Ethnicity" (Q9) must have a valid value (1, 2, or 9). If "Ethnicity" is blank then the RVCT record is NOT complete.
 10. "Race" (Q10) must have at least one field with a value of Yes (1). If all fields are blank then the RVCT record is NOT complete.
 - Extended HL7 codes are not included in the algorithm.
 11. "Country of Origin": "If U.S., check here" (Q11a) and "If not U.S., enter..." (Q11b) cannot both be blank.
 12. "Month-Year Arrived in U.S.:" (Q12) is not included in the algorithm.
 13. "Status at Diagnosis of TB" (Q13) must have a valid value (1, 2, or 9). If "Status at Diagnosis of TB" is blank then the RVCT record is NOT complete.
 14. "Previous Diagnosis of Tuberculosis" (Q14a) must have a valid value (1, 2, or 9). If "Previous Diagnosis of Tuberculosis" is blank then the RVCT record is NOT complete.
 - "If yes, list year..." (Q14b) and "If more than one..." (Q14c) are not included in the algorithm.
 15. "Major Site of Disease" (Q15a) must have a valid value. If "Major Site of Disease" is blank then the RVCT record is NOT complete.
 - If "Major Site of Disease" (Q15a) is equal to Other (80) then "If site is "Other", enter..." (Q15b) cannot be blank.
 16. "Additional Site of Disease" (Q16a) is not included in the algorithm used to determine when the RVCT record is complete except when "Additional Site of Disease" (Q16a) is equal to Other (80).
 - If "Additional Site of Disease" (Q16a) is equal to Other (80), then "If site is "Other", enter..." (Q16b) cannot be blank.
 - "If more than one additional site, ..." (Q16c) is not included in the algorithm.
 17. "Sputum Smear" (Q17) must have a valid value (1, 2, 3, or 9). If "Sputum Smear" is blank then the RVCT record is NOT complete.
 18. "Sputum Culture" (Q18) must have a valid value (1, 2, 3, or 9). If "Sputum Culture" is blank then the RVCT record is NOT complete.
 19. "Microscopic Exam of Tissue and Other Body Fluids" (Q19a) must have a valid value (1, 2, 3, or 9). If "Microscopic Exam of Tissue and Other Body Fluids" is blank then the RVCT record is NOT complete.
 - If "Microscopic Exam of Tissue and Other Body Fluids" (Q19a) is equal to Positive (1) then "If positive, enter..." (Q19b) cannot be blank.
 - "If positive, enter..." (Q19c) is not included in the algorithm.
 20. "Culture of Tissue and Other Body Fluids" (Q20a) must have a valid value (1, 2, 3, or 9). If "Culture of Tissue and Other Body Fluids" is blank then the RVCT record is NOT complete.
 - If "Culture of Tissue and Other Body Fluids" (Q20a) is equal to Positive (1) then "If positive, enter..." (Q20b) cannot be blank.
 - "If positive, enter..." (Q20c) is not included in the algorithm.
 21. "Chest X-Ray" (Q21a) must have a valid value (1, 2, 3, or 9). If "Chest X-Ray" is blank then the RVCT record is NOT complete.
 - If "Chest X-Ray" (Q21a) is equal to Abnormal (2) then "If Abnormal" (Q21b) must have a valid value (1, 2, 3, or 9) AND "If Abnormal" (Q21c) must have a valid value (1, 2, 3, or 9). If either "If Abnormal" (Q21b) OR "If Abnormal" (Q21c) is blank then the RVCT record is NOT complete.

22. "Tuberculin Skin Test at Diagnosis" (Q22a) must have a valid value (1, 2, 3, or 9). If "Tuberculin Skin Test at Diagnosis" is blank then the RVCT record is NOT complete.
 - If "Tuberculin Skin Test at Diagnosis" is equal to Positive (1) or Negative (2), then "Millimeters of Induration" (Q22b) must have a valid numeric value (00-99). If "Millimeters of Induration" is blank or not numeric then the RVCT record is NOT complete.
 - If "Tuberculin Skin Test at Diagnosis" (Q22a) is equal to Negative (2) then "If Negative, was..." (Q22c) must have a valid value (1, 2, or 9). If "If Negative, was..." (Q22c) is blank then the RVCT record is NOT complete.
23. "HIV Status" (Q23a) must have a valid value (0, 1, 2, 3, 4, 5, or 9). If "HIV Status" is blank then the RVCT record is NOT complete.
 - If "HIV Status" (Q23a) is equal to Positive (1) then "If Positive, Based On" (Q23b) must have a valid value (1, 2, or 9). If "If Positive, Based On" (Q23b) is blank then the RVCT record is NOT complete.
 - "If Positive, List" (Q23c, Q23d, Q23e), are not included in the algorithm.
24. "Homeless Within Past Year" (Q24) must have a valid value (0, 1, or 9). If "Homeless Within Past Year" is blank then the RVCT record is NOT complete.
25. "Resident of Correctional Facility at Time of Diagnosis" (Q25a) must have a valid value (0, 1, or 9). If "Resident of Correctional Facility at Time of Diagnosis" is blank then the RVCT record is NOT complete.
 - If "Resident of Correctional Facility at Time of Diagnosis" (Q25a) is equal to Yes (1) then "If Yes," (Q25b) must have a valid value (1, 2, 3, 4, 5, or 9). If "If Yes," (Q25b) is blank then the RVCT record is NOT complete.
26. "Resident of Long-Term Care Facility at Time of Diagnosis" (Q26a) must have a valid value (0, 1, or 9). If "Resident of Long-Term Care Facility at Time of Diagnosis" is blank then the RVCT record is NOT complete.
 - If "Resident of Long-Term Care Facility at Time of Diagnosis" (Q26a) is equal to Yes (1) then "If Yes," (Q26b) must have a valid value (1, 2, 3, 4, 5, 6, or 9). If "If Yes," (Q26b) is blank then the RVCT record is NOT complete.
27. "Initial Drug Regimen" (Q27) must have a valid value (0, 1, or 9) for each drug listed. If any one drug has a missing value then the RVCT record is NOT complete. If "Initial Drug Regimen" (Q27) has no drugs with a value of Yes (1) then each of the following must be blank:
 - "Date Therapy Started" (Q28).
 - "Date Therapy Stopped" (Q36).
 - "Reason Therapy Stopped" (Q37).
28. If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1), then "Date Therapy Started" (Q28) must be a valid date. Valid dates include complete dates in the format MM/DD/YYYY (month, day and year are all known) and partial dates in the format MM/01/YYYY (month and year are known, but day is unknown). If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1), AND "Date Therapy Started" (Q28) is blank or marked as unknown then the RVCT record is NOT complete.
29. "Injecting Drug Use Within Past Year" (Q29) must have a valid value (0, 1, or 9). If "Injecting Drug Use Within Past Year" is blank then the RVCT record is NOT complete.

30. "Non-Injecting Drug Use Within Past Year" (Q30) must have a valid value (0, 1, or 9). If "Non-Injecting Drug Use Within Past Year" is blank then the RVCT record is NOT complete.
31. "Excess Alcohol Use Within Past Year" (Q31) must have a valid value (0, 1, or 9). If "Excess Alcohol Use Within Past Year" is blank then the RVCT record is NOT complete.
32. "Occupation" (Q32) must have at least one field with a value of Yes (1) for the RVCT record to be complete. If all fields are blank then the RVCT record is NOT complete.

Followup-1 Record Completeness Criteria

The following criteria are used to determine when an Initial Drug Susceptibility Report (Follow Up-1) record is complete.

1. If "Status at Diagnosis of TB" (Q13) is equal to Dead (2) OR ["Sputum Culture" (Q18) is not equal to Positive (1) AND "Culture of Tissue and Other Body Fluids" (Q20) is not equal to Positive (1)] AND the Follow Up-1 record is empty, ignore the Follow Up-1 record. Exclude this record from reports of records that are complete and reports of records that are incomplete.
 - If "Status at Diagnosis of TB" (Q13) is equal to Dead (2) OR ["Sputum Culture" (Q18) is not equal to Positive (1) AND "Culture of Tissue and Other Body Fluids" (Q20) is not equal to Positive (1)] AND the Follow Up-1 record is not empty, then the Follow Up-1 record is complete.
2. If "Status at Diagnosis of TB" (Q13) is equal to Alive (1), or is equal to Unknown (9), or is Missing (Blank) AND ["Sputum Culture" (Q18) OR "Culture of Tissue and Other Body Fluids" (Q20) is equal to Positive (1)] then "Was Drug Susceptibility Testing Done" (Q33a) must have a valid value (0, 1, or 9). If "Was Drug Susceptibility Testing Done" is blank then the Follow Up-1 record is NOT complete.
 - If "Was Drug Susceptibility Testing Done" (Q33a) is equal to No (0) or Unknown (9) then the Follow Up-1 record is complete. If "Was Drug Susceptibility Testing Done" (Q33a) is equal to Yes (1) then "If Yes, Enter Date..." (Q33b) must be a valid date in the format MM/DD/YYYY (month, day and year are all known) or marked as Unknown. If the date is blank then the Follow Up-1 record is NOT complete.
3. If "Was Drug Susceptibility Testing Done" (Q33a) is equal to Yes (1) then there must be a valid value (1, 2, 3, or 9) for each drug listed in "Susceptibility Results" (Q34). If any one of the drugs is blank then the Follow Up-1 record is NOT complete.

Followup-2 Record Completeness Criteria

The following criteria are used to determine when a Case Completion Report (Follow Up-2) record is complete.

1. If ["Status at Diagnosis of TB" (Q13) is equal to Dead (2) OR "Date Therapy Started" (Q28) is equal to blank] AND the Follow Up-2 record is empty, ignore the Follow Up-2 record. Exclude this record from reports of records that are complete and reports

of records that are incomplete.

- If ["Status at Diagnosis of TB" (Q13) is equal to Dead (2) OR "Date Therapy Started" (Q28) is equal to blank] AND the Follow Up-2 record is not empty, then the Follow Up-2 record is complete.
2. If "Sputum Culture" (Q18) is not equal to Positive (1) then "Sputum Culture Conversion Documented" (Q35a, Q35b, Q35c) must all be blank.
 3. If "Sputum Culture" (Q18) is equal to Positive (1) then there must be a valid value (0, 1, or 9) for "Sputum Culture Conversion Documented" (Q35a). If "Sputum Culture Conversion Documented" is blank then the Follow Up-2 record is NOT complete.
 - If "Sputum Culture Conversion Documented" (Q35a) is equal to Yes (1) then "If Yes, Date Specimen Collected on Initial Positive Sputum Culture" (Q35b) and "If Yes, Date Specimen Collected on First Consistently Negative Culture" (Q35c) must each be a valid date in the format MM/DD/YYYY (month, day and year are all known) or marked as Unknown. If either date is blank then the Follow Up-2 record is NOT complete.
 4. If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1), then "Date Therapy Stopped" (Q36) must be a valid date. Valid dates include complete dates in the format MM/DD/YYYY (month, day and year are all known) and partial dates in the format MM/99/YYYY (month and year are known, but day is unknown). If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1) AND "Date Therapy Stopped" (Q36) is blank or is marked as Unknown then the Follow Up-2 record is NOT complete.
 5. If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1), then "Reason Therapy Stopped" (Q37) must have a valid value (1, 2, 3, 4, 5, 6, 7, or 9). If "Initial Drug Regimen" (Q27) has at least one drug with a value of Yes (1) AND "Reason Therapy Stopped" (Q37) is blank then the Follow Up-2 record is NOT complete.
 6. "Type of Health Care Provider" (Q38) is not included in the algorithm.
 7. "Directly Observed Therapy" (Q39a) must have a valid value (0, 1, 2, or 9). If "Directly Observed Therapy" is blank then the Follow Up-2 record is NOT complete.
 - "If Yes, Give Sites..." (Q39b) and "Number of Weeks..." (Q39c) are not included in the algorithm.
 8. If "Was Drug Susceptibility Testing Done" (Q33a) is not equal to Yes (1) then each of the following must be blank:
 - "Was Follow-up Drug Susceptibility Testing Done" (Q40a).
 - "If Yes, Enter Date Final Isolate Collected for Which Drug Susceptibility Testing Was Done" (Q40b). "Final Susceptibility Results" (Q41).
 9. If "Was Drug Susceptibility Testing Done" (Q33a) is equal to Yes (1) then "Was Follow-up Drug Susceptibility Testing Done" (Q40a) must have a valid value (0, 1, or 9). If "Was Follow-up Drug Susceptibility Testing Done" is blank then the Follow Up-2 record is NOT complete.
 10. If "Was Follow-up Drug Susceptibility Testing Done" (Q40a) is equal to Yes (1) then "If Yes, Enter Date Final Isolate Collected for Which Drug Susceptibility Testing Was Done" (Q40b) must be a valid date in the format MM/DD/YYYY (month, day and year are all known) or marked as Unknown. If the date is blank then the Follow Up-2 record is NOT complete.

11. If "Was Follow-up Drug Susceptibility Testing Done" (Q40a) is equal to Yes (1) then there must be a valid value (1, 2, 3, or 9) in each drug listed in "Final Susceptibility Results" (Q41). If any one of the drugs is blank then the Follow Up-2 record is NOT complete.

Case Verification Record Completeness Criteria

The following criteria are used to determine when a Case Verification record is complete.

1. If "Case Verification Criteria" is equal to Not a Verified Case (0) or Suspect (5) then the Case Verification record is complete.
2. If "Case Verification Criteria" is equal to Positive Culture (1) or Positive Smear/Tissue (2) or Clinical Case Definition (3) or Verified by Provider Diagnosis (4), then "Do you want to count this patient at CDC as a verified case of TB?" must have a valid value (Y or N).
 - If "Do you want to count this patient at CDC as a verified case of TB?" is equal to Pending (Blank) then the Case Verification record is NOT complete.
3. If "Do you want to count this patient at CDC as a verified case of TB?" is equal to Yes (1) AND "Month-Year Counted" (Q6) is blank then the Case Verification record is NOT complete.
4. If "Do you want to count this patient at CDC as a verified case of TB?" is equal to Yes (1) AND "Month-Year Counted" (Q6) is a valid date in the format MM/YYYY (month and year are both known) then the Case Verification record is complete.
5. "MMWR Reporting Date" is not included in the algorithm.

Patient Data Record Completeness Criteria

The following criteria are used to determine when a Patient Data record is complete.

1. "Month-Year Reported" (Q5) must be a valid date in the format MM/YYYY (month and year are both known). If the date is blank or marked as Unknown then the Client Data record is NOT complete.
2. "Client Last Name" must not be blank. If "Client Last Name" is blank then the Client Data record is NOT complete.
3. "Client First Name" and "Client Middle Initial" are not included in the algorithm.
4. "Date of Birth" (Q7) must be a valid date in the format MM/DD/YYYY (month, day and year are all known) or marked as Unknown. If "Date of Birth" is blank then the Client Data record is NOT complete.
5. The appropriate "Case Number" (State or City/County) (Q2) for the level generating the report cannot be blank. If the "Case Number" is blank then the Client Data record is NOT complete.
6. "Street Address" is not included in the algorithm.
7. "City" must have a valid value from the City pick list. If "City" is blank then the Client Data record is NOT complete.
8. "Zip Code" and "Zip Code Suffix" are not included in the algorithm.