**Accuracy Tool – 1a**

**Data Accuracy Checklist for Report of Verified Case of Tuberculosis  
(Inconsistent and Outlying Data Field Values)**

**4/17/2012**

**This document provides a checklist to determine the accuracy for items from the Report of Verified Case of Tuberculosis (RVCT).**

**Check the following for accuracy:**

* Calculated variables
* Text fields
* Data response patterns
* Date fields (no future dates and no dates too far in the past; dates for certain events in wrong order resulting in negative time duration)

**Examples for Checking Accuracy**

This includes common errors to check for accuracy.

| **RVCT** | | **Check for Accuracy** |
| --- | --- | --- |
| **#** | **Item** |
| **1** | **Report Date** | Report date should be later than or equal to January 1st, 1990 |
| **3** | **Case Numbers** | * State case number, city/county case number and linking state case number should equal 15 characters in length * If Linking State Case Numbers are entered then Linking Reason should also be entered |
| **City** | If City Limits is entered then City should also be entered |
| **7** | **Previous Diagnosis of TB Disease** | * If Previous Year of TB has been entered then  “Yes” should be checked for Previous Diagnosis of TB Disease * Year of previous diagnosis of TB should be a four digit text value |
| **8** | **Date of Birth** | Birth dates should be in the past (not future) |
| **11** | **Race** | * If Asian Extent or Asian Name is entered then Asian Race should be entered as “Y” * If Native Hawaiian Extent or Native Hawaiian Name is entered then Native Hawaiian Race should be entered as “Y” |
| **9** | **Sex at Birth** | Check for high rates of completion of demographic variables |
| **10** | **Ethnicity** |
| **11** | **Race and** |
| **12** | **Country of Birth** |
| **11** | **Race** | Check for correct Country of Birth for Race of   * Native Hawaiian or other Pacific Islander * American Indian or Alaska Native |
| **12** | **Country of Birth** |
| **12** | **Country of Birth** | * All records should have a “Country of Birth” specified * If U.S.-born is “No” the Country of Birth should **not** be “United States” * If Country of Birth is entered as “United States” then Arrival Date should be missing |
| **13** | **Month-Year Arrived in U.S.** | Month-year arrived in U.S. should be earlier or equal to the current date. |
| **14** | **Pediatric TB** | If Lived Outside the United States For More Than Two Months is Not entered as “Y” then Countries Specified should be blank |
| **15** | **Status at TB Diagnosis** | * If Status at Diagnosis is entered as “DEAD” then Was TB a Cause of Death should not be blank * If Status at Diagnosis is entered as “ALIVE” then Date of Death should be missing |
| **16** | **Site of TB Disease** | When selecting Site of Disease as “Other” also include the Anatomic Code |
| **17** | **Sputum Smear** | A Sputum Smear Collection Date is entered only when Sputum Smear Results are entered as “Positive” or “Negative” |
| **18** | **Sputum Culture** | * Sputum Culture Collection Date is entered only when Sputum Culture Results are entered as “Positive” or “Negative” * Sputum Culture Results Reporting Date is entered only when Sputum Culture Results are entered as “Positive” * Sputum Culture Reporting Lab Type is entered only when Sputum Culture Results are entered as “Positive” |
| **19** | **Smear/Pathology/**  **Cytology of Tissue and Other Body Fluids** | Only when Smear/Cytology/Pathology result is entered as “Positive” or “Negative” should the following be entered   * Collection Date * Anatomic Code * Type of Exam |
| **20** | **Culture of Tissue and Other Body Fluids** | * Only when Culture of Tissue or Other Body Fluids (CTOBF) result is entered as “Positive” or “Negative” should the following be entered   + Collection Date   + Anatomic Code * Only when Culture of Tissue or Other Body Fluids (CTOBF) result is entered as “Positive” should the following be entered   + Reporting Lab Type   + Results Reporting Date * CTOBF Reporting Lab Type is entered only when CTOBF results are entered as “Positive” |
| **21** | **Nucleic Acid Amplification (NAA) Test Result** | Only when NAA test result is entered as “Positive” or “Negative” should the following be entered   * Collection date * Specimen type |
| Only when NAA test result is entered as “Positive” should the following be entered   * Results Reporting date * Reporting Lab type |
| **22A** | **Initial Chest Radiograph** | Only whenchest x-ray or chest CT scan is entered as “Abnormal” should the following be entered   * Evidence of a cavity * Evidence of miliary disease |
| **22B** | **Initial Chest CT Scan or Other Chest Imaging Study** |
| **23** | **Tuberculin (Mantoux) Skin Test at Diagnosis** | Only when TB skin test result is entered as “Positive” or “Negative” should the following be entered   * Millimeters of induration * Date skin test was placed |
| **24** | **Interferon Gamma Release Assay (IGRA) for *Mycobacterium Tuberculosis* at Diagnosis** | Only when IGRA test result is entered as “Positive” or “Negative” should the following be entered   * Collection date * Test type |
| **26** | **HIV Status at Time of Diagnosis** | Only when HIV/AIDS status is entered as “Positive” should the HIV/AIDS registry numbers be entered |
| **28** | **Resident of Correctional Facility at Time of Diagnosis** | * Only when resident of correctional facility at time of diagnosis is entered as “Yes” should the Type of Correctional Facility be entered * Only when resident of correctional facility at time of diagnosis is entered as “Yes” should Was the patient under the custody of Immigration and Customs Enforcement be entered * Only when resident of correctional facility at time of diagnosis is not entered as “Yes” should resident of long-term care facility at time of diagnosis be entered as “Yes” |
| **29** | **Resident of Long-Term Care Facility at Time of Diagnosis** | Only when resident of long-term care facility at time of diagnosis is entered as “Yes” should the Type of long-term care facility be entered |
| **36** | **Date Therapy Started** | Start therapy date should be earlier or equal to the current date. |
| **38** | **Genotyping Accession Number** | * Only when an Isolate Submitted for Genotyping is entered as “Yes” should a Genotyping Accession Number be entered * Valid Genotyping Accession Numbers have an “L” in the 3rd digit, an “RF” in the 3rd and 4th digits or a “-“ in the 3rd digit |
| **39** | **Initial Drug Susceptibility Testing** | * Initial Susceptibility Testing should only be entered when Sputum Culture is entered as “Positive” or Culture of Tissue and Other Body Fluids is entered as “Positive” * Initial Susceptibility Test Date should only be entered when Initial Susceptibility Testing is entered as “Y” * Review Initial Susceptibility Test Date to eliminate illogical entries * A response should be entered for the Specimen Type only when Initial Susceptibility Testing is entered as “Yes” |
| **40** | **Initial Drug Susceptibility Results** | * A response should be entered for each drug for Initial Susceptibility Testing * A response for “Other: Specify” should only be entered when a response to “Other” drug has been entered |
| **41** | **Sputum Culture Conversion Documented** | * A response for Reason Culture Conversion Not Documented should be entered only when Sputum Culture Conversion Documented is entered as “No” * A response for First Consistently Negative Sputum Culture should be entered only when Sputum Culture Conversion Documented is entered as “Yes” |
| **42** | **Moved** | * The location a patient moved to during therapy should only be entered if the Patient Moved indicator is “Yes” * City and county, state or country should be specified for a move only when the Move location is not blank * A response to whether or not a Transnational Referral was made should be entered only when a move outside the U.S. is specified |
| **43** | **Date Therapy Stopped** | * Date Therapy Stopped is entered only when Date Therapy Started is entered * Date Therapy Stopped should be entered only when patient is Alive at Diagnosis and on one or more anti-TB drugs |
| **44** | **Reason Therapy Stopped or Never Started** | Cause of Death should only be entered when Reason Therapy Stopped is entered as “Died” |
| **45** | **Reason Therapy Extended > 12 Months** | A response to any of the Reasons Therapy Extended > 12 Months should only be entered when the duration of therapy is more than one year |
| **36** | **Date Therapy Started** |
| **43** | **Date Therapy Stopped** |
| **46** | **Type of Outpatient Health Care Provider** | No additional response should be given to Type of Outpatient Health Care Provider if response is Inpatient Care Only |
| **47** | **Directly Observed Therapy (DOT)** | * Directly Observed Therapy should only be entered when patient is Alive at Diagnosis and on one or more anti-TB drugs * DOT Weeks should only be entered when the patient is on DOT Only or Both DOT and Self-Administered |
| **48** | **Final Drug Susceptibility Testing** | * Final Susceptibility Testing should only be entered whenpatient is Alive at Diagnosis and on one or more anti-TB drugs * Final Susceptibility Test Date should only be entered when Final Susceptibility Testing is entered as “Y” * Review Final Susceptibility Test Date to eliminate illogical entries * Final Susceptibility Specimen Type of sputum or an anatomic code should only be entered when Final Susceptibility Testing is entered as “Y” |
| **49** | **Final Drug Susceptibility Results** | * A response should be entered for each drug for Initial Susceptibility Testing * A response for “Other: Specify” should only be entered when a response to “Other” drug has been entered |

**Date Checks**

|  |  |  |
| --- | --- | --- |
| **RVCT** | | **Check for Accuracy** |
| **#** | **Item** |
| **18** | **Sputum Culture** | Sputum culture reporting date is prior sputum culture collection date |
| **20** | **Culture of Tissue and Other Body Fluids** | Culture of tissue and other fluids reporting date is prior culture of tissue and other fluids collection date |
| **21** | **Nucleic Acid Amplification Test Result** | NAA test reporting date is prior NAA test collection date |
| **36** | **Date Therapy Started** | Date therapy stopped is prior date therapy started |
| **43** | **Date Therapy Stopped** |
| **39** | **Initial Drug Susceptibility Testing** | Date of final susceptibility testing is prior date of initial susceptibility testing |
| **48** | **Final Drug Susceptibility Testing** |
| **18** | **Sputum Culture** | Date of first consistently negative sputum culture is prior date of first positive sputum culture |
| **41** | **Sputum Culture Conversion Documented** |

**Impact of data collection changes:**

* Data under revised RVCT collected under different conditions (anatomic codes for diagnostic tests available for positive and negative test results)
* Data collected under TIMS is not collected in the same way under some state-developed systems (Country of Birth code and U.S.-born: “Yes” “No”)
* No provision made for NAA test in verification criteria resulting in no valid Verification Criteria
* Difficulty in obtaining lab data resulting in no valid Verification Criteria
* Changes in structure of a states’ HL7 message can result in data loss
* Some reporting areas not collecting City Limits information so must allow blank in City Limits fields to obtain city data (“Yes” and “Unknown” not sufficient)

**Accuracy checklist**

The following are data quality checks performed against the NTSS data to identify inconsistencies in the data. Each reporting area has evaluated at least some of the items referenced here. No action is required; however, for analyses that look at the data in fine detail, some of the items listed below may be worth reviewing to see if the data should be excluded from your analysis.

**Age**

The following checks of the data suggest that the results warrant a closer look.

| **RVCT** | | **Results Warranting Closer Look** |
| --- | --- | --- |
| **#** | **Item** |
| **1** | **Date Reported** | Age >= 100 |
| **8** | **Date of Birth** |
| **8** | **Date of Birth** | * Resident of federal prison is < 18 or >= 70 years old * Resident of state prison is < 18 or >= 70 years old * Resident of local jail is < 18 or >= 70 years old * Resident of juvenile facility is < 13 or >= 25 years old * Resident of other correctional facility is < 18 or >= 70 years old |
| **28** | **Resident of Correctional Facility at Time of Diagnosis** |
| **8** | **Date of Birth** | * Resident of a nursing home is <= 30 years old * Resident of a hospital-based facility is <= 25 years old * Resident of a residential-based facility is <= 25 or >= 90 years old * Resident of a mental health facility is <= 5 years old * Resident of alcohol/drug treatment facility is < 16 or >= 70 years old * Resident of other long-term care facility is <= 25 or >=90 years old |
| **29** | **Resident of Long-Term Care Facility at Time of Diagnosis** |
| **8** | **Date of Birth** | * Health care worker is < 13 years old * Correctional employee is < 18 or > 65 years old * Migratory/seasonal worker is < 16 or > 75 years old * Worker in any other occupation is < 16 or >= 90 years old |
| **30** | **Primary Occupation Within Past Year** |
| **8** | **Date of Birth** | Injecting drug user is < 16 or >= 70 years old |
| **31** | **Injecting Drug Use Within Past Year** |
| **8** | **Date of Birth** | Non injecting drug user is < 16 years old |
| **32** | **Non-Injecting Drug Use Within Past Year** |
| **8** | **Date of Birth** | Alcohol abuser is < 16 years old |
| **33** | **Excess Alcohol Use Within Past Year** |

**Completion of Therapy & Drug Resistance**

| **RVCT** | | **Results Warranting Closer Look** |
| --- | --- | --- |
| **#** | **Item** |
| **37** | **Initial Drug Regimen** | Initial drug regimen consists of seven or more drugs |
| **36** | **Date Therapy Started** | Length of completed therapy is less than 120 days |
| **43** | **Date Therapy Stopped** |
| **36** | **Date Therapy Started** | * Length of completed therapy is greater than 365 days for non-RIF resistance * Length of therapy for Rifampin resistance is greater than two years * Date therapy started is more than 60 days after or more than 14 days prior to date of first isolate for susceptibility testing |
| **39** | **Initial Drug Susceptibility Testing** |
| **40** | **Initial Drug Susceptibility Results** |
| **43** | **Date Therapy Stopped** |
| **36** | **Date Therapy Started** | Date therapy started is more than 60 days after or more than 14 days prior to date of first isolate for susceptibility testing |
| **39** | **Initial Drug Susceptibility** |
| **39** | **Initial Drug Susceptibility** | * Time between initial and final isolates collected for susceptibility testing is less than 30 or more than 730 days * Isolate is initially resistant yet susceptible in final susceptibility testing |
| **48** | **Final Drug Susceptibility Testing** |
| **36** | **Date Therapy Started** | * Sputum culture conversion for Rifampin resistance is less than 15 days or more than 300 days * Sputum culture conversion for non-RIF resistance is less than 15 days or more than 120 days |
| **39** | **Initial Drug Susceptibility** |
| **40** | **Initial Drug Susceptibility Results** |
| **41** | **Sputum Culture Conversion Documented** |

**Miscellaneous**

| **RVCT** | | **Results Warranting Closer Look** |
| --- | --- | --- |
| **#** | **Item** |
| **7** | **Previous Diagnosis of TB Disease** | Year of previous diagnosis is prior to 1930 |
| **13** | **Month-Year Arrived in U.S.** | Month-year arrived in U.S. prior to 1920 |
| **15** | **Status at TB Diagnosis** | Positive skin tests with mm of induration greater than or equal to 50 |
| **18** | **Sputum Culture** | Existence of a Follow-Up 1 record with no positive culture |
| **20** | **Culture of Tissue and Other Body Fluids** |
| **38** | **Genotyping Accession Number** |
| **39** | **Initial Drug Susceptibility Testing** |
| **40** | **Initial Drug Susceptibility Results** |
| **5** | **Count Status** | Existence of a Follow-Up 2 record with status “dead” at diagnosis |
| **41** | **Sputum Culture Conversion Documented** |
| **42** | **Moved** |
| **43** | **Date Therapy Stopped** |
| **44** | **Reason Therapy Stopped or Never Started** |
| **45** | **Reason Therapy Extended > 12 Months** |
| **46** | **Type of Outpatient Health Care Provider** |
| **47** | **Directly Observed Therapy (DOT)** |
| **48** | **Final Drug Susceptibility Testing** |
| **49** | **Final Drug Susceptibility Results** |

**National Tuberculosis Indicator Project (NTIP)**

Reviewing NTIP data from indicator reports can help detect errors in records. To detect errors if records do not meet NTIP objectives, request a line list of the data from within the NTIP application. Examine the NTIP line list to detect differences between State and CDC data bases. Records may not match because

* Data received at CDC may not be as complete or up-to-date as the State data base
* Data might be missing from the State data base

NTIP examines data from 2000 to present. Data for can be confirmed from previous years to help with analysis and check that the records match from the State and CDC.

For more information see Chapter 9: QA Cross-cutting Systems and Process (NTIP, TB GIMS, and Cohort Review)