



I. *Clostridium difficile* Infection (CDI) Surveillance by Laboratory-identified (LabID) Event

Methods: Facilities may choose to monitor *Clostridium difficile* infections (CDI) using laboratory-identified (LabID) event surveillance. This surveillance method allows laboratory data to be used without clinical evaluation of the resident for signs or symptoms, allowing for a less labor intensive method to track CDI. This method provides proxy measures of CDI and healthcare exposure based solely on laboratory data and limited resident admission/transfer data.

The data collected will enable participating facilities and the CDC to calculate several infection measures for CDI. NHSN forms should be used to collect all required data, using the definitions of each data field as indicated in the [Table of Instructions](#).

Settings: CDI LabID Event reporting is currently available for certified skilled nursing facilities/nursing homes (LTC:SKILLNURS) and intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS). Events reported should include *C. difficile* positive laboratory assays from any resident receiving care from the reporting LTCF.

Laboratory results obtained before a resident's admission to the LTCF or during an admission in another facility are excluded from LabID Event reporting. Laboratory results obtained from an emergency department (ED) or outpatient (OP) setting, such as a physician's office, during a resident's current admission (specifically, no change in current admission date) are eligible to be included in LabID Event reporting for the LTCF.

EXAMPLE: Mr. T is a resident in your LTCF. He does not have a history of *C. difficile*. On March 1, he was transferred to the local emergency department (ED) for evaluation of diarrhea and fever. While in the emergency department, a loose stool specimen was collected and tested positive for *C. difficile*. He received IV fluids and was transferred back to the LTCF the next calendar day, on March 2. Since the specimen was collected in an ED and Mr. T returned to the LTCF within 2 calendar days (specifically, during his current admission in the LTCF, the *C. difficile* specimen was entered into NHSN as a CDI LabID Event for the LTCF.

Requirements: A *NHSN Monthly Reporting Plan* for the LTCF ([CDC 57.141](#)) must be completed for each calendar month in which a facility plans to enter data into the NHSN. For each participating month, the facility must report numerators (CDI LabID Events) and denominators (total number of resident admissions, total number of resident-days, and total number of LTCF admissions on *C. difficile* treatment) for the entire facility, referred to as facility-wide inpatient (FacWideIN). *C. difficile* surveillance and reporting is limited to testing performed on unformed/loose stool specimens (conforms to the shape of the container). Facilities should report for at least 6 consecutive months to provide meaningful measures.



The following categorizations are based on the specimen collection date for the current CDI event being entered into the NHSN and the specimen collection date for the previous CDI LabID Event entered into the NHSN for a resident. *Note:* the date of specimen collection is considered as day 1.

- **Incident CDI LabID Event:** Either the first CDI LabID Event ever entered for an individual resident in the facility, or a subsequent LabID Event entered > 56 days (8 weeks) after the most recent CDI LabID Event reported for an individual resident while receiving care in the LTCF.
- **Recurrent CDI LabID Event:** Any CDI LabID Event entered > 14 days (2 weeks) and < 57 days (8 weeks) after the most recent CDI LabID Event reported for an individual resident while receiving care from the LTCF.

EXAMPLE: NHSN Classification of CDI LabID Events as Incident or Recurrent

| Resident ID | Current Admit Date | CDI Event Date (specifically, date of specimen collection) | Categorization |
|-------------|--------------------|--|----------------|
| 1111 | 01/01/2016 | 01/05/2016 | Incident |
| 1111 | 01/01/2016 | 01/25/2016 | Recurrent |
| 1111 | 01/01/2016 | 03/11/2016 | Recurrent |
| 1111 | 01/01/2016 | 05/20/2016 | Incident |

Further Categorizations of CDI LabID Events: All incident and recurrent CDI LabID Events will be further categorized by the NHSN. The following categorizations are based on the date of current admission to the facility, date specimen collected (event date), and date of last transfer from acute care to your facility. Because of variability in documenting time of admission to the LTCF, calendar days are used to categorize LabID Events.

- **Community-onset (CO) LabID Event:** Date specimen collected ≤ 3 calendar days after date of current admission to the facility (specifically, days 1, 2, or 3 of admission).
- **Long-term Care Facility-onset (LO) LabID Event:** Date specimen collected > 3 calendar days after date of current admission to the facility (specifically, on or after day 4).
 - LO LabID Events can be further sub-classified as:
 - Acute Care Transfer-Long-term Care Facility-onset (ACT-LO):** LTCF-onset (LO) LabID Event with date specimen collected ≤ 4 weeks following date of last transfer from an Acute Care Facility (hospital, long-term acute care hospital, or acute inpatient rehabilitation facility only) to the LTCF.



EXAMPLE: NHSN Classification of CDI LabID Events as Community-onset (CO) or Long-term Care Facility-onset (LO).

Ms. T was first admitted to the LTCF on June 4. On June 5 she developed diarrhea, and on June 6 a loose stool specimen was collected and subsequently tested positive for *C. difficile* toxin. Since she had not had a positive *C. difficile* laboratory assay performed in the previous 14 days while receiving care from the LTCF, the result was entered into NHSN as a CDI LabID Event for June 6 (date of specimen collection). The NHSN application categorized the LabID Event as Community-onset (CO) since the specimen was collected within the first 3 days of her current admission date into the facility. If the specimen had been first collected four or more days (June 7th or later) after her current admission date into the facility, the NHSN application would've categorized the LabID Event as Long-term Care Facility-onset (LO).

| Example: NHSN Classification of Lab ID Events as Community-onset or LTCF-onset | | | | |
|---|----------------------|----------------------|---|----------------------|
| Admission date | | | | |
| June 4 th | June 5 th | June 6 th | June 7 th | June 8 th |
| day 1 | day 2 | day 3 | day 4 | day 5 |
| Community-onset (CO) | | | Long-term Care Facility-onset (LO) | |

Calculated CDI Rates and Metrics: The following section describes the various measures calculated for CDI LabID event surveillance.

Total CDI Rate/10,000 resident-days = Number of CDI LabID Events per month regardless of time spent in the facility (specifically, CO + LO) / Number of resident-days per month x 10,000.

CDI Treatment Prevalence on Admission = Residents on *C. difficile* Treatment / Number of Admissions x 100.

CDI Long-term Care Facility-onset Incidence Rate/10,000 resident-days* = Number of all incident LO CDI LabID Events per month / Number of resident-days x 10,000.

*NOTE: This formula excludes recurrent CDI events.

Percent that is Community-onset = Number of CDI LabID Events that are CO / Total number of CDI LabID Events x 100.



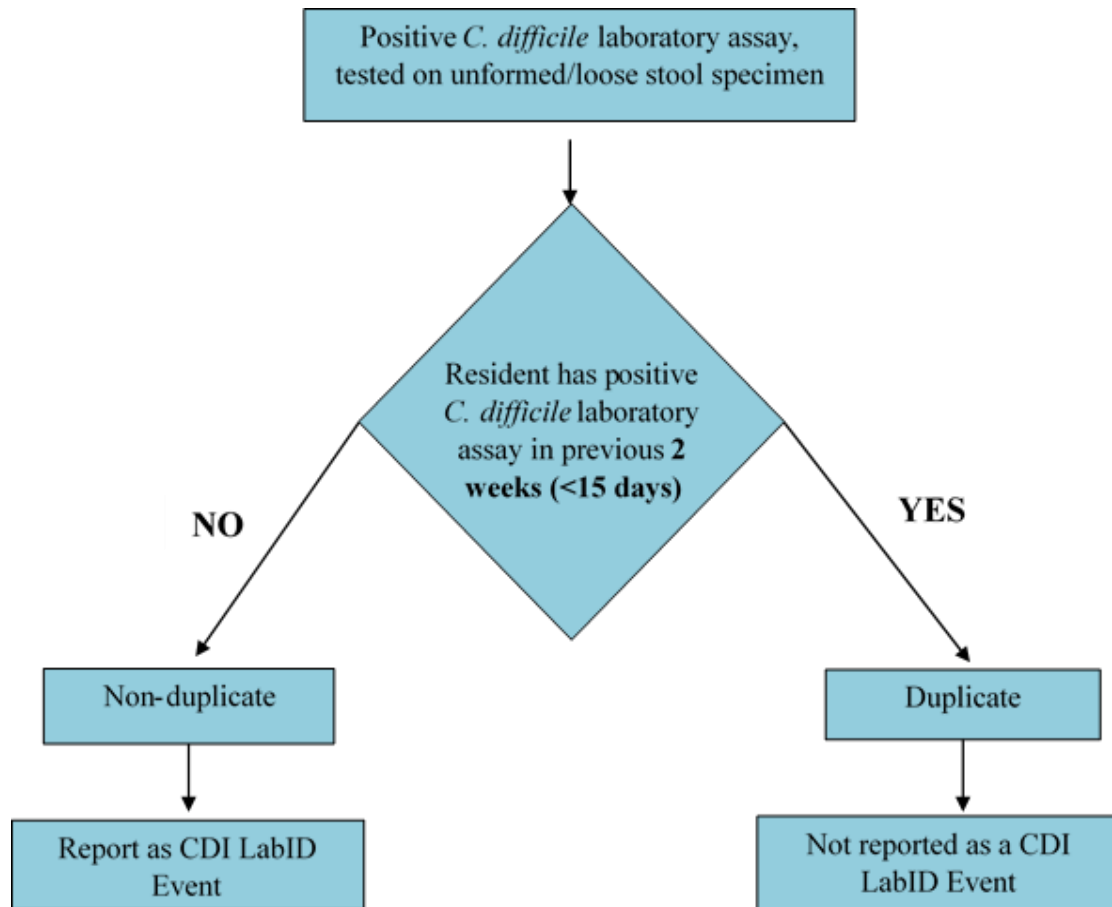
Percent that is Long-term Care Facility-onset = Number of incident and recurrent CDI LabID Events that are LO / Total number of CDI LabID Events x 100.

Percent of LO that is Acute Care Transfer-Long-term Care Facility-onset =
Number of ACT-LO CDI LabID Events / Total number of LO CDI LabID Events
x 100.

Percent that is Recurrent CDI = Number of CDI LabID Events that are recurrent / Total number of CDI LabID Events x 100.



Figure 1. *C. difficile* Test Result Algorithm for Laboratory-identified (LabID) Events



Notes:

1. LabID event reporting is based on specimens collected by the LTCF during the care of the resident, and specimens collected in an ED or OP (for example, physician's office) during the current admission. Laboratory results obtained prior to the resident's admission to the LTCF or during an admission in another healthcare facility are excluded. See [Settings](#)
2. Day of specimen collection equals day one of the specimen count.



II. MDRO Surveillance by Laboratory-identified (LabID) Event

Methods: Facilities may choose to monitor one or more of the following MDROs: *Staphylococcus aureus*, both methicillin-resistant (MRSA) and methicillin-susceptible (MSSA), vancomycin-resistant *Enterococcus spp.* (VRE), cephalosporin-resistant *Klebsiella spp.*, Carbapenem-resistant *Enterobacteriaceae* (CRE), and multidrug-resistant *Acinetobacter spp.*

Laboratory-identified (LabID) Event reporting allows laboratory data to be used without clinical evaluation of the resident for signs or symptoms, creating a less labor intensive method to track MDROs. This method provides proxy measures of MDRO infections, and healthcare exposure based solely on laboratory data and limited resident admission/transfer data.

The data collected will enable participating facilities and the CDC to calculate several measures, depending on which MDROs the facility chooses to track. NHSN forms are available and should be used to collect all required data, using the definitions of each data field as indicated in the [Table of Instructions](#).

Setting: MDRO LabID Event reporting is currently available for certified skilled nursing facilities/nursing homes (LTC:SKILLNURS) and intermediate/chronic care facilities for the developmentally disabled (LTC:DEVDIS). Events reported should include MDRO positive laboratory cultures obtained from any resident while receiving care from the reporting LTCF.

Laboratory results obtained before a resident's admission to the LTCF or during an admission in another healthcare facility are excluded from LabID Event reporting. Laboratory results obtained from an emergency department (ED) or outpatient (OP) setting, such as a physician's office, during a resident's current admission (specifically, no change in current admission date) are eligible to be included in LabID Event reporting for the LTCF.

EXAMPLE: Mr. T is a resident in your LTCF. He does not have a history of MRSA. On March 1, he was transferred to the local emergency department (ED) for evaluation of a foot ulcer. While in the emergency department, the wound was cultured and tested positive for MRSA. Antibiotics were ordered and Mr. T was transferred back to the LTCF on the same calendar day, March 1. Since the MRSA positive wound culture was collected in an outpatient setting (specifically, the ED) and within 2 calendar days of leaving the LTCF (specifically, during the resident's current admission in the LTCF), the specimen was entered into the NHSN as a MRSA LabID Event for the LTCF.

Requirements: A *NHSN Monthly Reporting Plan* for the LTCF ([CDC 57.141](#)) must be completed for each calendar month in which a facility plans to enter data into the NHSN. For each participating month, the facility must report numerators (MDRO LabID Events) and denominators (total number of resident admission and total number of resident-days) for the entire facility, referred to as facility-wide inpatient (FacWideIN). Facilities should report for at least 6



consecutive months to provide meaningful measures. For each MDRO being monitored, all MDRO test results are evaluated using the algorithm in [Figure 2](#), keeping in mind the following:

1. All first MDRO isolates (chronologically) per resident, per month are reported as a LabID event regardless of the specimen source [EXCLUDES tests related to active surveillance testing];
2. If a blood isolate is the first positive MDRO specimen for the month, it should be entered as a LabID Event even if the resident had a prior blood reported within two weeks in the previous month;
3. If a blood specimen is entered as the first specimen of the month, then no non-blood specimens can be entered for the remainder of that calendar month for that resident. However, another blood specimen may be entered if it represents a unique blood isolate (see below definition for [unique blood source](#)).

Definitions: The following MDROs can be selected for tracking in the LabID Event module:

Gram-stain positive organisms:

- **MRSA:** Any *S. aureus* testing resistant to oxacillin, methicillin, or ceftazidime, by standard susceptibility testing methods or by a positive result from an FDA-approved test for direct MRSA detection from that specimen source.
- **MSSA:** Any *S. aureus* testing intermediate or susceptible to oxacillin, methicillin, and ceftazidime by standard susceptibility testing methods; a positive result from an FDA-approved test for direct MSSA detection from that specimen source; or a negative result from an FDA-approved test for direct MRSA detection from a specimen source. Note: MSSA is only an option when surveillance includes MRSA.
- **VRE:** Any *Enterococcus species* that is resistant to vancomycin, by standard susceptibility testing methods or by a positive result from an FDA-approved test for VRE detection from that specimen source.

Gram-stain negative organisms:

- **CephR-Klebsiella:** Any *Klebsiella species* testing non-susceptible (specifically, resistant or intermediate) to cephalosporin antibiotics like ceftazidime, cefotaxime, ceftazidime, or cefepime.
- **CRE-** Any *Escherichia coli (E. coli)*, *Klebsiella species*, or *Enterobacter species* testing resistant to imipenem, meropenem, doripenem, or ertapenem by standard susceptibility testing methods (specifically, minimum inhibitory concentrations of ≥ 4 mcg/mL for doripenem, imipenem and meropenem or ≥ 2 mcg/mL for ertapenem) OR by production of a carbapenemase (specifically, KPC, NDM, VIM, IMP, OXA-48) demonstrated using a recognized test (for example, polymerase chain reaction, metallo- β -lactamase test,



modified-Hodge test, Carba-NP). **Note:** CRE surveillance requires facilities to monitor and report for all three organisms (CRE-*E. coli*, CRE-*Klebsiella spp.*, and CRE-*Enterobacter spp.*).

- MDR-*Acinetobacter*: Any ***Acinetobacter* species** testing non-susceptible (specifically, resistant or intermediate) to at least one agent in at least 3 antimicrobial classes of the following 6 antimicrobial classes:

| Antimicrobial Class | Antimicrobial Agents |
|---|---|
| β-lactams and β-lactam/β-lactamase inhibitor combinations | Piperacillin, Piperacillin/tazobactam |
| Sulbactam | Ampicillin/sulbactam |
| Cephalosporins | Cefepime, Ceftazidime |
| Carbapenems | Imipenem, Meropenem, Doripenem, Ertapenem |
| Aminoglycosides | Amikacin, Gentamicin, Tobramycin |
| Fluoroquinolones | Ciprofloxacin, Levofloxacin |

MDRO positive isolate: Any specimen, obtained for clinical decision making, testing positive for an MDRO (as defined above). **Note:** Excludes tests related to active surveillance testing.

Duplicate MDRO laboratory isolate: Any subsequent MDRO positive isolate collected from the *same* resident after the first isolate of the same MDRO during a calendar month, regardless of the specimen source except when a unique blood source is identified (see definition below and [Figure 2](#)). **Note:** A duplicate MDRO laboratory isolate should not be reported as a LabID Event.

EXAMPLE: On January 2, Mr. T had a positive MRSA urine culture that was entered as a MDRO LabID Event. The following week, he had MRSA cultured from an infected decubitus ulcer. The MRSA wound culture was considered a duplicate MDRO isolate, since it was the second non-blood MRSA isolate collected from the same resident during the same calendar month.

Unique blood source MDRO laboratory isolate: A MDRO isolate identified in a resident with no prior positive blood culture for the same MDRO in the past 2 weeks (<15 days), even across calendar months and admissions. **Note:** If the first MDRO isolate for the resident and calendar month is a blood isolate, the specimen should be reported as a LabID event, even if a previous MDRO blood isolate was reported in the previous 2 weeks across calendar months. See [Figure 2](#).



MDRO Laboratory-identified (LabID) Event: All non-duplicate MDRO positive laboratory isolates from any culture specimen, regardless of specimen source or MDRO unique blood source isolates obtained while a resident is receiving care from the facility (see [Settings](#)). See [Figure 2-MDRO Test Result Algorithm for Laboratory-identified \(LabID\) Events](#).

EXAMPLE: On December 27, Mr. T had a positive MRSA blood culture that was entered into the NHSN as a MRSA LabID Event. On January 2, he had another positive MRSA blood culture that was entered into the NHSN because it was the first positive MRSA blood isolate for the new calendar month. He had a wound that also tested positive for MRSA on January 20. This specimen was not entered into the NHSN since it represented a duplicate MDRO laboratory isolate for January. Again, on January 27, Mr. T had another positive MRSA blood culture. Since the isolate represented a unique blood source (>14 days since the last positive MRSA blood specimen), the MRSA blood specimen was entered into the NHSN as a MRSA LabID Event.

Key Points:

1. MDRO LabID Event reporting is ONLY for collecting and tracking isolates from positive cultures that are taken for "clinical" purposes (specifically, for diagnosis and treatment), which means that Active Surveillance Culture/Testing (for example, nasal swabs for MRSA or perirectal swabs for VRE) results are not reported as LabID Events.
2. LabID Event rules apply to specimens collected while resident is receiving care from the LTCF and includes specimens collected from an ED or OP setting during a resident's current admission. Laboratory results obtained before a resident's admission to the LTCF or during an admission in another facility are excluded from LabID Event reporting.
3. If a specimen is collected while the resident is receiving care from an ED or OP setting, the *Resident Care Location* and *Primary Resident Service Type* should indicate the resident's primary LTCF location and service type prior to the ED or OP visit.
4. When performing LabID Event reporting for MDROs, the facility must report the selected MDRO(s) from all specimen sources, and from all locations within the long-term care facility setting, referred to as FacWideIN.
5. The date of specimen collection is considered Day 1.
6. If the first MDRO isolate for the resident and calendar month is a blood isolate, the specimen should be reported as a LabID event, even if a previous MDRO blood isolate was reported in the previous 2 weeks across calendar months. (See [Figure 2](#)).
7. A unique blood source isolate should be reported even if the resident had this same MDRO previously isolated in a non-blood specimen earlier during the same calendar month (See [Figure 2](#)).



8. As a general rule, at a **maximum**, there should be no more than 2 blood isolates (which would be very rare) and 1 other specimen source isolate per MDRO type reported for the same resident during a calendar month.
9. NHSN recommends facilities keep an internal line listing log of all positive isolates for reference in LabID event reporting.

Numerator and Denominator Data:

Numerator: Data on each MDRO LabID Event will be reported using the *Laboratory identified MDRO or CDI Event for LTCF* form ([CDC 57.138](#)). The [Table of Instructions for Completion of the LTCF Laboratory- identified \(LabID\) MDRO or CDI Event form](#) includes instructions for collection and entry of each data element on the form. Report one event per form.

Denominator: Resident admissions and resident days are used for denominators. Monthly totals for denominators are collected using the *MDRO and CDI LabID Event Reporting Monthly Summary Data for LTCF* form ([CDC. 57.139](#)). The [Table of Instructions for Completion of the MDRO and CDI Monthly Monitoring for Long-term Care Facility](#) form includes brief instructions for collection and entry of data elements on the form. Facilities may also choose to use the *Denominators for LTCF* form ([CDC 57.142](#)) to collect daily denominator data. Only the monthly totals are entered into the NHSN. The [Table of Instructions for Completion of the LTCF Component- Denominators for LTCF](#) provides brief instructions for collection and entry of data elements on the form.

Categorizations of MDRO LabID Events: Based on data entered into the NHSN application, each event will be categorized by the NHSN to populate different measures.

The following categorizations are based on date of current admission to the facility, date specimen collected (event date), and date of last transfer from acute care to your facility. Because of variability in documenting time of admission to the LTCF, calendar days are used to categorize LabID Events.

- Community-onset (CO) LabID Event: Date specimen collected ≤ 3 calendar days after date of current admission to the facility (specifically, days 1, 2, or 3 of admission).
- Long-term Care Facility-onset (LO) LabID Event: Date specimen collected > 3 calendar days after date of current admission to the facility (specifically, on or after day 4).
 - LO LabID Events can be further sub-classified as:
 - Acute Care Transfer-Long-term Care Facility-onset (ACT-LO): LTCF-onset (LO) LabID Event with date specimen collected ≤ 4 weeks following date of last transfer from an Acute Care Facility (hospital, long-term acute care hospital, or acute inpatient rehabilitation facility only) to the LTCF.



EXAMPLE: Ms. T was first admitted to the LTCF on June 4. On June 6, a foot ulcer tested positive for MRSA. Since she had not had a positive MRSA positive isolate performed in the previous 14 days, while receiving care in the LTCF, the result was entered into NHSN as a MRSA LabID Event for June 6 (date of specimen collection). The NHSN application categorized the LabID Event as Community-onset (CO) since the specimen was collected within the first 3 days of her current admission date into the facility. If the specimen had been first collected four or more days (June 7th or later) after her current admission date into the facility, the NHSN application would've categorized the LabID Event as Long-term Care Facility-onset (LO).

| Example: NHSN Classification of Lab ID Events as Community-onset or LTCF-onset | | | | |
|---|----------------------|----------------------|---|----------------------|
| Admission date | | | | |
| June 4 th | June 5 th | June 6 th | June 7 th | June 8 th |
| day 1 | day 2 | day 3 | day 4 | day 5 |
| Community-onset (CO) | | | Long-term Care Facility-onset (LO) | |

Calculated MDRO Rates and Metrics*:

The following section describes the various measures calculated for MDRO LabID event surveillance.

*NOTE: These calculations will be performed for each specific MDRO included in the reporting plan during a month (for example, MRSA, VRE, etc.)

Total MDRO Rate/1,000 resident-days = Number of MDRO LabID Events per month (regardless of time spent in the facility specifically, CO + LO) / Number of resident-days per month x 1,000.

MDRO Long-term Care Facility-onset Incidence Rate/ 1,000 resident-days = Number of all LO MDRO LabID Events per month / Number of resident-days x 1,000.

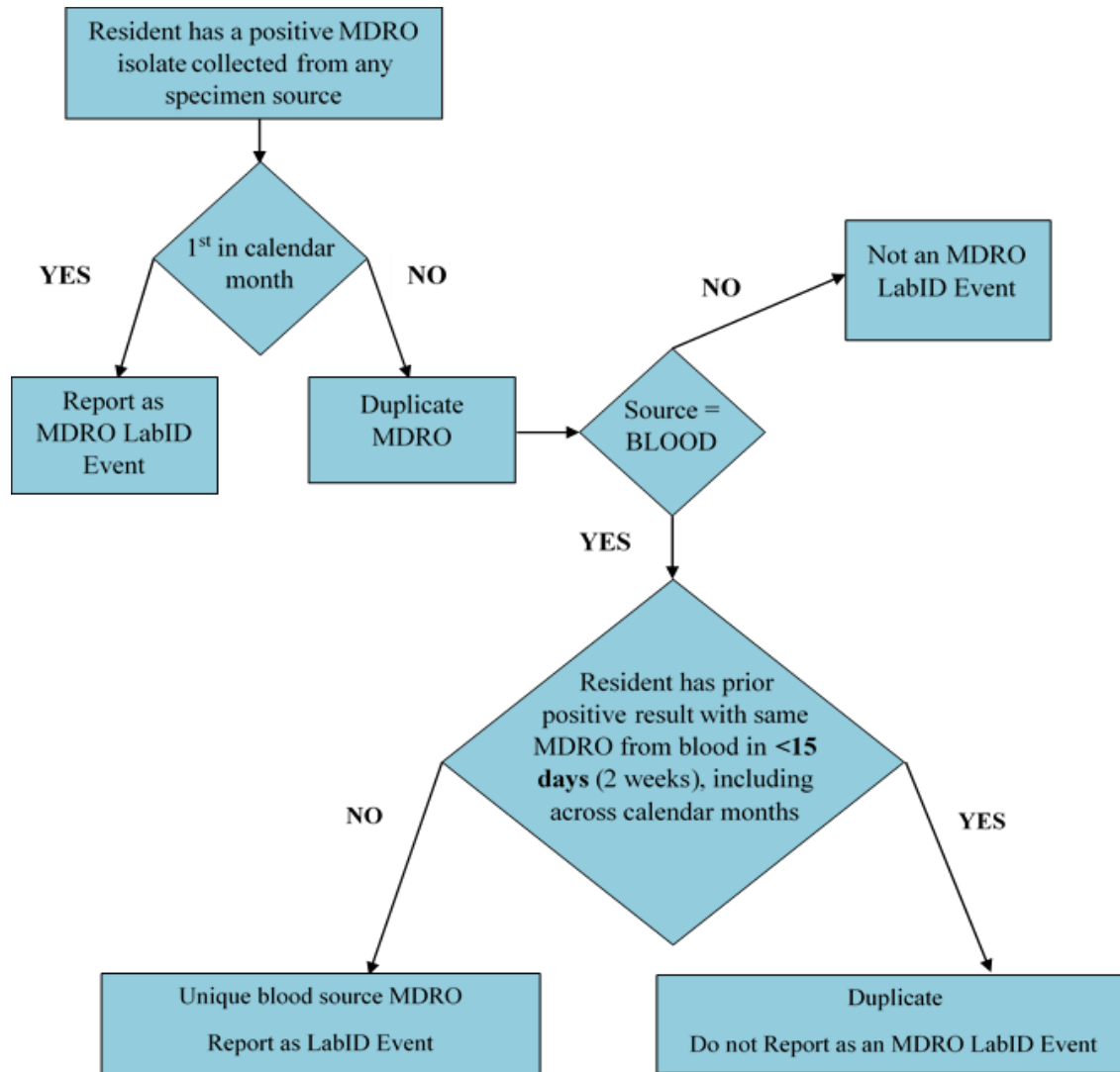
Percent of MDRO LabID Events that is Community-onset = Number of MDRO LabID Events that are CO / Total number of MDRO LabID Events x 100.

Percent of MDRO LabID Events that is Long-term Care Facility-onset = Number of MDRO LabID Events that are LO / Total number of MDRO LabID Events x 100.

Percent of LO LabID Events that is Acute Care-Transfer-Long-term Care Facility-onset = Number of ACT-LO MDRO LabID Events / Total number of LO MDRO LabID Events x 100.



Figure 2. MDRO Test Result Algorithm for Laboratory-identified (LabID) Events.



Notes:

1. LabID event reporting is based on specimens collected by the LTCF during the care of the resident, and specimens collected in an ED or OP setting (for example, physician’s office) during the current admission. Laboratory results obtained prior to the resident’s admission to the LTCF or during an admission in another healthcare facility are excluded. See [Settings](#)
2. Day of specimen collection equals Day 1 of the specimen count.