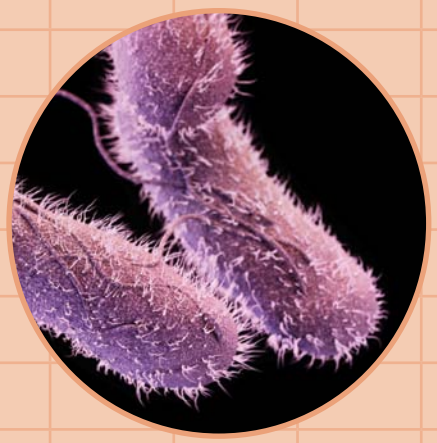
FoodCORE *Salmonella*, Shiga toxin-producing *E. coli*, and *Listeria* Metrics Rationale and Intent

The FoodCORE performance metrics are a list of measurable activities covering diverse aspects of outbreak response. These activities span from outbreak surveillance and detection through investigation, response, control, and prevention measures. Using the metrics, each center provides data about the burden, timeliness, and completeness of foodborne disease activities related to the key areas of activity. The rationale and intent of these metrics are for *Salmonella*, Shiga toxin-producing *Escherichia coli* (STEC), and *Listeria* only.

Sections



Salmonella

Shiga toxin-producing *E. coli*

Listeria

* http://www.cdc.gov/foodcore/metrics.html

National Center for Emerging and Zoonotic Infectious Diseases

Division of Foodborne Waterborne, and Environmental Diseases

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Isolate/Specimen-based Metrics

Rationale: The intent of these metrics is to evaluate the timeliness and completeness/availability of laboratory surveillance and subtyping data for *Salmonella*, STEC, and *Listeria* (SSL). These metrics can be used to determine if there are gaps in the laboratory isolate handling and testing processes. If gaps are identified, knowing the detailed circumstances around the gap will help develop targeted actions to address them specifically.

1a. Total number of SSL isolates and isolate-yielding specimens submitted to or recovered at the PHL

- Intent: To allow evaluation of the burden of isolate submissions and testing at the PHL.

1b. Number of SSL primary isolates and isolate-yielding specimens submitted to or recovered at the PHL

- Intent: To allow evaluation of laboratory testing associated with the first or representative isolate or sample for each case or testing unit for non-human isolates versus duplicate isolates from repeat testing or sampling protocols.

2a. Total number of preliminary positive STEC clinical specimens or samples received at the PHL (regardless of if isolate-yielding or not)

- Intent: To allow evaluation of the submissions of presumptive positive clinical STEC specimens to the PHL.

2b. # (%) of isolate-yielding STEC clinical specimens or samples

- Intent: To allow evaluation of the outcome of STEC clinical specimen testing.
- Note: Could be used to identify gaps in submission protocols if a high proportion of specimens or samples are not viable; this also indicates the utility of testing multiple clinical specimens to try to identify STEC cases that might otherwise be missed if only using isolate submissions.

3. Measure time from SSL isolation/isolate-yielding specimen collection to receipt at PHL

- Intent: To allow evaluation of the timeliness of isolate submission to the PHL.
- Note: Time is measured in median days, measurements will exclude weekend days. For laboratory time measurements, only isolates tested at the PHL should be included.

4. Measure time from receipt of SSL isolate-yielding specimens at PHL to recovery of isolate

- Intent: To allow assessment of the impact, if applicable within the lab, of the time it takes to recover an isolate if an isolate-yielding specimen is received so that subtyping can begin.
- Note: This may not be applicable in all labs, for those that only receive isolates this metric would be zero. Time is measured in median days, measurements will exclude weekend days. For laboratory time measurements, only isolates tested at the PHL should be included.

5. Measure % of *Salmonella* primary isolates with complete serotype information and % of STEC primary isolates with serotype information (n/a for *Listeria* isolates)

- Intent: To allow evaluation of the completeness of serotyping for *Salmonella* and STEC isolates.
- Note: Complete serotyping for *Salmonella* was included in the language to address the concern that it may be possible that serotyping cannot be completed to a final result because of some quirk or feature of the *Salmonella* isolate, which would have to be sent elsewhere to complete serotyping. Therefore, the metric would include isolates that have complete/final serotyping results at the PHL.

6. Measure time from SSL isolate receipt (or recovery) at PHL to serotype result

- Intent: To allow evaluation of the timeliness of serotyping at the PHL.
- Note: Time is measured in median days, measurements will exclude weekend days. For laboratory time measurements, only isolates tested at the PHL should be included.

7. Measure % of SSL primary isolates with PFGE information

- Intent: To allow evaluation of the completeness of PFGE subtyping of SSL isolates.

8a. Measure time from SLL isolate receipt (or recovery) at PHL to PFGE upload to PulseNet

- Intent: To allow evaluation of the timeliness of PFGE subtyping at the PHL.
- Note: Time is measured in median days, measurements will exclude weekend days. For laboratory time measurements, only isolates tested at the PHL should be included.

8b. Measure time from SSL isolate receipt (or recovery) at PHL to receipt at the PFGE laboratory

- Intent: To allow evaluation of the timeliness of PFGE subtyping at the PHL. Other performance metrics (e.g., PHEP, CIFOR) measure the turn-around-time (TAT) from receipt at the PFGE lab to upload to PulseNet. The FoodCORE metrics use a wider definition for the TAT in metric #8a; this submetric allows for the distinction between the two time periods while still retaining the original FoodCORE definition in metric #8a, which has proved useful for process evaluation.
- Note: Time is measured in median days, measurements will exclude weekend days. For laboratory time measurements, only isolates tested at the PHL should be included.

Case-based Metrics

Rationale: The intent of these metrics is to evaluate the timeliness and completeness/availability of epidemiologic data for reported cases. These metrics can be used to determine if there are gaps in the epidemiologic interviewing process. If gaps are identified, knowing the detailed circumstances around the gap will help develop targeted actions to address them specifically.

9. Number of laboratory confirmed SSL cases reported to epidemiology staff

- Intent: To allow evaluation of the burden of cases reported to epidemiology staff.
- Note: This number may not be equivalent to laboratory isolate counts because of duplicate isolates submitted to the PHL, and/or because cases may be reported to epidemiology staff from outside the PHL in their health department (i.e., laboratory or clinical report of cases not submitted to the PHL).

10a. % of SSL cases reported to epidemiology staff (#9) with attempted interview

- Intent: To allow evaluation of interviewing capacity to try to reach cases.
- Note: To be based off #9 for calculation.

10b. Measure time from SSL case report to initial interview attempt

- Intent: To allow evaluation of TAT for attempted interviews. Attempted interviews were used here because factors that impact completion of an interview may be outside the control of epidemiology staff (e.g., case refuses), whereas making an attempt to interview is a TAT that can be controlled through data exchange and capacity.

10c. % of SSL cases with reported to epidemiology staff (#9) complete demographic data

- Intent: To allow evaluation of minimum available data (demographic) even in the absence of exposure history.
- Note: To be based off #9 for calculations.
  - It is possible to get demographic data and have some information to report/utilize for cases without a completed interview, so while most cases with demographic data will have a completed interview, limiting this to only interviewed cases may under-represent the availability of these data.

10d. % of SSL cases with an attempted interview (#10a) with exposure history obtained

- Intent: To evaluate proportion of cases with assessment of exposures prior to onset of illness.
- Note: To be based off #10a for calculations.
  - The intended evaluation could be made using either #9 or #10a, but using #10a has the added benefit of allowing assessment of how many attempted interviews are being completed.

10d.i. Among SSL cases with an exposure history, % with full shotgun or case exposure completed

- Intent: To evaluate the completeness of conducted interviews, i.e., how many interviews may have been a shorter interview and how many had collection of a full shotgun or exposure assessment.
- Note: This is a sub-measure of #10d.

10e. % of SS cases reported to epidemiology staff (#9) with serotype information

- Intent: To evaluate how many cases reported to epidemiology staff have serotype information that could inform or impact interviewing.
- Note: To be based off #9 for calculations.

10f. % of SSL cases reported to epidemiology staff (#9) with PFGE information

- Intent: To evaluate how many cases reported to epidemiology staff have PFGE information that could inform or impact interviewing.
- Note: To be based off #9 for calculations.

10f.i. Among SSL cases with PFGE information, % where complete epidemiologic data is collected

- Intent: To evaluate if the availability of complete epidemiologic data is impacted by PFGE subtyping availability (i.e. does PFGE subtyping data availability impact the availability of epidemiologic data).
- Note: This is a sub-measure of #10f.

10g. Record reason for not interviewing SSL cases (e.g. lost to follow-up, refused, time lag too long, other)

- Intent: To evaluate any trends or gaps in the reasons why an interview cannot be conducted.
- Note: This is reported in percentages, by category, for cases where an interview was not conducted.

Cluster-based Metrics

Rationale: The intent of these metrics is to evaluate epidemiologic activity related to cluster and outbreak monitoring, evaluation, and investigation. These metrics can be used to determine if there are gaps in cluster and outbreak investigation. If gaps are identified, knowing the detailed circumstances around the gap will help develop targeted actions to address them specifically.

11. Number of SSL clusters

- Intent: To allow evaluation of the burden of clusters and investigational needs.

12a. # (%) of SSL clusters with routine interview of cases

- Intent: To allow evaluation of completeness of cluster response activities.
- Note: This metric would indicate that initial interviews were conducted with a case(s) in your jurisdiction.

12b. # (%) of SSL clusters with supplemental or targeted interviewing of cases

- Intent: To allow evaluation of completeness of cluster response activities.
- Note: This metric would indicate that additional interviews were conducted beyond the initial interview for further hypothesis-generating.

12c. # (%) of SSL clusters where an analytic epidemiologic investigation was conducted

- Intent: To allow the evaluation of conducting or participating in analytic epidemiologic investigations.
- Note: This metric would indicate that your jurisdiction was responsible for (i.e. led) or participated in analytic hypothesis testing. There may be clusters that do not warrant analytic epidemiologic investigation based on the hypothesis generating data.

13. Measure # (%) of SSL clusters with suspect vehicle/source identified

- Intent: To allow the evaluation of how often cluster investigations result in identifying suspect vehicles or sources. The evaluation of suspect vehicles or sources is important because even without a confirmed source, these investigations can still contribute to the body of knowledge of risky foods, practices, or other gaps in the food safety system in order to inform prevention efforts.
- Note: There is not always a relationship between the completeness and/or timeliness of an investigation and identification of a suspect vehicle/source.

14. Measure # (%) of SSL clusters with confirmed vehicle/source identified

- Intent: To allow the evaluation of how often cluster investigations result in identifying confirmed vehicles or sources. These investigations can still contribute to the body of knowledge of risky foods, practices, or other gaps in the food safety system in order to inform prevention efforts.
- Note: There is not always a relationship between the completeness and/or timeliness of an investigation and identification of a confirmed vehicle/source.

15a. # (%) of SSL clusters with exclusion of (an) ill person(s) from high risk setting

- Intent: To allow the evaluation of excluding an ill person(s) within your jurisdiction to help minimize the risk to others and mitigate ongoing transmission.
- Note: High risk settings may include, but are not limited to food handling, daycare attendance, or healthcare work. Not all investigations will yield evidence that support taking this kind of action.

15b. # (%) of SSL clusters with remediation or closure of an establishment linked to illness

- Intent: To allow the evaluation of requiring remediation of an identified gap in food safety or even closure of an establishment within your jurisdiction to help minimize the risk to others and mitigate ongoing transmission.
- Note: Not all investigations will yield evidence that support taking this kind of action.

15c. # (%) of SSL clusters with educational campaigns during outbreaks (beyond individual case education)

- Intent: To allow the evaluation of conducting an educational campaign within your jurisdiction for at-risk groups to help minimize the risk to others and mitigate ongoing transmission.
- Note: Educational campaigns, beyond individual case education, may include but are not limited to hand washing education in a classroom or daycare or safe food handling and preparation practices. Not all investigations will yield evidence that support taking this kind of action.

15d. # (%) of SSL clusters with media or public messaging (e.g. web updates, press release, etc.)

- Intent: To allow the evaluation of notifying the public about a cluster investigation to help minimize the risk to others and mitigate ongoing transmission. This applies to notifications that occurred within your jurisdiction, or that your jurisdiction participated in (e.g. confirmed or contributed information to).
- Note: Media or public messaging includes but is not limited to web updates or press releases of materials that would be available beyond the population directly impacted by a cluster or outbreak. Not all investigations will yield evidence that support taking this kind of action.

15e. # (%) of SSL clusters with regulatory action (e.g. recall, hold, etc.)

- Intent: To allow the evaluation of taking a regulatory action to prevent initial or further distribution of a product associated with illness or risk of illness. This applies to regulatory actions that occurred within your jurisdiction, or that your jurisdiction participated in (e.g. confirmed or contributed information to).
- Note: Regulatory action includes but is not limited to product recalls, holding product from distribution, or initiating other restrictions of sale or production. Not all investigations will yield evidence that support taking this kind of action.

16. Measure # (%) of SSL clusters with link to a common location of exposures (e.g. restaurant, food establishment, nursing home, etc.) where an environmental health assessment was conducted

- Intent: To allow the evaluation of how often environmental health assessments are conducted within your jurisdiction as part of a cluster investigation.
- Note: Not all investigations will yield evidence that support taking this kind of action.

17. Measure # (%) of SSL clusters where food or environmental sample collected for testing

- Intent: To allow the evaluation of how often food or environmental samples are collected for testing within your jurisdiction as part of a cluster investigation.
- Note: Not all investigations will yield evidence that support taking this kind of action.

18. Measure # (%) of SSL clusters where environmental health, agriculture, regulatory, or food safety program staff were contacted

- Intent: To allow the evaluation of how often environmental health, agriculture, regulatory, or food safety program staff within your jurisdiction were engaged in cluster investigation activities.
- Note: Not all investigations will yield evidence that support taking this kind of action. Additionally, contacting partners during an investigation does not necessarily imply that a regulatory action would be indicated or taken.

Outbreak-based Metrics

Rationale: The intent of these metrics is to evaluate outbreak reporting activity. These metrics can be used to determine if there are gaps in outbreak reporting. If gaps are identified, knowing the detailed circumstances around the gap will help develop targeted actions to address them specifically.

19. Measure # (%) of SSL outbreaks where NORS form completed

- Intent: To determine the burden and completeness of outbreak reporting through NORS.
- Note: It is understood that this value may not be 100% during specific reporting periods if an outbreak investigation is ongoing and therefore not ready to be submitted to NORS.