



Dialysis Event Surveillance Protocol

Table of Contents

Introduction	1
Dialysis Event Surveillance Overview	1
Event Definitions and Key Terms	2
Measure Definitions	4
Vascular Access Types	4
Reporting Instructions	5
Data Analysis	7
Reporting Resources	8
Appendices	9
Appendix A. Instructions for the Completion of the Dialysis Monthly Reporting Plan Form	9
Appendix B. Instructions for the Denominators for Dialysis Event Surveillance Form	12
Appendix C. Instructions for the Dialysis Event Surveillance Form	14

Introduction

More than 425,000 patients are treated with maintenance hemodialysis in the United States. Hemodialysis patients require a vascular access, which can be a catheter, or a graft or an enlarged blood vessel that can be punctured to remove and replace blood. Bloodstream infections and localized infections of the vascular access site cause substantial morbidity and mortality in hemodialysis patients. Hemodialysis vascular access types, in order of increasing risk of infection, include arteriovenous fistulas created from the patient's own blood vessels; arteriovenous grafts typically constructed from synthetic materials; tunneled central lines; and nontunneled central lines. Other access devices, such as catheter-graft hybrid devices, also exist. Because of frequent hospitalizations and receipt of antimicrobial drugs, hemodialysis patients are also at high risk for infection with antimicrobial-resistant bacteria. Measuring and tracking rates of infection and utilizing this information is an important part of prevention. Infection prevention information is located at: <http://www.cdc.gov/dialysis/>

Dialysis Event Surveillance Overview

Each month, facilities report the number of hemodialysis outpatients who were dialyzed in the facility on the first two working days of the month, using the *Denominators for Dialysis Event Surveillance* form. This count is used to estimate the number of patient-months for which there is risk of healthcare-associated infection. Throughout the entire month, any and all outpatients who receive hemodialysis at the facility are monitored for three National Healthcare Safety Network (NHSN)-defined dialysis events, which are: IV antimicrobial starts, positive blood cultures, and evidence of local access site infection. Facilities use a *Dialysis Event* form to report the details of each dialysis event that occurred among patients. Before data can be reported, facilities must indicate that they are reporting according to this protocol by saving a *Monthly Reporting Plan* and selecting "DE." Completion of an *Outpatient Dialysis Center Practices Survey* is required annually.



Setting: Surveillance occurs in outpatient hemodialysis centers. These centers may be attached to or affiliated with a hospital, but should serve hemodialysis outpatients. If other patients (e.g., inpatients, peritoneal dialysis patients) are present, exclude them from Dialysis Event numerator and denominator reporting.

Population: Hemodialysis outpatients.

- Include transient patients
- Include peritoneal dialysis patients or transplant patients undergoing temporary hemodialysis
- Include outpatients with acute kidney injury

Requirements: Participating facilities are required to report data according to this protocol, using the NHSN definitions described herein, to ensure data are uniformly reported across participating facilities. Report available data to NHSN within 30 to 60 days of the end of the month for which they were collected. If additional data become available after that period, users are expected to report the additional information retrospectively to ensure NHSN data are complete and accurate. This may involve reporting additional dialysis events and/or editing existing event records.

Event Definitions and Key Terms

Dialysis Event: Three types of dialysis events are reported by users: IV antimicrobial start; positive blood culture; and pus, redness, or increased swelling at the vascular access site. The following measures are also generated from the reported data: bloodstream infection (BSI), local access site infection (LASI), access-related bloodstream infection (ARBSI), and vascular access infection (VAI).

21 day rule: An event reporting rule which reduces reporting of events that are likely to be related to the same patient problem. The rule is that 21 or more days must exist between two dialysis events of the *same* type for the second occurrence to be reported as a separate dialysis event. If fewer than 21 days have passed since the last reported event of the same type, the subsequent event of the same type is NOT considered a new dialysis event and therefore, it is not reported. The 21 day rule applies across calendar months. Refer to each event definition for instructions on applying the 21 day by event type.

IV antimicrobial start: Report **all** starts of intravenous (IV) antibiotics or antifungals administered in an outpatient setting, regardless of the reason for administration (e.g., include IV antimicrobial starts unrelated to vascular access infection) and regardless of the duration of treatment. A start is defined as a single outpatient dose or first outpatient dose of a course. Do not report IV antiviral starts. Report outpatient starts that are continuations of inpatient antimicrobial treatment.

- 21 day rule: There must be 21 or more days from the **end** of one reported IV antimicrobial course to the **beginning** of a second IV antimicrobial start for two starts to be reported as separate dialysis events, even if different antimicrobials are used. If IV antimicrobials are stopped for fewer than 21 days and then restarted, the second start is NOT considered a new dialysis event and therefore, is not reported.
- For outpatient IV antimicrobial starts that are continuations of inpatient antimicrobial treatment, consider the start day to be the first day of outpatient administration.



- **Inter-facility patient transfers:** If a patient at a dialysis facility has an IV antimicrobial start and then transfers to another facility (as a transient or permanent patient) where the antimicrobial is continued, the second facility would report the IV antimicrobial start in their facility as well.

Positive blood culture: Report **all** positive blood cultures from specimens collected as an outpatient or collected within one calendar day after a hospital admission. One calendar day after hospital admission includes positive blood cultures collected on the day of or the day following admission to the hospital. Positive blood cultures meeting the criteria above should be reported regardless of whether or not a true infection is suspected or whether the infection is thought to be related to hemodialysis.

- **21 day rule:** There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate dialysis event, even if organisms are different. If two positive blood cultures (the first of which is reported) occur less than 21 days apart, the second positive blood culture is NOT considered a new dialysis event and therefore, is not reported. If different organisms grow from the subsequent positive blood cultures, add the new organisms to the first reported event.
- **Suspected source of the positive blood culture:** Indicating one of four suspected sources of a positive blood culture is required. Consider the following suspected sources sequentially, starting with “Vascular access”.
 - **Vascular access:** Choose “Vascular access” if there is objective evidence of vascular access infection and the vascular access is thought to be the source of the positive blood culture.
 - **A source other than the vascular access:** Choose “A source other than the vascular access” if either (a) or (b) is true:
 - a) a culture from another site (e.g., infected leg wound) shows the same organism found in the blood and the site is thought to be the source of the positive blood culture.
 - b) there is clinical evidence of infection at another site which is thought to be the source of the positive blood culture, but the site was not sampled for culture.
 - **Contamination:** Choose “Contamination” if the organism isolated from the blood culture is thought by the physician, infection preventionist, or nurse manager to be a contaminant. Contamination is more likely if the organism is a common commensal and is isolated from only one of several blood cultures. Examples of common commensals include: diphtheroids (*Corynebacterium* spp., not *C. diphtheriae*); *Bacillus* spp. (not *B. anthracis*); *Propionibacterium* spp.; coagulase-negative staphylococci (including *S. epidermidis*); viridans group streptococci; *Aerococcus* spp.; and *Micrococcus* spp. For a full list of Common Commensal organisms, see the Common Commensal tab of the NHSN organism list (<https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx>).
 - **Uncertain:** Choose “Uncertain” only if there is insufficient evidence to decide among the three previous suspected source categories.



Pus, redness, or increased swelling at the vascular access site:

Report each new outpatient episode where the patient has one or more symptoms of the following, at any vascular access site, regardless of whether the patient receives treatment for infection:

- Pus
- Redness that is suspicious for infection
- Greater than expected swelling that is suspicious for infection

Pus is always reportable. Indicate the vascular access site(s) where the symptom(s) occurred.

- **21 day rule:** There must be 21 or more days between the **onset** of one episode and the **onset** of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events. If a reported episode of pus, redness, or increased swelling at a vascular access site resolves and then recurs within 21 days of the first onset, the recurrence is NOT considered a new dialysis event and therefore, is not reported.

Measure Definitions

- Bloodstream infection (BSI): Any positive blood culture event.
- Access-related bloodstream infection (ARBSI): Positive blood culture with the suspected source reported as the vascular access or uncertain.
- Local access site infection (LASI): Pus, redness, or increased swelling of the vascular access site and access-related bloodstream infection is not present.
- Vascular access infection (VAI): Either a local access site infection or an access-related bloodstream infection.

Vascular Access Types

Consider all vascular accesses for hemodialysis and all central venous catheters that are present at the time of the event in Dialysis Event reporting, even if they are not used for dialysis and even if they are abandoned/non-functional. Do not include peritoneal dialysis catheters in vascular access type reporting.

- Nontunneled central line: a central venous catheter that is fixed in place at the point of insertion and travels directly from the skin entry site to a vein and terminates close to the heart or one of the great vessels, typically intended for short term use (e.g., triple lumen catheters).
- Tunneled central line: a central venous catheter that travels a distance under the skin from the point of insertion before entering a vein, and terminates at or close to the heart or one of the great vessels (e.g., Hickman[®] or Broviac[®] catheters¹).
- Graft: a surgically created connection between an artery and a vein using implanted material (typically synthetic tubing) to provide a permanent vascular access for hemodialysis.

¹ Use of trade names and commercial sources is for identification only and does not imply endorsement.



- **Fistula:** a surgically created direct connection between an artery and a vein to provide a permanent vascular access for hemodialysis.
 - Buttonhole: a cannulation technique where a blunt needle (cannula) is inserted into the fistula at the same location each time using an established track. Report the way in which a patient is primarily cannulated.
- **Other vascular access device:** includes catheter-graft hybrid vascular access devices, ports, and any other vascular access devices that do not meet the above definitions. Do not use this field to report vascular accesses that are grafts, central venous catheters or fistulas. Do not use this field to report peritoneal dialysis catheters.
 - **Catheter-graft hybrid:** a subcutaneous surgical implant with both a catheter and a graft component that provides blood flow directly from the target artery to the heart, bypassing the patient's central venous system (e.g., HeRO[®] vascular access device²).

Reporting Instructions

Location: NHSN requires that facilities map each patient care area in their facility to one or more locations, as defined by NHSN, in order to report surveillance data collected from these areas. For the Dialysis Event Module, facilities should choose one of the following locations to report their surveillance data:

- Outpatient Hemodialysis Clinic (OUT: NONACUTE: CLINIC: DIAL)
- Outpatient Hemodialysis Clinic-Acute Kidney Injury (OUT: NONACUTE: CLINIC: DIAL_AKI)

NHSN forms and/or the definitions in this protocol should be used to collect required data. Each form has a corresponding table of instructions.

Complete a Survey Annually: Upon enrollment and annually thereafter, complete the *Outpatient Dialysis Center Practices Survey* (CDC 57.500). After enrollment, the data for the dialysis survey should be collected and reported in February.

Complete Monthly Reporting Plans: The *Monthly Reporting Plan* (CDC 57.501) is used by NHSN facilities to inform CDC that they are following the NHSN surveillance protocol, in its entirety, for each data type selected on the plan. A Monthly Reporting Plan must be completed before data can be entered into NHSN for that month.

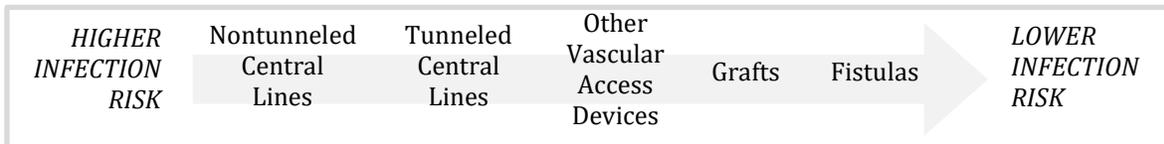
- To indicate the facility is reporting in accordance with this protocol, save a Monthly Reporting Plan with the “DE” checkbox selected for the ‘outpatient hemodialysis clinic’ and ‘outpatient hemodialysis clinic-AKI’ locations, under the Events section, for each month that the facility is participating in Dialysis Event Surveillance.

If your facility is not following any protocols for the Dialysis Component modules for a particular month (e.g., the facility was closed), select “Not Participating in NHSN this Month.”



Report Denominator Data Monthly: The denominators are counts of patients by vascular access type used to estimate the number of patient-months considered at risk for dialysis events. To report denominator data, each month, report the number of hemodialysis outpatients with each vascular access type who received hemodialysis at the center during the first two working days of the month on the *Denominators for Dialysis Event Surveillance* form (CDC 57.503).

Report all hemodialysis outpatients, including transient patients. Exclude non-hemodialysis patients and exclude inpatients. Report denominator data each month, regardless of whether any dialysis events occur. Count each patient only once; if a patient has multiple vascular accesses, record that patient once, reporting only their vascular access type with the highest risk of infection (note: this might not be the vascular access currently in use for dialysis).



See tables of instructions for an explanation of each field of the *Denominators for Dialysis Event Surveillance* form.

Working Days: The first two “working days” of the month should provide the opportunity to capture all regularly scheduled shifts and patients.

- For example, if a facility dialyzes patients 6 days a week, Monday through Saturday, and the first day of the month falls on a Sunday, then Monday and Tuesday would be the first two working days of the month for that facility.

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
Facility closed	Working day 1	Working day 2				

- For facilities that provide nocturnal hemodialysis, working days should include nocturnal hemodialysis patients.
- Working days are shift/schedule dependent – the actual patient census is **not** a criterion for determining a working day.
- If the facility was closed the entire month, do not complete a denominator form.



Report Numerator Data Monthly: The numerators are the number of dialysis events that occur during a defined time period. To report numerator data, complete one *Dialysis Event* form (CDC 57.502) per occurrence of event(s) among any patients who received hemodialysis at the facility during that month. If there are no dialysis events to report, access that month’s denominator form to “Report No Events.”

Report Events: Any patient who receives outpatient hemodialysis treatment at your facility is monitored for dialysis events, even if they were not counted on the denominator form. Include transient patients at your facility who have a dialysis event. Complete a *Dialysis Event* form if a hemodialysis outpatient has one or more of the following:

- Positive blood culture
- IV antimicrobial start
- Pus, redness, or increased swelling at the vascular access site

See tables of instructions for an explanation of each field of the *Dialysis Event* form.

Multiple Dialysis Events: If multiple dialysis events occur together, **as a part of the same patient problem**, they should be reported on the same *Dialysis Event* form. For example, if a patient has a positive blood culture and begins IV antimicrobials, these two events would be recorded together on one form. When reporting multiple dialysis events together, the “date of event” is always the date that the first event occurred. Refer to dialysis event definitions for the 21 day rule. Do not report unrelated dialysis events on the same form.

Event Type	Date of Event Criterion
IV antimicrobial start	Date of first outpatient dose of an antimicrobial course
Positive blood culture	Date of specimen collection
Pus, redness or increased swelling at vascular access site	Date of onset
Combination	Earliest date of the three types

Report No Events: Each dialysis event type needs to be accounted for every month. Either (a) the event type is reported on one or more *Dialysis Event* forms, or (b) the “report no events” box for that event type is checked on the *Denominators for Dialysis Event Surveillance* form to confirm that no events of that type occurred during the month.

Data Analyses

Dialysis event rates are stratified by vascular access type and expressed per 100 patient-months. Rates are calculated by dividing the number of events by the number of patient-months and multiplying the result by 100. CDC calculates aggregate pooled mean rates for each event type by combining data from all participating facilities. Facilities can compare their rates with the aggregate rates using NHSN analysis rate table or run chart output options. Facilities are strongly encouraged to analyze the data they report and provide regular feedback to staff about dialysis event rates.

$$rate = \frac{Dialysis\ Events\ (numerator)}{Patient-Months\ (denominator)} \times 100$$



Reporting Resources

Data collection and reporting resources, including the AKI surveillance definition, are available on the NHSN Dialysis Event website: <http://www.cdc.gov/nhsn/dialysis/dialysis-event.html>.

Please direct questions to the NHSN Helpdesk at nhsn@cdc.gov and include “dialysis” in the subject line.



Appendix A. Instructions for the Completion of the Dialysis Monthly Reporting Plan Form (CDC 57.501)

Data Field	Instructions for Form Completion
Facility ID #	The NHSN-assigned facility ID will auto-populate in this field.
Month/Year	Required. Enter the month and year for the surveillance plan being recorded.
Not Participating in NHSN this Month	<p>Optional. Check the “Not Participating in NHSN this Month ” box if your facility is not conducting any surveillance in the Dialysis Component for the month, due to one or more of the following circumstances:</p> <ol style="list-style-type: none"> 1. The facility is closed or non-operational for the month 2. No Dialysis Component surveillance will be conducted in the facility for other reasons 3. The facility will not be adhering to any of the NHSN Dialysis Component Protocols for the month
Events	
Location	<p>Required. From the drop-down menu, select both location options below to indicate that you plan to collect Dialysis Event (DE) and corresponding summary (denominator) data.</p> <ul style="list-style-type: none"> • Outpatient Hemodialysis Clinic (OUT: NONACUTE: CLINIC: DIAL) • Outpatient Hemodialysis Clinic-Acute Kidney Injury (OUT: NONACUTE: CLINIC: DIAL_AKI) <p>Monthly reporting plans can be created in January for the months of January – April with the “DE” box checked for both the Outpatient Hemodialysis Clinic and Outpatient Hemodialysis Clinic – Acute Kidney Injury locations. After the Outpatient Dialysis Center Practices Survey is submitted in February, monthly reporting plans can be created for the months of May – December with the “DE” box checked for both locations.</p> <p>Patients with Acute Kidney Injury (AKI) are defined by the following criteria:</p> <ol style="list-style-type: none"> 1. No diagnosis of “End Stage Renal Disease’ or “ESRD” in the patient medical record, or through the ESRD Medical Evidence Form (Form CMS-2728-U3), <u>AND</u> 2. Physician-diagnosis of “Acute Kidney Injury” or “AKI” listed in the patient medical record (e.g., nephrologist consult or referral form,” <u>AND</u> 3. No more than 6 months has passed since the patient initiated outpatient hemodialysis.
Dialysis Event (DE)	Optional. Check this box if you plan to collect dialysis event (DE) data and corresponding summary (denominator) data as described by the <u>Dialysis Event Protocol</u> .



Data Field	Instructions for Form Completion
	<p>Once you select the location from the drop-down menu, the DE box will check automatically to indicate that you plan to collect DE data and corresponding summary (denominator) data for the dialysis location specified.</p> <p>Select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
Central Line Insertion Practice (CLIP)	<p>Optional. Check this box if you plan to collect Central Line Insertion Practice (CLIP) data for the location specified, as described by the CLIP Protocol.</p> <p>To follow the same data collection plan from the previous month for DE and/or CLIP, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
Prevention Process Measures	
Location	<p>Select your outpatient hemodialysis clinic reporting location from the drop-down menu to indicate that you plan to collect Prevention Process Measures (PPM) data for outpatient dialysis location specified.</p>
Hand Hygiene (HH)	<p>Optional. Check this box if you plan to collect Hand Hygiene (HH) observation data for the location specified, as described by the Prevention Process Measures Protocol.</p> <p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
Hemodialysis Catheter Connection/Disconnection (CATHCON)	<p>Optional. Check this box if you plan to collect Hemodialysis Catheter Connection/Disconnection (CATHCON) observation data for the location specified, as described by the Prevention Process Measures Protocol.</p> <p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
Hemodialysis Catheter Exit Site Care (CATHCARE)	<p>Optional. Check this box if you plan to collect Hemodialysis Catheter Exit Site Care (CATHCARE) observation data for the location specified, as described by the Prevention Process Measures Protocol.</p>



Data Field	Instructions for Form Completion
	<p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
<p>Arteriovenous Fistula and Graft Cannulation/Decannulation (FGCANN)</p>	<p>Optional. Check this box if you plan to collect Arteriovenous Fistula and Graft Cannulation/Decannulation (FGCANN) observation data for the location specified, as described by the <u>Prevention Process Measures Protocol</u>.</p> <p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
<p>Dialysis Station Routine Disinfection (DISINFECT)</p>	<p>Optional. Check this box if you plan to collect Dialysis Station Routine Disinfection (DISINFECT) observation data for the location specified, as described by the <u>Prevention Process Measures Protocol</u>.</p> <p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
<p>Injection Safety (INJSAFE)</p>	<p>Optional. Check this box if you plan to collect Injection Safety (INJSAFE) observation data, which includes both Injectable Medication Preparation and Injectable Medication Administration observations, for the location specified, as described by the <u>Prevention Process Measures Protocol</u>.</p> <p>To follow the same data collection plan from the previous month for <u>all</u> Prevention Process Measures, select "Copy from Previous Month" to automatically populate the section with last month's selections.</p> <p>To clear <u>all</u> selections in this section, select "Clear All Rows."</p>
Patient Vaccination	
<p>FLUVAXDP – Influenza Vaccination Dialysis Patient</p>	<p>Optional. Check this box if you plan to collect Influenza Vaccination of Dialysis Patients (FLUVAXDP) data, as described by the <u>Influenza Vaccination of Dialysis Patient Protocol</u>.</p> <p>If you wish to follow the data collection plan from the previous month, select "Copy from Previous Month." The FLUVAXDP monitoring plan selected in the previous month will automatically populate the field.</p>



Appendix B. Instructions for the Denominators for Dialysis Event Surveillance Form

(CDC 57.503)

* = required field when reporting according to the Dialysis Event Protocol

^ = conditionally required field when reporting according to the Dialysis Event Protocol

Data Field	Instructions for Data Collection							
Facility ID #	The NHSN-assigned facility ID will auto-populate in this field.							
*Location code	<p>Required.</p> <p>Select one of the following location codes from which you will collect data about dialysis events:</p> <ul style="list-style-type: none"> • Outpatient Hemodialysis Clinic (OUT: NONACUTE: CLINIC: DIAL) • Outpatient Hemodialysis Clinic-Acute Kidney Injury (OUT: NONACUTE: CLINIC: DIAL_AKI) <p>The Acute Kidney Injury (AKI) Location should be used to report Dialysis Event denominator data for patients who meet the following criteria:</p> <ol style="list-style-type: none"> 1. No diagnosis of “End Stage Renal Disease’ or “ESRD” in the patient medical record, or through the ESRD Medical Evidence Form (Form CMS-2728-U3), <u>AND</u> 2. Physician-diagnosis of “Acute Kidney Injury” or “AKI” listed in the patient medical record (e.g., nephrologist consult or referral form,” <u>AND</u> 3. The date of denominator data collection are not more than 6 months after the date the patient initiated outpatient hemodialysis. 							
*Month	Required. Select the month during which the data were collected for this location from the dropdown menu.							
*Year	Required. Select the 4-digit year during which the data were collected for this location from the dropdown menu.							
*Number of Hemodialysis Outpatients by Vascular Access Type	<p>Required. For each vascular access type listed, report the number of outpatients, including transient patients, who received in-center hemodialysis at this location on the first two working days of the month. The first two “working days” of the month are treatment days that provide the opportunity to capture all regularly scheduled hemodialysis shifts in the denominator count. A patient must be physically present for in-center hemodialysis on one of these two days to be counted on this form (exclude patients who are hospitalized).</p> <p>Count each patient only once. If a patient has more than one vascular access, count that patient by their vascular access type with the highest risk for infection, using the following hierarchy:</p> <div style="border: 1px solid gray; padding: 5px; margin-top: 10px;"> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 15%;"><i>HIGHER</i> <i>INFECTION</i> <i>RISK</i></td> <td style="width: 15%;">Nontunneled Central Lines</td> <td style="width: 15%;">Tunneled Central Lines</td> <td style="width: 15%;">Other Vascular Access Devices</td> <td style="width: 15%;">Grafts</td> <td style="width: 15%;">Fistulas</td> <td style="width: 15%;"><i>LOWER</i> <i>INFECTION</i> <i>RISK</i></td> </tr> </table> </div>	<i>HIGHER</i> <i>INFECTION</i> <i>RISK</i>	Nontunneled Central Lines	Tunneled Central Lines	Other Vascular Access Devices	Grafts	Fistulas	<i>LOWER</i> <i>INFECTION</i> <i>RISK</i>
<i>HIGHER</i> <i>INFECTION</i> <i>RISK</i>	Nontunneled Central Lines	Tunneled Central Lines	Other Vascular Access Devices	Grafts	Fistulas	<i>LOWER</i> <i>INFECTION</i> <i>RISK</i>		



Data Field	Instructions for Data Collection
	<p>When categorizing a patient with multiple vascular accesses, consider all vascular accesses the patient has, even if they are not used for dialysis and even if they are abandoned and/or are non-functional. For example, if a patient has a fistula and a tunneled central line, count this patient under the category of tunneled central line. If the patient has only a catheter-graft hybrid or a port, record as “other vascular access device.”</p> <p>If there are no patients in a given vascular access category, enter 0.</p>
^Number of these Fistula Patients who undergo Buttonhole Cannulation	Conditionally required. Out of the fistula patients counted above, report the number of patients who are primarily cannulated with buttonhole cannulation technique, where a blunt needle (cannula) is inserted into the fistula at the same location each time using an established track.

*Total patients	Required. The sum of all patients listed above will auto-populate in this field.
Number of these patients for whom dialyzers are reused	Required. Of the “Total patients” counted above, count the number of those patients whose dialyzers are reprocessed for reuse. If dialyzers are not reused, enter 0.
Custom fields	Optional. Add up to 50 alphanumeric, numeric, and/or date fields to this form for local use. <p>NOTE: Each custom field must be added in advance. Within NHSN, select “Facility,” then “Customize Forms,” and then follow on-screen instructions. The Form Type is “CDC-Defined – DIAL – Summary Data” and form is “DIAL – Denominators for Dialysis Event Surveillance form.”</p>
Comments	Optional. Use this field to add any additional information that would help you to interpret your surveillance data. CDC typically does not analyze these data.



Appendix C. Instructions for the Dialysis Event Surveillance Form

(CDC 57.502)

Complete a Dialysis Event form for IV antimicrobial starts, positive blood cultures, and/or onsets of pus, redness, or increased swelling at vascular access sites, according to definitions and reporting instructions in the Dialysis Event Surveillance Protocol.

* = required field when reporting according to the Dialysis Event Protocol

^ = conditionally required field when reporting according to the Dialysis Event Protocol

Patient Data	
Data Fields	Instructions for Completion
Facility ID #	NHSN-assigned facility ID will auto-populate in this field.
Event ID #	Event ID# will auto-populate in this field.
*Patient ID #	Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the healthcare facility and may consist of any combination of numbers and/or letters.
Social Security #	Optional. Enter the 9-digit numeric patient Social Security Number.
Secondary ID #	Optional. Enter the alphanumeric ID number assigned by the facility.
Medicare #	Optional. Enter the patient’s Medicare number.
Patient Name	Optional. Enter last, first and middle name of the patient.
*Gender	Required. Select “Female,” “Male,” or “Other” to indicate the patient’s gender.
*Date of Birth	Required. Enter the patient’s date of birth (format: MM/DD/YYYY).
Ethnicity (specify)	Optional. Specify whether the patient is “Hispanic or Latino,” or “Not Hispanic or Not Latino.”
Race (specify)	Optional. Specify all of the following that identify the patient’s race: American Indian/Alaska Native; Asian; Black or African American; Native Hawaiian/Other Pacific Islander; and White.

General Event Information	
Data Fields	Instructions for Completion
*Event Type	Required. Select “DE – Dialysis Event.”
*Date of Event	Required. Date (format: MM/DD/YYYY) depends on event type: <ul style="list-style-type: none"> • For IV antimicrobial starts, enter the date the outpatient IV antimicrobial administration was started. • For positive blood cultures, enter the date the blood specimen was collected. • For pus, redness, or increased swelling at the vascular access site, enter the onset date. • If reporting more than one type of dialysis event, use the above criteria and select the earliest event date.



General Event Information	
*Location	<p>Required. Select one of the following location codes to report Dialysis Event data:</p> <ul style="list-style-type: none"> • Outpatient Hemodialysis Clinic (OUT: NONACUTE: CLINIC: DIAL) • Outpatient Hemodialysis Clinic-Acute Kidney Injury (OUT: NONACUTE: CLINIC: DIAL_AKI) <p>The Acute Kidney Injury (AKI) Location should be used to report Dialysis Events for patients who meet the following criteria:</p> <ol style="list-style-type: none"> 1. No diagnosis of “End Stage Renal Disease’ or “ESRD” in the patient medical record, or through the ESRD Medical Evidence Form (Form CMS-2728-U3), <u>AND</u> 2. Physician-diagnosis of “Acute Kidney Injury” or “AKI” listed in the patient medical record (e.g., nephrologist consult or referral form,” <u>AND</u> 3. The event date is not more than 6 months after the date the patient initiated outpatient hemodialysis.

*Was the patient admitted/readmitted to the dialysis facility on this dialysis event date?	Required. Select “Yes” if the dialysis event occurred on the same date the patient was newly admitted to your facility, or readmitted from a different facility after missing ≥1 dialysis treatment in your facility.
*Transient Patient	Required. Select “Yes” if this patient was temporarily admitted for treatment at your facility for a short time at the time of the event (fewer than 30 days or 13 treatments) due to vacation, emergency, or other short-term displacement. Select “No” if this patient is part of your regular patient census.

Risk Factors	
Data Fields	Instructions for Completion
*Vascular accesses	Required. Select <i>all</i> vascular accesses that the patient had present at the time of the dialysis event, even if they are not used for dialysis and even if they are abandoned/non-functional.
Fistula ^Buttonhole	<p>Indicate if the patient has an arteriovenous fistula: a surgically-created direct connection between an artery and a vein for hemodialysis.</p> <p>Conditionally required for patients with fistulas. Select “yes” if the patient’s fistula is primarily accessed via buttonhole cannulation technique (i.e., a procedure in which a blunt needle [cannula] is inserted into the fistula at the same location each time using an established track).</p> <p>Select “no” if the patient’s fistula is primarily accessed by conventional or rope ladder method.</p>



Risk Factors	
Graft	Indicate if the patient has an arteriovenous graft: a connection between an artery and a vein created with surgically implanted material (typically synthetic tubing) for hemodialysis.
Tunneled central line	Indicate if the patient has a tunneled central line: a central venous catheter that travels a distance under the skin from the point of insertion before entering a vein, and terminates at or close to the heart or one of the great vessels.
Nontunneled central line	Indicate if the patient has a nontunneled central line: a central venous catheter that is fixed in place at the point of insertion and travels directly from the skin entry site to a vein and terminates close to the heart or one of the great vessels.
Other vascular access device	Indicate if the patient has a hybrid vascular access device (e.g., HeRO [®] vascular access device ²¹), port, or any other <u>vascular access</u> device that does not meet the above definitions. Do not use this field to report vascular accesses that are grafts, central venous catheters, or fistulas. Do not use this field to report peritoneal dialysis catheters.
^Is this a catheter-graft hybrid?	Conditionally required for patients with an “other vascular access device.” Select “yes” if the patient has a catheter-graft hybrid access device: a subcutaneous surgical implant with both a catheter and a graft component that provides blood flow directly from the target artery to the heart, bypassing the patient’s central venous system (e.g., HeRO [®] vascular access device ²). Select “no” if the patient’s other access device is not a catheter-graft hybrid.
*Access Placement Date	Required. For each vascular access type present, indicate the date (MM/YYYY) the access was placed or check the box if placement date is unknown. If the patient has more than one access of the same type (e.g., two grafts), indicate the access placement date of the access in use, or most recently in use, at the time of the event.
Vascular access comment	Optional. Use this field to add any additional information about the patient’s vascular access(es) at the time of the event that would help you to interpret your surveillance data, such as recent surgical revisions. CDC typically does not analyze these data.
Is this patient’s dialyzer reused?	Required. Select “yes” if this patient’s dialyzer is reprocessed for reuse (i.e., patient participates in reuse program). Select “no” if a new dialyzer is used for each hemodialysis treatment.

Event Details	
Data Fields	Instructions for Completion
*Specify Dialysis Event	Required. Select all that apply:

² Use of trade names and commercial sources is for identification only and does not imply endorsement.



Event Details	
Positive blood culture	<p>Report any positive blood cultures from specimens collected as an outpatient or collected within one calendar day after a hospital admission. A positive blood culture should be reported if any organism can be isolated from the blood culture. Positive blood cultures meeting this definition should be reported regardless of whether or not the patient was determined to have a bloodstream infection.</p> <p>21 day rule: There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate dialysis event, even if organisms are different. The day after the last reported positive blood culture is Day 1 and any other positive blood cultures that occur on day 22 or later are reportable. If positive blood cultures occur less than 21 days apart, the second positive blood culture is NOT considered a new dialysis event and therefore, should not be reported. However, if different organisms grow from these subsequent positive blood cultures, add the new organisms to the first dialysis event.</p>
^Specify pathogen(s) and antimicrobial susceptibilities	<p>Conditionally required for a positive blood culture. See the following section for additional instructions.</p>

Pathogens and Antimicrobial Susceptibilities	
Data Fields	Instructions for Completion
^Pathogens	<p>Conditionally required. Select each organism identified in the positive blood culture from the pathogen dropdown menu (up to three organisms can be selected). Microorganisms do not have to be listed in a specific order when positive blood culture events are reported.</p> <p>The species should be entered once it becomes available on the final lab report. <u>Do not</u> report preliminary results (such as Gram stain). If the species is not indicated on the final lab report or is not listed in the NHSN pathogen dropdown list, then select the “spp.” choice for the genus (e.g., <i>Bacillus natto</i> is not on the list so it would be reported as <i>Bacillus</i> spp.).</p> <p>Note that the pathogen dropdown menu opens to display an abbreviated list of the most common pathogens. If the microorganism cannot be found in the NHSN pathogen dropdown list, select “<i>All Pathogens</i>” at the top of the menu to search through a more complete list of pathogens.</p>
^Antimicrobial agent and susceptibility results	<p>Conditionally required if ≥ 1 pathogen is identified.</p> <ul style="list-style-type: none"> For organisms shown on the back of the event form, susceptibility results are required only for the antimicrobial agents listed. For organisms that are not listed on the back of an event form, susceptibility results are optional. (Optional) Report up to a maximum of 20 additional antimicrobials and susceptibility results, per microorganism.



Antimicrobial agent and susceptibility results (continued)	<p>Select the organism’s susceptibility result code for each antimicrobial agent.</p> <p>S – Susceptible I – Intermediate R – Resistant N – Not Tested NS- Non-susceptible S-DD- Susceptible-dose dependent</p>	<p>For gentamicin and streptomycin high level tests only, use:</p> <p>S – Susceptible/Synergistic R – Resistant/Not Synergistic</p>
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Antimicrobial Drug Code Table

AMK = amikacin	COL = colistin	MINO = minocycline
AMP = ampicillin	DAPTO = daptomycin	MOXI = moxifloxacin
AMPSUL = ampicillin/sulbactam	DORI = doripenem	NITRO = nitrofurantoin
AMXCLV = amoxicillin/clavulanic acid	DOXY = doxycycline	OX = oxacillin
ANID = anidulafungin	ERTA = ertapenem	PB = polymyxin B
AZT = aztreonam	ERYTH = erythromycin	PIP = piperacillin
CASPO = caspofungin	FLUCO = fluconazole	PIPTAZ = piperacillin/tazobactam
CEFAZ= cefazolin	FLUCY = flucytosine	QUIDAL = quinupristin/dalfopristin
CEFEP = cefepime	GENT = gentamicin	RIF = rifampin
CEFOT = cefotaxime	GENTHL = gentamicin-high level test	STREPHL = streptomycin-high level test
CEFOX= cefoxitin	IMI = imipenem	TETRA = tetracycline
CEFTAZ = ceftazidime	ITRA = itraconazole	TICLAV = ticarcillin/clavulanic acid
CEFTRX = ceftriaxone	LEVO = levofloxacin	TIG = tigecycline
CEFUR= cefuroxime	LNZ = linezolid	TMZ = trimethoprim/sulfamethoxazole
CTET= cefotetan	MERO = meropenem	TOBRA = tobramycin
CHLOR= chloramphenicol	METH = methicillin	VANC = vancomycin
CIPRO = ciprofloxacin	MICA = micafungin	VORI = voriconazole
CLIND = clindamycin		

Event Details	
Data Fields	Instructions for Completion
^Suspected source of positive blood culture	<p>Conditionally required for positive blood culture dialysis events. Select one suspected source of the positive blood culture:</p> <ul style="list-style-type: none"> • <u>Vascular access</u>: Choose “Vascular access” if there is objective evidence of vascular access infection and the vascular access is thought to be the source of the positive blood culture. • <u>A source other than the vascular access</u>: Choose “A source other than the vascular access” if either (a) or (b) is true: <ol style="list-style-type: none"> a) a culture from another site (e.g., infected leg wound) shows the same organism found in the blood and is thought to be the source of the positive blood culture. b) there is clinical evidence of infection at another site which is thought to be the source of the positive blood culture, but the site was not sampled for culture. • <u>Contamination</u>: Choose “Contamination” if the organism isolated from the blood culture is thought by the physician, infection



	<p>preventionist, or nurse manager to be a contaminant. Contamination is more likely if the organism is a common commensal and is isolated from only one of several blood cultures. Examples of some common commensals include: diphtheroids (<i>Corynebacterium</i> spp., not <i>C. diphtheriae</i>), <i>Bacillus</i> spp. (not <i>B. anthracis</i>), <i>Propionibacterium</i> spp., coagulase-negative staphylococci [including <i>S. epidermidis</i>], viridians group streptococci, <i>Aerococcus</i> spp., and <i>Micrococcus</i> spp.</p> <ul style="list-style-type: none"> • <u>Uncertain</u>: Choose “Uncertain” only if there is insufficient evidence to decide among the three previous categories.
^Where was the positive blood culture collected?	Conditionally required for positive blood culture dialysis events. Indicate the patient’s location when the blood culture was drawn.
<p>Pus, redness, or increased swelling at the vascular access site</p> <p>^Check the access site(s) with pus, redness, or increased swelling:</p>	<p>Report each new outpatient episode where the patient has one or more symptoms of pus, greater than expected redness or greater than expected swelling at any vascular access site. Pus is always reportable. Cellulitis involving the vascular access site is also reportable as a pus, redness, or increased swelling event. Report redness or swelling if it is greater than expected and suspicious for infection.</p> <p>21 day rule: There must be 21 or more days between the onset of one episode and the onset of a second episode of pus, redness, or increased swelling at a vascular access site to be considered separate dialysis events. The day after onset of pus, redness, or increased swelling at a vascular access site is day 1; if the symptoms resolve, then the next onset of any of pus, redness, or increased swelling on day 22 or later is reportable. If an episode of pus, redness, or increased swelling at a vascular access site resolves and then recurs within 21 days of the first onset, the recurrence is NOT considered a new dialysis event and therefore, should not be reported.</p> <p>If pus, redness, or increased swelling occur at a central line site after the central line was removed, report the event.</p> <p>Conditionally required if there is pus, redness, or increased swelling at the vascular access site. Select vascular access site(s) with these findings.</p> <p>Note, the corresponding access should be selected under “Risk Factors.”</p> <p>If reporting pus, redness, or increased swelling of a central line site occurred after the central line was removed, report that central line, even if it was no longer in place at the time of the event.</p>

Event Details (continued)	
*Specify Problem(s)	Required. Indicate all problems present at the time of the event.
Fever	Select if a fever of $\geq 37.8^{\circ}\text{C}$ (100°F) (tested orally) is present.
Chills or rigors	Select if chills or rigors are present.
Drop in Blood Pressure	Select if abnormal drop in blood pressure occurs.



Event Details (continued)	
Wound with pus or increased redness	Select if a wound that is unrelated to the vascular access site has pus or increased redness.
Cellulitis	Select if cellulitis is present at a site other than the vascular access and without open wound.
Pneumonia or respiratory infection	Select if pneumonia or another respiratory tract infection is present.
Urinary Tract Infection	Select if a urinary tract infection is present.
Other Problem	Select if another problem related to the dialysis event (IV antimicrobial start; positive blood culture; and/or pus, redness, or increased greater than expected swelling at vascular access site) is present. Specify the problem.
None	Select "none" if there are no related problems.
*Outcome(s)	Required.
*Loss of Vascular Access	<p>Select "Yes" if the patient had a complete loss of the vascular access (i.e., the vascular access became unusable and/or had to be removed) and this outcome was either definitely or possibly related to the event(s) or problem(s).</p> <p>Select "No" if this outcome did not occur, or if loss of vascular access occurred, but it was definitely not related to the event(s) or problem(s). Also select "No" if there was only a partial loss of the vascular access (i.e., the access needs revision or intervention to gain patency).</p> <p>Select "Unknown" if uncertain about whether or not loss of the vascular access occurred (e.g., patient was lost to follow-up).</p>
*Hospitalization	<p>Select "Yes" if the patient was admitted to a hospital and this outcome was either definitely or possibly related to the event(s) or problem(s).</p> <p>Select "No" if this outcome did not occur, or the patient was hospitalized, but it was definitely not related to the event(s) or problem(s). Also select "No" if the patient only visited the emergency department without admission and/or was placed under hospital observation without admission.</p> <p>Select "Unknown" if uncertain about whether or not the patient was hospitalized (e.g., patient was lost to follow-up).</p>
*Death	<p>Select "Yes" if the patient died and this outcome was either definitely or possibly related to the event(s) or problem(s). Select "Yes" if cause of death is unknown.</p> <p>Select "No" if this outcome did not occur, or if the patient did die, but it was definitely not related to the event(s) or problem(s).</p> <p>Select "Unknown" if uncertain about whether or not the patient died (e.g., patient was lost to follow-up).</p>



Custom Fields	
Custom fields	<p>Optional. Add up to 50 alphanumeric, numeric, and/or date fields to this form for local use.</p> <p>NOTE: Each custom field must be added in advance. Within NHSN, select "Facility," then "Customize Forms," and then follow on-screen instructions. The Form Type is "CDC-Defined – DIAL – Event" and form is "DE – Dialysis Event."</p>

Comments	
Comments	<p>Optional. Use this field to add any additional information about the dialysis event that would help you to interpret your surveillance data. CDC typically does not analyze these data.</p>