Dialysis Event Reporting
ESRD Network 8 LAN
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- Alicia Shugart, CDC
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- Ashley Fell, TN Dept of Health
Why are we doing this?

Surveillance Can Improve Practices

- Dialysis unit in London implemented CDC dialysis surveillance; described their experience over 18 months
- Without any other intervention, tracking rates and feeding back data to staff resulted in reductions in:
  - Access-related bloodstream infections
  - Antibiotic usage
- “Surveillance raised awareness and provided a cornerstone for improved infection control and line care involving all staff of the dialysis unit.”

CMS (and TN, MS) Reporting Requirements

- All outpatient hemodialysis facilities (includes those attached to hospitals and freestanding centers) must report
- 12 months of:
  - Dialysis Event numerator, and
  - Dialysis Event denominator data
    - per the NHSN Protocol
NHSN Dialysis Event Protocol

- Dialysis Event Protocol design
- Surveillance population
- Data collection forms:
  - Outpatient Dialysis Center Practices Survey
  - Monthly Reporting Plan
  - Denominators for Outpatient Dialysis Census Form
  - Dialysis Event Form
- Dialysis Event definitions:
  - IV antimicrobial start
  - Positive blood culture
  - Pus, redness, or increased swelling at the vascular access site
Dialysis Event Protocol Design

- Designed for implementation in dialysis facilities with limited surveillance resources
  - Goal: generate data that are useful for informing quality improvement decisions
  - Requires reliable data capture
  - Protocol is designed for optimal balance of low data collection burden with high data validity

- Data must be collected uniformly so that meaningful comparisons can be made
  - Requires all users follow the **Dialysis Event Protocol**
  - Dialysis Event definitions are standardized and simplified to minimize subjectivity
Dialysis Event Surveillance Population

- Maintenance hemodialysis patients treated in-center

- Other dialysis patients should be excluded:
  - Peritoneal dialysis
  - Home hemodialysis
  - Inpatient dialysis
Required Reading: Dialysis Event Protocol

- The Dialysis Event Protocol is a document that provides instructions for reporting in NHSN.
- All users must read the Dialysis Event Protocol to become familiar with instructions, definitions and procedures.

Data Reporting Requirements

1. Outpatient Dialysis Center Practices Survey
   - Completed upon enrollment and annually thereafter

2. Monthly Reporting Plan
   - Indicate what NHSN surveillance your facility will do each month

3. Denominators for Outpatient Dialysis form
   - Completed once monthly

4. Numerator: Dialysis Event form
   - Completed when a dialysis event occurs
1. Outpatient Dialysis Center Practices Survey

- Completed during enrollment and every January thereafter
- Data are collected by someone at the facility who is familiar with facility practices; survey is entered in NHSN by a user with administrative rights
- Includes: facility information, patient and staff census, vaccines, hepatitis B and C, policies and practices, and vascular accesses
- Survey includes questions about staff and patients during the first week of January
  - Complete the survey in January each year
  - Must be entered by April 1
Data Reporting Requirements

1. **Outpatient Dialysis Center Practices Survey**
   - Completed upon enrollment and annually thereafter

2. **Monthly Reporting Plan**
   - Indicate what NHSN surveillance your facility will do each month

3. **Denominators for Outpatient Dialysis form**
   - Completed once monthly

4. **Numerator: Dialysis Event form**
   - Completed when a dialysis event occurs
2. Monthly Reporting Plan

- Informs CDC what Patient Safety surveillance the facility is following according to protocol each month
- A Monthly Reporting Plan must be completed before data are entered into NHSN for that month
- Indicate Dialysis Event surveillance in your plan:
  - Under the Device-Associated Module >> Dialysis Event is abbreviated “DE”
  - Checking this box tells CDC that your facility is following the protocol for all Dialysis Event numerator and denominator data reported for that month
- Up to one year of Monthly Reporting Plans can be saved in advance
Data Reporting Requirements

1. Outpatient Dialysis Center Practices Survey
   - Completed upon enrollment and annually thereafter

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Infection Risk by Vascular Access

- NHSN data are stratified by vascular access type

- Risk of infection varies by vascular access type:
  - LOWER RISK: Arteriovenous fistulas (F)
    Arteriovenous grafts (G)
    Other access devices (e.g., hybrids) (O)
  - HIGHER RISK: Tunneled central lines (TCL)
    Nontunneled central lines (NTCL)
3. Denominators for Outpatient Dialysis form

- Report all maintenance hemodialysis outpatients (including transient patients) treated at your facility on the first 2 working days of the month, separated by vascular access type.
- Count each patient only once.
  - If they have more than 1 vascular access, count that patient once, under their highest infection risk access.
  - If a patient is present on both working days (e.g., for a make-up appointment) do not count them twice.
- Consider ALL vascular accesses present, not just those being used for dialysis.
- Complete this form once per month.

Refer to Table of Instructions for guidance.
Note: First two working days of the month

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

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>31</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>CLOSED</td>
<td></td>
<td>Working Day 1</td>
<td>CLOSED</td>
<td>Working Day 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Denominators for Outpatient Dialysis - Census Form

Mandatory fields marked with *

**Facility ID**: 10055 (Dialysis Test Facility 2)

**Location Code**:

**Month**:

**Year**:

Report No Events: [ ]

#### Vascular Access Type

<table>
<thead>
<tr>
<th>Access Type</th>
<th>Number of Chronic Hemodialysis Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fistula*</td>
<td>Number of these Fistula Patients who undergo Buttonhole Cannulation:</td>
</tr>
<tr>
<td>Graft*</td>
<td></td>
</tr>
<tr>
<td>Tunneled Central Line*</td>
<td></td>
</tr>
<tr>
<td>Nontunneled Central Line*</td>
<td></td>
</tr>
<tr>
<td>Other Access Device (e.g., hybrid access)*</td>
<td></td>
</tr>
</tbody>
</table>

**Total Patients**:

---

**Custom Fields**

[Save] [Back]
Denominator Example

Hemodialysis Outpatients

<table>
<thead>
<tr>
<th>Vascular Access</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fistula</td>
<td>(F)</td>
</tr>
<tr>
<td>Graft</td>
<td>(G)</td>
</tr>
<tr>
<td>Tunneled CL</td>
<td>(TCL)</td>
</tr>
<tr>
<td>Nontunneled CL</td>
<td>(NTCL)</td>
</tr>
<tr>
<td>Other Access Device</td>
<td>(O)</td>
</tr>
</tbody>
</table>

Transient Patient

1 F
2 TCL
3 F
4 G
5 NTCL
6 G
7 O
8 NTCL
For the Denominator form, exclude patients who are not physically present for outpatient maintenance hemodialysis treatment on the first two working days of the month (such as hospitalized patients)
For the Denominator form, count each patient only once.

Among patients with more than 1 vascular access, identify their highest infection risk access.

- Arteriovenous fistulas
- Arteriovenous grafts
- Other access devices
- Tunneled central lines
- Nontunneled central lines
Denominator Example

Hemodialysis Outpatients

Vascular Access | #
---|---
Fistula (F) | 1
Graft (G) | 2
Tunneled CL (TCL) | 2
Nontunneled CL (NTCL) | 1
Other Access Device (O) | 1

Hemodialysis Outpatients

1. Fistula (F)
2. TCL
3. Fistula (F)
4. G
5. NTCL
6. G
7. F
8. NTCL
### Example

<table>
<thead>
<tr>
<th>July 1</th>
<th>Patient</th>
<th>Access Type(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>Graft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Fistula</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>TCL, Fistula</td>
<td>Absent -- hospitalized</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Graft, Fistula</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>July 2</th>
<th>Patient</th>
<th>Access Type(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>NTCL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>Other</td>
<td>Absent – birthday party</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>TCL, Fistula</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Graft, Fistula</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G (Transient Patient)</td>
<td>Graft</td>
<td></td>
</tr>
</tbody>
</table>
### Explanation

<table>
<thead>
<tr>
<th>Patient</th>
<th>Access Type(s)</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td><strong>Graft</strong></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td><strong>Fistula</strong></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>TCL, Fistula</td>
<td>Absent -- hospitalized</td>
</tr>
<tr>
<td>D</td>
<td><strong>Graft, Fistula</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### LOWER RISK
- Arteriovenous fistulas
- Arteriovenous grafts
- Other access devices
- Tunneled central lines
- Nontunneled central lines

#### HIGHER RISK

<table>
<thead>
<tr>
<th>Patient</th>
<th>Access Type(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td><strong>NTCL</strong></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Other</td>
<td>Absent – birthday party</td>
</tr>
<tr>
<td>C</td>
<td>TCL, Fistula</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td><strong>Graft, Fistula</strong></td>
<td></td>
</tr>
<tr>
<td>G (Transient Patient)</td>
<td><strong>Graft</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Answers

<table>
<thead>
<tr>
<th>Vascular Access</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fistula</td>
<td>(F)</td>
</tr>
<tr>
<td>Graft</td>
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</tr>
<tr>
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<td>(NTCL)</td>
</tr>
<tr>
<td>Other Access Device</td>
<td>(O)</td>
</tr>
</tbody>
</table>

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>
Data Reporting Requirements

1. Outpatient Dialysis Center Practices Survey
   ▪ Completed upon enrollment and annually thereafter

2. Monthly Reporting Plan
   ▪ Indicate what NHSN surveillance your facility will do each month

3. Denominators for Outpatient Dialysis form
   ▪ Completed once monthly

4. Numerator: Dialysis Event form
   ▪ Completed when a dialysis event occurs
4. Dialysis Event Form

- Monitor all maintenance hemodialysis outpatients who are treated at your facility for dialysis events:
  - IV antimicrobial start
  - Positive blood culture
  - Pus, redness, or increased swelling at the vascular access site

- Any patient who receives maintenance hemodialysis treatment at your facility is monitored for dialysis events
  - Even if they were not counted on the denominator form
  - Include transient patients who have a dialysis event while being treated by your facility

Refer to Table of Instructions for guidance.
Dialysis Event Form

- Patient demographics
- Risk Factors
- Other Patient Information
- Dialysis Event type(s) & details
- Problems
- Outcomes
## Additional Information: Dialysis Event Date

<table>
<thead>
<tr>
<th>Dialysis Event</th>
<th>Date Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV antimicrobial start</td>
<td>Date of first outpatient dose of an antimicrobial course</td>
</tr>
<tr>
<td>Positive blood culture</td>
<td>Date of specimen collection</td>
</tr>
<tr>
<td>Pus, redness, or increased swelling at vascular access site</td>
<td>Date of onset</td>
</tr>
<tr>
<td>Combination</td>
<td>Earliest date of the three types</td>
</tr>
</tbody>
</table>
If no dialysis events occur, select “Report No Events” to report zero events for the month.
Reporting Timeline

- Data should be reported to NHSN within 30 days of the end of the month for which they were collected
- Example: March data collection
  - Denominators for Outpatient Dialysis Form: March 1 and 2
  - Dialysis Event form(s): through all of March
  - Report both on or before April 30
Summary – National Healthcare Safety Network

- Data must be collected in a standardized way – as described by the Dialysis Event protocol

- Reporting requirements include:
  - The Outpatient Dialysis Center Practices Survey
  - Monthly Reporting Plan
  - Denominators for Outpatient Dialysis Form
  - Numerator: Dialysis Event Form(s) or “Report No Events”
Dialysis Event Definitions
Dialysis Event Type: IV Antimicrobial Start

- Report all outpatient intravenous antibiotic and antifungal starts regardless of the reason for treatment and regardless of duration of treatment
  - Include starts unrelated to vascular access problems
  - Report outpatient starts that are continuations of inpatient treatment
  - Report all IV antibiotic starts, not just vancomycin
  - Do not report IV antiviral starts
Dialysis Event Type: Positive Blood Culture

- Report all positive blood cultures collected as an outpatient or collected within 1 calendar day after a hospital admission
  - Even if the patient does not receive treatment
  - Even if the infection is not related to dialysis
Dialysis Event Type: Positive Blood Culture

- Report all positive blood cultures (PBC)
  - Collected as an outpatient
  - Collected within 1 calendar day after a hospital admission

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- **REPORT PBC if specimen was collected during this time**
- **Do NOT report PBC if specimen was collected during this time**
Suspected Source of Positive Blood Culture

- **“Vascular Access”** if there is objective evidence of vascular access infection and it is thought to be the source

- **“A Source Other than the Vascular Access”** if another site is thought to be the source and either:
  - Culture from another site has the same organism as the blood
  - Clinical evidence of infection at the site, but site is not cultured

- **“Contamination”** if organism is thought by the physician, Infection Preventionist, or nurse manager to be a contaminant

- **“Uncertain”** only if there is insufficient evidence to decide among the 3 previous categories
Positive Blood Culture Microorganisms

- For each positive blood culture, report up to 3 microorganisms
  - Suggestion: attach microbiology lab report to paper form

- Include antimicrobial susceptibility information
  - i.e., susceptible, resistant, intermediate, or not tested

- Do not report results of cultures from sites other than blood
Dialysis Event Type: Pus, Redness or Increased Swelling at the Vascular Access Site

- Report each new outpatient episode of pus, greater than expected redness or greater than expected swelling at a vascular access site
  - Even if the patient does not receive treatment
  - Always report pus
  - Report redness or swelling if they are more than expected and suspicious for infection
21 Day Rule

- There must be 21 or more days between dialysis events of the same type
  - Reduces multiple reporting of a single event/problem

- IV antimicrobial start
  - From the end of first start to beginning of next start

- Positive blood cultures
  - Between collection dates

- Pus, redness, or increased swelling
  - Between onset to onset

- Otherwise second occurrence is not reported
21 Day Rule - Example

Example: A patient has two positive blood cultures within 21 days as a result of a bloodstream infection on January 1st and January 4th
  - Report one dialysis event, event date is January 1st

The patient has a new positive blood culture on February 20th
  - Report a second dialysis event, because event date of this new positive blood culture is 21 or more days after the last reported positive blood culture
Additional Information: Dialysis Event Combinations

- 1 Dialysis Event report may have multiple parts, combining:
  - IV antimicrobial start
  - Positive blood culture
  - Pus, redness or increased swelling at vascular access site

- For example, if a positive blood culture is the reason that a patient is treated with IV antimicrobials, this is part of the same group of events and they are reported together.
Summary – Dialysis Event Definitions

- **IV antimicrobial starts**
  - All outpatient IV antimicrobial starts, including outpatient continuation of inpatient treatment

- **Positive blood cultures**
  - All positive blood cultures collected as an outpatient or collected within 1 calendar day after a hospital admission

- **Pus, redness, or swelling at the vascular access site**
  - All new outpatient episodes where patient has any pus, greater than expected redness, or greater than expected swelling at a vascular access site, suspicious for infection
Summary – NHSN Dialysis Event Surveillance

- Maintenance hemodialysis outpatients

- NHSN Dialysis Event Surveillance reporting forms:
  - Outpatient Dialysis Center Practices Survey
  - Monthly Reporting Plan
  - Denominators for Outpatient Dialysis form
  - Dialysis Event form
    - IV antimicrobial starts
    - Positive blood cultures
    - Pus, redness, or increased swelling at the vascular access site

- Facilities must understand the reporting protocol and surveillance definitions to produce quality data
Resources

- **Use other supporting resources:**
  - BSI Prevention
    - CDC/HICPAC Guidelines
    - ESRD Networks
    - Health departments
  - General Infection Control
  - NHSN
    - Dialysis Event Homepage: [http://www.cdc.gov/nhsn/psc_da_de.html](http://www.cdc.gov/nhsn/psc_da_de.html)
    - NHSN Helpdesk: nhsn@cdc.gov
    - ESRD Network 8
    - Tennessee Facilities: Tennessee Department of Health HAI team: hai.health@tn.gov