

# Haemodialysis Event (HDE)

1.	Introduction .....	1
2.	Methodology .....	1
	Setting .....	1
	Requirements .....	1
	Definitions .....	2
	Criteria for Haemodialysis Events .....	2
	Denominator Data.....	2
	Numerator Data .....	2
3.	Data Analyses.....	3
4.	References .....	3

## 1. Introduction

The VICNISS haemodialysis event (HDE) surveillance module is based on the National Health Safety Network (NHSN) Patient Safety Component Manual, Centers for Disease Control and Prevention (CDC) in the United States<sup>1</sup>.

Haemodialysis (HD) patients require a vascular access, which can either be a catheter or a graft or an enlarged blood vessel that can be punctured to remove and replace blood. Bacteremias and localised infections of the vascular access site are common in haemodialysis patients<sup>2-7</sup>. The vascular access types, ordered according to increasing risk of infection, include arteriovenous fistulas created from the patient’s own blood vessels; arteriovenous grafts often constructed from synthetic materials; tunneled central lines; and nontunneled central lines. Because of frequent hospitalisations and receipt of antimicrobial drugs, haemodialysis patients are at high risk for infection with drug-resistant bacteria.

## 2. Methodology

Haemodialysis event surveillance requires that all haemodialysis outpatients be monitored for any outpatient IV antimicrobial start; positive blood culture; or presence of pus, redness, or swelling at the vascular access site. Inpatients are not included in the surveillance.

### Setting

Surveillance will occur in outpatients who are treated in outpatient haemodialysis centres. These centres may be attached to or affiliated with a hospital (hub or satellite), but should serve mostly hemodialysis outpatients.

### Requirements

Refer to the [Type 1 VICNISS Performance Indicators](#) and [Type 2 VICNISS Performance Indicators](#) on the VICNISS website for required HDE surveillance activities. For further information also refer to the [VICNISS Type 1 Surveillance Manual \(section 4.1\)](#) and the [VICNISS Type 2 Surveillance Manual \(section 4.3\)](#) on the VICNISS website.

## Definitions

The following types of haemodialysis events are determined with an algorithm from data and reported quarterly by VICNISS:

**Local access infection:** Pus, redness, or swelling of the vascular access site and access-associated bacteremia was not present and patient was hospitalised or had initiation of an IV antimicrobial agent.

**Access-associated bacteremia:** Blood culture positive with source identified as the vascular access site or unknown.

**Vascular access infection:** Either local access infection or access-associated bacteremia.

## Criteria for Haemodialysis Events

**IV antimicrobial start:** Include all outpatient IV antimicrobial starts, not just those with vancomycin or for a vascular access problem. If IV antimicrobials are stopped for less than 21 days and then restarted, the second start is NOT considered a new haemodialysis event.

**Positive blood culture:** Include all positive blood cultures collected as an outpatient or collected within 1 calendar day after hospital admission. The date of a blood culture result is based on the date the blood specimen was collected, not the date the laboratory reported the result. There must be 21 or more days between positive blood cultures for each positive blood culture to be considered a separate haemodialysis event. If positive blood cultures occur less than 21 days apart, the second positive blood culture is NOT considered a new event.

**Pus, redness or increased swelling at the vascular access site:** Include each new episode where the patient has one or more symptoms of pus, redness or increased swelling at a vascular access site. There must be 21 or more days between the onset of a first and second episode of pus, redness, or swelling at a vascular access site to be considered separate haemodialysis events. If an episode of pus, redness, or swelling at a vascular access site resolves and then recurs within 21 days, the recurrence is NOT considered a new dialysis event.

## Denominator Data

The number of chronic haemodialysis patients with each access type who received haemodialysis at the centre during the first two working days of the month is recorded on a VICNISS web based data collection form (web form) [Haemodialysis Event \(Denominator\)](#). These data are used to estimate the number of patient-months. Only haemodialysis outpatients are included. Each patient is counted only once; if the patient has multiple vascular accesses, record that patient once reporting their highest risk vascular access type only. For further explanation of required data fields see [Instructions for Completion of HDE Data Forms](#) on the VICNISS website. For more information on how to register and obtain access to web forms please see the [Web Based Data Collection Forms \(Web Forms\) User Guide](#) on the VICNISS website.

## Numerator Data

For each patient with IV antimicrobial start; positive blood culture; or pus, redness, or swelling at the vascular access site (must meet HDE criteria), participating dialysis centers will complete one VICNISS web based data collection form (web form) [Haemodialysis Event \(Numerator\)](#). For further explanation of required data fields see [Instructions for Completion of HDE Data Forms](#) on the VICNISS website. For more information on how to register and obtain access to web forms please see the [Web Based Data Collection Forms \(Web Forms\) User Guide](#) on the VICNISS website.

Reporting multiple dialysis events for a single patient: if multiple dialysis events occur together, as a part of the same patient problem, they should be reported as one dialysis event. For example, if a patient has a positive blood culture and has an IV antimicrobial start, these two events would be recorded together as one dialysis event. When reporting multiple dialysis events together, always use the date from the first event that occurred. Refer to criteria for haemodialysis events (above) for the 21 day rule.

### 3. Data Analyses

The numbers of various haemodialysis events are tabulated, and rates of these events per 100 patient-months calculated by dividing the number of events by the number of patient-months and multiplying the result by 100. These rates are stratified by vascular access type and compared to the VICNISS aggregate rate.

### 4. References

1. Centers for Disease Control and Prevention. The National Healthcare Safety Network (NHSN) Manual. Patient Safety Component Protocol. 2010 [www.cdc.gov/nhsn/TOC\\_PSCManual.html](http://www.cdc.gov/nhsn/TOC_PSCManual.html)
2. Klevens RM, Edwards JR, Andrus ML, Peterson KD, Dideck MA, Horan TC. Dialysis Surveillance Report: National Healthcare Safety network (NHSN)-data summary for 2006. *Seminars in dialysis* 2008;21 (1):24-28.
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7. Tokars J, Stein G, Frank M, the Dialysis Surveillance Network. The influence of blood culture frequency on reported bacteremia in hemodialysis outpatients. Abstract presented at the Society for Healthcare Epidemiology of America, Salt Lake City, UT, April 2002.