PREVENT HAIs Healthcare-Associated Infections

National Opportunity To Improve Infection Control in ESRD (NOTICE)

Phase One Final Report

HRET
UM-KECC
Renal Network 11

AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care ● www.ahrq.gov

Contents

Appendixes

Executive Summary

This final report from the first phase of the National Opportunity To Improve Infection Control in End-Stage Renal Disease Facilities (NOTICE) project gives an overview of all work performed thus far, including the literature review, checklist development, study design, analytic plan and analyses of results obtained from the review of 34 participating dialysis facilities by infection control evaluators (ICE) over a 4-month period (late October 2011 to early January 2012). The ICE implemented the infection control worksheet (ICWS) developed by the study team and assessed a number of facility practices associated with required and best practices in administering hemodialysis care. In the results section of this report we assess the overall variation between facilities with respect to the recommended practices in the ICWS with a view to identifying those areas where there is potential for improvement. We also assess whether there is evidence of a relationship between these observed practices from the administration of the ICWS and vascular access infection rates in the participating facilities. In addition, we assess the change in infection rates before versus after the site visits and administration of the ICWS and the size of these effects and perform an initial examination of the association between the various infection measures that could be used in the participating facilities. The report concludes with a discussion of lessons learned thus far that are relevant to future project phases and to related future initiatives of the Agency for Healthcare Research and Quality (AHRQ).

Results suggest that there is considerable variation in infection control practices across facilities enrolled in the NOTICE project. The ICWS identified 73 distinct items of appropriate practice, and this report summarizes the information on each of these. More specifically, there is a natural interest in some specific practices, and the report explores variation in as appropriate practice of hand hygiene, the use of chlorhexidine, use of antimicrobial ointment, and scrubbing the central venous catheter (CVC) hub. Results are shown overall and by facility characteristics in Figures 1–4 of Appendix F and in Tables 8a–e and 9. Overall adherence to expected practices was 71 percent for facilities in the project. Overall adherence to expected hand hygiene practice was 72 percent, with specific instances of proper hand hygiene ranging from 35 percent to 95 percent. Use of chlorhexidine was 19 percent overall but varied from 35 percent to 0 percent.

The primary infection outcome used in the analyses was vascular access-related infections (VAIs) per 100 hemodialysis (HD) patient months based on ICD-9 reporting in inpatient and outpatient Medicare claims. The Medicare claims seem to be, at this stage, the most reliable measure available. Secondary measures of infection were based on the National Healthcare Safety Network (NHSN) data collected on a subset of the facilities that participated in the NHSN program, and on the V-modifier vascular access-related bacteremia reported in Medicare outpatient claims. Results obtained from the V-modifier claims were considered to be somewhat unreliable because data collection was discontinued. For direct comparisons, infection rates were estimated for each facility over the five month period from August to December 2011.

Some particular practices as measured in the ICWS implementation were seen to be associated with better infection outcomes (Table 11 in Appendix F). Overall hand hygiene stands out as a significant predictor of infection rate ($p=0.02$) and perhaps an appropriate focus for further consideration. It appears that there are no specific elements of hand hygiene that stand out as particularly important,

however, and it may simply be that this variable is an overall measure of general care at the facility for infection control practices. Other notable predictors include cleaning the injection port, properly inserting the needle, and properly assembling supplies. Because multiple statistical models used the same data, there is a greater likelihood that the results are due to random chance. So, these associations should be viewed primarily as arising from an exploratory analysis.

With respect to the assessment of infection rates before and after the site visits and administration of the ICWS, we examined the NHSN data that were available on the participating centers. For overall vascular access infection, for example, we show that there is strong evidence ($p<0.001$) of a decrease in infection rates. Instances of VAIs were 44 percent less frequent in the post-ICE visit period, and instances of positive blood culture (PBC) 43 percent less frequent. This analysis is based on a Poisson model for monthly infection counts with a random effect for centers. Although these results are suggestive and worthy of additional investigation, we caution that the lack of controls in this study makes the interpretation of this difference ambiguous. A later analysis will assess this change in the context of Centers for Medicare & Medicaid Services (CMS) claims data and measures of infection obtained from that source. This has the advantage that appropriate controls can be defined and used to assess the evidence.

One surprising aspect of this study is that, except for the two NHSN measures considered, the various measures of infections are weakly correlated with each other, at least over the period August to November 2011. This is a surprising result that will be the subject of further investigation.

Introduction

Overview of Project Goals

Infection is the second leading cause of death for patients on dialysis; thus, reducing risk factors for infection in dialysis facilities is imperative. NOTICE is an initiative of AHRQ, in collaboration with the Centers for Disease Control and Prevention (CDC) and CMS, that was conducted by the Health Research and Educational Trust (HRET), as well as the University of Michigan Kidney Epidemiology and Cost Center (UM-KECC) and the Renal Network of the Upper Midwest (Network 11). The NOTICE project was funded by AHRQ with several specific goals:

- To develop an evidence-based infection control worksheet that could be used by facility staff and potentially CMS surveyors to assess the extent to which recommended infection control practices were being adhered to

- To evaluate this worksheet in a diverse set of dialysis facilities to assess how feasible it was to use and how helpful it might be for the audiences it was targeting

- To develop a process for helping facility staff to understand infection control practices and how to improve them and create systems and a culture that sustains these improvements

Testing this improvement process is the focus on the project phase scheduled to begin in October 2012. Collectively, these activities will directly contribute to the overall goal of reducing infections that occur within dialysis facilities. While the focus of the intervention is on vascular access infections, many of the recommended interventions should also reduce other infection and safety risks patients experience.

Overview of Required Project Activities

The scope of work for this project entailed a sequence of activities designed to be prepared for the improvement initiative scheduled to begin in October. Major activities included:

- **Development of a literature review to assess infection control risks and infection control practices.** This literature review was performed to ensure that the ICWS would reflect current knowledge of dialysis-related infections and in particular, vascular access infection causes and prevention.

- **Development of an evidence-based checklist.** Checklists were developed for use by facility staff seeking to improve their infection prevention practices. To ensure alignment with CDC guidelines and CMS oversight, the checklists were also developed to reflect the potential needs of surveyors. To accommodate both the facilities and surveyors, checklist versions for surveyors and facilities were developed. Both focus on the same set of infection prevention practices, but they have different structures to facilitate their use by distinct target audiences.

- **Testing of the checklist.** Ideally, the checklists we developed should be usable by the target audiences and have evidence that their results reflect other measures of infection prevention derived from other data sources. To assess these possibilities, the checklists were tested in a set of 34 volunteer facilities selected for their variability. Results from this test were then examined to assess the utility of the checklists for their intended purposes.

- **Sharing of findings.** Because infection prevention is an important priority for dialysis facilities, this project included resources to raise awareness of the checklist and its utility for facilities. Dissemination activities included Webinars, presentations at trade meetings, and papers and posters submitted for presentation at professional meetings

- **Development of an infection prevention change package.** This work, technically part of Option A of the contract, was to develop a change package that addresses both behaviors that directly impact vascular access risks and the systems and culture within the facility that are likely to impact whether infection prevention practices are consistently followed. Development of this change package is ongoing, but will be complete for use in the pilot testing scheduled to begin in October 2012.

Structure of Report

This report describes the activities conducted for the NOTICE quality improvement project. Results of this phase of the project are intended to help inform further development of quality improvement programs in infection control for dialysis facilities. Specifically, this project aims to (1) develop a checklist for monitoring infection control practices and providing safe dialysis care, (2) describe variation in observed practices across facilities in the study, and (3) assess the extent to which this variation among facilities is related to differential infection rates. This will provide background evidence to support development and implementation of a comprehensive unit-based safety program (CUSP). In support of CUSP development, this report provides information about variation in infection control practice across NOTICE project dialysis facilities, the relationships between ICE observations of specific infection control practices to various measures of infection, and a preliminary evaluation of the associations between infection measures from different sources.

Development of Intervention Tools

Literature Review

In November 2009, a PubMed search was performed for hemodialysis catheter infection in November 2009 using the search terms “catheter infection” and limited to articles published in 2006 or later, which resulted in a list of approximately 1,700 articles. Articles that didn’t specifically pertain to hemodialysis catheter infections were eliminated, and 216 articles remained. The initial list of 216 was reviewed and narrowed down to 93 articles. The Kidney Disease Outcomes Quality Initiative Guideline citations were also searched for vascular access; however, the citations only went back to mid-2005, so additional searches were completed for articles for the last half of 2005. This search resulted in 46 articles. This list was then narrowed down to nine articles for further review. After further review, a total of 74 articles were found to be applicable for best practices development.

While the focus of this project was VAIs, we updated the initial list of infection-related articles and performed searches in PubMed in December 2010 using the following search terms: “Hepatitis C ESRD,” “Hepatitis B ESRD,” “Influenza prevention ESRD,” “Pneumococcal ESRD,” “Tuberculosis ESRD,” “HIV AIDS ESRD,” and “Infection Control ESRD.” The search was set to retrieve articles published in the last year. A total of 134 were found and reviewed for relevance to best practices development.

In January 2011, an additional request for articles pertaining to vascular access infection in other patient care settings besides dialysis was requested and performed using the search terms “Vascular access infection” in PubMed; 167 articles were retrieved from the last 2 years. Our clinicians reviewed this list of articles and previous two lists for relevance to the project’s goals of creating a list of best practices. A total of 123 articles were selected to be included in the final list of articles.

In April 2011, an additional request to review cited guidelines for which could pertain to VAI infection prevention in dialysis patients was conducted. That review identified four articles published in 2008 and one in 2007. The remaining citations were from 2006 and earlier. Most, but not all, describe work in intensive care units (ICU) and/or non-ICU hospitalized patients. These 56 articles were identified and included in the final bibliography.

The complete literature review is available in Appendix A.

ICWS Development Process

Draft Instruments

The Project Team worked in conjunction with CMS, CDC, AHRQ, and HRET beginning in March 2011 to develop the ICWS/ICCL (infection control checklist) document. It was decided during the course of this development that there should be two versions of the lists, one to be used by facility auditors to review their staff and by the infection control evaluators for the study portion of the project. The other set of checklists would have related material but would be designed for the facility end user (techs and nurses providing direct patient care). In addition to these two sets of the checklists four informational sheets were also designed to inform facilities about the importance of infection control practices.

The final version of the ICWS/ICCL is available in Appendix B.

Pretesting

In July 2011, ESRD surveyors from three states were recruited to participate in pilot testing a draft version of the ICWS. They were selected to participate in this process because of the value of their knowledge and expertise as an ESRD surveyor and to give feedback and ideas to assure the development of the best products possible to enhance the ESRD survey process for infection control and improve dialysis patient care.

During the pretest phase of the project, the recruited surveyors (1) used the draft infection control audit checklists for Task 3b Observations of Hemodialysis Care during scheduled ESRD surveys in August and September; and (2) provided the project team with feedback on their content and usability, and ideas for how these tools could be improved to enhance the survey process and best meet surveyors' needs.

Technical Expert Panel

An appropriately constituted Technical Expert Panel (TEP) can provide useful feedback on major deliverables, offer advice on the approaches being taken to major activities, and endorse the scientific validity and utility of documents or recommendations.

It was determined that the TEP would need to contain people with expertise in multiple areas. Since some may have several forms of needed expertise, the number of people on the TEP was fewer than the list of required competencies noted below:

Nephrology care for ESRD patients: Competency is needed to validate the accuracy and completeness of the literature review, provide input on best and required practices, and ensure ICWS has support of relevant physician community.

Infection control: Competency is needed to validate the accuracy and completeness of the literature review and provide input on best and required practices, and to ensure the ICWS has the support of the infection control community.

Research methodology: Competency is needed to ensure that sampling methodology and study design will meet standards of scientific rigor necessary so that results will be publishable and credible.

Dialysis facility operations: Competency is needed to understand the practical implications of labeling things best or required practices, to provide input on proposed processes for facility recruitment, and to provide input on supporting materials being developed for facility personnel.

CMS Surveyor perspective: Competency is needed to understand how many checklist items can be included for the ICWS to remain feasible for surveyors, understand whether guidance on how to use the ICWS is clear, and ensure ICWS has support of surveyor community.

Dialysis patient perspective: Because this project ultimately exists to strengthen care dialysis patients receive, and because ESRD patients can play an active role in ensuring that infection prevention practices are followed, the patient's perspective is a valuable one. While a patient may not have the clinical and scientific background to evaluate the literature on which the ICWS is based, the patient would contribute to discussions about which practices should be best and which should be required, as well as to discussions about the support materials being developed for dialysis facilities.

The TEP was not designed as a workgroup but rather was used to offer useful advice on the approaches the project team took on major tasks and as a group that provided feedback on the products created under the contract. The TEP's primary responsibility was to respond to documents and plans the project team created, as opposed to drafting documents or other materials.

Technical Expert Panel Feedback

The Technical Expert Panel met in Rockville, MD, on October 17, 2011. The TEP provided feedback on the study design, ICE visit procedures including reviewing the randomization of selecting patients, and the ICWS. Some items specifically discussed included the need to mask the patient, the decision to separate hand hygiene items into their own task, and the clarification that buttonhole cannulation techniques should not be included in the checklists. The complete TEP meeting agenda is included as Appendix C.

Government Feedback

The government partners provided feedback throughout the development of the ICWS/ICCL and supporting materials, including detailed revisions of the draft materials in August 2011. After the TEP meeting, an additional call was held to discuss final changes and to finalize the ICWS/ICCL on November 7, 2011. A few small changes were made to the document as a result of this call, and a prominent and detailed disclaimer was included on the first page of the document stating that neither CMS nor the CDC officially endorsed the ICWS/ICCL. It was also decided that the ICEs would verbally reiterate the disclaimer at the start of the visit.

NOTICE Study Intervention

Recruitment

In total, 87 facilities were identified for participation and 47 facilities declined to participate for various reasons including: facility change of ownership and/or administrative changes, facility under focused reviews for other clinical issues, facility reported being too busy, or facility reported "pushback" from regional management. Of the 40 facilities that agreed to participate, 6 facilities dropped out before beginning to enter data into the NHSN. A total of 34 facilities participated in the first phase of the NOTICE project.

The ESRD Networks worked closely with dialysis facilities to assist the process of enrolling them in NHSN. Weekly conference calls were convened to walk dialysis facilities through each step. A one-page checklist was developed to assist dialysis facilities in the rather complex enrollment process. As a part of the process, the participating facility was to convey data reviewing rights for the NHSN data to its Network and the data coordinating center at UM-KECC. As of late March 2012, UM-KECC was able to see NHSN data on infections for only 27 of the facilities in the study, and only for 15 facilities were the data complete for each month from August through to January. Throughout the period, Network 11 made many efforts to assist facilities in entering their data into NHSN.

In April 2012, in an attempt to achieve a more complete set of data on infections from the participating facilities, participating facilities with incomplete data were invited to provide paper forms with the NHSN event data to Network 11. Additional infection data were obtained from four facilities, and these data were merged with the online NHSN data.

Methods

UM-KECC created a list of facilities for each selected Network (06, 11, 15, and 17) that includes the top 75 percent of facilities by size (more than 29 HD patients) that are also in the top 75 percent of facilities by infection rate (more than 12.5% vascular access-related infection). Facilities identified as closed and facilities from Guam and Hawaii were not included. The list for each Network was further categorized into 12 strata using the following criteria:

1. **LDO affiliation**: defined as Large LDO (66.8%), Small LDO (21.6%), and Non-LDO (11.6%).
2. **Vascular access-related infection rate**: above or below 21.35% infection rate (overall median after removing the bottom 25%)

3. **Median family income in facility ZIP Code**: above or below $37,283 (overall median for facilities after exclusions) as a measure of socioeconomic status. Data obtained from the 2000 census by facility ZIP Code.

The mechanism for selection was as follows: From each of the Network lists, KECC selected at random 10 strata from the 12 available; this selection was constrained so that across all networks 3 or 4 facilities were obtained from each of the 12 strata. From each of the 10 strata selected for a given Network, KECC selected at random 1 facility from the list. UM-KECC provided a list of 10 facilities to the contact person(s) at each Network and the Networks invited these facilities to participate. If for any reason a selected facility declined to participate, the Network informed UM-KECC and the facility was replaced by an additional facility from the same stratum. If all facilities in a given stratum were exhausted, a facility from a stratum not originally sampled was chosen. Three strata were exhausted and replaced during recruitment. The sampling scheme resulted in the expected overall balance on the characteristics chosen; LDO versus non LDO facilities in the ratio of 2:1.

This process continued until 10 facilities agreed to participate within each Network. It was anticipated that all facilities would be recruited and submitting data through the NHSN mechanism by the end of May 2011, however facilities continued to be recruited until August 1, 2011.

Execution

An initial list of 10 facilities was sent to each Network under the direction of Network 11. Facilities were asked to sign a form indicating their willingness to participate and understanding of their responsibilities. Questions and requests for replacement facilities were directed to KECC and Network 11 was copied. Reasons that facilities declined or were otherwise unsuitable were recorded. Reasons for dropout after recruitment were also recorded.

Sampling Results

Tables 1 and 2 show the planned enrollment of facilities by strata. The protocol was designed to produce of ratio of LDO to Non-LDO of 2:1 (27 LDOs and 13 Non-LDOs). This ratio was achieved in the actual enrollment with 21 LDO and 13 Non-LDO facilities.

Table 1. Planned Stratification (Initial Recruitment List)

Strata	Description	NW 6	NW 11	NW 15	NW17	Total
1	LDO, Small, Low Inf, Low Income	x		x	x	3
2	LDO, Small, Low Inf, High Income	x	x	x	x	4
3	LDO, Small, High Inf, Low Income	x	x		x	3
4	LDO, Small, High Inf, High Income	x	x		x	3
5	LDO, Large, Low Inf, Low Income	x		x	x	3
6	LDO, Large, Low Inf, High Income	x	x	x	x	4
7	LDO, Large, High Inf, Low Income		x	x	x	3
8	LDO, Large, High Inf, High Income	x	x	x	x	4
9	Non-LDO, Low Inf, Low Income	x	x	x		3
10	Non-LDO, Low Inf, High Income		x	x	x	3
11	Non-LDO, High Inf, Low Income	x	x	x	x	4
12	Non-LDO, High Inf, High Income	x	x	x		3

Table 2. Actual Stratification Results (11/16/2011)

Strata	Description	NW 6	NW 11	NW 15	NW17	Total
1	LDO, Small, Low Inf, Low Income	x		x		2
2	LDO, Small, Low Inf, High Income		x		x	2
3	LDO, Small, High Inf, Low Income	x	x			2
4	LDO, Small, High Inf, High Income	x	x			2
5	LDO, Large, Low Inf, Low Income			x	x	2
6	LDO, Large, Low Inf, High Income		x	x	x	3
7	LDO, Large, High Inf, Low Income	x		x	x	3
8	LDO, Large, High Inf, High Income	x	x	x	xx	5
9	Non-LDO, Low Inf, Low Income	x	x	x	x	4
10	Non-LDO, Low Inf, High Income		x	x		2
11	Non-LDO, High Inf, Low Income	x	x	x		3
12	Non-LDO, High Inf, High Income	x	x	x	x	4

*Two facilities enrolled in strata 8

Reasons for Nonparticipation

Of the 87 facilities that were approached for recruitment, 34 enrolled. Forty-four facilities declined to participate or were unsuitable. Seven facilities enrolled and subsequently dropped out. Reasons for nonparticipation are described in Table 3.

The corporate office of one small chain declined on behalf of all of its facilities in Network 17. Subsequent selections were not made from its facilities.

Table 3. Reasons for Nonparticipation

	Reasons for Nonparticipation	
Detailed	**Dropped Out**	7
	Declined	32
	Rejected	12
	Closed	1
	Subtotal	52
	Accepted	34
	Total	86

Reasons for Nonparticipation for every facility approached are provided Appendix D.

Comparison of Participating Facilities to Nonparticipants

Below is an evaluation of infection measures for facilities in the NOTICE study compared with other facilities. Table 4 shows comparisons of the mean infection rate for facilities in the study ("Accepted" group) versus each of the other groups (unweighted and weighted by number of patient months). The only statistically significant model is the comparison of the 34 study facilities with the 7 dropout facilities (weighted). Tables 5 and 6 show comparisons of average percentage of patients with vascular access infections reported on claims (unweighted and weighted by number of Medicare patients). None of these were significant, which is a little surprising because we used the 2008 measure in our selection protocol to weed out the lowest 25 percent of facilities. Both the Accepted and Declined groups have slightly higher means (and higher minimum values due to the selection protocol) than the "Not Asked" group, but the difference in the means is not significant.

Table 4. HD Infections/100 Patient-Months, 2010

	n	Mean Infection Rate	p-value	Mean (weighted)	p-value (weighted)
Accepted	34	3.0		3.0	
Not Asked	5798	2.9	0.83	2.8	0.67
Declined	32	3.3	0.72	3.1	0.84
Not Participating	52	3.2	0.72	3.4	0.53
Dropped Out	7	4.1	0.35	5.1	0.03

Table 5. Percent of Patients With Vascular Access Infections Reported in Claims, 2008

	N	Mean % patients	p-value	Mean (weighted)	p-value (weighted)
Accepted	34	22.9		22.5	
Not Asked	5798	19.7	0.11	19.7	0.10
Declined	32	21.1	0.34	21.2	0.48
Not Participating	52	21.5	0.41	21.5	0.56
Dropped Out	7	22.6	0.93	22.5	0.99

Table 6. Percent of Patients With Vascular Access Infections Reported in Claims, 2009

	N	Mean % patients	p-value	Mean (weighted)	p-value (weighted)
Accepted	34	19.2		20.6	
Not Asked	5798	19.0	0.92	18.9	0.30
Declined	32	19.5	0.89	18.8	0.44
Not Participating	52	19.8	0.78	19.5	0.60
Dropped Out	7	22.2	0.44	22.8	0.52

Visit Protocol

Visit protocol was discussed with each of the ICEs before any onsite visits occurred. The protocol given to the ICEs is provided below.

Previsit Facility Contact and Preparation

All communication with the participating facility should come from a collaborative position, as "partners" in reducing infections, rather than a regulatory position.

Three to four weeks prior to visit: The Infection Control Evaluator (ICE) should call the facility person listed as the "Contact" to:

1. **Introduce:** yourself as an Infection Control Evaluator working with the NOTICE Initiative; give first and last name for clear identification; ask the person to document the ICE name, and inform other pertinent staff (i.e., alternate for the contact person in their absence, charge nurse) of the ICE name

and the plan for an unannounced visit to the facility. Ask for the name of the alternate person who could be contacted in the absence of the primary facility contact.

2. **Timeframe:** Inform the facility contact person that you will be arriving at the facility for a 1- to 1.5-day visit within a 2 week timeframe (e.g., "I estimate that the visit to your facility will occur in the first 2 weeks of November"). Do not give a specific day or days for the visit. Ask if there is any reason why the scheduled timeframe is not feasible (e.g. nurse manager vacation), for possible rescheduling.
3. **Purpose:** Reinforce that the purpose for the onsite visit is to observe direct patient care using audit checklists for infection control; to inform facility administrative personnel of the results of the observations; and to inform one or more facility personnel about the infection control checklists and supportive information. Explain that the materials will be presented to the facility for implementation thereafter, with the educational support of the ESRD Network.
4. **Facility characteristics:** Ask and record:
    a. What days are there in-center hemodialysis (ICHD) patients scheduled?
    b. What time does the first shift of ICHD patients start?
    c. How may shifts of ICHD patients are there each day?
    d. What times do the first and second shift of patients' treatments end?
    e. Verify the address of the facility, and any special directions for locating it.
    f. Does the facility have the equipment for projecting a power point presentation?
    g. If they do not have this capability, determine if they have a computer monitor or laptop that may be used to give a brief power point presentation to a few people.
5. **Emergency communication:** Explain that, if an emergency arises that would make the scheduled timeframe for the visit not feasible (e.g. unexpected absence of key personnel, physical plant/equipment emergency, external disaster), the facility should contact their ESRD Network to report the need for rescheduling the onsite visit. The ESRD Network will contact the ICE either directly or through Network 11.

Prior to the Visit

Gather the materials needed:

1. Two Hard copies of blank ICCL/Supportive Materials document : one to use and one to present to facility (if ICE chooses to record observations electronically, only one copy is needed)
2. Unencrypted USB drive containing the ICCL/Supportive Materials document and the educational presentation for the facility to upload
3. Two hard copies of the educational presentation handout (the facility may make additional copies as needed)

Onsite Visit

Attempt to arrive at the facility in the morning before the first-shift patients' ICHD treatments end. When possible, try to schedule the visit for a day when there will be two ICHD patient shift changes/turnovers to observe (three shifts), to assure you can complete the observations in one treatment day.

Introduce yourself to the person in charge; ask for the contact person or their alternate; explain that you are there to conduct the NOTICE onsite visit and would like to meet with them briefly before going into the ICHD patient treatment area.

1. Explain that you will be observing direct care of the ICHD patients throughout the day and will remain in the ICHD patient treatment area during the visit (i.e., will not tour other facility areas).
2. At the conclusion of the observations, the ICE will give facility-identified person(s) (e.g., nurse manager, charge nurse, etc.) a verbal report of the results of the observations and an informational presentation about the ICCL/supportive materials intended to preliminarily prepare them for implementation of the information at their facility. Explain that this may take place the following morning, depending on the facility schedule.
3. Assure them that the purpose of the visit is to document the current facility infection control practices, not to rate performance. Explain that, after they have implemented the information in the ICCL/supportive materials for 5–6 months, a return visit will be conducted to see how the infection control practices may have changed.
4. Inform them that no patient- or staff-specific information will be documented or reported from the visit.
5. Ask for items needed to conduct observations:
    a. A copy of the ICHD patient schedule and seating chart for today that includes patients' vascular access type. Tell them that you will return this to the administrative person at the conclusion of the visit.
    b. Personal protective equipment to wear in the ICHD patient treatment area during the observation period

Administration of audit infection control checklists:

Observation overview: Conduct the observations in the ICHD patient treatment area. Ensure you are positioned so that you have a clear view of the activities, but are not interfering with or encumbering patient care. Enter the facility name, CCN#, date, beginning time, and dialysis station for each observation at the top of each checklist. Note whether that dialysis station is readily visible from the main nurses' station and if it is an isolation station. Mark "Met/Not Met" as indicated for each checklist item/step, and record any pertinent notes about those "Not Met." "Not Met" should be marked if the staff member did not fulfill ALL of the elements in that "step" on the checklist. Do not record patient or staff names, as this process is not intended to identify individual staff practices nor patient-specific issues. Do record staff designations, such as RN, LVN/LPN, PCT, without numeric identifiers.

1. **Audit checklists 1a, 1b, 1c, 3a, 3b, 4:** Continuously observe the activities at one hemodialysis station/patient for each of these audit checklists. Administer each of these checklists two times, using these parameters:
    a. Randomly choose the station(s) to observe. The random selection of the dialysis station is outlined in the document "ICE Randomization Instructions."
    b. Observe a different "primary" (i.e., the person conducting the majority of the "steps" on a checklist) staff member for the two administrations of each checklist, when possible (e.g., you observe PCT 1 disinfecting a dialysis station with checklist 4, so do not observe PCT 1 when administering checklist 4 the second time; you observe LN 2 accessing a CVC with checklist 1a, so do not observe LN 2 the second time).
    c. Multiple staff may "share" the activities on one checklist at that station: consider them as a whole for the audit; you may document on the checklist that there were different staff observed, but this process is not to identify specific staff issues, but rather baseline practices of the facility.
    d. You may observe the same or different stations for the different checklists; it is feasible that you may observe the activities at one station and be able to administer

multiple checklists during one turnover of patients at that station. Or you may choose to "move around" and administer the checklists at different stations. Record the station observed at the top of the corresponding audit checklist.

e. If completion of each checklist two times is not possible (as with CVC access and care), record the reason on each checklist NOT administered two times

2. **Audit Checklist #5 Dialysis Supply Management and Contamination Prevention:** This is the only audit checklist that incorporates ALL of your observations regarding supply management during the observation periods. Administration of checklist #5 is not restricted to one dialysis station; it is intended to look at the facility system for supply management in the ICHD patient treatment area. It is helpful to be familiar with the content/requirements listed on checklist #5, and to make notations onto it regarding observed "Not Met" practices while administering the other checklists. When you have finished your observations with the above checklists 1a, 1b,1c, 3a, 3b, and 4 complete checklist #5.
3. **Audit Checklist #2 Medication Preparation and Injection:** Administer checklist #2 two times, if possible (see "b" below). Each observation should include:
    a. Observe a licensed nurse preparing and administering the nondialysis medications for patients, such as the ESA, Vitamin D3, and iron preparations.
    b. The facility routine may vary:
        i. It may include the simultaneous preparation of medications for multiple patients, then the administration of the medications to that "shift" of patients. If this is the case, observe the preparation of all of the medications, and the administration to 4–5 patients to complete checklist #2
        ii. It may include the preparation and administration of individual patient medications (i.e., one at a time). If this is the case, observe this practice for 4–5 patients' medications for completion of checklist #2
    c. Observe a different licensed nurse for the second observation. If this is not possible (i.e., there is only 1 licensed nurse administering meds that day), do not administer the checklist a second time, and record the reason on the checklist.

Informing the Facility Administrative Personnel:

At the conclusion of your observations, arrange to meet with facility-selected personnel (e.g., administrator, nurse manager) to introduce the ICCL/supportive materials and inform them of the results of your observations. It is best to first give them the hard copy ICCL/supportive materials and the brief educational presentation, so that they have a reference for the results of your observations, making it more meaningful.

1. **Presentation of ICCL/supportive materials:** The intent of this is to give the blank hard copy of the ICCL/supportive materials to the facility-selected personnel (e.g., nurse manager, administrator), and a brief PowerPoint presentation about its purpose and contents. This is also an opportunity to inform them of the supportive educational offerings regarding the ICCL available, such as ESRD Network Web-based trainings, communications, etc., during the implementation period. Give them the copies of the slide handouts for the presentation, and use whatever method was decided for delivery (i.e., projection, the ICE laptop, facility computer).
   It is unlikely that more than a few personnel will be able to view the presentation. It should be approached from a "train the trainer" perspective.

2. **Inform them of the results of your observations:** Give them a verbal report only, and inform them that they will receive a written report within 2 weeks. Briefly go over each checklist, informing them of those items "Not Met" and pertinent related notes you recorded; summarize any patterns of "Not Met" practices you observed. Reinforce that this activity is to see what current practices are, not to rate performance, and that the return visit will assess for possible changes in the practices. Ask if they have further questions. Thank the facility administrative personnel, and return any patient-specific documents prior to leaving the facility.

Postvisit Activities

Notification of ESRD Network: The ICE will contact the appropriate ESRD Network by phone to inform them that the onsite visit occurred. This notification may be made during or immediately after completion of the visit. The ICE is not expected to verbally inform the Network about the results of observations of care during the visit, but may let the Network person know that KECC will be sending them the visit report when it is sent to the facility.

Submission of Completed Audit Checklists: Submit the completed audit checklists to UM-KECC by mail within 1 week after completion of the visit. If mailed, make a copy of the completed checklists and retain until KECC sends an acknowledgment of receipt.

Intervention Results Summary

All of the ICE site visits took place between October 24, 2011, and January 26, 2012. Summary reports for each of the visits, including the comments from the infection control evaluators were sent to each facility and their ESRD Network by February 9, 2012.

Evaluation

Data Sources

ICWS Data

Data used for the NOTICE study come from the ICE checklists completed during the study period, NHSN data submitted by the facilities enrolled, CMS Medicare data for ESRD beneficiaries, and feedback collected directly from the facilities. A complete list of measures and data dictionary used for the NOTICE study are located in Appendixes E and H.

From October 2011 to early January 2012, ICEs visited 34 dialysis facilities chosen randomly from four ESRD Networks. The ICE observed patient care directly and recorded their observations on the ICWS developed by the NOTICE team. Data included observations on the facility infection control practices during dialysis treatment for two patients using CVCs, and two patients using a fistula or graft for each facility. Medication preparation practices were also observed. All eight checklists in the ICWS were included in the ICE assessment with a total of 73 specific practices observed and assessed. The ICEs also took extensive notes regarding their observations. For each item and for each patient observed, the ICE recorded whether or not (met or not met) the particular infection control practice was appropriately followed.

Results from the 73 individual items were combined to represent overall measures of adherence. For example, a measure comprised of the outcomes of all of the items on the ICWS was calculated for each

facility, giving the facility an overall score for the entire visit. Individual items related to hand hygiene (HH) were also combined into an overall measure of HH, a composite measure of HH items from each checklist occurring after set up but before contact with the patient (HH Before), and a similar measure of HH after contact with the patient (HH After). Specific checklist items included in each of these measures are listed in Table 7 below. These measures were available to examine associations with infection rate outcomes.

Table 7. Hand Hygiene Items by ICWS Item*

Initial	Before	After
HH_1a1	HH_1a3	HH_1a9
HH_1b1	HH_1b4	HH_1b8
HH_1c1	HH_1c45	HH_1c9
	HH_2a1	HH_2a11
	HH_2a8	HH_3a10
	HH_3a5	HH_3b8
	HH_3b4	HH_4a10
	HH_4a2	

*Refer to ICWS key

NHSN Data

Thirty-four facilities participated in the NOTICE study through the ICE visits. Of these, 27 facilities provided relatively complete NHSN data on infection rates through the period from August to November 2011. More data on facility recruitment and data completeness are given in the appendixes.

Data on infection rates for each facility were obtained through the NHSN as well as through CMS claims data. The NHSN data include monthly dialysis event data and infection rates (e.g., VAIs, bacteremia) entered by facilities in the study since August 2011. NHSN data collection will continue until July 2012.

Two infection-related outcomes were developed and considered from the NHSN data sources. Results of analyses assessing relationships between ICWS information and these outcomes are presented in the appendixes of this report. The infection rates are measured in terms of number of events per 100 patient-HD months and are based on data for the 4-month period from August to November 2011. The specific outcomes are defined as follows:

- **NHSN VAI rate:** VAI rate as reported through the NHSN. The event is defined as either a local access-site infection (pus, redness, or swelling of the vascular access site and bloodstream infection is not present) or an access-related bloodstream infection (positive blood culture with the suspected source identified as the vascular access site or uncertain). The rate is calculated by adding up the number of HD patients in a facility with a VAI event reported in NHSN during the month and dividing by the number of HD patients. The number is then converted to a rate per 100 HD patient-months. A patient can contribute more than one event per month.

- **NHSN Positive Blood Culture Rate:** The event is defined as any positive blood culture irrespective of cause as reported through the NHSN. The rate is calculated by adding up the number of HD patients in a facility with a bacteremia event reported in NHSN during the month

and dividing by the number of HD patients. The number is then converted to a rate per 100 HD patient-months. A patient can contribute more than one event per month.

Medicare Claims Data

CMS data from claims are also available for each facility, including infection control measures presented in the Dialysis Facility Reports (DFR).

The UM-KECC ESRD Database includes administrative and billing records for all Medicare ESRD beneficiaries. These data are used to produce the facility-level DFRs and, through a data use agreement with CMS, are available to the NOTICE team for analysis. The DFR data include infection rates, deaths due to infection, hospitalizations due to septicemia, LDO affiliation, urban/rural status, SES, and other facility characteristics.

Two infection-related outcomes were developed and considered from the Medicare claims data source. Results of analyses assessing relationships between ICWS information and these outcomes are presented in the appendixes of this report. The infection rates are measured in terms of number of events per 100 patient-HD months and are based on data for the 4-month period from August to November 2011. The specific outcomes are defined as follows:

- **ICD-9 infection rate:** HD access-related Infections per 100 HD patient months based on ICD-9 code 996.62 (Infection or inflammatory reaction due to vascular device, implant, or graft) reported on Medicare inpatient and outpatient claims. Patients can only contribute one infection to a facility during a month. The rate is calculated by summing the patient-months with an access-related infection and dividing by the number of eligible HD patient-months. The number is then converted to a rate per 100 patient-months.

- **V-modifier Rate:** Vascular access-related bacteremia based on the V-modifier (V8) reporting in Medicare outpatient claims. The rate is calculated by summing the number of hemodialysis patients in a facility with a V8 modifier on a Medicare claim in the month and dividing by the number of HD patients. The number is then converted to a rate per 100 HD patient-months. Similar to the ICD-9 infection rate, a patient can contribute one infection per month.

Data Analyses

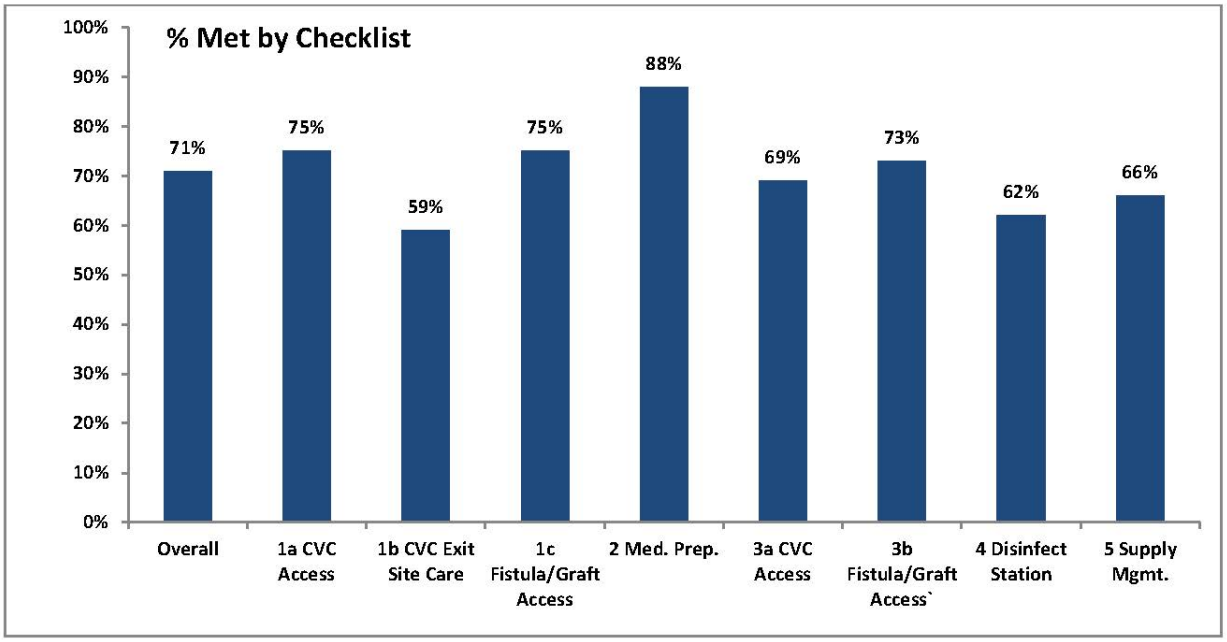
Summary and Analyses of ICWS Data

Results in the analyses of ICWS data suggest that there is considerable variation in infection control practices across facilities, such as in the use of chlorhexidine, or use of antimicrobial ointment, and scrubbing the hub. Particular practices, such as observed proper hand hygiene, for example, are shown to be associated with better infection-related outcomes. Also, the overall measure of infection control practice as collected on the ICWS/ICCL is shown to be associated with bacteremia rates based on V-modifiers reported on Medicare claims for patients in these facilities. While some figures and tables are included with the descriptions in this section, all analysis tables and figures can be found in Appendix F.

Figures 1–4 in Appendix F illustrate the variation in the percent of responses “Met” (Percent Met) as observed by the ICE and recorded using the ICWS checklists. As shown in Figure 1, reproduced below, the overall percentage met was 71 percent on average for the 34 facilities in the project. The lowest percentage for an individual checklist was 59 percent for checklist 1b CVC exit site care. Figures 2–3 in

Appendix F show results for hand hygiene measures and indicate that compliance with specific items ranged from 35 percent to 95 percent with an overall average of 72 percent for the 20 items. Figure 4 in Appendix F shows differences in the percent of facilities with 100 percent met for selected items.

Figure 1. Overall Percent of Checklist Items "Met" by Checklist



Tables 8a-e in Appendix F illustrate the variation in the percent met across facility subgroups for selected ICWS items. LDOs, facility size, urban/rural classification, SES, and ESRD Network are considered here. While very few individual items are statistically significantly related to these facility characteristics, there are interesting differences in practice among these subgroups.

Table 9 in Appendix F shows the overall percent "Met" for each of the 73 items in the ICWS.

ICE Notable Observations

In a review of the comments included by the ICE in the ICWS report, four items appeared with some frequency and are summarized below.

- Check list 1b Item 3, "Don clean gloves; gown, mask and eye protection; remove old dressing and discard; remove gloves" had 20 instances of comments noting that gloves were not removed.

- Checklist 1b Item 5, "Don clean gloves, cleanse area around CVC exit site with chlorhexidine unless incompatible with a patient's catheter; allow to dry before applying dressing" had 44 separate comments noting that the item was not met because a disinfectant other than chlorhexidine was used. Other disinfectants used where alcohol with another agent (6), Betadine (16), Alcavis (2), ExSept (16) and povidone-iodine (4).

- Checklist 1b Item 6, "Apply antimicrobial ointment to exit site, unless there is a contraindication (e.g., patient hypersensitivity or bio-incompatibility with catheter material)" had 39 comments noting that no ointment was used without mention of contraindication.

- Checklist 4a Item 4, "Wipe all machine top, front and side surfaces and dialysate hoses wet with disinfectant per manufacturer directions for use; if visible blood, second application with tuberculocidal disinfectant per manufacturer directions for use" had 37 observations noting that during disinfection the dialysate hoses were not wiped sufficiently.

Comparison of Multiple Data Sources and Association of ICWS Items With Prior Infection Outcomes

Although the four measures of infection rates are attempting to assess very similar aspects of facility outcomes, neither the claims-based measure nor the V-modifier measure are correlated with the NHSN measures. Nor are the claims based and V-modifier measures correlated with each other. Only the two NHSN measures exhibit a substantial correlation in the rates over the period August to December 2011. This result tends to throw into question the accuracy of the infection measures and is reported in Table 10. In our analyses, we have given priority to the infections as defined in the Medicare claims since these are available for all facilities and seem to be more complete.

Table 10. Correlation of Infection Measures From NHSN and DFRs (shading indicates statistical significance, p<0.05)

Outcome Measure		Infections/100 Patient Months	V-Modifier Rate	NHSN VA Inf Rate	NHSN Bact Rate
Infections/100 pt mos	R		**0.18396**	**0.26202**	**-0.00108**
	p-value		**0.2977**	**0.1697**	**0.9956**
	N		**34**	**29**	**29**
V-modifier rate	R			**-0.03845**	**-0.01761**
	p-value			**0.8430**	**0.9278**
	N			**29**	**29**
NHSN VA inf rate	R				**0.78972**
	p-value				**<.0001**
	n				**29**

The infection rates based on V-modifier values reported on Medicare outpatient claims tend to be much lower than the other infection rates and often indicates zero infections in the 4-month period. While the V-modifier measure is the most restrictive by definition, it should represent a subset of the other infection counts and demonstrate similar properties; one should certainly expect a positive association with the claims based measures. It should be noted that the V-modifier data were only collected for a short time, and CMS indicated in July 2011 that this data element would no longer be collected as of January 2012. It is possible that the limited number of infections is due to dialysis facilities' discontinuing reporting. Figure 5 shows the infection rates for facilities with complete data for all four measures during a 4-month period. NHSN data should be of good quality, but there may be startup issues that

make the data less reliable over the first few months of reporting. Nonetheless, it is surprising that these measures do not correlate with other measures determined from the claims. In many ways, the claims data may be the most reliable source of data at this point since the motivation of payment may tend to make the data more complete. We have considered the analyses based on the claims measure as the primary ones. Those with NHSN data are secondary, and those based on the V-modifiers we view as the least reliable.

Testing multiple hypotheses: Even concentrating on the single measure based on claims, many separate analyses were conducted in exploring the relationship between the infection rates and the elements of the ICWS. As noted earlier, we concentrated the analyses on the summary variables for hand hygiene and this reduced substantially the number of variables for consideration. As well, on general grounds, we might suppose that variables associated with the proper methods of treating the vascular access might be considered more important. Nonetheless, we must discount the strength of the evidence (p-value) to some degree since we should expect to see some strong positive relationships by chance alone.

Table 11 shows the association of items from the ICWS/ICCL and the infection measures using Poisson regression. Primary interest in these analyses concerned the summary measures of hand hygiene and certain variables that related particularly to the treatment of the vascular access. In the interests of completeness, however, we investigated separately each of the 73 items in the ICWS. Each item was summarized as having either both observations met or only one or neither met and entered into a Poisson models individually as a predictor of the number of infections for each of the four infection measures (i.e., ICD-9, NHSN VA infections, and NHSN bacteremia and V-modifier). Each model included an offset equal to the log of the denominator of the infection rate and a scale parameter to account for overdispersion (greater variation than expected for the Poisson distribution). While every item on the ICWS checklist was examined along with composite measures (% met overall, overall HH, HH before and HH after), only statistically significant results are shown in Table 11. As noted earlier, the results based on the ICD-9 Medicare claims data seems the most reliable of these analyses with the NHSN measures being available only on a subset of facilities and the V modifiers being generally unreliable. Results indicated that the hand hygiene variables and the item related to maintenance of the injection port are strongly suggestive of a real relationship with infection rates.

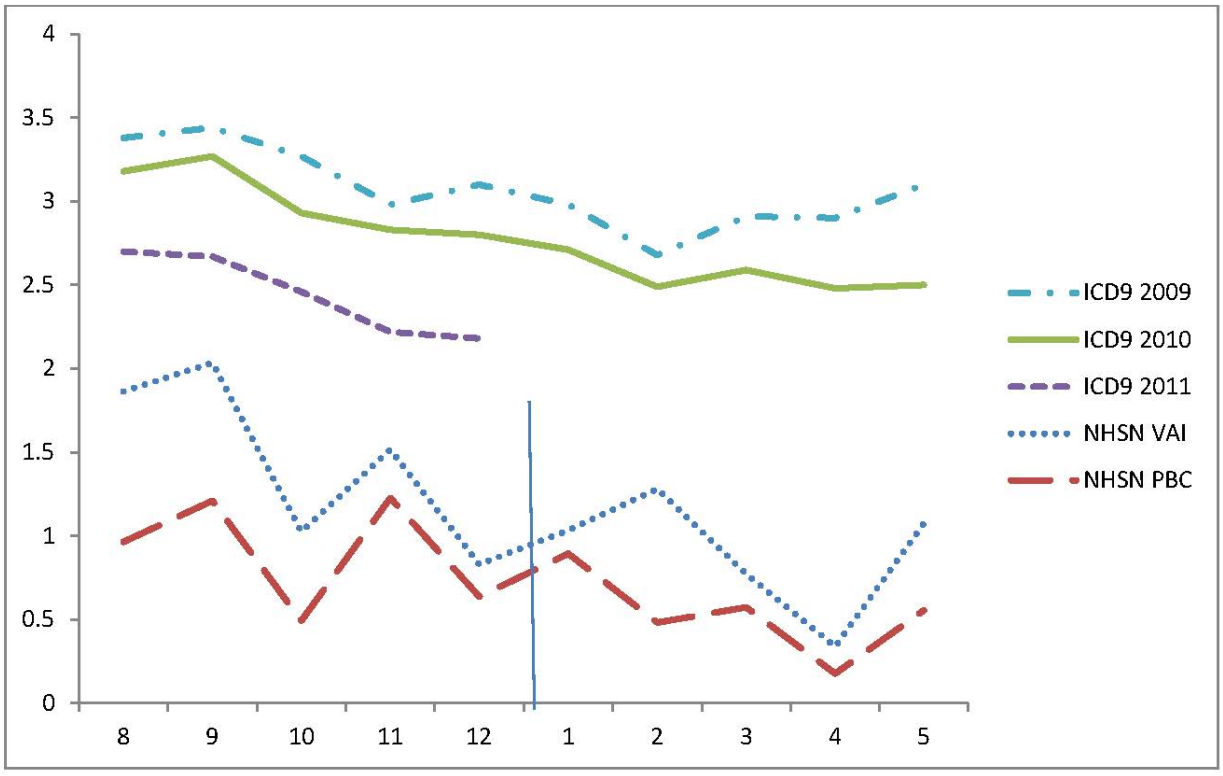
The majority of the items on the ICWS/ICCL that were statistically significantly related to infection were HH items. Overall HH and HH after were significantly related to ICD-9 and V-modifier infection rates. Wiping the injection port (2a9) was the only ICWS item that was statistically significant with all four infection measures. Applying a sterile dressing to the CVC exit site (1b7) was related to both NHSN infection measures.

Comparison of Infection Rates Pre- Versus Post- ICE Visit

One aim of the NOTICE project was to evaluate infection rates before and after the ICE visit. Data were collected through the NHSN regarding VAIs and PBCs from 34 participating facilities. NHSN data were collected from August 2011 through July 2012 (data collection to be complete August 2012). Data are also available from all dialysis facilities in the country regarding infections reported CMS claims 2009–2011.

Figure 6, reproduced below from Appendix F, shows the ICD-9 reported infection rates per 100 HD patient months for all facilities (approximately 6,000 facilities) each year, 2009–2011, as well as VAI and PBC infection rates per 100 HD patient months for the NOTICE facilities. Average rate per month is shown for August through May. The vertical line indicates the division between the ”pre-“ and “post-“ intervention periods (Aug–Dec vs. Jan–May). In regression analyses described below, pre/post periods are identified based on the date of the ICE visit. This figure demonstrates the general decrease of infection rates over time as well as seasonal variation.

Figure 6. Average Monthly ICD-9 Infection Rates 2009-2011 and Average Monthly NHSN Infection Rates Over the Study Period



As the figure shows, infection rates have been declining over time. The following analysis compares pre- versus post- ICE visit infection rates reported through the NHSN, using each facility as its own control.

Table 12 shows the average infection rates in the pre-ICE visit period compared with the post-ICE visit period. In the pre- period, VAI rates were 1.46 per 100 hemodialysis patient months on average, and PBC rates were 0.89 on average. These averages dropped to 0.92 for VAI and 0.63 for PBC in months following the ICE visit. Facilities in the study treated approximately 70 patients each month during both time periods.

Table 12. Average Number of Infection Events Pre- Versus Post-ICE Visit

	Time Period	
	Pre-ICE Visit	Post-ICE Visit
VAI Rate per 100 pt. mo.	1.46	0.92
PBC Rate per 100 pt. mo.	0.89	0.63
Total Patients	70.07	67.95
Total Months	128	165

Methods

Monthly NHSN data were available for 29 of the 34 facilities enrolled in the NOTICE project. Primary outcomes for this analysis were monthly counts of VAIs and PBCs.

Generalized linear mixed models were used to determine the extent to which infection rates were different in the pre- versus post- periods, given the characteristics of the dialysis providers. Poisson models were used with log link and offset equal to the log of the total number of patients in the facility each month. Random effects for provider were included to control for between facility variation.

Results

Results of these analyses are shown in Table 13. The estimates given are the log relative risks associated with the intervention period corresponding to the percentage change in infection rates in the post-intervention period as compared to the pre-intervention period. When provider effects are taken into account, instances of both VAI were 35 percent less frequent and PBC were 22 percent less frequent than in the pre- ICE visit period, although this change was not statistically significant for PBC.

Table 13. Results of Pre/Post Modeling

Outcome	Estimate	$e^{(est)}$	% Change	P-Value
VAI	-0.427	0.65	35%	0.0114
PBC	-0.254	0.78	22%	0.1142

Alternative models, not reported here, included fixed effects only; random effects for month; as well as month effects assuming an auto regressive correlation structure (AR1). However, no evidence of correlation between months was found. These alternative models lead to essentially the same results.

These analyses include completed data through July 2012, with pre/post period based on ICE visit date.

Conclusions

These analyses suggest that there are a number of practices in the facilities where there is substantial room for improvement. They also indicate that some of the items on the ICWS relate to specific infection rates as measured, for example, by the ICD-9 measure based on Medicare claims data.

One surprising feature of these analyses is that the various measures that we have of infections are not correlated. This is of some concern and certainly worthy of additional investigation. In particular, the association between the ICD-9 measures and those obtained from the NHSN are of particular interest. As we gain more data from the participation of these centers in the NHSN, we will revisit this to see

whether this lack of correlation persists. Otherwise, it seems important to investigate this further and to understand the reason that these variables seem to be reflecting quite different outcomes.

Hand hygiene overall, before, and after patient contact also was related to infection rates at the facility level ($p<0.05$). There was insufficient evidence to suggest associations between infection outcomes and any other measures studied. Further, multivariable models adjusted for percent of patients using catheters at each facility showed no significant effect of the level of catheter use.

Based on the preliminary results of this study, hand hygiene is the factor most clearly related to infection rates, and this may be an important area for quality improvement work.

Based on review of the relevant literature, we recommend further investigation into the effectiveness of scrubbing the CVC hub, using antibiotic ointment, using chlorhexidine, and vacating the dialysis station for the control of PBC and VAIs. These variables do not show up as significant in this small study, but they are variables where there is substantial room for improvement in facility practices. Also, it is commonly accepted in that the use of fistulas for vascular access is greatly to be preferred to catheters and grafts and that catheter use should be discouraged except when absolutely necessary. Catheter use would seem another area for appropriate intervention, though this small study does not confirm other larger studies that have demonstrated a strong relationship between poor outcomes and catheter use.

Finally, there is evidence that measured infection rates declined in NOTICE facilities over the study period. However, due to a lack of external controls, it is not possible to determine whether this improvement was due to a general improvement in infection control in dialysis facilities nationwide or to some component of the NOTICE study (e.g., enrollment in NHSN, the ICE visit, the ICWS checklists, feedback to the dialysis facility, the Webinar, or other study materials). With matched controls from the general population, it may be possible to determine whether or not the rate of improvement was different for facilities in the NOTICE project.

Unfortunately, data from CMS claims for the NOTICE time period are currently unavailable, so it is not possible to directly compare the rate of change from these data sources. This comparison using CMS claims data will be carried out when claims data become available for the entire NOTICE study period. One advantage of the CMS claims data is that it will be possible to sample matched controls from the overall facility population to help assess whether differences in infection rates can be attributed to the study intervention.

Dissemination Activities

Webinar With Participants

NOTICE organized an hourlong Webinar for pilot participants to share lessons learned and progress in development of the ICWS and ICCL. The Webinar provided an overview of the NOTICE project, its goals, findings from the pilot, and the ICWS and ICCL. Speakers included Teri Spence and KECC staff. A majority of the participating facilities connected to the Webinar; the exact number of participants is unknown since many locations had multiple individuals listen in. Feedback from the participants led to adjustments to the content and structure of the presentations, which we incorporated into the September Webinar we hosted for all interested dialysis facilities.

Summary of Webinar

The Webinar was held March 7, 2012, after several months of observation using the ICWS. The NOTICE Webinar's target audience was any project pilot participants, including representatives from 34 dialysis facilities from ESRD networks 6, 11, 15, and 17. The content and proper usage of the ICCL by the facilities was discussed in detail. Data from ICE site visits during this stage of testing also was shared to highlight areas with the most potential for improvement. Among these were hand hygiene, scrubbing of the CVC hub, and the use of appropriate antimicrobial ointments. Of major note was the large variation in infection control practices across the surveyed facilities. Data collection methods were shared with the group. Participants were encouraged to continue using the NOTICE checklists and informational materials and to keep entering data into NHSN. The Webinar included a Q & A time where many participants asked questions related to the NOTICE project. In addition, a feedback form was provided to gain insight into how site personnel viewed these interventions and resources.

Webinar and Site Visit Feedback

After the Webinar, an online survey was emailed to NOTICE facilities to gain feedback on the study from the facilities. The survey asked questions about which ICWS/ICCL checklists were useful and if the study overall was helpful in learning about infection control practices. As of April 23, 22 of the 34 facilities participating in the NOTICE project had taken the feedback survey. For the questions concerning overall ratings of the NOTICE project as well as the usefulness of the checklists, the results of the survey were largely positive. Twenty of the 22 respondents stated that they agreed that participation in the NOTICE project increased staff awareness of appropriate infection control practices. Seventeen of 21 responded that participation in the NOTICE project will have a positive impact on Infection rates in their facility, and 17 of 20 responded that the onsite visit and participation in the NOTICE project was a positive experience. For the questions concerning the specific checklists the results of the survey were also largely positive. Twenty of the 22 respondents stated that they agreed that the ICE checklists were informative, 19 of 21 responded that the procedural checklists were easy to use, and 19 of 21 responded that the checklists covered relevant topics.

When asked to identify which checklists were used at their facility, responses varied from facilities that used none of the checklists to some of the facilities that used all of them. The most-used ICE checklist was 1a with 16 responses, while the most used procedural checklists were 1a and 2 with 14 responses each. Bar graphs showing the complete listing of which checklists were used are included in Appendix F as Figures 7–9.

We also looked at responses by facility type (LDO, Small Chain, and Independent). The results by facility type generally followed the patterns of the total responses with the exception of the question, "Did your facility change infection control practices as a result of participation in the NOTICE project?" For that question, all independent facilities answered that they did change practices, where the majority of the LDOs stated they did not. Small chain facilities were split. The display of answers can be seen in Appendix F as Figure 10.

Webinar With All Interested Facilities

An hourlong Webinar with all interested facilities was held on September 5, 2012. This Webinar was open to all facilities in the United States. There were 289 unique registrants connected to the call, many lines with multiple people. Facilities were recruited to participate through email blasts to Renal Networks and LDOs. Similar to the first Webinar, this event introduced the NOTICE project and its goals, described the ICCL and ICWS briefly, and shared the results of the ICWS pilot study. Its main focus was to share results specifically lessons learned and what was accomplished with the use of NOTICE's tools and to answer questions posed by participants in the web event. Over 40 responses to an online feedback tool were received from participants. Those responses reflected considerable satisfaction with the content of the event, a desire by persons to learn more about the project, and an appreciation for the question-answer sections, which allowed KECC physicians to address a number of questions related to infection prevention practices assessed with the ICWS. We believe the event also will facilitate the recruitment efforts that will occur at the start of the next project phase.

Webinar participants are being provided with a draft version of the ICWS for their own use. Additionally, the event was recorded and is being transcribed for posting on the project's Web page, along with the ICWS and additional project materials.

Project Update at the Renal Network Meeting

To further promote the project, staff from the KECC team hosted a poster session at the Renal Network Meeting in Baltimore, MD, on Sept. 12, 2012. The purpose of this session was to—

- Expand awareness of the ICWS with staff from Renal Networks that work with dialysis facilities nationwide on a variety of quality improvement efforts
- Share information about infection risks observed during the site visits conducted by the infection control evaluators
- Expand contacts with Renal Network staff that we may work with further in the next project phase

This poster session generated substantial interest in the project and its resources.

Abstract and Publication Submissions

American Society of Nephrology (ASN) 2011

The abstract submitted to the 2011 ASN meeting titled "Geographic Variation and Trends in Vascular Access-Related Infection Rates in the United States" is included below. It was accepted for a poster presentation and presented at the conference in November 2011.

The 2011 Dialysis Facility Reports included information on dialysis access-related infection (ARI) rates for Medicare Hemodialysis (HD) patients for 2007-2010. These metrics were derived from ICD-9 codes for dialysis ARI for HD patients (996.62 - Infection and inflammatory reaction due vascular device, implant and graft) and will help dialysis providers compare their infection rates to national, state, and ESRD Network averages.

We describe variation in ARI rate across dialysis facilities and geographic regions. ARI rates per 100 patient months were calculated using ICD-9 codes reported in Medicare claims 2007-2010 and data from other national ESRD data. Poisson regression (log link, offset=ln of patient months) was used to assess the association of facility characteristics with infection rates and to establish expected values and standardized infection rates.

Significant facility variation exists in VAI across the country using the ICD-9 definition presented in the Dialysis Facility Reports. Over the 4 years of observation, these infection rates have significantly declined overall ($p<0.001$ average decrease 0.05). The new measure of VAI rates is strongly correlated with known predictors of infection such as patient age, percent of patients with diabetes, and percent of patients using catheter at those facilities ($p<0.001$). Mortality associations with VAI were completely abrogated by adjustment for percent facility use of catheter as vascular access ($p<0.01$ to $p=0.71$).

The decreasing trend in VAI is reassuring, but requires continued monitoring. Decreasing use of dialysis catheters should remain a national priority. Our study helps to validate the calculation of infection rates using ICD-9 codes derived from Medicare claims. Lowering the proportion of catheters used as vascular access can reduce VAI and, therefore, potentially reduce mortality.

ASN 2012

Two abstracts were submitted to the 2012 ASN meeting to be held in San Diego, CA, in November 2012. The abstract titled "Variation in Observed Infection Control Practices in the NOTICE Project" was accepted for an oral abstract presentation. The submitted abstract is included below. The abstract titled "Infection Rates for U.S. Dialysis Facilities: Comparing Sources" was accepted for a poster presentation and is also included below.

Abstract 1

Title: Variation in Observed Infection Control Practices in the NOTICE Project

Joseph M. Messana, MD*1, Stephen C Hines, PhD2, Rajiv Saran, MD, MBBS1, John Kalbfleisch, PhD1, Teri Spencer, RN3, Kelly M Frank, RN4, Diane Carlson5, Jan Deane5, Erik Roys1, Natalie Scholz1, Casey Parrotte1 and Carol Chenoweth, MD1. 1Uni. of MI, Ann Arbor, MI; 2HRET, Chicago, IL; 3TB Spencer Consulting LLC, Fallbrook, CA; 4CMS, Waterloo, IA and 5Renal Network of the Upper Midwest, Inc., St. Paul, MN.

Background: The National Opportunity to Improve Infection Control in ESRD (NOTICE) project is designed to assess recommended infection control (IC) practices at US dialysis facilities with the aim of identifying potential areas for quality improvement.

Methods: Trained IC Evaluators observed 73 distinct IC practices at 34 randomly selected hemodialysis facilities. Facility selection was stratified on large dialysis organization (LDO) affiliation, size, socioeconomic status, and urban/rural status from 4 ESRD Networks. Observations were made using an IC Worksheet (ICWS) developed under contract with AHRQ in collaboration with CMS and the CDC.

Results: There was considerable variation in IC practices across enrolled facilities. Overall adherence was 68% (range=53% to 92%). Overall adherence to expected hand hygiene (HH) practice was 72% (range=30% to 95%). Use of chlorhexidine was 19% overall but varied from 35% in independent facilities

to 0% in LDO facilities. Overall HH and medication preparation procedures (cleaning the injection port, proper needle insertion, and proper assembly of supplies) were significant predictors of ICD-9 based infection rate (p=0.02).

Mean % Adherence to ICWS Items Selected for Low Adherence

Selected ICWS Items	Mean %
Overall Adherence	68
Adherence to Hand Hygiene Items	72
Use Antimicrobial Ointment	17
Transfer of Non-Disposable Items to Common Areas	18
Use Chlorhexidine	19
Vacate Dialysis Chair Prior to Disinfecting	26
Scrub External CVC Hub at Termination	29
Disinfect Non-Disposable Items	31
Scrub Internal CVC Hub at Initiation	34
Scrub Internal CVC Hub at Termination	36
Disinfect Surfaces per Manufacturer DFU	41
Scrub External CVC Hub at Initiation	45
Wash Skin Over CVC Access	53

Conclusions: Our findings suggest that there is room for improvement in HH and other IC practices. These NOTICE project findings will help to inform the development of a larger quality improvement initiative at dialysis facilities.

Abstract 2

Title: Infection Rates for U.S. Dialysis Facilities: Comparing Sources

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Background: Reducing infections in hemodialysis facilities is a national priority to improve patient outcomes and reduce cost. Tracking infection rates at the facility level is essential for quality improvement. Several sources of infection rate information are currently available to facilities and other ESRD community members. This study examines the differences and similarities in infection rates based on Medicare claims and the CDC's National Health Safety Network (NHSN) data.

Methods: Four infection rates were examined for 34 facilities enrolled in the NOTICE project from 4 ESRD Networks for August- November 2011: 1) hemodialysis access-related infections based on ICD-9 code 996.62 reported on Medicare inpatient, physician/supplier, and outpatient claims; 2) vascular access-related bacteremia based on the V-modifier (V8) reporting in Medicare outpatient claims; 3) NHSN reported vascular access infections, defined as either a local access site infection or an access-related bloodstream infection; and 4) NHSN reported bloodstream infections, defined as any positive blood culture. Rates were expressed as events per 100 hemodialysis patient months. NHSN data were unavailable for 5 facilities.

Results: Rates obtained from NHSN were highly correlated with each other (r=.73, p<0.0001). However, there was a weak correlation between the vascular access infection rate from NHSN and the similar hemodialysis access-related infection rate based on ICD-9 reporting (r=.37, p=0.049). Infection rates based on V-modifier reporting were not correlated with any other source and had the lowest reported numbers of infections.

Correlation	n	r	p-value
ICD-9 vs V-Modifier	34	0.25	0.15
ICD-9 vs NHSN VA	29	0.37	0.05
ICD-9 vs NHSN Bact	29	0.03	0.87
V-Modifier vs NHSN VA	29	0.01	0.96
V-Modifier vs NHSN Bact	29	0.08	0.69
NHSN VA vs NHSN Bact	29	0.73	<0.0001

Conclusions: Despite these measures having somewhat different definitions, significant overlap would be expected. The lack of strong correlation between these measures suggests the need for additional investigation. Possible explanations will be explored including differences in definition and reporting factors.

Next Steps

Next Steps for the Project

Using CUSP as a model, NOTICE is compiling a change package highlighting infection control opportunities as well as focusing on a culture of safety in the work environment. CUSP is transforming care and patient safety in hospital units by improving patient safety culture and practices; thus its application to the dialysis facility and VAI is hopeful. The NOTICE program will be piloted to 40 facilities in Renal Network 11 and one other Network, beginning in fall 2012, using the change package and accompanying video vignettes and materials developed. Through application of the ICWS, cultural change, and increased awareness of risk activities, NOTICE intends to reduce infection risk behaviors and resulting infections in participating facilities.

At the start of the ICCL/ICWS development, it was determined that recommending only chlorohexidine for access site preparation was in alignment with current expert opinion and available literature. All checklists used during the first phase of the project recommended only chlorohexidine. Since then, the CDC recommendations have shifted to include chlorohexidine and other antiseptics as acceptable. Additionally, there is no evidence to support solely chlorohexidine usage on tunneled catheters. To be in alignment with current expert recommendations and literature, the NOTICE project has changed to recommend antiseptics like chlorohexidine and others. This can be seen in the video modules and change packages that were developed after the ICCL/ICWS. For the project expansion, checklists will be updated to include other antiseptics.

Appendix A. Literature Review

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notice National Opportunity to Improve Infection Control in ESRD

National Opportunity to Improve Infection Control in ESRD (NOTICE)

ICWS/ICCL

Infection Control Worksheet

Infection Control Checklists

AHRQ

HRET

ESRD Network 11

UM-KECC

Infection Control Worksheet

Facility Direct Care Infection Control Practices: This document contains two variations on checklists addressing direct care activities which are high risk for transmission of infections in the dialysis setting:
1) an ICE (Infection Control Evaluator) checklist intended for use by facility audit staff; and
2) a procedural checklist intended for use by direct care staff at the dialysis station.

Overview of Facility Infection Control Practices:

1. Treatment Initiation
    a. Accessing Central Venous Catheter
    b. CVC Exit Site Care
    c. Accessing Arterial Venous (AV) Fistula/Graft

2. Parenteral Medication Preparation and Administration

3. Treatment Termination
    a. CVC Treatment Termination
    b. AV fistula/Graft Termination and Site Care

4. Cleaning and Disinfection of the Dialysis Station

5. Dialysis Supply Management and Contamination Prevention

Specific Policies/Practices Designed to reduce Patient Contact with Potential Pathogens:

Hand Hygiene– When: before touching patient; before clean/aseptic procedure; after body fluid exposure; after touching patient; after touching patient surroundings/How: soap and water or alcohol-based hand rub if hands not visibly soiled: **Information Sheet #1**

Provide Sanitary Environment-maintenance of treatment-related areas; management of blood spills; handling of infectious waste; provision of hand washing equipment: **Information Sheet #2**

Prevention and Management of specific pathogen exposure- Surveillance, vaccination and management of hepatitis B; surveillance of hepatitis C; tuberculosis surveillance; Influenza and pneumococcal pneumonia vaccination: patient-specific pathogen management: **Information Sheet #2**

Quality Assessment and Performance Improvement (QAPI)- Recommended infection prevention and management components of QAPI: **Information Sheet #3**

Injection Safety/Safe Medication Handling –Guidelines that apply to the use of needles, cannulas that replace needles, and, where applicable, intravenous delivery systems: **Information Sheet #4**

ICE Checklist #1a: Access of Central Venous Catheter (CVC) for Initiation of Dialysis

Checklist #1a

Certification Number:_____

Observation 1: Shift #___Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies for that patient at dialysis chair (no common tray/cart brought to dialysis station) Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves, gown, impermeable mask/eye protection or face shield Obs 1: Met / Not Met Obs 2: Met / Not Met
Place clean field under CVC ports Obs 1: Met / Not Met Obs 2: Met / Not Met
Scrub the exterior of the CVC hubs, with caps in place, with antiseptic (alcohol or povidone iodine or chlorhexidine) Obs 1: Met / Not Met Obs 2: Met / Not Met
Remove port caps; wipe threads and top of uncapped hub with antiseptic, using friction, removing any residue/blood **Note: If using needleless catheter system and connector device caps are not removed, scrub the injection port of the connector device.** Obs 1: Met / Not Met Obs 2: Met / Not Met
Connect sterile syringes aseptically to each port to remove indwelling solutions and/or flush with sterile saline; initiate treatment; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

ICE Checklist #1b: Central Venous Catheter (CVC) Exit Site Care

Checklist #1b

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies for that patient at dialysis chair (no common tray/cart at station) Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves; gown, mask and eye protection; remove old dressing and discard; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves, cleanse area around CVC exit site with chlorhexidine unless there is a contraindication; allow to dry before applying dressing Obs 1: Met / Not Met Obs 2: Met / Not Met
Apply antimicrobial ointment to exit site, unless there is a contraindication (e.g. patient hypersensitivity, bio-incompatibility with catheter material, or chlorhexidine impregnated sponge dressing is used) Obs 1: Met / Not Met Obs 2: Met / Not Met
Sterile dressing applied to CVC exit site; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

Checklist #1c

ICE Checklist #1c: Access of AV Fistula* or Graft for Initiation of Dialysis

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N.

Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies for that patient at dialysis chair (no common tray/cart at station); Obs 1: Met / Not Met Obs 2: Met / Not Met
Wash skin over access with soap and water or antibacterial scrub. **Exception: patient washed own access after entering facility as verified by ICE observation or interview** Obs 1: Met / Not Met Obs 2: Met / Not Met
Locate/palpate cannulation sites: sites not touched again after skin antisepsis (at step 7) without repeating skin antisepsis Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves; if not already worn, don gown, impermeable mask/eye protection or face shield Obs 1: Met / Not Met Obs 2: Met / Not Met
Scrub skin over cannulation sites with antiseptic; allow antiseptic to dry before cannulating; sites not touched again after skin antisepsis, without repeating skin antisepsis Obs 1: Met / Not Met Obs 2: Met / Not Met
Insert cannulation needles; tape in place; initiate treatment; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

***Checklist not intended for observation of buttonhole cannulation technique**

Checklist #2

ICE Checklist #2: Parenteral Medication Preparation and Administration

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Hand hygiene (HH) before preparing medications Obs 1: Met / Not Met Obs 2: Met / Not Met
Medications prepared in a clean area, on a clean surface, away from dialysis stations **note: exception** for drawing saline syringes at the dialysis station from patient's own clean saline bag, using aseptic technique Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies: sterile syringes, 70% alcohol swabs or other antiseptic, medication vials Obs 1: Met / Not Met Obs 2: Met / Not Met
Single dose vials used for one patient only and discarded (punctured only one time) Obs 1: Met / Not Met Obs 2: Met / Not Met
Multiple dose vials are only entered with a new, empty sterile syringe and needle and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial. (see Information Sheet #4) Obs 1: Met / Not Met Obs 2: Met / Not Met
Open one vial of each medication at a time: wipe stopper with alcohol or other antiseptic; withdraw medication into sterile syringe **May prepare meds for multiple patients at one time, but administration must be to one patient at a time, leaving the remainder of drawn meds in the clean preparation area** Obs 1: Met / Not Met Obs 2: Met / Not Met
Label syringes that are pre-drawn and not immediately administered with patient name, medication, dose, time drawn; take only individual patient's medications to their dialysis station Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves; wipe injection port (or patient's skin if sq or IM injection) with antiseptic (e.g. chlorhexidine, povidone iodine, iodophor, or 70% alcohol); inject medication Obs 1: Met / Not Met Obs 2: Met / Not Met
Discard syringe into Sharps-container available at point of use; remove gloves **Exception:** If using a needleless system with no attached needle, disposal in Sharps not necessary. Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

ICE Checklist #3a: Access of Central Venous Catheter (CVC) for Termination of Dialysis

Checklist #3a

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies; don gloves, gown, impermeable mask/eye protection or face shield Obs 1: Met / Not Met Obs 2: Met / Not Met
Place clean field under CVC ports Obs 1: Met / Not Met Obs 2: Met / Not Met
Re-infuse extracorporeal circuit; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves, scrub exterior of CVC hub with antiseptic Obs 1: Met / Not Met Obs 2: Met / Not Met
Disconnect blood lines aseptically Obs 1: Met / Not Met Obs 2: Met / Not Met
Scrub CVC hubs with antiseptic to remove any residue/blood; apply sterile port caps aseptically after post treatment protocol Obs 1: Met / Not Met Obs 2: Met / Not Met
Discard unused supplies; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

ICE Checklist #3b: Access of AV Fistula* or Graft for Termination Of Dialysis and Post Dialysis Access Care

Checklist #3b

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Assemble supplies; don gloves, gown, and impermeable mask/eye protection or face shield Obs 1: Met / Not Met Obs 2: Met / Not Met
Re-infuse extracorporeal circuit; disconnect bloodlines aseptically; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves; remove needles aseptically ; discard needles in Sharps container at point of use; Remove gloves **Needle sites held with clean gauze using clean gloved hands (patient and staff) or disinfected clamps** Obs 1: Met / Not Met Obs 2: Met / Not Met
When hemostasis is achieved, replace any blood-soiled bandage(s) on needle sites; ensure the bandage on each needle site is clean & dry site prior to discharge Obs 1: Met / Not Met Obs 2: Met / Not Met
Discard unused supplies; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

*** Checklist not intended for observation of buttonhole cannulation technique**

Checklist #4

ICE Checklist #4: Cleaning and Disinfection of the Dialysis Station

Certification Number: _____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

***Note:** In other healthcare settings, patients vacate the treatment area before cleaning and disinfection occur. The patient should be vacated from station before cleaning/disinfection of the machine/station unless contraindicated by patient condition. Clinical judgment must be exercised to determine appropriate practice for each patient, ensuring that the patient is fully stabilized prior to discharge.*

Was the dialysis station vacated prior to cleaning/disinfection? Obs 1: Y / N Obs 2: Y / N

Machine: don gown, gloves, impermeable mask/eye protection or face shield; remove all bloodlines and disposable equipment and discard in biohazardous waste; dialyzer to be reprocessed: all ports capped; dialyzer and bloodlines are transported in a manner to prevent contamination of other surfaces; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Don clean gloves; obtain EPA-registered disinfectant; tuberculocidal if visible blood Obs 1: Met / Not Met Obs 2: Met / Not Met
Wipe all machine top, front and side surfaces and dialysate hoses wet with disinfectant per manufacturer directions for use; If visible blood, second application with tuberculocidal disinfectant per manufacturer directions for use Obs 1: Met / Not Met Obs 2: Met / Not Met
Empty prime waste receptacle; all internal and external surfaces wiped wet with disinfectant per manufacturer directions for use Obs 1: Met / Not Met Obs 2: Met / Not Met
Chair: vacated, fully reclined, all disposable supplies removed and discarded; **With new disinfectant, wipe all external front-facing and side chair surfaces wet with disinfectant per manufacturer directions for use, including down sides of seat cushion and side tables** Obs 1: Met / Not Met Obs 2: Met / Not Met
Non-disposable items: BP cuff, TV controls, call button, data entry station and counters around station are cleaned and wiped wet with disinfectant Obs 1: Met / Not Met Obs 2: Met / Not Met
If clamps are used, cleaned of visible blood and dirt and disinfected. Obs 1: Met / Not Met Obs 2: Met / Not Met
Discard cloth/wipe; remove gloves Obs 1: Met / Not Met Obs 2: Met / Not Met
Hand Hygiene Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

ICE Checklist #5: Dialysis Supply Management and Contamination Prevention

Checklist #5

Certification Number:_____

Observation 1: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Observation 2: Shift #___ Staff Type_____ Isolation Y / N Visible from Nursing Station Y / N

Supplies are stored and kept in designated clean areas, sufficient distance from dialysis stations to prevent contamination from potentially infectious materials/substances Obs 1: Met / Not Met Obs 2: Met / Not Met
Supplies for next patient are not brought to the station before the prior patient's treatment is terminated and applicable equipment (machine, chair) cleaned/disinfected Obs 1: Met / Not Met Obs 2: Met / Not Met
Carts or trays containing supplies are not taken to or moved between dialysis stations Obs 1: Met / Not Met Obs 2: Met / Not Met
Staff do not keep patient care supplies in pockets or on their person Obs 1: Met / Not Met Obs 2: Met / Not Met
Non-disposable equipment (e.g. thermometer, pH/conductivity meter, access flow device, O2 saturation meter, blood glucose meter) brought to the dialysis station is cleaned and disinfected before being returned to a common area or taken to another dialysis station **Disinfection=all surfaces wiped with EPA-registered disinfectant per manufacturer's directions for use** Obs 1: Met / Not Met Obs 2: Met / Not Met
Multidose medication vials are not taken to the dialysis station Obs 1: Met / Not Met Obs 2: Met / Not Met
Disposable supplies taken to the dialysis station (whether they are/are not used on the patient) are discarded Obs 1: Met / Not Met Obs 2: Met / Not Met
Observation 1 Notes-
Observation 2 Notes-

Information Sheet 1

Information Sheet #1: Hand Hygiene

Hand hygiene is the primary measure to reduce infections in the dialysis center. Adherence to accepted guidelines for hand hygiene has been shown to decrease the incidence of infections and to prevent the transmission of antimicrobial-resistant organisms and blood borne pathogens. [1,2] The World Health Organization has encouraged all healthcare facilities to adopt their 2009 guidelines, including the My 5 Moments for Hand Hygiene approach. According to this strategy, opportunities for hand hygiene can be stratified into five major activities.

5 Moments for Hand Hygiene in Health Care:

1. Before touching a patient
2. Before clean/aseptic procedure
3. After body fluid exposure
4. After touching a patient
5. After touching patient surroundings
6.

Acceptable Methods of Hand Hygiene:

Soap and water:

Technique: Wet hands first with water, apply an amount of product recommended by the manufacturer to hands, and rub hands together vigorously for at least 15 seconds, covering all surfaces of the hands and fingers. Rinse hands with water and dry thoroughly with a disposable towel. Use towel to turn off the faucet. Avoid using hot water, because repeated exposure to hot water may increase the risk of dermatitis.

When to use:

A. Wash hands with soap and water when visibly dirty or soiled with blood or other body fluids.

B. If patient has known infection with *Clostridium difficile*, hand washing with soap and water is preferred.

Alcohol-based handrub:

Technique: Apply product to palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands are dry. Follow the manufacturer's recommendations regarding the volume of product to use

When to use: This is the preferred means for routine hand hygiene in all other clinical situations, listed below.

Indications for hand hygiene specific to dialysis centers:

A. Before and after touching the patient
B. Before handling an invasive device or performing any vascular access procedure
C. After contact with body fluids, dialysate, mucous membranes, non-intact skin, or wound dressings
D. If moving from a contaminated body site to another body site during care of the same patient, e.g., care of a wound followed by manipulation of a dialysis catheter.
E. After contact with environmental surfaces and objects (including medical equipment, dialysis machine) in the dialysis station.
F. Before handling medication or preparing food
G. After removal of gloves

References

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Information Sheet 2

A. Provide a sanitary environment:

- All treatment-related areas, equipment and surfaces are kept free of blood, mold, and accumulation of dirt, dust and other potentially infectious materials.
    - Treatment-related areas include any areas accessible to patients or public, and areas where dialysis supplies, equipment and medications are stored, prepared or processed.
    - There is a clear separation of clean and dirty work areas; clean areas are used for storage and preparation of medications and unused supplies; dirty areas are used for contaminated equipment
- Blood spills are promptly cleaned up with EPA registered tuberculocidal hospital disinfectant per manufacturer directions for use (DFU) with a second application of same using a new wipe/cloth for contact time per DFU.
- Infectious waste and sharps are disposed in clearly marked, leak-proof receptacles. Sufficient numbers of infectious waste receptacles and sharps are available in the patient treatment areas at point of use to reduce the potential for blood contamination of the patient care environment.
- Hand washing sinks and hand sanitizer dispensers are available in sufficient numbers for use by staff, patients and public to promote hand hygiene.
    - Hand washing sinks with warm water and soap for patient use; in isolation room/area; home training room(s); reuse room; medication preparation area; and for every 4-6 in-center hemodialysis stations

B. Prevention and management of specific pathogen exposure:

- **Hepatitis B**
    - Surveillance: test all patients per CDC guidelines: prior to admission; ongoing testing as indicated by patient's immunity status; test results reviewed promptly and acted upon if indicated
    - Vaccination: offer vaccine to all susceptible patients and staff with follow up testing for vaccine response
    - Management:
        - Isolate hepatitis B surface antigen positive (HBV+) patients for dialysis treatments in a dedicated isolation room. If an isolation room is not possible for facilities Medicare certified prior to 10/14/2008, use an isolation area separated from other dialysis stations by the width of one dialysis station
        - Dedicate the isolation room/area for only HBV+ patient(s) when there is at least one such patient on census; all equipment and supplies are dedicated to the isolation room/area
        - Staff caring for HBV+ patients must not care for HBV susceptible patients at the same time, including the time period when dialysis is terminated on one patient and initiated on another.
        - When the last HBV+ patient on census is discharged, terminal cleaning of the isolation room/area and equipment is required before use for non-HBV+ patient
- **Hepatitis C:** Surveillance: test all patients per CDC guidelines: prior to admission; ongoing testing as indicated by the patient's immunity status; test results reviewed promptly and acted upon if indicated
- **Tuberculosis**: Surveillance: baseline testing of all patients and staff with rescreening for symptoms. Develop contingency plan for management of patients with active TB infection
- **Influenza:** Offer all patients and staff annual vaccination
- **Pneumococcal pneumonia:** Offer all patients vaccination
- **Modified Contact Precautions:**
    - Draining wound: separation of wound care from any dialysis –related care; full Personal Protective Equipment worn for wound care and discarded when completed; patient separation at a dialysis station with as few adjacent stations as possible and dedicated gown for staff caring for patient(s) with non-contained draining wound(s)
    - Fecal incontinence: separation of incontinence care from any dialysis-related care; full Personal Protective Equipment worn for incontinence care and discarded when completed; patient separation at a dialysis station with as few adjacent stations as possible and dedicated gown for staff caring for patient(s) with uncontrolled diarrhea or fecal incontinence

Information Sheet 3

Recommended Infection Prevention Components of QAPI

The facility QAPI program should implement ongoing and effective processes to prevent, detect and manage infections, with a goal of minimizing or eliminating healthcare associated infections acquired at the facility. The following clinical and technical areas should be continuously monitored, with analysis of the available data, prompt recognition of adverse trends, and implementation of performance improvement activities to achieve and sustain measurable improvements:

1. Infection occurrence surveillance: Occurrences should be logged for:
    a. All Bloodstream Infections (BSI), stratified by vascular access type. The CDC National Healthcare Safety Network (NHSN) dialysis event rates should be measured.
    b. All other positive culture results separated by location/site, including hemodialysis or peritoneal dialysis access exit site, wound, etc.
    Sufficient information should be recorded for each occurrence, including patient identification, date of infection diagnosis (positive culture result), site of infection, infecting organisms with antibiotic sensitivities.

2. Disease-specific management should be addressed, with continuous monitoring, at a minimum for:
    a. Hepatitis B and Hepatitis C
        i. Surveillance of all patients per CDC guidelines including comprehensive investigation and reporting of seroconversions
        ii. Vaccination program for all HBV-susceptible patients to ensure timely offer of vaccination, and follow up testing of vaccines for response. Vaccination offered to all susceptible staff.
    b. Tuberculosis surveillance of patients and staff
    c. Influenza vaccination programs for patients and staff
    d. Pneumococcal pneumonia vaccination program for patients

3. Vascular access prevalence aimed at minimizing central venous catheter (CVC) rates and achieving optimum AV fistula use rates, including measuring CVC and AV fistula prevalence rates and AV fistula incidence rates

4. Staff education and visual practice audits
    a. All facility staff receive initial and at least annual education in infection control pertinent to their job duties, using, at a minimum, the information and procedures in Checklists #1-5.
    b. Direct care staff are visually audited, using the ICE Checklists #1-5 monthly; each direct care staff visually audited at least annually

5. Patient education should be focused on informing patients about infection prevention through vascular access care/hygiene. Patients should be informed about what to expect of direct patient care staff practices for infection control, and empowered to be an active participant in assuring the care they receive is appropriate, with freedom to voice concerns without fear of reprisal.

6. Environmental/technical: Ensuring the microbial safety of hemodialysis by monthly evaluation of:
    a. Water and dialysate cultures and endotoxin levels
    b. Dialyzer reprocessing and reuse program (if applicable)
        i. Reuse water source and reuse equipment cultures and endotoxins
    c. Patient pyrogen reactions

Information Sheet 4

Information Sheet #4 Injection Safety/Safe Medication Handling

The Centers for Disease Control and Prevention (CDC) have identified 33 hepatitis outbreaks between 1998-2008, resulting from deficient healthcare practices. These outbreaks occurred in outpatient settings such as doctor's offices, outpatient clinics, dialysis centers, and nursing homes. Unsafe injection practices, such as reuse of syringes, accounted for most of the infections and exposures. In addition to viruses, unsafe practices when handling medications for injection can put a dialysis patient at risk of central line-associated bloodstream infections.

The following recommendations should be adhered to in all dialysis centers and apply to the use of needles, cannulas that replace needles, and, where applicable, intravenous delivery systems:

- Use aseptic technique to avoid contamination of sterile injection equipment and supplies.
- Do not administer medications from a syringe to multiple patients, even if the needle or cannula on the syringe is changed. Needles, cannulae, and syringes are sterile, single-use items; they should never be reused for another patient.
- Do not enter any vial with a used syringe or needle
- Decontaminate vial stoppers with antiseptic before entering a with a sterile needle
- Use fluid infusion and administration sets (i.e., intravenous bags, tubing, and connectors) for one patient only and dispose appropriately after use. Consider a syringe or needle/cannula contaminated once it has been used to enter or connect to a patient's intravenous infusion bag or administration set.
- Use single-dose vials for parenteral medications whenever possible.
- Do not administer medications from single-dose vials or ampules to multiple patients or combine leftover contents for later use.
- If multidose vials must be used, both the needle or cannula and syringe used to access the multidose vial must be sterile.
- Do not keep multidose vials in the immediate patient treatment area and store in accordance with the manufacturer's recommendations; discard if sterility is compromised or questionable.
- Do not use bags or bottles of intravenous solution as a common source of supply for multiple patients
- Medications should be prepared only in a dedicated medication area and never at the dialysis station
- Medication vials should always be discarded whenever sterility is compromised or questionable.
- In addition, the United States Pharmacopeia (USP) General Chapter 797 [16] recommends the following for multi-dose vials of sterile pharmaceuticals:
    - If a multi-dose has been opened or accessed (e.g., needle-punctured) the vial should be dated and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial.
    - If a multi-dose vial has **not** been opened or accessed (e.g., needle-punctured), it should be discarded according to the manufacturer's expiration date.
- The manufacturer's expiration date refers to the date after which an unopened multi-dose vial should not be used. The beyond-use-date refers to the date after which an opened multi-dose vial should not be used. The beyond-use-date should never exceed the manufacturer's original expiration date.
- For information on storage and handling of vaccines please refer to the CDC Vaccine Storage and Handling Toolkit or the manufacturer's recommendations for specific vaccines.

References:

http://www.oneandonlycampaign.org/content/what-are-they-why-follow-them

Access of Central Venous Catheter (CVC) for Initiation of Dialysis

Procedural Checklist

Checklist #1a

- [ ] Hand Hygiene
- [ ] Assemble supplies for that patient at dialysis chair (no common tray/cart brought to dialysis station)
- [ ] Hand Hygiene
- [ ] Don clean gloves, gown, impermeable mask/eye protection or face shield
- [ ] Place clean field under CVC ports
- [ ] Scrub the exterior of the CVC hubs, with caps in place, with antiseptic
- [ ] Remove port caps; wipe threads and top of uncapped hub with antiseptic, using friction, removing any residue/blood

  Note: If using "needleless" catheter system and connector device caps are not removed, scrub the injection port of the connector device
- [ ] Connect sterile syringes aseptically to each port to remove indwelling solutions and/or flush with sterile saline; initiate treatment; remove gloves
- [ ] Hand Hygiene

Note: If troubleshooting or manipulation of catheter or dialysis lines must occur during the dialysis treatment, then hand hygiene, gloves, PPE and disinfection of the CVC hub procedure should be performed as above with each manipulation.

CVC Exit Site Care

Procedural Checklist

Checklist #1b

- [ ] Hand Hygiene
- [ ] Assemble supplies for that patient at dialysis chair (no common tray/cart at station)
- [ ] Don clean gloves, gown, mask and eyeprotection; remove old dressing & discard; remove gloves
- [ ] Hand Hygiene
- [ ] Don clean gloves, cleanse area around CVC exit site with chlorhexidine unless there is a contraindication; allow to dry before applying dressing
- [ ] Apply antimicrobial ointment to exit site, unless there is a contraindication or chlorhexidine impregnated sponge dressing is used
- [ ] Sterile dressing applied to CVC exit site; remove gloves
- [ ] Hand Hygiene

Access of AV Fistula or Graft for Initiation of Dialysis Procedural Checklist

Checklist #1c

- ☐ **Hand Hygiene**
- ☐ **Assemble supplies for that patient at dialysis chair (no common tray/cart at station)**
- ☐ **Wash skin over access with soap and water or antibacterial scrub.**
  Exception: patient washed own access after entering facility as verified by auditor observation or interview
- ☐ **Locate/palpate cannulation sites; sites not touched again after skin antisepsis, without repeating skin antisepsis**
- ☐ **Hand Hygiene**
- ☐ **Don clean gloves; if not already worn, don gown, impermeable mask/eye protection or face shield**
- ☐ **Scrub skin over cannulation sites with antiseptic; allow antiseptic to dry before cannulating; sites not touched again after skin antisepsis, without repeating skin antisepsis**
- ☐ **Insert cannulation needles; tape in place; initiate treatment; remove gloves**
- ☐ **Hand Hygiene**

Note: Checklist not intended for observation of buttonhole cannulation technique

Parenteral Medication Storage, Preparation and Administration

Checklist #2

Procedural Checklist

Assemble supplies in a clean area with clean surface away from dialysis station before the following steps:

- ☐ **Hand hygiene**
- ☐ **Open one vial of each medication at a time**
- ☐ **Wipe stopper with alcohol or other antiseptic**
- ☐ **Withdraw medication into sterile syringe, Label syringes**
  Note: May prepare meds for multiple patients at one time, but administration must be to one patient at a time, leaving the remainder of drawn meds in the clean preparation area
- ☐ **Take only individual patient's medications to their dialysis station**
- ☐ **Hand Hygiene**
- ☐ **Don clean gloves, wipe injection port with antiseptic**
- ☐ **Inject medication**
- ☐ **Discard syringe into Sharps-container**
- ☐ **Remove gloves**
- ☐ **Hand Hygiene**

***Note: this checklist is intended to address the infection control aspects of medication preparation and injection, and does not include requirements for verification of accuracy of medication administration (i.e. order verification, patient identification, documentation) or injection technique**

Access of Central Venous Catheter (CVC) for Termination of Dialysis

Procedural Checklist

Checklist #3a

- [ ] Hand Hygiene
- [ ] Assemble supplies; don gloves, gown, impermeable mask/eye protection or face shield
- [ ] Place clean field under CVC ports
- [ ] Reinfuse extracorporeal circuit, remove gloves
- [ ] Hand Hygiene
- [ ] Don clean gloves, scrub exterior of CVC hub with antiseptic
- [ ] Disconnect blood lines aseptically
- [ ] Scrub CVC hubs with antiseptic to remove any residue/blood; apply sterile port caps aseptically after post treatment protocol
- [ ] Discard unused supplies; remove gloves
- [ ] Hand Hygiene

Access of AV Fistula or Graft for Termination of Dialysis and Post Dialysis Access Care Procedural Checklist

Checklist #3b

- ☐ Hand Hygiene
- ☐ Assemble supplies, don gloves, gown, & impermeable mask/eye protection or face shield
- ☐ Reinfuse extracorporeal circuit, disconnect bloodlines aseptically, remove gloves
- ☐ Hand Hygiene
- ☐ Don clean gloves, remove needles aseptically; discard needles in Sharps container at point of use; remove gloves
  Note: Needle sites held with clean gauze using clean gloved hands (patient and staff) or disinfected clamps.
- ☐ When hemostasis is achieved, replace any blood-soiled bandage(s) on needle sites; ensure the bandage on each needle site is clean & dry site prior to discharge
- ☐ Discard unused supplies; remove gloves
- ☐ Hand Hygiene

Note: Checklist not intended for observation of buttonhole cannulation technique

Cleaning and Disinfection of the Dialysis Station

Procedural Checklist

Checklist #4

- ☐ Don gown, gloves & impermeable mask/eye protection or face shield
- ☐ Remove all bloodlines & disposable equipment & discard in biohazardous waste; dialyzer to be reprocessed all ports capped; dialyzer, bloodlines etc. are transported in a manner to prevent contamination of other surfaces; remove gloves
- ☐ Hand Hygiene
- ☐ Don clean gloves, obtain EPA-registered disinfectant; tuberculocidal if visible blood
- ☐ Wipe machine top, front and side surfaces and dialysate hoses wet with disinfectant per manufacturer directions for use;
  If visible blood, second application with tuberculocidal disinfectant
- ☐ Empty prime waste receptacle: wipe all internal and external surfaces wiped wet with disinfectant per manufacturer directions for use
- ☐ When chair is vacated, remove and discard all disposable supplies
- ☐ Fully recline chair and clean with disinfectant, wipe all external front-facing and side chair surfaces wet with disinfectant per manufacturer directions for use, including down sides of seat cushion and side tables
- ☐ Wipe down all non-disposable items BP cuff, TV controls, call button, data entry station & counters around station with disinfectant
- ☐ If clamps are used, clean off visible blood and dirt and disinfect
- ☐ Discard cloth/wipe; remove gloves
- ☐ Hand Hygiene

NOTE: Allow disinfectant contact time per manufacturer's recommendations for all above items.

NOTE: In other healthcare settings, patients vacate treatment area before cleaning and disinfection occur. This practice should be considered for dialysis facilities.

Appendix C. TEP Summary

NOTICE Facility Final Assessment

Do you know your facility's Vascular Access Infection (VAI) rate? ☐ Yes ☐ No

How often are VAIs reported to facility leaders?
☐ Immediately ☐ Monthly ☐ Quarterly ☐ Other ☐ We do not report VAIs to facility leaders

For each of the following questions, please indicate the degree to which each of the following has taken place in your facility:

Element	Fully implemented before or separate from the NOTICE project	Implemented as a result of the NOTICE project	Not implemented and no plans to do so
Culture of Safety			
Senior Leaders are engaged in patient safety			
Front-line staff raises the need for systematic analysis and proactive learning from harmful events or events with potential for harm			
Regular (i.e. daily, monthly, quarterly) goals are set based on analysis of facility harmful events			
Staff are educated on the "Science of Safety"			
Regular (i.e. monthly, quarterly) internal huddles are used to discuss culture of safety and safety improvements			
Hand Hygiene			
Consistent use of guidelines on proper techniques for hand hygiene			
Regular in-service training for facility personnel on techniques and procedures for hand hygiene			
Monitoring and documentation of proper hand hygiene			
Access Site Preparation and Cleansing			
Consistent use of guidelines on proper techniques for access site preparation			

Element	Fully implemented before the NOTICE project	Implemented as a result of the NOTICE project	Not implemented and no plans to do so
Regular in-service training for facility personnel on techniques and procedures for access site preparation			
Monitoring and documentation of proper access site preparation			
Reduce and Remove Catheters			
Consistent use of guidelines on proper techniques for reducing and removing catheters			
Regular in-service training for facility personnel on techniques and procedures for reducing and removing catheters			
Monitoring and documentation of appropriate catheter use			
Great Connection and Disconnection Technique			
Consistent use of guidelines on proper connection and disconnection techniques			
Regular in-service training for facility personnel on proper connection and disconnection techniques			
Monitoring and documentation of proper connection and disconnection technique			
Evaluation of Team Infection Control Practices			
Regular collection and Review of VAI and Blood Stream Infection (BSI) rates			
Monitoring and documentation of infection control practices			

Appendix D. Facility Reasons for Nonparticipation

network	provfs	provname	Rejection Reason
6	342544	CARY KIDNEY CENTER	dropout - under review
6	342546	DIALYSIS CARE OF ROWAN COUNTY INC	drop out of the NOTICE Initiative because it would require the IT dept to install a program onto their computers across the board and they do not want to do it
6	342502	GREENVILLE DIALYSIS CENTER	dropout nhsn
6	112795	HARBIN CLINIC SUMMERVILLE DIALYSIS CENTER	112795 HARBIN CLINIC SUMMERVILLE DIALYSIS CENTER. The facility declined due to staffing issues (2 staff members on Leave of absence, 1 staff member recently terminated) and increase in patient load.
6	342313	WILKES REGIONAL DIALYSIS CENTER	Wilkes declining participation because of office construction and performing several of their own QA projects.
6	422593	NRA HOLLY HILL DIALYSIS CENTER	Network decision. This facility has poor forms compliance and is currently on performance review for 3 different areas. And I am afraid they would also decline the opportunity being an RAI facility like the other 2 RAI facilities that declined due to time constraints. These 3 RAI facilities have the same Reg Admin who has to make the decision.
6	422575	RAI CARE CENTERS CHARLESTON	Declined because of time constraints.
6	422556	RAI CARE CENTERS SUMMERVILLE	RAI Care Centers Summerville declining because of time constraints– same reason as the other RAI facility 422575 declined for.
6	112691	DSI CARTERSVILLE RENAL CENTER	facility lead is terminally ill and will be resigning from the facility.

network	provfs	provname	Rejection Reason
6	112614	ATLANTA EASTSIDE DIALYSIS CENTER	closed on 8/17/2010
6	422601	MT PLEASANT DIALYSIS CENTER	422601 Mt Pleasant is backing out due to the time it would take them to perform the tasks. I tried and they were intrigued by the opportunity, but I could not get them to change their mind.
6	112753	STOCKBRIDGE DIALYSIS CLINIC,LLC	declining due to a lot of staffing issues.
6	112609	NEPHROLOGY CENTERS OF AMERICA GROVETOWN	The CM states she will not have time to participate due to opening a new facility that she will also be overseeing.
6	342616	DURHAM WEST DIALYSIS	this facility has forms compliance issues. Their performance is very poor at a current 58.3%. Facilities are supposed to maintain a 90% or greater. I feel this is a barrier and may make my work with them more difficult to do regarding the project.
6	112668	FMC DIALYSIS SERVICES SOUTH COBB	drop out of it due to lack of time to put into the training and enrollment process. Facility is short staffed also.
6	112790	SOUTHSTAR ADAMSVILLE DIALYSIS	They declined participation because they are involved in several of their own projects.
6	112729	BAKERS FERRY DIALYSIS	declined to participate due to they are involved on other projects and too busy to give this project the attention that is needed
11	432503	SIOUX FALLS DIALYSIS - DAVITA	dropped out of the project after the call on Tuesday saying it was just too much work right now with poor staffing

network	provfs	provname	Rejection Reason
11	522335	ST CATHERINES KIDNEY CTR - UNITED HOSP SYSTEM	522335 – this facility is under focused review for several outcome issues and I feel it would be too much to put them in this project also. So I would like a substitute, please. Thanks.
11	232586	SAGINAW DIALYSIS CLINIC - DAVITA	Drop out.
11	232529	NEW CENTER DIALYSIS OF DAVITA	No reason given
11	232624	DAVITA - BALLENGER POINTE	I have been struggling to get this facility on board and keep getting one excuse after another and I give up.
11	523519	MAYO DIALYSIS - LA CROSSE	The Mayo Lacrosse dialysis unit is lost in the bureaucratic nightmare of IRB approval. They cannot give me a timeline as to when they will approve the project.
11	232599	RENAL ADVANTAGE - ROCKFORD PARK	Declined, No reason given
11	522302	MINISTRY DIALYSIS - MARSHFIELD	This facility is undergoing a buy-out to Davita effective tomorrow.
11	232515	GREENFIELD HS - LIVONIA	232515 is a definite no (they feel they are too busy right now)
11	232330	MARQUETTE GENERAL HOSPITAL	232330 – this is a hospital-based facility that is in process (next 1-2 months) of being bought out by an LDO.
15	032523	032523 PRESCOTT DIALYSIS (DSI)	They are in the process of an acquisition by DaVita.
15	032599	032599 AHWATUKEE DIALYSIS (FMC)	They just have too many staff turnovers.

network	provfs	provname	Rejection Reason
15	032614	032614 DOUGLAS DIALYSIS CENTER (DCI)	One of the facilities that had committed verbally to participate in the infection project is having staffing issues and is working in the patient care arena full time. She is already having difficulty fulfilling her administrative responsibilities and participating might cause the quality of care to suffer at her facility. Could you please send us an alternate facility for 032614 (DCI-Douglas Dialysis)? Thanks in advance.
15	322519	322519 SOUTHEASTERN NM KIDNEY CENTER (FMC)	Their nurse manager seems to be in hiding since she verbally agreed to participate in the NOTICE project.
15	322521	322521 HOBBS DIALYSIS (FMC)	No reason given
17	052307	CALIFORNIA PACIFIC MC DIALYSIS	in the middle of a transition due to a change in ownership and are really struggling.
17	052877	PLUMAS STREET DIALYSIS CENTER	...stated they are too busy; working more with less.
17	053525	COMMUNITY DIALYSIS CENTER	Will not participate. No reason given
17	052676	DCI UNIVERSITY DIALYSIS CLINIC	No reason given
17	052624	FMC PETALUMA	...stated they are too busy; working more with less.
17	052694	FMC LOS GATOS	declined to participate. No reason given
17	052787	ALAMEDA COUNTY DIALYSIS CENTER	...stated they are too busy; working more with less.
17	052753	LODI DIALYSIS CENTER	No reason given
17	052300	CPMC DAVIES CAMPUS	in the middle of a transition due to a change in ownership and are really struggling.
17	052600	SATELLITE DIALYSIS SAN JOSE	No reason given
17	052514	SATELLITE DIALYSIS CUPERTINO	No reason given

network	provfs	provname	Rejection Reason
17	052340	MILLS DIALYSIS CENTER	in the middle of a transition due to a change in ownership and are really struggling.
17	052813	SAN FRANCISCO GENERAL HOSPITAL RENAL CENTER	No reason given
17	053524	COMMUNITY DIALYSIS CENTER - CLOVIS	No reason given
17	052752	RAI CERES AVENUE, CHICO	Definite no No reason given
17	552559	SATELLITE DIALYSIS	No reason given
17	052711	SOUTHGATE DIALYSIS	Definite no No reason given
17	052610	RAI PIEDMONT	Definite no No reason given
17	052775	RAI CESAR CHAVEZ	Decline to participate. No reason given
17	052796	DCI MADISON DIALYSIS CLINIC	Will likely be 'no'. No reason given

Appendix E. List of Measures

ICWS Measures

1. **Overall percent of ICWS items met**: Overall percent of all 73 items that were met during ICE visits
2. **Percent of ICWS items met by checklist**: Percent of total items on each checklist that were met during ICE visits
3. **Percent met on individual ICWS items**- Percent of facilities that met individual items on the ICWS during ICE visits.
4. **Percent individual hand hygiene items met**: Percent of facilities that met individual hand hygiene items during ICE visits.
5. **Percent before patient contact hand hygiene items met:** Percent of hand hygiene items that occurred before patient contact that were met by facilities.
6. **Percent after patient contact hand hygiene items met:** Percent of hand hygiene items that occurred after patient contact that were met by facilities.
7. **Overall percent hand hygiene items met:** Overall percent of hand hygiene items that were met during ICE visits.

NHSN Measures

1. **NHSN VA Infection Rate:** Vascular access related infection rate as reported through the NHSN. The event is defined as either a local access site infection (pus, redness, or swelling of the vascular access site and bloodstream infection is not present) or an access-related bloodstream infection (positive blood culture with the suspected source identified as the vascular access site or uncertain). The rate is calculated by summing the number of hemodialysis patients in a facility with a vascular access infection event reported in NHSN during the month and dividing by the number of hemodialysis patients. The number is then converted to a rate per 100 hemodialysis patient-months. A patient can contribute more than one event per month.
2. **NHSN Bacteremia Rate:** The event is defined as any bacteremia (positive blood culture irrespective of cause) as reported through the NHSN. The rate is calculated by summing the number of hemodialysis patients in a facility with a bacteremia event reported in NHSN during the month and dividing by the number of hemodialysis patients. The number is then converted to a rate per 100 hemodialysis patient-months. A patient can contribute more than one event per month.

DFR Measures

1. **ICD-9 Infection Rate:** Hemodialysis access-related Infections per 100 HD patient months based on ICD-9 code 996.62 (Infection or inflammatory reaction due to vascular device, implant, or graft) reported on Medicare inpatient and outpatient claims. Patients can only contribute one infection to a facility during a month. The rate is calculated by summing the patient-months with an access-related infection and dividing by the number of eligible hemodialysis patient-months. The number is then converted to a rate per 100 patient-months.
2. **V-modifier Rate:** Vascular access-related bacteremia based on the V-modifier (V8) reporting in Medicare outpatient claims. The rate is calculated by summing the number of hemodialysis patients in a facility with a V8 modifier on a Medicare claim in the month and dividing by the number of hemodialysis patients. The number is then converted to a rate per 100 hemodialysis patient-months. Similar to the ICD-9 infection rate, a patient can contribute one infection per month.

Facility Survey Measures

1. **ICE Checklist use**: A count of how many facilities used each ICE checklist in the ICWS
2. **Procedural Checklist use**: A count of how many facilities used each procedural checklist in the ICWS
3. **Usefulness of Information sheets**: A count of which information sheets were useful to facilities
4. **Change in infection practices**: A count of facilities that changed infection practices based on the participation in the NOTICE project

Appendix F. Figures and Tables From Data Analyses

Figure 1. Overall Percent of Checklist Items Met by Checklist

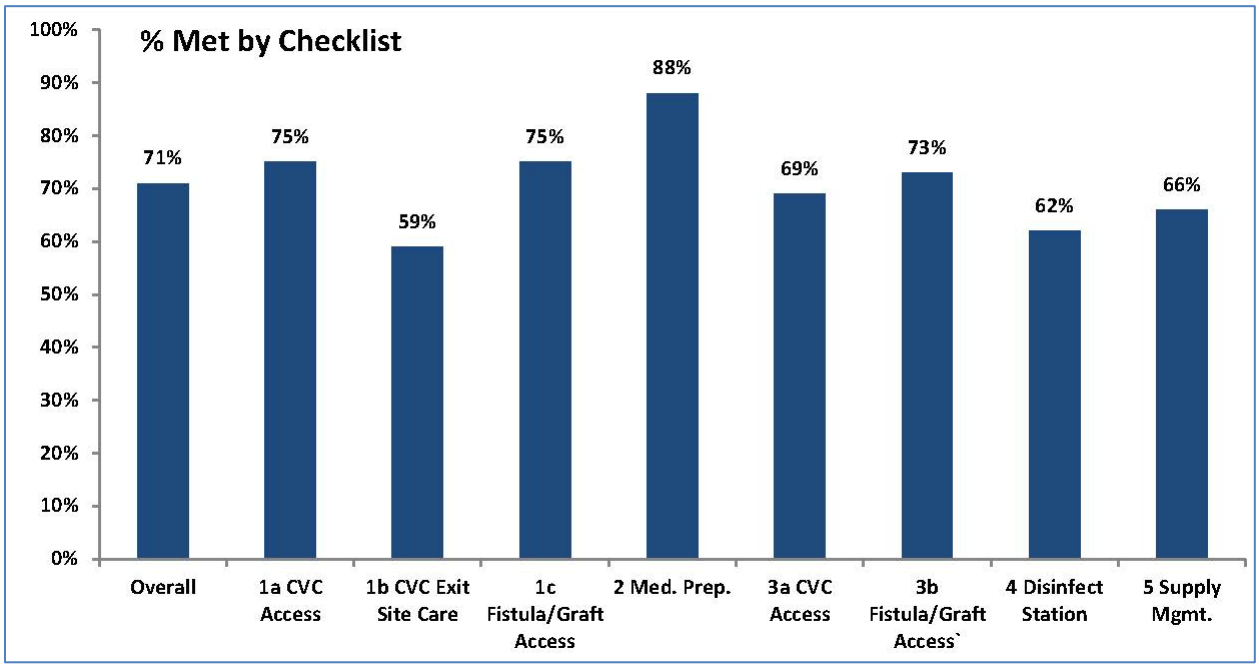


Figure 2. Percent of Hand Hygiene Items Met Overall and by Item

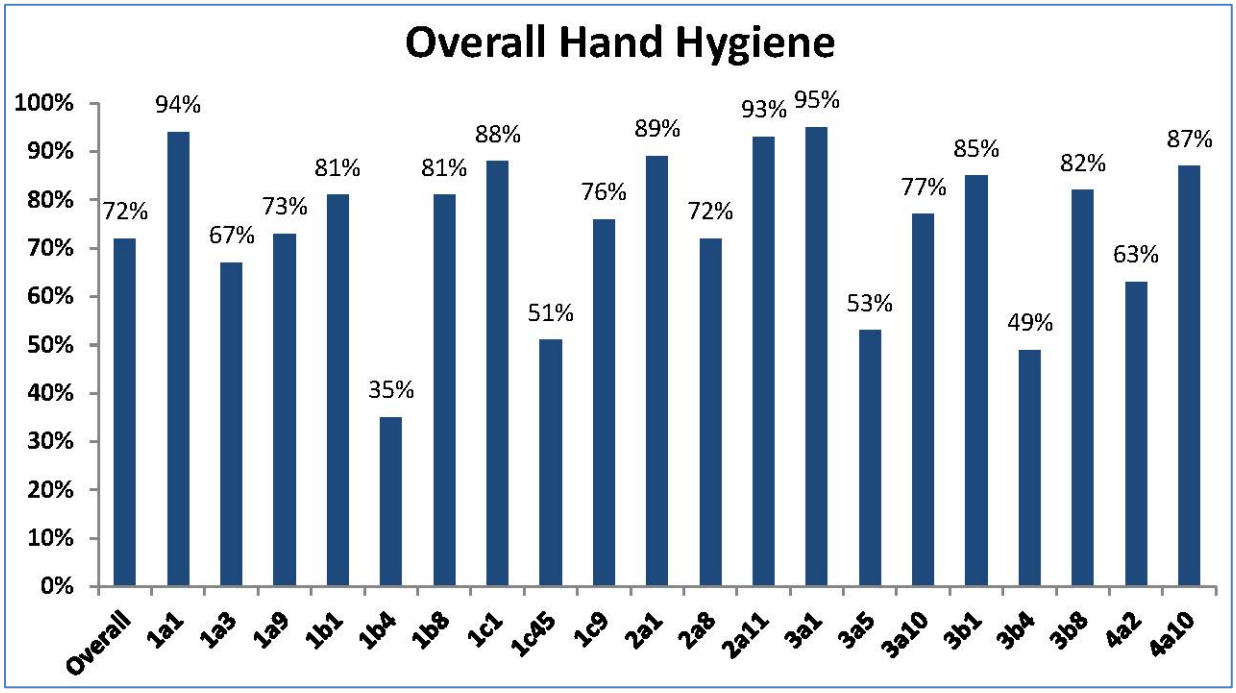


Figure 3a. Percent of Hand Hygiene Before Items Met (Subset of Figure 2)

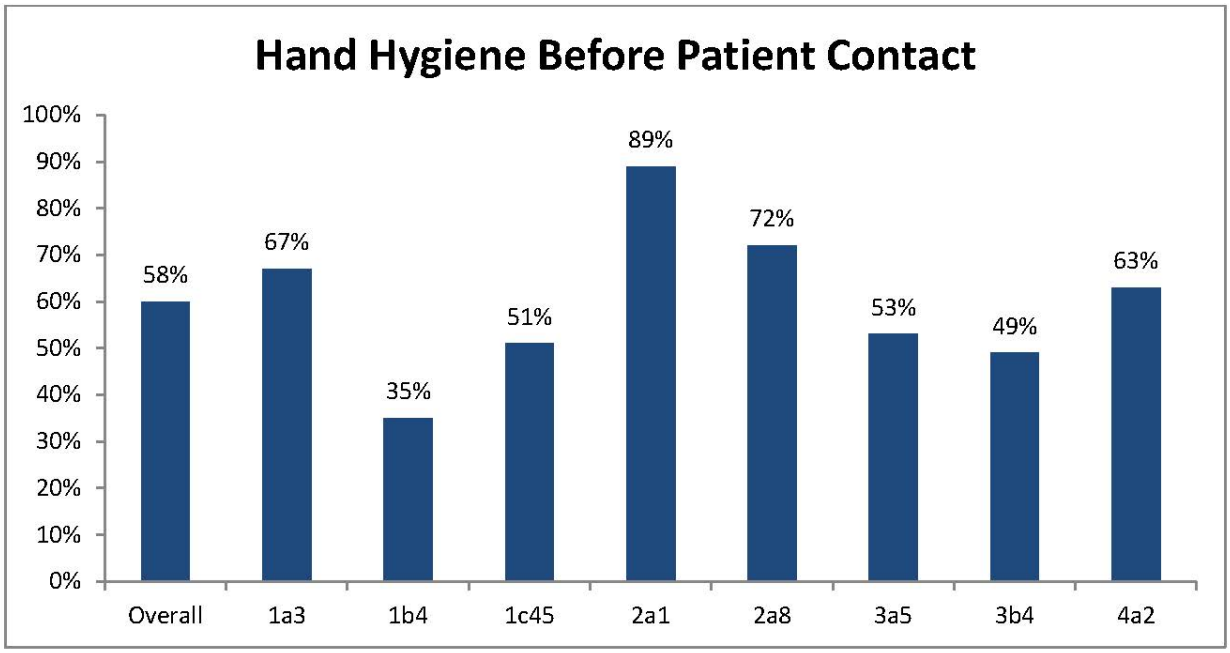


Figure 3b. Percent of Hand Hygiene After Items Met (Subset of Figure 2)

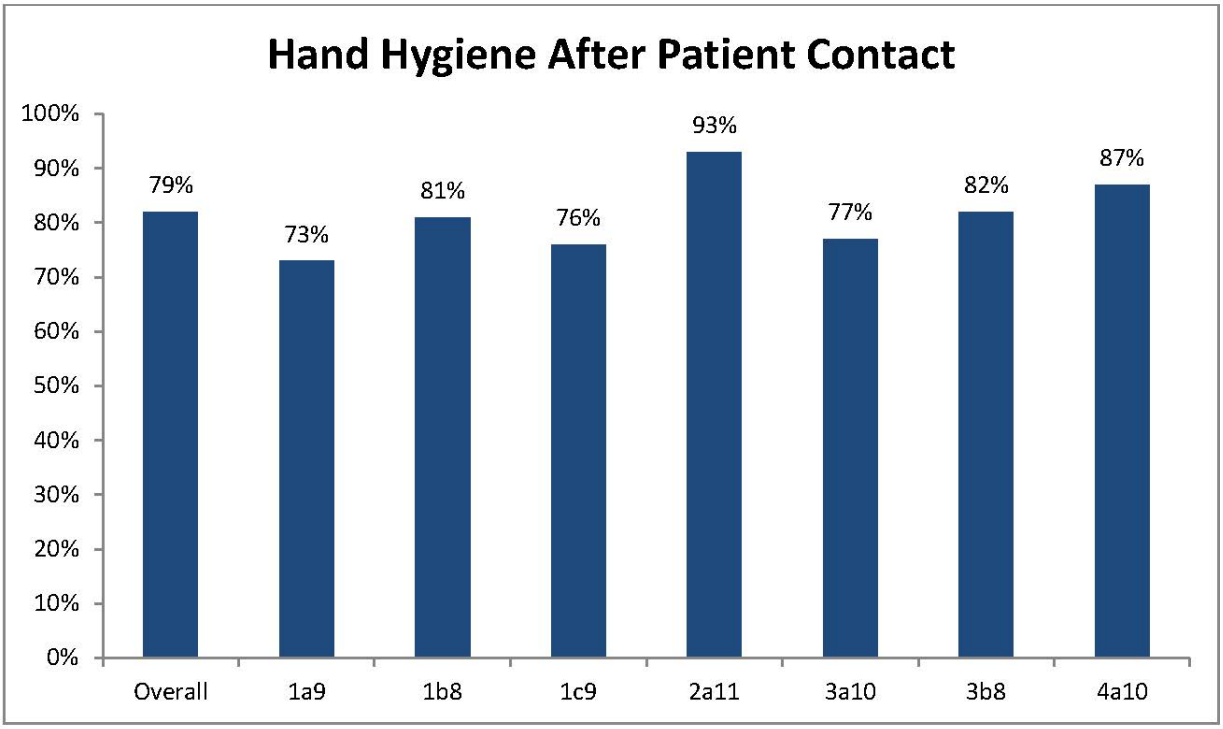


Figure 4. Percent Met for Selected ICWS Items

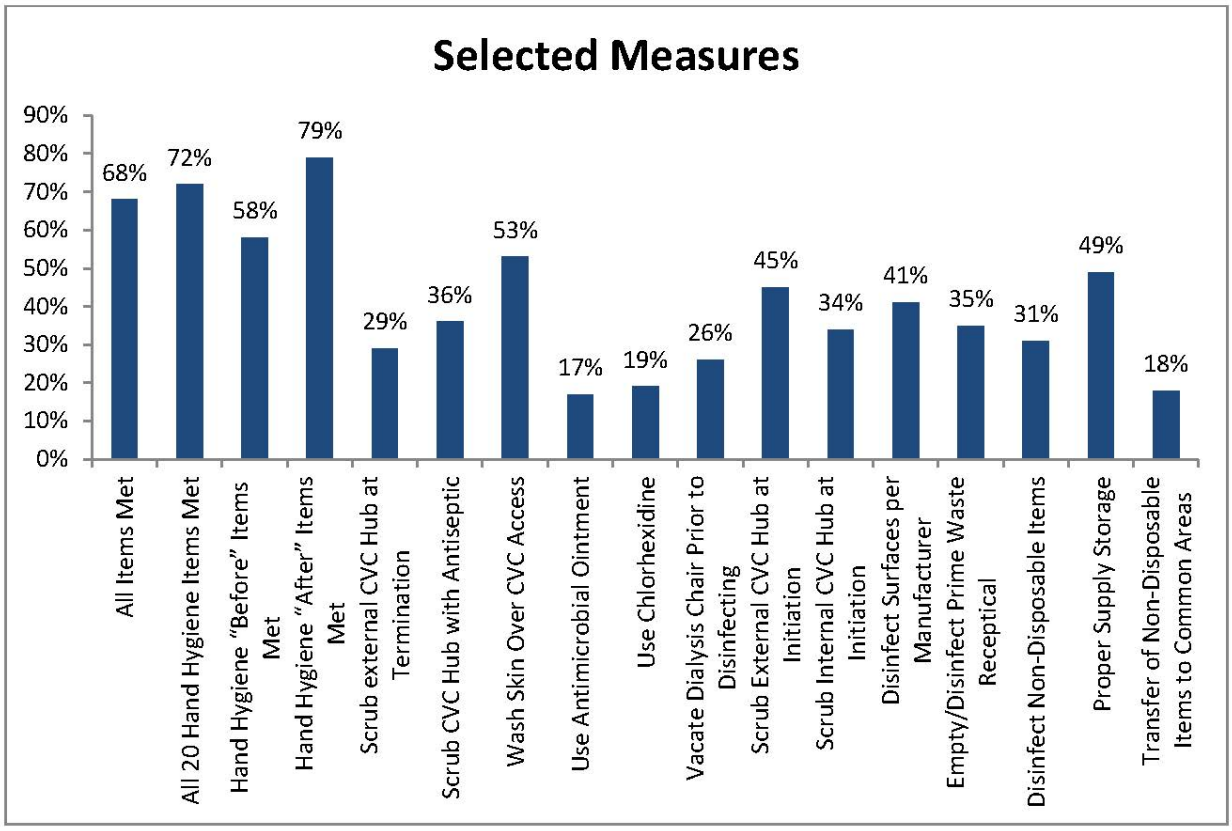


Table 8a. Percent of Facilities With 100% Met on Select ICWS Items by LDO Affiliation

ICWS Item	All	LDO		
		Non-LDO	LDO	Other
	Mean	n=9	n=11	n=13
All Items Met	68%	68%	69%	70%
All 20 Hand Hygiene Items Met	72%	69%	74%	72%
Hand Hygiene Before Items Met	58%	58%	59%	58%
Hand Hygiene After Items Met	79%	79%	79%	77%
Scrub external CVC Hub at Termination	29%	41%	14%	35%
Scrub CVC Hub with Antiseptic	36%	29%	32%	46%
Wash Skin Over CVC Access	53%	67%	27%	69%
Use Antimicrobial Ointment	17%	6%	0%	43%
Use Chlorhexidine	19%	35%	0%	26%
Vacate Dialysis Chair Prior to Disinfecting	26%	31%	18%	28%
Scrub External CVC Hub at Initiation	45%	53%	36%	52%
Scrub Internal CVC Hub at Initiation	34%	53%	14%	43%
Disinfect Surfaces per Manufacturer	41%	61%	41%	23%
Empty/Disinfect Prime Waste Receptacle	35%	44%	25%	42%
Disinfect Non-Disposable Items	31%	61%	18%	23%
Proper Supply Storage	49%	65%	45%	46%
Transfer of Non-Disposable Items to Common Areas	18%	19%	9%	27%

Table 8b. Percent of Facilities With 100% Met on Select ICWS Items by Facility Size

ICWS Item	All	Size	
		Small*	Large
	Mean	n=20	n=13
All Items Met	68%	68%	70%
All 20 Hand Hygiene Items Met	72%	69%	77%
Hand Hygiene Before Items Met	58%	55%	63%
Hand Hygiene After Items Met	79%	76%	82%
Scrub external CVC Hub at Termination	29%	34%	23%
Scrub CVC Hub with Antiseptic	36%	26%	54%
Wash Skin Over CVC Access	53%	60%	46%
Use Antimicrobial Ointment	17%	16%	21%
Use Chlorhexidine	19%	24%	13%
Vacate Dialysis Chair Prior to Disinfecting	26%	29%	18%
Scrub External CVC Hub at Initiation	45%	45%	50%
Scrub Internal CVC Hub at Initiation	34%	29%	45%
Disinfect Surfaces per Manufacturer	41%	50%	23%
Empty/Disinfect Prime Waste Receptacle	35%	39%	32%
Disinfect Non-Disposable Items	31%	38%	23%
Proper Supply Storage	49%	63%	32%
Transfer of Non-Disposable Items to Common Areas	18%	23%	13%

*Small < 112 patients

Table 8c. Percent of Facilities With 100% Met on Select ICWS Items by Urban/Rural Status

ICWS Item	All	Urban	
	Mean	Rural n=10	Urban n=23
All Items Met	68%	66%	70%
All 20 Hand Hygiene Items Met	72%	67%	74%
Hand Hygiene Before Items Met	58%	55%	60%
Hand Hygiene After Items Met	79%	74%	80%
Scrub external CVC Hub at Termination	29%	26%	31%
Scrub CVC Hub With Antiseptic	36%	26%	42%
Wash Skin Over CVC Access	53%	65%	50%
Use Antimicrobial Ointment	17%	22%	16%
Use Chlorhexidine	19%	28%	16%
Vacate Dialysis Chair Prior to Disinfecting	26%	44%	18%
Scrub External CVC Hub at Initiation	45%	61%	41%
Scrub Internal CVC Hub at Initiation	34%	38%	34%
Disinfect Surfaces per Manufacturer	41%	35%	41%
Empty/Disinfect Prime Waste Receptacle	35%	28%	40%
Disinfect Non-Disposable Items	31%	35%	30%
Proper Supply Storage	49%	55%	49%
Transfer of Non-Disposable Items to Common Areas	18%	40%	9%

Table 8d. Percent of Facilities with 100% Met on Select ICWS Items by Facility SES

ICWS Item	All	SES	
	All	Below*	Above
	Mean	n=15	n=18
All Items Met	68%	67%	71%
All 20 Hand Hygiene Items Met	72%	71%	73%
Hand Hygiene Before Items Met	58%	54%	61%
Hand Hygiene After Items Met	79%	80%	77%
Scrub external CVC Hub at Termination	29%	27%	32%
Scrub CVC Hub with Antiseptic	36%	32%	41%
Wash Skin Over CVC Access	53%	57%	53%
Use Antimicrobial Ointment	17%	14%	21%
Use Chlorhexidine	19%	14%	24%
Vacate Dialysis Chair Prior to Disinfecting	26%	31%	20%
Scrub External CVC Hub at Initiation	45%	39%	53%
Scrub Internal CVC Hub at Initiation	34%	29%	39%
Disinfect Surfaces per Manufacturer	41%	33%	44%
Empty/Disinfect Prime Waste Receptacle	35%	35%	38%
Disinfect Non-Disposable Items	31%	27%	36%
Proper Supply Storage	49%	40%	60%
Transfer of Non-Disposable Items to Common Areas	18%	17%	21%

*Below Median Income 1999

Table 8e. Percent of Facilities With 100% Met on Select ICWS Items by ESRD Network

		ESRD Network			
	All	A	B	C	D
All Items Met	68%	66%	71%	65%	73%
All 20 Hand Hygiene Items Met	72%	62%	75%	68%	83%
Hand Hygiene Before Items Met	58%	53%	61%	47%	70%
Hand Hygiene After Items Met	79%	64%	83%	75%	92%
Scrub external CVC Hub at Termination	29%	13%	35%	28%	40%
Scrub CVC Hub with Antiseptic	36%	44%	24%	22%	62%
Wash Skin Over CVC Access	53%	56%	61%	39%	56%
Use Antimicrobial Ointment	17%	8%	17%	33%	7%
Use Chlorhexidine	19%	0%	33%	22%	13%
Vacate Dialysis Chair Prior to Disinfecting	26%	40%	14%	22%	31%
Scrub External CVC Hub at Initiation	45%	62%	50%	33%	40%
Scrub Internal CVC Hub at Initiation	34%	73%	24%	25%	27%
Disinfect Surfaces per Manufacturer	41%	25%	67%	50%	19%
Empty/Disinfect Prime Waste Receptacle	35%	50%	38%	31%	21%
Disinfect Non-Disposable Items	31%	0%	61%	22%	38%
Proper Supply Storage	49%	75%	56%	17%	53%
Transfer of Non-Disposable Items to Common Areas	18%	13%	56%	0%	0%

Table 9. Percent Met for ICWS Items (in Order as They Appear on the ICWS form)

	ICWS Item	n	% Met
Checklist 1a	Hand Hygiene	63	94%
	Assemble supplies	63	92%
	Hand Hygiene	64	67%
	PPE	64	81%
	Place clean field under CVC ports	64	95%
	Scurb cvc hub	64	45%
	Scrub internal hub	59	34%
	Aseptically connect syringes	64	94%
	Hand Hygiene	63	73%
	Checklist 1a Average		**75%**
Checklist 1b	Hand Hygiene	64	81%
	Assemble supplies	64	95%
	PPE	64	55%
	Hand Hygiene	63	35%
	Clean CDC exit site w chlorhexidine	64	19%
	Antimicrobial ointment cvc exit site	64	17%
	Sterile dressing to cvc exit site	65	89%
	Hand Hygiene	62	81%
	Checklist 1b Average		**59%**
Checklist 1c	Hand Hygiene	68	88%
	Assemble supplies	68	96%
	Palpate cannulation site	67	88%
	Hand Hygiene	67	51%
	PPE	68	62%
	Wash skin over access	68	53%
	Scrub skin over cannulation site	68	71%
	Insert cannulation needles	68	94%
	Hand Hygiene	68	76%
	Checklist 1c Average		**75%**
Checklist 2a	Hand Hygiene	63	89%
	Meds prepared in clean area	66	92%
	Assemble supplies	65	98%
	Single dose vial use	53	100%
	Multi dose vial use	50	68%
	Med vial prep and use	67	70%
	Label syringes	58	95%
	Hand Hygiene	67	72%
	Injection port use	66	88%
	Discard syringe into sharps container	66	98%
	Hand Hygiene	67	93%
	Checklist 2a Average		**88%**

	ICWS Item	n	% Met
Checklist 3a	Hand Hygiene	65	95%
	Assemble supplies	64	91%
	Place clean field under CVC ports	66	64%
	Reinfuse circuit	65	63%
	Hand Hygiene	64	53%
	Scrub exterior of CVC hub w antiseptic	66	29%
	Disconnect blood lines aseptically	65	98%
	Scrub CVC hub w antispetic sterile port cap	64	36%
	Discard unused supplies	66	85%
	Hand Hygiene	66	77%
	Checklist 3a Average		**69%**
Checklist 3b	Hand Hygiene	68	85%
	Assemble supplies	68	88%
	Reinfuse circuit disconnect bloodlines	68	71%
	Hand Hygiene	68	49%
	Remove needles aseptically	68	57%
	Apply clean bandage to needle site	68	71%
	Discard unused supplies	67	84%
	Hand Hygiene	67	82%
	Checklist 3b Average		**73%**
Checklist 4a	Vacate chair before cleaning	58	26%
	Proper disposal of bloodlines and waste	67	79%
	Hand Hygiene	68	63%
	Disinfectant soaked cloth	67	70%
	Disinfect machine	68	41%
	Empty and disinfect waste receptacle	62	35%
	Disinfect chair	67	60%
	Non disposable items disinfected	68	31%
	Disinfect clamps	62	89%
	Discard cloth wipe	68	99%
	Hand Hygiene	68	87%
	Checklist 4a Average		**62%**
Checklist 5a	Supplies stored in clean areas	67	49%
	Supplies not in before station cleaned	68	51%
	Supplies not moved between stations	68	94%
	Supplies not kept in pockets	68	88%
	Non disposable items disinfected	66	18%
	Multi dose vials not in station	67	94%
	Disposable supplies are discarded	68	65%
	Checklist 5a Average		**66%**
		Overall	**71%**

Table 10. Correlation of Infection Measures From NHSN and DFRs (Shading Indicates Statistical Significance, p<0.05)

Outcome Measure		Infections/100 pt mos	V-modifier Rate	NHSN VA Inf rate	NHSN Bact Rate
Infections/100 pt mos	R		**0.25131**	**0.36863**	**0.03162**
	p-value		**0.1517**	**0.0491**	**0.8706**
	N		**34**	**29**	**29**
V-modifier Rate	R			**0.00893**	**0.07857**
	p-value			**0.9633**	**0.6854**
	N			**29**	**29**
NHSN VA Inf rate	R				**0.73452**
	p-value				**<.0001**
	n				**29**

Figure 5.

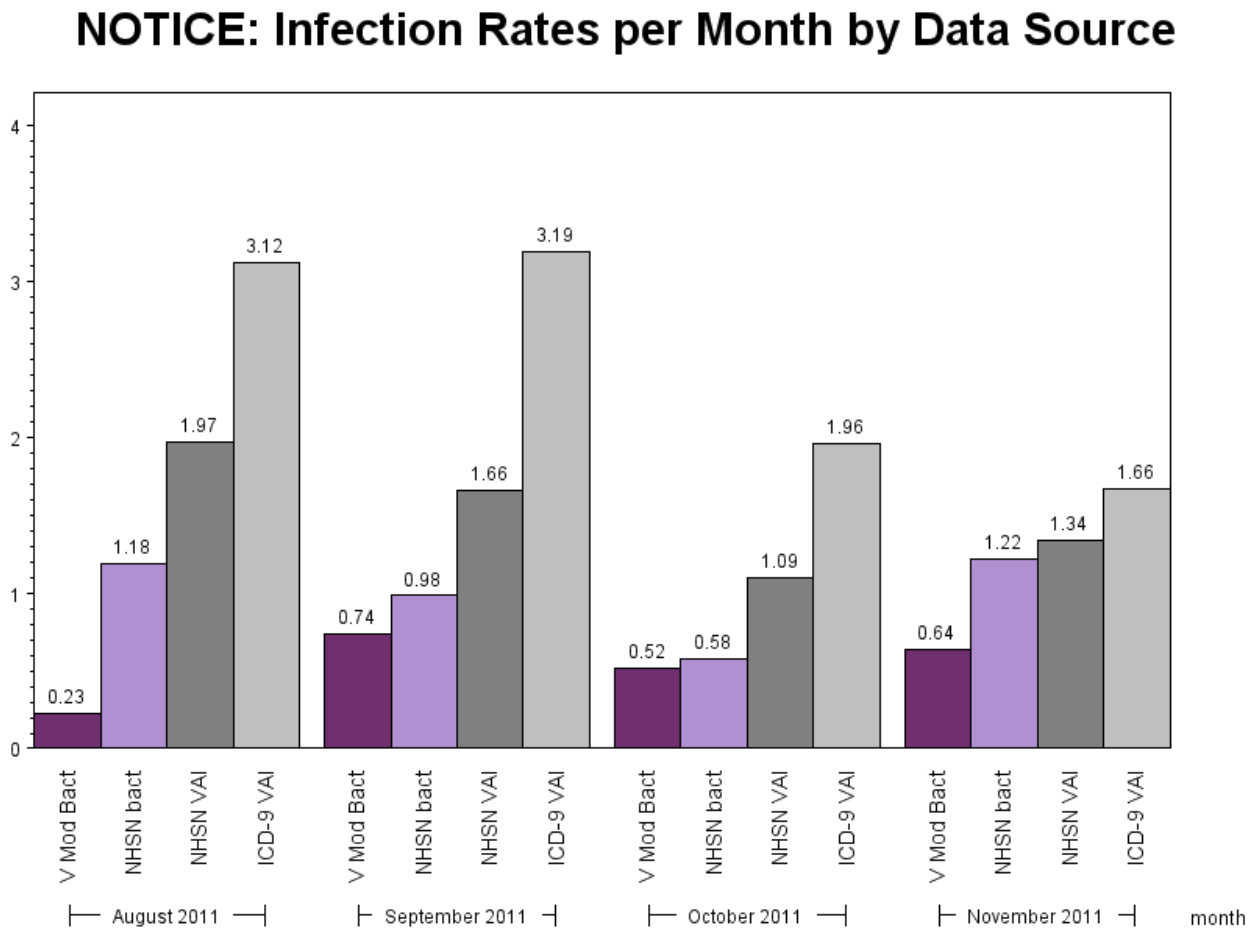


Table 11. Results of Poisson Regression Predicting Infection Rate Outcomes

Predictor	Outcome	Estimate	P-value
Total % Met	ICD-9 HD VAR Inf Rate	-3.098	0.020
Overall Hand Hygiene	ICD-9 HD VAR Inf Rate	-1.568	0.008
Hand Hygiene After	ICD-9 HD VAR Inf Rate	- 1.480	0.003
PPE 1a4	ICD-9 HD VAR Inf Rate	-0.7066	0.037
HH 1b8	ICD-9 HD VAR Inf Rate	-0.8687	0.004
HH 1c1	ICD-9 HD VAR Inf Rate	-1.101	0.015
Supplies 1c2	ICD-9 HD VAR Inf Rate	-1.453	0.025
HH 2a8	ICD-9 HD VAR Inf Rate	-0.762	0.001
Injection Port 2a9	ICD-9 HD VAR Inf Rate	-0.862	0.002
HH 3a1	ICD-9 HD VAR Inf Rate	-1.77	0.009
Bloodline 3a7	ICD-9 HD VAR Inf Rate	-1.933	0.027
HH 3a10	ICD-9 HD VAR Inf Rate	-0.784	0.006
Disinfect 4a3	NHSN Bacteremia	-0.744	0.030
HH 2a8	NHSN VAI	-0.66	0.028
Bloodline 3a7	NHSN VAI	-1.91	0.044
Total % Met	V-Modifier Bacteremia	-9.94	0.003
Overall Hand Hygiene	V-Modifier Bacteremia	-4.20	0.001
Hand Hygiene After	V-Modifier Bacteremia	-4.16	<.0001
HH 1a9	V Modifier Bacteremia	-2.12	0.001
HH 1b1	V Modifier Bacteremia	-1.56	0.030
Dressing 1b7	V Modifier Bacteremia	-1.72	0.005
HH 1b8	V Modifier Bacteremia	-2.62	<.0001
HH 1c1	V Modifier Bacteremia	-3.36	0.002
Injection Port 2a9	V Modifier Bacteremia	-1.47	0.027
HH 3a10	V Modifier Bacteremia	-1.53	0.030
HH 3b1	V Modifier Bacteremia	-1.63	0.029
Reinfuse 3b3	V Modifier Bacteremia	-1.86	0.007
HH 3b4	V Modifier Bacteremia	-3.21	0.001
HH 3b8	V Modifier Bacteremia	-2.14	0.001

Figure 6. Average Monthly ICD-9 Infection Rates 2009-2011 and Average Monthly NHSN Infection Rates Over the Study Period

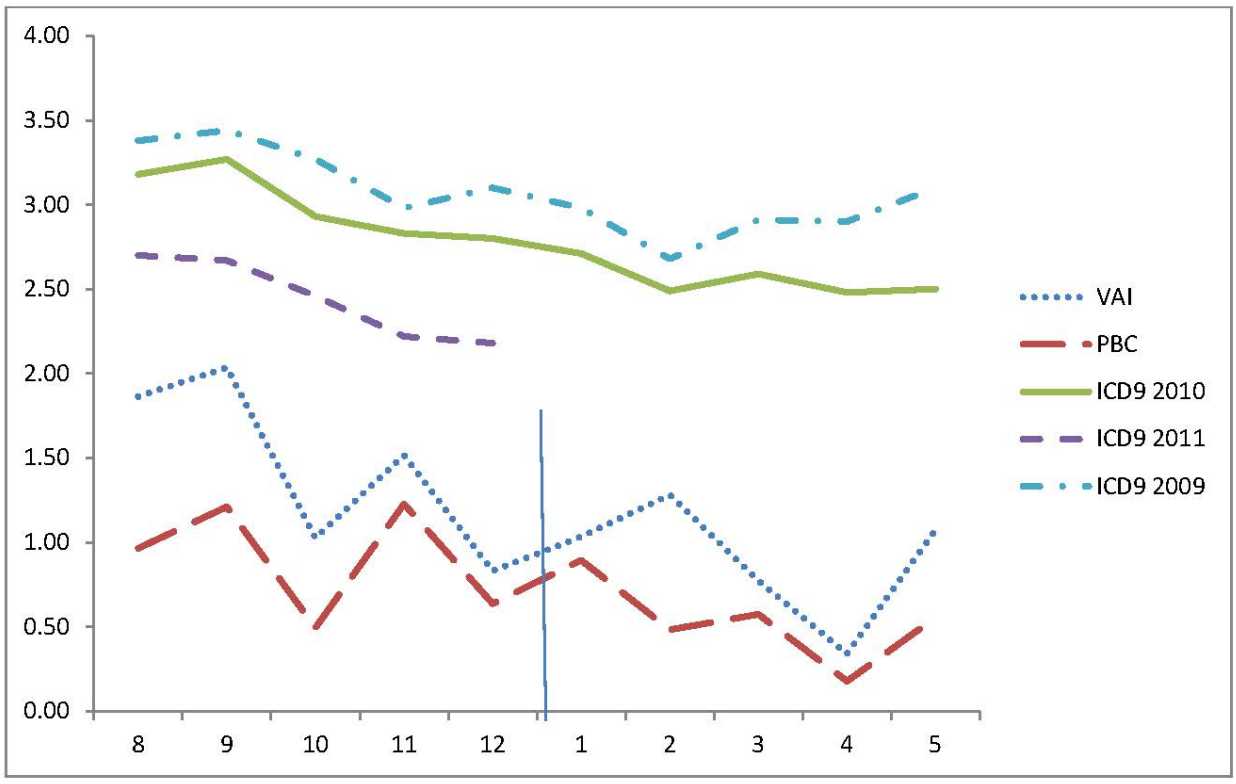


Table 12. Results of Pre/Post Modeling

	Time Period	
	Pre-ICE Visit	Post-ICE Visit
VAI Rate per 100 pt. mo.	1.46	0.92
PBC Rate per 100 pt. mo.	0.89	0.63
Total Patients	70.07	67.95
Total Months	128	165

Figure 7.

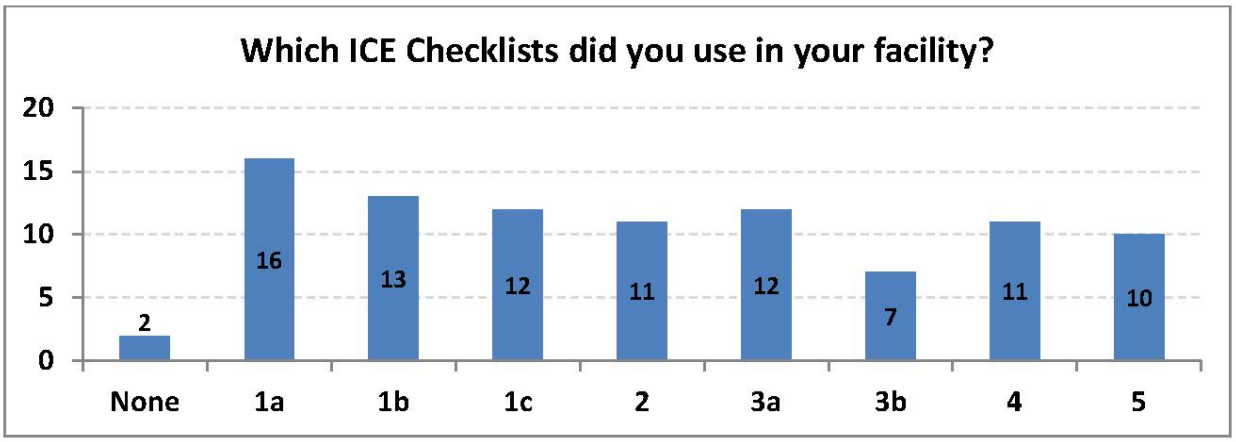


Figure 8.

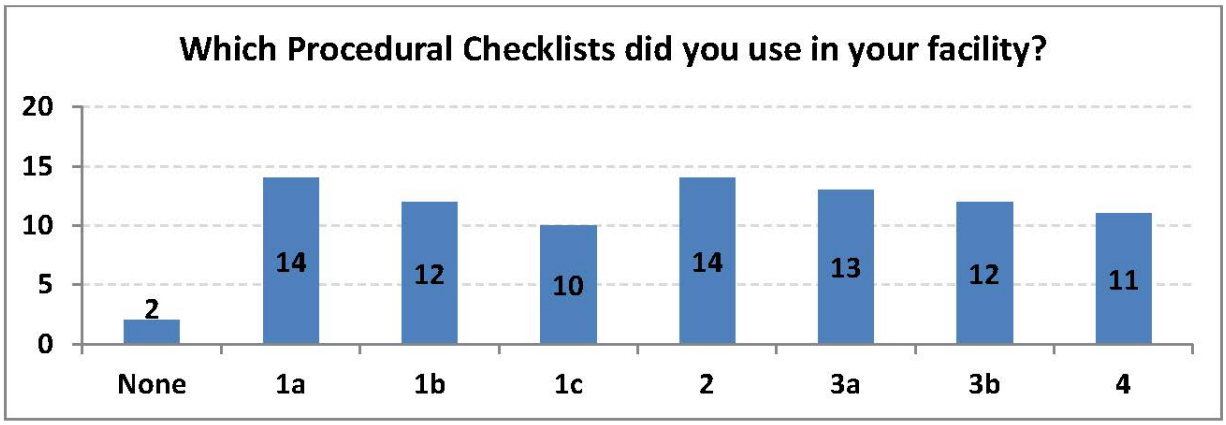


Figure 9.

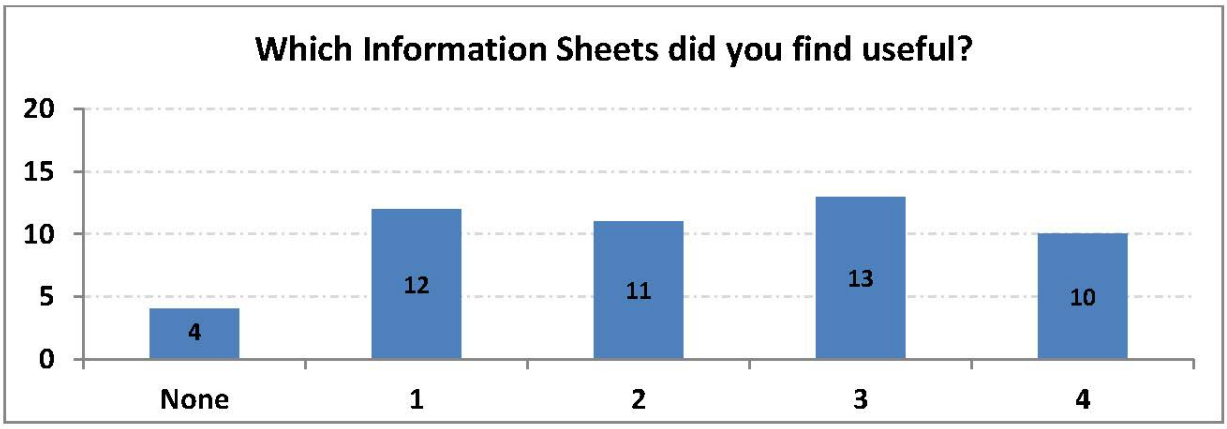
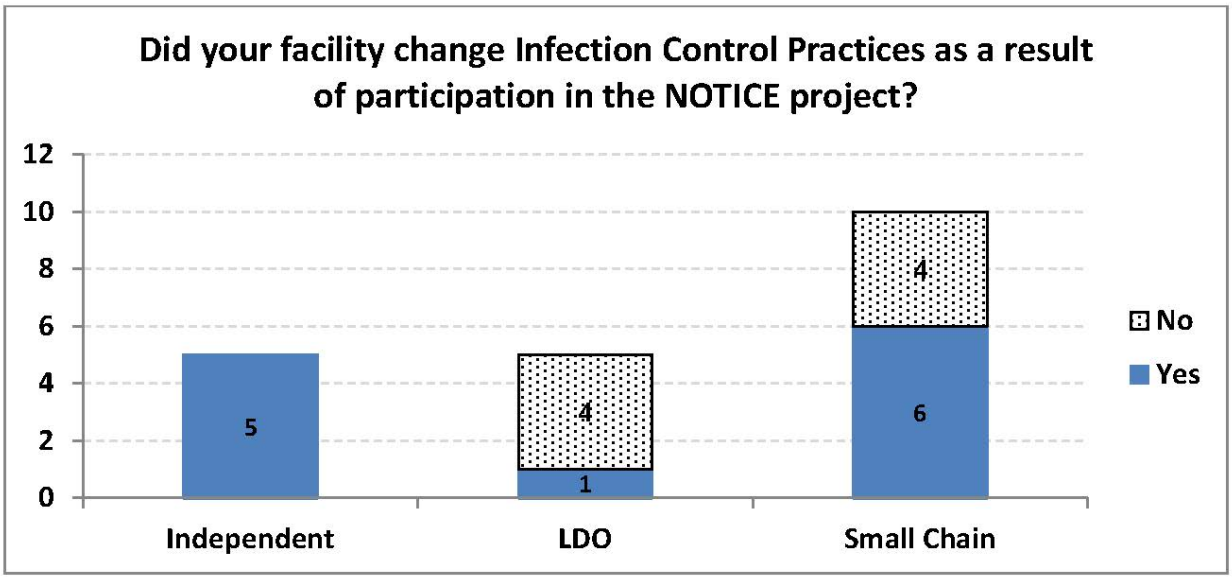


Figure 10.


Did your facility change Infection Control Practices as a result of participation in the NOTICE project?
12
10
8
6
4
2
0
5
4
1
4
6
Independent
LDO
Small Chain
No
Yes

Appendix G. Produced and Planned Publications

Produced Publications

2011 ASN abstract: Saran R, Messana JM, Roys E, Lueth NA, Parrotte P, Shearon TH, Kalbfleisch J. Geographic Variation and Trends in Vascular Access–Related Infection Rates in the United States. J Am Soc Nephrol. 22:2011.

Planned Publications

The two ASN abstracts will be published in the Journal of American Society of Nephrology in late 2012. NOTICE plans to submit a manuscript based on the abstract submitted to ASN in 2012 titled Variation in Observed Infection Control Practices in the NOTICE Project.

Appendix H. Data Dictionary

All Variables

#	Variable	Type	Len	Format	Informat	Label
329	ABXCount	Num	8			antibiotic count
248	CL2	Num	8			Percent of checklist 2 vars Met, facility level
251	CL4	Num	8			Percent of checklist 4 vars Met, facility level
252	CL5	Num	8			Percent of checklist 5 vars Met, facility level
245	CL1a	Num	8			Percent of checklist 1a vars Met, facility level
246	CL1b	Num	8			Percent of checklist 1b vars Met, facility level
247	CL1c	Num	8			Percent of checklist 1c vars Met, facility level
249	CL3a	Num	8			Percent of checklist 3a vars Met, facility level
250	CL3b	Num	8			Percent of checklist 3b vars Met, facility level
160	HDinfDm10_f	Num	8			Oct 2011 V-Mod Denom (DFR)
162	HDinfDm11_f	Num	8			Nov 2011 V-Mod Denom (DFR)
164	HDinfDm12_f	Num	8			Dec 2011 V-Mod Denom (DFR)
142	HDinfDm1_f	Num	8			Jan 2011 V-Mod Denom (DFR)
144	HDinfDm2_f	Num	8			Feb 2011 V-Mod Denom (DFR)
146	HDinfDm3_f	Num	8			Mar 2011 V-Mod Denom (DFR)
148	HDinfDm4_f	Num	8			Apr 2011 V-Mod Denom (DFR)
150	HDinfDm5_f	Num	8			May 2011 V-Mod Denom (DFR)
152	HDinfDm6_f	Num	8			June 2011 V-Mod Denom (DFR)
154	HDinfDm7_f	Num	8			July 2011 V-Mod Denom (DFR)
156	HDinfDm8_f	Num	8			Aug 2011 V-Mod Denom (DFR)
158	HDinfDm9_f	Num	8			Sept 2011 V-Mod Denom (DFR)

#	Variable	Type	Len	Format	Informat	Label
229	HDinfDmz_f	Num	8			Jan-Dec 2011 V-Mod Denom (DFR)
8	HH_1a1	Num	8			Hand Hygiene
10	HH_1a3	Num	8			Hand Hygiene
16	HH_1a9	Num	8			Hand Hygiene
21	HH_1b1	Num	8			Hand Hygiene
24	HH_1b4	Num	8			Hand Hygiene
28	HH_1b8	Num	8			Hand Hygiene
33	HH_1c1	Num	8			Hand Hygiene
36	HH_1c4	Num	8			Hand Hygiene
45	HH_1c9	Num	8			Hand Hygiene
116	HH_1c45	Num	8			Hand Hygiene
41	HH_1c5a_v2	Num	8			Hand Hygiene
50	HH_2a1	Num	8			Hand Hygiene
57	HH_2a8	Num	8			Hand Hygiene
60	HH_2a11	Num	8			Hand Hygiene
65	HH_3a1	Num	8			Hand Hygiene
69	HH_3a5	Num	8			Hand Hygiene
74	HH_3a10	Num	8			Hand Hygiene
79	HH_3b1	Num	8			Hand Hygiene
82	HH_3b4	Num	8			Hand Hygiene
86	HH_3b8	Num	8			Hand Hygiene
93	HH_4a2	Num	8			Hand Hygiene
101	HH_4a10	Num	8			Hand Hygiene

#	Variable	Type	Len	Format	Informat	Label
231	LDO	Num	8			Large Dialysis Organization
232	LDO2	Num	8			Large Dialysis Organization flag
	OverallHH_aft_pct_f	Num	8			Percent of 7 After HH vars Met, facility level
242	OverallHH_bef_pct_f	Num	8			Percent of 8 Before HH vars Met, facility level
244	OverallHH_init_pct_f	Num	8			Percent of 5 Initial HH vars Met, facility level
241	OverallHH_pct_f	Num	8			Percent of 20 HH vars Met, facility level
442	PBCCount	Num	8			Total 2011-12 PCB Numerator (NHSN)
11	PPE_1a4	Num	8			PPE
23	PPE_1b3	Num	8			PPE
37	PPE_1c5	Num	8			PPE
117	PPE_1c56	Num	8			PPE
42	PPE_1c6a_v2	Num	8			PPE
390	Provnum	Char	6	$6	$6	Provnum
253	V2_HH_1a1	Num	8			Hand Hygiene
255	V2_HH_1a3	Num	8			Hand Hygiene
261	V2_HH_1a9	Num	8			Hand Hygiene
262	V2_HH_1b1	Num	8			Hand Hygiene
265	V2_HH_1b4	Num	8			Hand Hygiene
269	V2_HH_1b8	Num	8			Hand Hygiene
270	V2_HH_1c1	Num	8			Hand Hygiene
278	V2_HH_1c9	Num	8			Hand Hygiene

#	Variable	Type	Len	Format	Informat	Label
273	V2_HH_1c45	Num	8			Hand Hygiene
279	V2_HH_2a1	Num	8			Hand Hygiene
286	V2_HH_2a8	Num	8			Hand Hygiene
289	V2_HH_2a11	Num	8			Hand Hygiene
290	V2_HH_3a1	Num	8			Hand Hygiene
294	V2_HH_3a5	Num	8			Hand Hygiene
299	V2_HH_3a10	Num	8			Hand Hygiene
300	V2_HH_3b1	Num	8			Hand Hygiene
303	V2_HH_3b4	Num	8			Hand Hygiene
307	V2_HH_3b8	Num	8			Hand Hygiene
310	V2_HH_4a2	Num	8			Hand Hygiene
318	V2_HH_4a10	Num	8			Hand Hygiene
256	V2_PPE_1a4	Num	8			PPE
264	V2_PPE_1b3	Num	8			PPE
274	V2_PPE_1c56	Num	8			PPE
275	V2_Washskin_1c63	Num	8			Wash skin over access
260	V2_asceptic_1a8	Num	8			Aseptically connect syringes
305	V2_bandage_3b6	Num	8			Apply clean bandage to needle site
296	V2_bloodline_3a7	Num	8			Disconnect blood lines aseptically
314	V2_chair_4a6	Num	8			Disinfect chair
266	V2_chlorhex_1b5	Num	8			clean CDC exit site w chlorhexidine

#	Variable	Type	Len	Format	Informat	Label
316	V2_clamps_4a8	Num	8			Disinfect clamps
257	V2_cleanfield_1a5	Num	8			Place clean field under CVC ports
292	V2_cleanfield_3a3	Num	8			Place clean field under CVC ports
317	V2_cloth_4a9	Num	8			Discard cloth wipe
298	V2_discard_3a9	Num	8			Discard unused supplies
306	V2_discard_3b7	Num	8			Discard unused supplies
311	V2_disinfectant_4a3	Num	8			Disinfectant soaked cloth
325	V2_disposable_5a7	Num	8			Disposable supplies are discarded
268	V2_dress_1b7	Num	8			sterile dressing to cvc exit site
287	V2_injectionport_2a9	Num	8			Injection port use
277	V2_insertneedle_1c8	Num	8			Insert cannulation needles
309	V2_machine_4a1	Num	8			Proper disposal of bloodlines and waste
280	V2_medprep_2a2	Num	8			Meds prepared in clean area
284	V2_meduse_2a6	Num	8			Med vial prep and use
283	V2_multidose_2a5	Num	8			Multi dose vial use
324	V2_multidose_5a6	Num	8			Multi dose vials not in station

#	Variable	Type	Len	Format	Informat	Label
315	V2_nondisposable_4a7	Num	8			Non disposable items disinfected
323	V2_nondisposable_5a5	Num	8			Non disposable items disinfected
267	V2_ointment_1b6	Num	8			antimicrobial ointment cvc exit site
272	V2_palpate_1c34	Num	8			palpate cannulation site
322	V2_pockets_5a4	Num	8			Supplies not kept in pockets
293	V2_reinfuse_3a4	Num	8			Reinfuse circuit
302	V2_reinfuse_3b3	Num	8			Reinfuse circuit disconnect bloodlines
304	V2_removeneedles_3b5	Num	8			Remove needles aseptically
276	V2_scrubcann_1c7	Num	8			scrub skin over cannulation site
258	V2_scrubextcvc_1a6	Num	8			Scurb cvc hub
295	V2_scrubextcvc_3a6	Num	8			Scrub exterior of CVC hub w antiseptic
297	V2_scrubhub_3a8	Num	8			Scrub CVC hub w antispetic sterile port cap
259	V2_scrubintcvc_1a7	Num	8			Scrub internal hub
288	V2_sharps_2a10	Num	8			Discard syringe into sharps container
282	V2_singledose_2a4	Num	8			Single dose vial use

#	Variable	Type	Len	Format	Informat	Label
319	V2_storage_5a1	Num	8			Supplies stored in clean areas
254	V2_supplies_1a2	Num	8			Assemble supplies
263	V2_supplies_1b2	Num	8			Assemble supplies
271	V2_supplies_1c2	Num	8			Assemble supplies
281	V2_supplies_2a3	Num	8			Assemble supplies
291	V2_supplies_3a2	Num	8			Assemble supplies
301	V2_supplies_3b2	Num	8			Assemble supplies
320	V2_supplies_5a2	Num	8			Supplies not in before station cleaned
321	V2_supplies_5a3	Num	8			Supplies not moved between stations
312	V2_surfacedisinfect_4a4	Num	8			Disinfect machine
285	V2_syringlabel_2a7	Num	8			Label syringes
308	V2_vacate_chair_4a0	Num	8			Vacate chair before cleaning
313	V2_waste_4a5	Num	8			Empty and disinfect waste receptacle
443	VAICount	Num	8			Total 2011-12 VAI Numerator (NHSN)
38	Washskin_1c6	Num	8			Wash skin over access
115	Washskin_1c63	Num	8			Wash skin over access

#	Variable	Type	Len	Format	Informat	Label
39	Washskin_1c3a_v2	Num	8			Wash skin over access
236	above_median_income	Num	8			SES for facility selection
198	afterHH_pct	Num	8			Percent of after HH items met
126	allcnty4_f	Num	8			F (AFS): # of pts, 2010
15	asceptic_1a8	Num	8			Aseptically connect syringes
414	bact_rate100mo01	Num	8			January 2012 Positive Blood Culture (NHSN)
419	bact_rate100mo02	Num	8			February 2012 Positive Blood Culture (NHSN)
424	bact_rate100mo03	Num	8			March 2012 Positive Blood Culture (NHSN)
429	bact_rate100mo04	Num	8			April 2012 Positive Blood Culture (NHSN
434	bact_rate100mo05	Num	8			May 2012 Positive Blood Culture (NHSN
439	bact_rate100mo06	Num	8			June 2012 Positive Blood Culture (NHSN
336	bact_rate100mo08	Num	8			August 2011 Positive Blood Culture (NHSN)
394	bact_rate100mo09	Num	8			September 2011 Positive Blood Culture (NHSN)
399	bact_rate100mo10	Num	8			October 2011 Positive Blood Culture (NHSN)
404	bact_rate100mo11	Num	8			November 2011 Positive Blood Culture (NHSN)
409	bact_rate100mo12	Num	8			December 2011 Positive Blood Culture (NHSN)
445	bact_rate_tot	Num	8			Positive Blood Culture (NHSN)

#	Variable	Type	Len	Format	Informat	Label
225	bactnum10_f	Num	8			October 2011 V-Mod Numerator (DFR)
226	bactnum11_f	Num	8			November 2011 V-Mod Numerator (DFR)
227	bactnum12_f	Num	8			December 2011 V-Mod Numerator (DFR)
216	bactnum1_f	Num	8			Jan 2011 V-Mod Numerator (DFR)
217	bactnum2_f	Num	8			Feb 2011 V-Mod Numerator (DFR)
218	bactnum3_f	Num	8			Mar 2011 V-Mod Numerator (DFR)
219	bactnum4_f	Num	8			Apr 2011 V-Mod Numerator (DFR)
220	bactnum5_f	Num	8			May 2011 V-Mod Numerator (DFR)
221	bactnum6_f	Num	8			June 2011 V-Mod Numerator (DFR)
222	bactnum7_f	Num	8			July 2011 V-Mod Numerator (DFR)
223	bactnum8_f	Num	8			August 2011 V-Mod Numerator (DFR)
224	bactnum9_f	Num	8			September 2011 V-Mod Numerator (DFR)
228	bactnumz_f	Num	8			V-Mod Numerator (DFR)
84	bandage_3b6	Num	8			Apply clean bandage to needle site
197	beforeHH_pct	Num	8			Percent of before HH items met
200	belowavg_HH	Num	8			Below Average HH
71	bloodline_3a7	Num	8			Disconnect blood lines aseptically
338	cathPort	Char	3	$3	$3	cathPort
339	cathPortDesc	Char	3	$3		cathPort description
340	cathPortOth	Char	25	$25	$25	cathPortOth
139	chainnam	Char	40			Name of dialysis chain from SIMS
97	chair_4a6	Num	8			Disinfect chair
341	chlorhexUsed	Char	1	$1	$1	chlorhexUsed

#	Variable	Type	Len	Format	Informat	Label
342	chlorhexUsedDesc	Char	1	$1		chlorhexUsed description
25	chlorhex_1b5	Num	8			clean CDC exit site w chlorhexidine
99	clamps_4a8	Num	8			Disinfect clamps
12	cleanfield_1a5	Num	8			Place clean field under CVC ports
67	cleanfield_3a3	Num	8			Place clean field under CVC ports
100	cloth_4a9	Num	8			Discard cloth wipe
343	dialHome	Char	1	$1	$1	dialHome
344	dialInCenter	Char	1	$1	$1	dialInCenter
345	dialPeritoneal	Char	1	$1	$1	dialPeritoneal
73	discard_3a9	Num	8			Discard unused supplies
85	discard_3b7	Num	8			Discard unused supplies
94	disinfectant_4a3	Num	8			Disinfectant soaked cloth
112	disposable_5a7	Num	8			Disposable supplies are discarded
346	drawLocation	Char	7	$7	$7	drawLocation
347	drawLocationDesc	Char	1	$1		drawLocation description
348	drawLocationOth	Char	20	$20	$25	drawLocationOth
349	dressBAid	Char	1	$1	$1	dressBAid
383	dressChanged	Num	8	6	6	dressChanged
350	dressChlorhex	Char	1	$1	$1	dressChlorhex
351	dressGauze	Char	1	$1	$1	dressGauze
352	dressKit	Char	1	$1	$1	dressKit

#	Variable	Type	Len	Format	Informat	Label
353	dressNone	Char	1	$1	$1	dressNone
354	dressOth	Char	1	$1	$1	dressOth
355	dressOthSfy	Char	1	$1	25	dressOthSfy
356	dressTrans	Char	1	$1	$1	dressTrans
27	dress_1b7	Num	8			sterile dressing to cvc exit site
357	dressing	Char	5	$5	$6	dressing
358	dressingDesc	Char	5	$5		dressing description
359	dressingOth	Char	21	$21	$25	dressingOth
127	endcnty4_f	Num	8			F (AFS): # of all pts on Dec 31, 2010
360	facOwnerDial	Char	3	$3	$3	facOwnerDial
361	facOwnerDialDesc	Char	3	$3		facOwnerDial description
362	factype	Char	8	$8	$15	factype
363	groupMember	Char	1	$1	$1	groupMember
364	groupName	Char	1	$1	$20	groupName
365	groupNameCode	Char	6	$6	$6	groupNameCode
366	groupNameCodeDesc	Char	6	$6		groupNameCode description
367	groupNameOth	Char	20	$20	$20	groupNameOth
185	hdinf100mom10_f	Num	8			October 2011 ICD-9 HD Infection Rate (DFR)
187	hdinf100mom11_f	Num	8			November 2011 ICD-9 HD Infection Rate (DFR)
189	hdinf100mom12_f	Num	8			December 2011 ICD-9 HD Infection Rate (DFR)

#	Variable	Type	Len	Format	Informat	Label
167	hdinf100mom1_f	Num	8			January 2011 ICD-9 HD Infection Rate (DFR)
169	hdinf100mom2_f	Num	8			February 2011 ICD-9 HD Infection Rate (DFR)
171	hdinf100mom3_f	Num	8			March 2011 ICD-9 HD Infection Rate (DFR)
173	hdinf100mom4_f	Num	8			April 2011 ICD-9 HD Infection Rate (DFR)
175	hdinf100mom5_f	Num	8			May 2011 ICD-9 HD Infection Rate (DFR)
177	hdinf100mom6_f	Num	8			June 2011 ICD-9 HD Infection Rate (DFR)
179	hdinf100mom7_f	Num	8			July 2011 ICD-9 HD Infection Rate (DFR)
181	hdinf100mom8_f	Num	8			August 2011 ICD-9 HD Infection Rate (DFR)
183	hdinf100mom9_f	Num	8			September 2011 ICD-9 HD Infection Rate (DFR)
215	hdinf100momz_f	Num	8			Total 2011 ICD-9 HD Infection Rate (DFR)
134	hdinf100moy4_f	Num	8			F Infection: HD Infection rate per 100 HD Patient-Months, 2010
210	hdnumm10_f	Num	8			October 2011 ICD-9 HD Infection Numer (DFR)
211	hdnumm11_f	Num	8			November 2011 ICD-9 HD Infection Numer (DFR)
212	hdnumm12_f	Num	8			December 2011 ICD-9 HD Infection Numer (DFR)
201	hdnumm1_f	Num	8			January 2011 ICD-9 HD Infection Numer (DFR)
202	hdnumm2_f	Num	8			Febuary 2011 ICD-9 HD Infection Numer (DFR)
203	hdnumm3_f	Num	8			March 2011 ICD-9 HD Infection Numer (DFR)

#	Variable	Type	Len	Format	Informat	Label
204	hdnumm4_f	Num	8			April 2011 ICD-9 HD Infection Numer (DFR)
205	hdnumm5_f	Num	8			May 2011 ICD-9 HD Infection Numer (DFR)
206	hdnumm6_f	Num	8			June 2011 ICD-9 HD Infection Numer (DFR)
207	hdnumm7_f	Num	8			July 2011 ICD-9 HD Infection Numer (DFR)
208	hdnumm8_f	Num	8			August 2011 ICD-9 HD Infection Numer (DFR)
209	hdnumm9_f	Num	8			September 2011 ICD-9 HD Infection Numer (DFR)
213	hdnummz_f	Num	8			Total 2011 ICD-9 HD Infection Numer (DFR)
132	hdpaty4_f	Num	8			F Infection: Eligible HD Patients, 2010
184	hdptmom10_f	Num	8			October 2011 ICD-9 HD Infection Denom (DFR)
186	hdptmom11_f	Num	8			November 2011 ICD-9 HD Infection Denom (DFR)
188	hdptmom12_f	Num	8			December 2011 ICD-9 HD Infection Denom (DFR)
166	hdptmom1_f	Num	8			January 2011 ICD-9 HD Infection Denom (DFR)
168	hdptmom2_f	Num	8			February 2011 ICD-9 HD Infection Denom (DFR)
170	hdptmom3_f	Num	8			March 2011 ICD-9 HD Infection Denom (DFR)
172	hdptmom4_f	Num	8			April 2011 ICD-9 HD Infection Denom (DFR)
174	hdptmom5_f	Num	8			May 2011 ICD-9 HD Infection Denom (DFR)
176	hdptmom6_f	Num	8			June 2011 ICD-9 HD Infection Denom (DFR)
178	hdptmom7_f	Num	8			July 2011 ICD-9 HD Infection Denom (DFR)
180	hdptmom8_f	Num	8			August 2011 ICD-9 HD Infection Denom (DFR)
182	hdptmom9_f	Num	8			September 2011 ICD-9 HD Infection Denom (DFR)
214	hdptmomz_f	Num	8			Total 2011 ICD-9 HD Infection Denom (DFR)

#	Variable	Type	Len	Format	Informat	Label
133	hdptmoy4_f	Num	8			F Infection: Eligible HD Patient-Months, 2010
368	icDialCharge	Char	1	$1	$1	icDialCharge
369	icPerson	Char	5	$5	$5	icPerson
370	icPersonChg	Char	1	$1	$1	icPersonChg
371	icPersonDesc	Char	5	$5		icPerson description
372	icPersonOth	Char	1	$1	$1	icPersonOth
373	icPersonOthSfy	Char	23	$23	$25	icPersonOthSfy
374	icPersonUnit	Char	1	$1	$1	icPersonUnit
131	ihhemy4_f	Num	8			F (AFS): # home HD pts on Dec 31, 2010
234	infection	Num	8			infection category used for stratification (high/low)
119	infy4_f	Num	8			% of deaths from infection, 2010
199	initHH_pct	Num	8			percent of initiation of HH items met
58	injectionport_2a9	Num	8			Injection port use
44	insertneedle_1c8	Num	8			Insert cannulation needles
6	isolation1a	Num	8			Isolation
19	isolation1b	Num	8			Isolation
31	isolation1c	Num	8			Isolation
48	isolation2a	Char	1	$1	$1	Isolation
63	isolation3a	Num	8			Isolation
77	isolation3b	Num	8			Isolation
90	isolation4a	Num	8			Isolation
104	isolation5a	Char	1	$1	$1	Isolation

#	Variable	Type	Len	Format	Informat	Label
129	iucapdy4_f	Num	8			F (AFS): # in-center CAPD pts on Dec 31, 2010
130	iuccpdy4_f	Num	8			F (AFS): # in-center CCPD pts on Dec 31, 2010
128	iuhemy4_f	Num	8			F (AFS): # in-center HD pts on Dec 31, 2010
92	machine_4a1	Num	8			Proper disposal of bloodlines and waste
51	medprep_2a2	Num	8			Meds prepared in clean area
55	meduse_2a6	Num	8			Med vial prep and use
141	modal_f	Char	1			Modality(ies) treated at facility
118	multidose_2a5	Num	8			Multi dose vial use
54	multidose_2a5a	Char	1	$1	$1	v2a5
111	multidose_5a6	Num	8			Multi dose vials not in station
137	network	Char	2			Network Number
98	nondisposable_4a7	Num	8			Non disposable items disinfected
110	nondisposable_5a5	Num	8			Non disposable items disinfected
384	numChronicPats	Num	8	11	11	numChronicPats
385	numHomePats	Num	8	11	11	numHomePats
386	numInCenterPats	Num	8	11	11	numInCenterPats
387	numPeritonealPats	Num	8	11	11	numPeritonealPats
388	numStations	Num	8	11	11	numStations
335	numcathpats	Num	8			numcathpats
333	numfistulapats	Num	8			numfistulapats

#	Variable	Type	Len	Format	Informat	Label
334	numgraftpats	Num	8			numgraftpats
441	numpats	Num	8	6	6	VAI Rate/Positive Blood Culture Rate Denominator (NHSN)
411	numpatsmo01	Num	8	6	6	January 2012 NHSN Denominator
416	numpatsmo02	Num	8	6	6	February 2012 NHSN Denominator
421	numpatsmo03	Num	8	6	6	March 2012 NHSN Denominator
426	numpatsmo04	Num	8	6	6	April 2012 NHSN Denominator
431	numpatsmo05	Num	8	6	6	May 2012 NHSN Denominator
436	numpatsmo06	Num	8	6	6	June 2012 NHSN Denominator
328	numpatsmo08	Num	8	6	6	August 2011 NHSN Denominator
391	numpatsmo09	Num	8	6	6	September 2011 NHSN Denominator
396	numpatsmo10	Num	8	6	6	October 2011 NHSN Denominator
401	numpatsmo11	Num	8	6	6	November 2011 NHSN Denominator
406	numpatsmo12	Num	8	6	6	December 2011 NHSN Denominator
375	ointTypeOthSfy	Char	17	$17	$25	ointTypeOthSfy
376	ointment	Char	1	$1	$1	ointment
377	ointmentType	Char	3	$3	$3	ointmentType
378	ointmentTypeDesc	Char	3	$3		ointment Type description
26	ointment_1b6	Num	8			antimicrobial ointment cvc exit site
327	orgID	Num	8	11	11	orgID
196	overallHH_pct	Num	8			Percent of 20 HH vars Met
138	owner_f	Char	1	$OWNER.		Profit Status

#	Variable	Type	Len	Format	Informat	Label
35	palpate_1c3	Num	8			palpate cannulation site
114	palpate_1c34	Num	8			palpate cannulation site
40	palpate_1c4a_v2	Num	8			palpate cannulation site
412	pbccountmo01	Num	8			January 2012 PCB Numerator (NHSN)
417	pbccountmo02	Num	8			February 2012 PCB Numerator (NHSN)
422	pbccountmo03	Num	8			March 2012 PCB Numerator (NHSN)
427	pbccountmo04	Num	8			April 2012 PCB Numerator (NHSN)
432	pbccountmo05	Num	8			May 2012 PCB Numerator (NHSN)
437	pbccountmo06	Num	8			June 2012 PCB Numerator (NHSN)
330	pbccountmo08	Num	8			August 2011 PCB Numerator (NHSN)
392	pbccountmo09	Num	8			September 2011 PCB Numerator (NHSN)
397	pbccountmo10	Num	8			October 2011 PCB Numerator (NHSN)
402	pbccountmo11	Num	8			November 2011 PCB Numerator (NHSN)
407	pbccountmo12	Num	8			December 2011 PCB Numerator (NHSN)
109	pockets_5a4	Num	8			Supplies not kept in pockets
124	ppcathy4_f	Num	8			% of pts receiving trmt w/ catheters, 2010
125	ppcg90y4_f	Num	8			% of pts w/ catheter only > 90 days, 2010
1	provfs	Char	6	$6	$6	provfs
380	punctPrep	Char	3	$3	$3	punctPrep
381	punctPrepOth	Char	19	$19	$25	punctPrepOth
68	reinfuse_3a4	Num	8			Reinfuse circuit
81	reinfuse_3b3	Num	8			Reinfuse circuit disconnect bloodlines

#	Variable	Type	Len	Format	Informat	Label
83	removeneedles_3b5	Num	8			Remove needles aseptically
43	scrubcann_1c7	Num	8			scrub skin over cannulation site
13	scrubextcvc_1a6	Num	8			Scurb cvc hub
70	scrubextcvc_3a6	Num	8			Scrub exterior of CVC hub w antiseptic
72	scrubhub_3a8	Num	8			Scrub CVC hub w antispetic sterile port cap
14	scrubintcvc_1a7	Num	8			Scrub internal hub
120	sepiy4_f	Num	8			% pts hospitalized with septicemia, 2010
59	sharps_2a10	Num	8			Discard syringe into sharps container
4	shift1a	Num	8			Shift
17	shift1b	Num	8			Shift
29	shift1c	Num	8			Shift
46	shift2a	Num	8			Shift
61	shift3a	Num	8			Shift
75	shift3b	Num	8			Shift
88	shift4a	Num	8			Shift
102	shift5a	Num	8			Shift
123	shrdy4_f	Num	8			F: Standardized Total Days Hospitalized Ratio, 2010
122	shrty4_f	Num	8			F: Standardized Total Admission Ratio, 2010
53	singledose_2a4	Num	8			Single dose vial use
233	size	Num	8			Facility size
121	smry4_f	Num	8			F: Standardized Mortality Ratio, 2010

#	Variable	Type	Len	Format	Informat	Label
5	staff1a	Char	7	$7	$7	Staff type
18	staff1b	Char	7	$7	$7	Staff type
30	staff1c	Char	8	$8	$8	Staff type
47	staff2a	Char	3	$3	$3	Staff type
62	staff3a	Char	7	$7	$7	Staff type
76	staff3b	Char	9	$9	$9	Staff type
89	staff4a	Char	8	$8	$8	Staff type
103	staff5a	Char	8	$8	$8	Staff type
106	storage_5a1	Num	8			Supplies stored in clean areas
237	strata	Num	8			Strata for faclity selection
191	sumHH	Num	8			Count of 20 HH vars Met
193	sumHHafter	Num	8			Total number of HH items after checklist procedure that were met
192	sumHHbefore	Num	8			Total number of HH items before checklist procedure that were met
194	sumHHinit	Num	8			Total number of HH items before initiation of dialysis that were met
190	sumtotal_met	Num	8			Total number of ICWS items that were met
9	supplies_1a2	Num	8			Assemble supplies
22	supplies_1b2	Num	8			Assemble supplies
34	supplies_1c2	Num	8			Assemble supplies
52	supplies_2a3	Num	8			Assemble supplies
66	supplies_3a2	Num	8			Assemble supplies
80	supplies_3b2	Num	8			Assemble supplies
107	supplies_5a2	Num	8			Supplies not in before station cleaned

#	Variable	Type	Len	Format	Informat	Label
108	supplies_5a3	Num	8			Supplies not moved between stations
95	surfacedisinfect_4a4	Num	8			Disinfect machine
382	surveyYear	Num	3	6	6	surveyYear
56	syringlabel_2a7	Num	8			Label syringes
389	timeSpent	Num	8	11	11	timeSpent
195	total_met_pct	Num	8			Percent of all vars Met
240	total_met_pct_f	Num	8			Percent of all vars Met, facility level
140	totstas_f	Num	8			Number of Hemo Stations
235	urban	Num	8			Flag for Urban (vs. Rural)
87	vacate_chair_4a0	Num	8			Vacate chair before cleaning
413	vaicountmo01	Num	8			January 2012 VAI Numerator (NHSN)
418	vaicountmo02	Num	8			February 2012 VAI Numerator (NHSN)
423	vaicountmo03	Num	8			March 2012 VAI Numerator (NHSN)
428	vaicountmo04	Num	8			April 2012 VAI Numerator (NHSN)
433	vaicountmo05	Num	8			May 2012 VAI Numerator (NHSN)
438	vaicountmo06	Num	8			June 2012 VAI Numerator (NHSN)
331	vaicountmo08	Num	8			August 2011 VAI Numerator (NHSN)
393	vaicountmo09	Num	8			September 2011 VAI Numerator (NHSN)
398	vaicountmo10	Num	8			October 2011 VAI Numerator (NHSN)
403	vaicountmo11	Num	8			November 2011 VIA Numerator (NHSN)
408	vaicountmo12	Num	8			December 2011 VAI Numerator (NHSN)

#	Variable	Type	Len	Format	Informat	Label
415	vainf_rate100mo01	Num	8			January 2012 Vascular Access Related Infection (NHSN)
420	vainf_rate100mo02	Num	8			February 2012 Vascular Access Related Infection (NHSN)
425	vainf_rate100mo03	Num	8			March 2012 Vascular Access Related Infection (NHSN)
430	vainf_rate100mo04	Num	8			April 2012 Vascular Access Related Infection (NHSN)
435	vainf_rate100mo05	Num	8			May 2012 Vascular Access Related Infection (NHSN)
440	vainf_rate100mo06	Num	8			June 2012 Vascular Access Related Infection (NHSN)
337	vainf_rate100mo08	Num	8			August 2011 Vascular Access Related Infection (NHSN)
395	vainf_rate100mo09	Num	8			September 2011 Vascular Access Related Infection (NHSN)
400	vainf_rate100mo10	Num	8			October 2011 Vascular Access Related Infection (NHSN)
405	vainf_rate100mo11	Num	8			November 2011 Vascular Access Related Infection (NHSN)
410	vainf_rate100mo12	Num	8			December Vascular Access Related Infection (NHSN)
444	vainf_rate_tot	Num	8			Vascular Access Related Infection (NHSN)
161	vbact100m10_f	Num	8			October 2011 Access Related Bacteremia (DFR)
163	vbact100m11_f	Num	8			November 2011 Access Related Bacteremia (DFR)
165	vbact100m12_f	Num	8			December 2011 Access Related Bacteremia (DFR)
143	vbact100m1_f	Num	8			Jan 2011 Access Related Bacteremia (DFR)

#	Variable	Type	Len	Format	Informat	Label
145	vbact100m2_f	Num	8			Feb 2011 Access Related Bacteremia (DFR)
147	vbact100m3_f	Num	8			Mar 2011 Access Related Bacteremia (DFR)
149	vbact100m4_f	Num	8			Apr 2011 Access Related Bacteremia (DFR)
151	vbact100m5_f	Num	8			May 2011 Access Related Bacteremia (DFR)
153	vbact100m6_f	Num	8			June 2011 Access Related Bacteremia (DFR)
155	vbact100m7_f	Num	8			July 2011 Access Related Bacteremia (DFR)
157	vbact100m8_f	Num	8			Aug 2011 Access Related Bacteremia (DFR)
159	vbact100m9_f	Num	8			Sept 2011 Access Related Bacteremia (DFR)
230	vbact100z_f	Num	8			Access Related Bacteremia (DFR)
135	vcathm16_f	Num	8			F New Measures: HD Access Type: Catheter, 7-12/2010
136	vcg90m16_f	Num	8			F New Measures: HD Access Type: Catheter>90 days, 7-12/2010
7	visible1a	Num	8			Visible from Nurses Station
20	visible1b	Num	8			Visible from Nurses Station
32	visible1c	Num	8			Visible from Nurses Station
49	visible2a	Char	1	$1	$1	Visible from Nurses Station
64	visible3a	Num	8			Visible from Nurses Station
78	visible3b	Num	8			Visible from Nurses Station
91	visible4a	Num	8			Visible from Nurses Station
105	visible5a	Char	1	$1	$1	Visible from Nurses Station
96	waste_4a5	Num	8			Empty and disinfect waste receptacle
332	year	Num	8			year

ICWS Variables

	Variable	Type	Len	Format	Informat	Label
248	CL2	Num	8			Percent of checklist 2 vars Met, facility level
251	CL4	Num	8			Percent of checklist 4 vars Met, facility level
252	CL5	Num	8			Percent of checklist 5 vars Met, facility level
245	CL1a	Num	8			Percent of checklist 1a vars Met, facility level
246	CL1b	Num	8			Percent of checklist 1b vars Met, facility level
247	CL1c	Num	8			Percent of checklist 1c vars Met, facility level
249	CL3a	Num	8			Percent of checklist 3a vars Met, facility level
250	CL3b	Num	8			Percent of checklist 3b vars Met, facility level
8	HH_1a1	Num	8			Hand Hygiene
10	HH_1a3	Num	8			Hand Hygiene
16	HH_1a9	Num	8			Hand Hygiene
21	HH_1b1	Num	8			Hand Hygiene
24	HH_1b4	Num	8			Hand Hygiene
28	HH_1b8	Num	8			Hand Hygiene
33	HH_1c1	Num	8			Hand Hygiene
36	HH_1c4	Num	8			Hand Hygiene
45	HH_1c9	Num	8			Hand Hygiene
116	HH_1c45	Num	8			Hand Hygiene
41	HH_1c5a_v2	Num	8			Hand Hygiene
50	HH_2a1	Num	8			Hand Hygiene
57	HH_2a8	Num	8			Hand Hygiene
60	HH_2a11	Num	8			Hand Hygiene
65	HH_3a1	Num	8			Hand Hygiene
69	HH_3a5	Num	8			Hand Hygiene
74	HH_3a10	Num	8			Hand Hygiene
79	HH_3b1	Num	8			Hand Hygiene
82	HH_3b4	Num	8			Hand Hygiene
86	HH_3b8	Num	8			Hand Hygiene
93	HH_4a2	Num	8			Hand Hygiene
101	HH_4a10	Num	8			Hand Hygiene
243	OverallHH_aft_pct_f	Num	8			Percent of 7 After HH vars Met, facility level
242	OverallHH_bef_pct_f	Num	8			Percent of 8 Before HH vars Met, facility level
244	OverallHH_init_pct_f	Num	8			Percent of 5 Initial HH vars Met, facility level
241	OverallHH_pct_f	Num	8			Percent of 20 HH vars Met, facility level
11	PPE_1a4	Num	8			PPE
23	PPE_1b3	Num	8			PPE
37	PPE_1c5	Num	8			PPE
117	PPE_1c56	Num	8			PPE
42	PPE_1c6a_v2	Num	8			PPE
253	V2_HH_1a1	Num	8			Hand Hygiene

	Variable	Type	Len	Format	Informat	Label
255	V2_HH_1a3	Num	8			Hand Hygiene
261	V2_HH_1a9	Num	8			Hand Hygiene
262	V2_HH_1b1	Num	8			Hand Hygiene
265	V2_HH_1b4	Num	8			Hand Hygiene
269	V2_HH_1b8	Num	8			Hand Hygiene
270	V2_HH_1c1	Num	8			Hand Hygiene
278	V2_HH_1c9	Num	8			Hand Hygiene
273	V2_HH_1c45	Num	8			Hand Hygiene
279	V2_HH_2a1	Num	8			Hand Hygiene
286	V2_HH_2a8	Num	8			Hand Hygiene
289	V2_HH_2a11	Num	8			Hand Hygiene
290	V2_HH_3a1	Num	8			Hand Hygiene
294	V2_HH_3a5	Num	8			Hand Hygiene
299	V2_HH_3a10	Num	8			Hand Hygiene
300	V2_HH_3b1	Num	8			Hand Hygiene
303	V2_HH_3b4	Num	8			Hand Hygiene
307	V2_HH_3b8	Num	8			Hand Hygiene
310	V2_HH_4a2	Num	8			Hand Hygiene
318	V2_HH_4a10	Num	8			Hand Hygiene
256	V2_PPE_1a4	Num	8			PPE
264	V2_PPE_1b3	Num	8			PPE
274	V2_PPE_1c56	Num	8			PPE
275	V2_Washskin_1c63	Num	8			Wash skin over access
260	V2_asceptic_1a8	Num	8			Aseptically connect syringes
305	V2_bandage_3b6	Num	8			Apply clean bandage to needle site
296	V2_bloodline_3a7	Num	8			Disconnect blood lines aseptically
314	V2_chair_4a6	Num	8			Disinfect chair
266	V2_chlorhex_1b5	Num	8			clean CDC exit site w chlorhexidine
316	V2_clamps_4a8	Num	8			Disinfect clamps
257	V2_cleanfield_1a5	Num	8			Place clean field under CVC ports
292	V2_cleanfield_3a3	Num	8			Place clean field under CVC ports
317	V2_cloth_4a9	Num	8			Discard cloth wipe
298	V2_discard_3a9	Num	8			Discard unused supplies
306	V2_discard_3b7	Num	8			Discard unused supplies

	Variable	Type	Len	Format	Informat	Label
311	V2_disinfectant_4a3	Num	8			Disinfectant soaked cloth
325	V2_disposable_5a7	Num	8			Disposable supplies are discarded
268	V2_dress_1b7	Num	8			sterile dressing to cvc exit site
287	V2_injectionport_2a9	Num	8			Injection port use
277	V2_insertneedle_1c8	Num	8			Insert cannulation needles
309	V2_machine_4a1	Num	8			Proper disposal of bloodlines and waste
280	V2_medprep_2a2	Num	8			Meds prepared in clean area
284	V2_meduse_2a6	Num	8			Med vial prep and use
283	V2_multidose_2a5	Num	8			Multi dose vial use
324	V2_multidose_5a6	Num	8			Multi dose vials not in station
315	V2_nondisposable_4a7	Num	8			Non disposable items disinfected
323	V2_nondisposable_5a5	Num	8			Non disposable items disinfected
267	V2_ointment_1b6	Num	8			antimicrobial ointment cvc exit site
272	V2_palpate_1c34	Num	8			palpate cannulation site
322	V2_pockets_5a4	Num	8			Supplies not kept in pockets
293	V2_reinfuse_3a4	Num	8			Reinfuse circuit
302	V2_reinfuse_3b3	Num	8			Reinfuse circuit disconnect bloodlines
304	V2_removeneedles_3b5	Num	8			Remove needles aseptically
276	V2_scrubcann_1c7	Num	8			scrub skin over cannulation site
258	V2_scrubextcvc_1a6	Num	8			Scurb cvc hub
295	V2_scrubextcvc_3a6	Num	8			Scrub exterior of CVC hub w antiseptic
297	V2_scrubhub_3a8	Num	8			Scrub CVC hub w antispetic sterile port cap
259	V2_scrubintcvc_1a7	Num	8			Scrub internal hub

	Variable	Type	Len	Format	Informat	Label
288	V2_sharps_2a10	Num	8			Discard syringe into sharps container
282	V2_singledose_2a4	Num	8			Single dose vial use
319	V2_storage_5a1	Num	8			Supplies stored in clean areas
254	V2_supplies_1a2	Num	8			Assemble supplies
263	V2_supplies_1b2	Num	8			Assemble supplies
271	V2_supplies_1c2	Num	8			Assemble supplies
281	V2_supplies_2a3	Num	8			Assemble supplies
291	V2_supplies_3a2	Num	8			Assemble supplies
301	V2_supplies_3b2	Num	8			Assemble supplies
320	V2_supplies_5a2	Num	8			Supplies not in before station cleaned
321	V2_supplies_5a3	Num	8			Supplies not moved between stations
312	V2_surfacedisinfect_4a4	Num	8			Disinfect machine
285	V2_syringlabel_2a7	Num	8			Label syringes
308	V2_vacate_chair_4a0	Num	8			Vacate chair before cleaning
313	V2_waste_4a5	Num	8			Empty and disinfect waste receptacle
38	Washskin_1c6	Num	8			Wash skin over access
115	Washskin_1c63	Num	8			Wash skin over access
39	Washskin_1c3a_v2	Num	8			Wash skin over access
198	afterHH_pct	Num	8			Percent of after HH items met
15	asceptic_1a8	Num	8			Aseptically connect syringes
84	bandage_3b6	Num	8			Apply clean bandage to needle site
197	beforeHH_pct	Num	8			Percent of before HH items met
200	belowavg_HH	Num	8			Below Average HH
71	bloodline_3a7	Num	8			Disconnect blood lines aseptically
97	chair_4a6	Num	8			Disinfect chair
25	chlorhex_1b5	Num	8			clean CDC exit site w chlorhexidine
99	clamps_4a8	Num	8			Disinfect clamps
12	cleanfield_1a5	Num	8			Place clean field under CVC ports
67	cleanfield_3a3	Num	8			Place clean field under CVC ports
100	cloth_4a9	Num	8			Discard cloth wipe

	Variable	Type	Len	Format	Informat	Label
73	discard_3a9	Num	8			Discard unused supplies
85	discard_3b7	Num	8			Discard unused supplies
94	disinfectant_4a3	Num	8			Disinfectant soaked cloth
112	disposable_5a7	Num	8			Disposable supplies are discarded
27	dress_1b7	Num	8			sterile dressing to cvc exit site
199	initHH_pct	Num	8			percent of initiation of HH items met
58	injectionport_2a9	Num	8			Injection port use
44	insertneedle_1c8	Num	8			Insert cannulation needles
6	isolation1a	Num	8			Isolation
19	isolation1b	Num	8			Isolation
31	isolation1c	Num	8			Isolation
48	isolation2a	Char	1	$1	$1	Isolation
63	isolation3a	Num	8			Isolation
77	isolation3b	Num	8			Isolation
90	isolation4a	Num	8			Isolation
104	isolation5a	Char	1	$1	$1	Isolation
92	machine_4a1	Num	8			Proper disposal of bloodlines and waste
51	medprep_2a2	Num	8			Meds prepared in clean area
55	meduse_2a6	Num	8			Med vial prep and use
118	multidose_2a5	Num	8			Multi dose vial use
54	multidose_2a5a	Char	1	$1	$1	v2a5
111	multidose_5a6	Num	8			Multi dose vials not in station
98	nondisposable_4a7	Num	8			Non disposable items disinfected
110	nondisposable_5a5	Num	8			Non disposable items disinfected
26	ointment_1b6	Num	8			antimicrobial ointment cvc exit site
196	overallHH_pct	Num	8			Percent of 20 HH vars Met
35	palpate_1c3	Num	8			palpate cannulation site
114	palpate_1c34	Num	8			palpate cannulation site
40	palpate_1c4a_v2	Num	8			palpate cannulation site
109	pockets_5a4	Num	8			Supplies not kept in pockets
68	reinfuse_3a4	Num	8			Reinfuse circuit
81	reinfuse_3b3	Num	8			Reinfuse circuit disconnect bloodlines
83	removeneedles_3b5	Num	8			Remove needles aseptically

	Variable	Type	Len	Format	Informat	Label
43	scrubcann_1c7	Num	8			scrub skin over cannulation site
13	scrubextcvc_1a6	Num	8			Scurb cvc hub
70	scrubextcvc_3a6	Num	8			Scrub exterior of CVC hub w antiseptic
72	scrubhub_3a8	Num	8			Scrub CVC hub w antiseptic sterile port cap
14	scrubintcvc_1a7	Num	8			Scrub internal hub
59	sharps_2a10	Num	8			Discard syringe into sharps container
4	shift1a	Num	8			Shift
17	shift1b	Num	8			Shift
29	shift1c	Num	8			Shift
46	shift2a	Num	8			Shift
61	shift3a	Num	8			Shift
75	shift3b	Num	8			Shift
88	shift4a	Num	8			Shift
102	shift5a	Num	8			Shift
53	singledose_2a4	Num	8			Single dose vial use
5	staff1a	Char	7	$7	$7	Staff type
18	staff1b	Char	7	$7	$7	Staff type
30	staff1c	Char	8	$8	$8	Staff type
47	staff2a	Char	3	$3	$3	Staff type
62	staff3a	Char	7	$7	$7	Staff type
76	staff3b	Char	9	$9	$9	Staff type
89	staff4a	Char	8	$8	$8	Staff type
103	staff5a	Char	8	$8	$8	Staff type
106	storage_5a1	Num	8			Supplies stored in clean areas
191	sumHH	Num	8			Count of 20 HH vars Met
193	sumHHafter	Num	8			Total number of HH items after checklist procedure that were met
192	sumHHbefore	Num	8			Total number of HH items before checklist procedure that were met
194	sumHHinit	Num	8			Total number of HH items before initiation of dialysis that were met
190	sumtotal_met	Num	8			Total number of ICWS items that were met
9	supplies_1a2	Num	8			Assemble supplies
22	supplies_1b2	Num	8			Assemble supplies
34	supplies_1c2	Num	8			Assemble supplies
52	supplies_2a3	Num	8			Assemble supplies
66	supplies_3a2	Num	8			Assemble supplies
80	supplies_3b2	Num	8			Assemble supplies
107	supplies_5a2	Num	8			Supplies not in before station cleaned
108	supplies_5a3	Num	8			Supplies not moved between stations

	Variable	Type	Len	Format	Informat	Label
95	surfacedisinfect_4a4	Num	8			Disinfect machine
56	syringlabel_2a7	Num	8			Label syringes
195	total_met_pct	Num	8			Percent of all vars Met
240	total_met_pct_f	Num	8			Percent of all vars Met, facility level
87	vacate_chair_4a0	Num	8			Vacate chair before cleaning
7	visible1a	Num	8			Visible from Nurses Station
20	visible1b	Num	8			Visible from Nurses Station
32	visible1c	Num	8			Visible from Nurses Station
49	visible2a	Char	1	$1	$1	Visible from Nurses Station
64	visible3a	Num	8			Visible from Nurses Station
78	visible3b	Num	8			Visible from Nurses Station
91	visible4a	Num	8			Visible from Nurses Station
105	visible5a	Char	1	$1	$1	Visible from Nurses Station
96	waste_4a5	Num	8			Empty and disinfect waste receptacle

NHSN Variables

#	Variable	Type	Len	Format	Informat	Label
329	ABXCount	Num	8			antibiotic count
442	PBCCount	Num	8			Total 2011-12 PCB Numerator (NHSN)
443	VAICount	Num	8			Total 2011-12 VAI Numerator (NHSN)
414	bact_rate100mo01	Num	8			January 2012 Positive Blood Culture (NHSN)
419	bact_rate100mo02	Num	8			February 2012 Positive Blood Culture (NHSN)
424	bact_rate100mo03	Num	8			March 2012 Positive Blood Culture (NHSN)
429	bact_rate100mo04	Num	8			April 2012 Positive Blood Culture (NHSN
434	bact_rate100mo05	Num	8			May 2012 Positive Blood Culture (NHSN
439	bact_rate100mo06	Num	8			June 2012 Positive Blood Culture (NHSN
336	bact_rate100mo08	Num	8			August 2011 Positive Blood Culture (NHSN)
394	bact_rate100mo09	Num	8			September 2011 Positive Blood Culture (NHSN)
399	bact_rate100mo10	Num	8			October 2011 Positive Blood Culture (NHSN)
404	bact_rate100mo11	Num	8			November 2011 Positive Blood Culture (NHSN)

#	Variable	Type	Len	Format	Informat	Label
409	bact_rate100mo12	Num	8			December 2011 Positive Blood Culture (NHSN)
445	bact_rate_tot	Num	8			Positive Blood Culture (NHSN)
338	cathPort	Char	3	$3	$3	cathPort
339	cathPortDesc	Char	3	$3		cathPort description
340	cathPortOth	Char	25	$25	$25	cathPortOth
341	chlorhexUsed	Char	1	$1	$1	chlorhexUsed
342	chlorhexUsedDesc	Char	1	$1		chlorhexUsed description
343	dialHome	Char	1	$1	$1	dialHome
344	dialInCenter	Char	1	$1	$1	dialInCenter
345	dialPeritoneal	Char	1	$1	$1	dialPeritoneal
346	drawLocation	Char	7	$7	$7	drawLocation
347	drawLocationDesc	Char	1	$1		drawLocation description
348	drawLocationOth	Char	20	$20	$25	drawLocationOth
349	dressBAid	Char	1	$1	$1	dressBAid
383	dressChanged	Num	8	6	$6	dressChanged
350	dressChlorhex	Char	1	$1	$1	dressChlorhex
351	dressGauze	Char	1	$1	$1	dressGauze
352	dressKit	Char	1	$1	$1	dressKit
353	dressNone	Char	1	$1	$1	dressNone
354	dressOth	Char	1	$1	$1	dressOth
355	dressOthSfy	Char	1	$1	$25	dressOthSfy
356	dressTrans	Char	1	$1	$1	dressTrans
357	dressing	Char	5	$5	$6	dressing
358	dressingDesc	Char	5	$5		dressing description
359	dressingOth	Char	21	$21	$25	dressingOth
360	facOwnerDial	Char	3	$3	$3	facOwnerDial
361	facOwnerDialDesc	Char	3	$3		facOwnerDial description
362	factype	Char	8	$8	$15	factype
363	groupMember	Char	1	$1	$1	groupMember
364	groupName	Char	1	$1	$20	groupName
365	groupNameCode	Char	6	$6	$6	groupNameCode
366	groupNameCodeDesc	Char	6	$6		groupNameCode description
367	groupNameOth	Char	20	$20	$20	groupNameOth
368	icDialCharge	Char	1	$1	$1	icDialCharge
369	icPerson	Char	5	$5	$5	icPerson
370	icPersonChg	Char	1	$1	$1	icPersonChg
371	icPersonDesc	Char	5	$5		icPerson description

#	Variable	Type	Len	Format	Informat	Label
372	icPersonOth	Char	1	$1	$1	icPersonOth
373	icPersonOthSfy	Char	23	$23	$25	icPersonOthSfy
374	icPersonUnit	Char	1	$1	1	icPersonUnit
384	numChronicPats	Num	8	11	11	numChronicPats
385	numHomePats	Num	8	11	11	numHomePats
386	numInCenterPats	Num	8	11	11	numInCenterPats
387	numPeritonealPats	Num	8	11	11	numPeritonealPats
388	numStations	Num	8	11	11	numStations
335	numcathpats	Num	8			numcathpats
333	numfistulapats	Num	8			numfistulapats
334	numgraftpats	Num	8			numgraftpats
441	numpats	Num	8	6	6	VAI Rate/Positive Blood Culture Rate Denominator (NHSN)
411	numpatsmo01	Num	8	6	6	January 2012 NHSN Denominator
416	numpatsmo02	Num	8	6	6	February 2012 NHSN Denominator
421	numpatsmo03	Num	8	6	6	March 2012 NHSN Denominator
426	numpatsmo04	Num	8	6	6	April 2012 NHSN Denominator
431	numpatsmo05	Num	8	6	6	May 2012 NHSN Denominator
436	numpatsmo06	Num	8	6	6	June 2012 NHSN Denominator
328	numpatsmo08	Num	8	6	6	August 2011 NHSN Denominator
391	numpatsmo09	Num	8	6	6	September 2011 NHSN Denominator
396	numpatsmo10	Num	8	6	6	October 2011 NHSN Denominator
401	numpatsmo11	Num	8	6	6	November 2011 NHSN Denominator
406	numpatsmo12	Num	8	6	6	December 2011 NHSN Denominator
375	ointTypeOthSfy	Char	17	$17	$25	ointTypeOthSfy
376	ointment	Char	1	$1	$1	ointment
377	ointmentType	Char	3	$3	$3	ointmentType
378	ointmentTypeDesc	Char	3	$3		ointment Type description
327	orgID	Num	8	11	11	orgID
412	pbccountmo01	Num	8			January 2012 PCB Numerator (NHSN)
417	pbccountmo02	Num	8			February 2012 PCB Numerator (NHSN)
422	pbccountmo03	Num	8			March 2012 PCB Numerator (NHSN)
427	pbccountmo04	Num	8			April 2012 PCB Numerator (NHSN)
432	pbccountmo05	Num	8			May 2012 PCB Numerator (NHSN)
437	pbccountmo06	Num	8			June 2012 PCB Numerator (NHSN)
330	pbccountmo08	Num	8			August 2011 PCB Numerator (NHSN)
392	pbccountmo09	Num	8			September 2011 PCB Numerator (NHSN)
397	pbccountmo10	Num	8			October 2011 PCB Numerator (NHSN)
402	pbccountmo11	Num	8			November 2011 PCB Numerator (NHSN)
407	pbccountmo12	Num	8			December 2011 PCB Numerator (NHSN)

#	Variable	Type	Len	Format	Informat	Label
380	punctPrep	Char	3	$3	$3	punctPrep
381	punctPrepOth	Char	19	$19	$25	punctPrepOth
382	surveyYear	Num	3	6	6	surveyYear
389	timeSpent	Num	8	11	11	timeSpent
413	vaicountmo01	Num	8			January 2012 VAI Numerator (NHSN)
418	vaicountmo02	Num	8			February 2012 VAI Numerator (NHSN)
423	vaicountmo03	Num	8			March 2012 VAI Numerator (NHSN)
428	vaicountmo04	Num	8			April 2012 VAI Numerator (NHSN)
433	vaicountmo05	Num	8			May 2012 VAI Numerator (NHSN)
438	vaicountmo06	Num	8			June 2012 VAI Numerator (NHSN)
331	vaicountmo08	Num	8			August 2011 VAI Numerator (NHSN)
393	vaicountmo09	Num	8			September 2011 VAI Numerator (NHSN)
398	vaicountmo10	Num	8			October 2011 VAI Numerator (NHSN)
403	vaicountmo11	Num	8			November 2011 VIA Numerator (NHSN)
408	vaicountmo12	Num	8			December 2011 VAI Numerator (NHSN)
415	vainf_rate100mo01	Num	8			January 2012 Vascular Access Related Infection (NHSN)
420	vainf_rate100mo02	Num	8			February 2012 Vascular Access Related Infection (NHSN)
425	vainf_rate100mo03	Num	8			March 2012 Vascular Access Related Infection (NHSN)
430	vainf_rate100mo04	Num	8			April 2012 Vascular Access Related Infection (NHSN)
435	vainf_rate100mo05	Num	8			May 2012 Vascular Access Related Infection (NHSN)
440	vainf_rate100mo06	Num	8			June 2012 Vascular Access Related Infection (NHSN)
337	vainf_rate100mo08	Num	8			August 2011 Vascular Access Related Infection (NHSN)
395	vainf_rate100mo09	Num	8			September 2011 Vascular Access Related Infection (NHSN)
400	vainf_rate100mo10	Num	8			October 2011 Vascular Access Related Infection (NHSN)
405	vainf_rate100mo11	Num	8			November 2011 Vascular Access Related Infection (NHSN)
410	vainf_rate100mo12	Num	8			December Vascular Access Related Infection (NHSN)
444	vainf_rate_tot	Num	8			Vascular Access Related Infection (NHSN)

DFR Variables

#	Variable	Type	Len	Format	Informat	Label
161	HDinfDm10_f	Num	8			Oct 2011 V-Mod Denom (DFR)
162	HDinfDm11_f	Num	8			Nov 2011 V-Mod Denom (DFR)
164	HDinfDm12_f	Num	8			Dec 2011 V-Mod Denom (DFR)
142	HDinfDm1_f	Num	8			Jan 2011 V-Mod Denom (DFR)

#	Variable	Type	Len	Format	Informat	Label
144	HDinfDm2_f	Num	8			Feb 2011 V-Mod Denom (DFR)
146	HDinfDm3_f	Num	8			Mar 2011 V-Mod Denom (DFR)
148	HDinfDm4_f	Num	8			Apr 2011 V-Mod Denom (DFR)
150	HDinfDm5_f	Num	8			May 2011 V-Mod Denom (DFR)
152	HDinfDm6_f	Num	8			June 2011 V-Mod Denom (DFR)
154	HDinfDm7_f	Num	8			July 2011 V-Mod Denom (DFR)
156	HDinfDm8_f	Num	8			Aug 2011 V-Mod Denom (DFR)
158	HDinfDm9_f	Num	8			Sept 2011 V-Mod Denom (DFR)
229	HDinfDmz_f	Num	8			Jan-Dec 2011 V-Mod Denom (DFR)
231	LDO	Num	8			Large Dialysis Organization
232	LDO2	Num	8			Large Dialysis Organization flag
390	Provnum	Char	6	$6	$6	Provnum
236	above_median_income	Num	8			SES for facility selection
126	allcnty4_f	Num	8			F (AFS): # of pts, 2010
225	bactnum10_f	Num	8			October 2011 V-Mod Numerator (DFR)
226	bactnum11_f	Num	8			November 2011 V-Mod Numerator (DFR)
227	bactnum12_f	Num	8			December 2011 V-Mod Numerator (DFR)
216	bactnum1_f	Num	8			Jan 2011 V-Mod Numerator (DFR)
217	bactnum2_f	Num	8			Feb 2011 V-Mod Numerator (DFR)
218	bactnum3_f	Num	8			Mar 2011 V-Mod Numerator (DFR)
219	bactnum4_f	Num	8			Apr 2011 V-Mod Numerator (DFR)
220	bactnum5_f	Num	8			May 2011 V-Mod Numerator (DFR)
221	bactnum6_f	Num	8			June 2011 V-Mod Numerator (DFR)
222	bactnum7_f	Num	8			July 2011 V-Mod Numerator (DFR)
223	bactnum8_f	Num	8			August 2011 V-Mod Numerator (DFR)
224	bactnum9_f	Num	8			September 2011 V-Mod Numerator (DFR)
228	bactnumz_f	Num	8			V-Mod Numerator (DFR)
139	chainnam	Char	40			Name of dialysis chain from SIMS
127	endcnty4_f	Num	8			F (AFS): # of all pts on Dec 31, 2010
185	hdinf100mom10_f	Num	8			October 2011 ICD-9 HD Infection Rate (DFR)
187	hdinf100mom11_f	Num	8			November 2011 ICD-9 HD Infection Rate (DFR)
189	hdinf100mom12_f	Num	8			December 2011 ICD-9 HD Infection Rate (DFR)
167	hdinf100mom1_f	Num	8			January 2011 ICD-9 HD Infection Rate (DFR)
169	hdinf100mom2_f	Num	8			February 2011 ICD-9 HD Infection Rate (DFR)
171	hdinf100mom3_f	Num	8			March 2011 ICD-9 HD Infection Rate (DFR)
173	hdinf100mom4_f	Num	8			April 2011 ICD-9 HD Infection Rate (DFR)

#	Variable	Type	Len	Format	Informat	Label
175	hdinf100mom5_f	Num	8			May 2011 ICD-9 HD Infection Rate (DFR)
177	hdinf100mom6_f	Num	8			June 2011 ICD-9 HD Infection Rate (DFR)
179	hdinf100mom7_f	Num	8			July 2011 ICD-9 HD Infection Rate (DFR)
181	hdinf100mom8_f	Num	8			August 2011 ICD-9 HD Infection Rate (DFR)
183	hdinf100mom9_f	Num	8			September 2011 ICD-9 HD Infection Rate (DFR)
215	hdinf100momz_f	Num	8			Total 2011 ICD-9 HD Infection Rate (DFR)
134	hdinf100moy4_f	Num	8			F Infection: HD Infection rate per 100 HD Patient-Months, 2010
210	hdnumm10_f	Num	8			October 2011 ICD-9 HD Infection Numer (DFR)
211	hdnumm11_f	Num	8			November 2011 ICD-9 HD Infection Numer (DFR)
212	hdnumm12_f	Num	8			December 2011 ICD-9 HD Infection Numer (DFR)
201	hdnumm1_f	Num	8			January 2011 ICD-9 HD Infection Numer (DFR)
202	hdnumm2_f	Num	8			Febuary 2011 ICD-9 HD Infection Numer (DFR)
203	hdnumm3_f	Num	8			March 2011 ICD-9 HD Infection Numer (DFR)
204	hdnumm4_f	Num	8			April 2011 ICD-9 HD Infection Numer (DFR)
205	hdnumm5_f	Num	8			May 2011 ICD-9 HD Infection Numer (DFR)
206	hdnumm6_f	Num	8			June 2011 ICD-9 HD Infection Numer (DFR)
207	hdnumm7_f	Num	8			July 2011 ICD-9 HD Infection Numer (DFR)
208	hdnumm8_f	Num	8			August 2011 ICD-9 HD Infection Numer (DFR)
209	hdnumm9_f	Num	8			September 2011 ICD-9 HD Infection Numer (DFR)
213	hdnummz_f	Num	8			Total 2011 ICD-9 HD Infection Numer (DFR)
132	hdpaty4_f	Num	8			F Infection: Eligible HD Patients, 2010
184	hdptmom10_f	Num	8			October 2011 ICD-9 HD Infection Denom (DFR)
186	hdptmom11_f	Num	8			November 2011 ICD-9 HD Infection Denom (DFR)
188	hdptmom12_f	Num	8			December 2011 ICD-9 HD Infection Denom (DFR)
166	hdptmom1_f	Num	8			January 2011 ICD-9 HD Infection Denom (DFR)
168	hdptmom2_f	Num	8			February 2011 ICD-9 HD Infection Denom (DFR)
170	hdptmom3_f	Num	8			March 2011 ICD-9 HD Infection Denom (DFR)
172	hdptmom4_f	Num	8			April 2011 ICD-9 HD Infection Denom (DFR)
174	hdptmom5_f	Num	8			May 2011 ICD-9 HD Infection Denom (DFR)
176	hdptmom6_f	Num	8			June 2011 ICD-9 HD Infection Denom (DFR)
178	hdptmom7_f	Num	8			July 2011 ICD-9 HD Infection Denom (DFR)
180	hdptmom8_f	Num	8			August 2011 ICD-9 HD Infection Denom (DFR)

#	Variable	Type	Len	Format	Informat	Label
182	hdptmom9_f	Num	8			September 2011 ICD-9 HD Infection Denom (DFR)
214	hdptmomz_f	Num	8			Total 2011 ICD-9 HD Infection Denom (DFR)
133	hdptmoy4_f	Num	8			F Infection: Eligible HD Patient-Months, 2010
131	ihhemy4_f	Num	8			F (AFS): # home HD pts on Dec 31, 2010
234	infection	Num	8			infection category used for stratification (high/low)
119	infy4_f	Num	8			% of deaths from infection, 2010
129	iucapdy4_f	Num	8			F (AFS): # in-center CAPD pts on Dec 31, 2010
130	iuccpdy4_f	Num	8			F (AFS): # in-center CCPD pts on Dec 31, 2010
128	iuhemy4_f	Num	8			F (AFS): # in-center HD pts on Dec 31, 2010
141	modal_f	Char	1			Modality(ies) treated at facility
137	network	Char	2			Network Number
138	owner_f	Char	1	$OWNER.		Profit Status
124	ppcathy4_f	Num	8			% of pts receiving trmt w/ catheters, 2010
125	ppcg90y4_f	Num	8			% of pts w/ catheter only > 90 days, 2010
1	provfs	Char	6	$6	$6	provfs
120	sepiy4_f	Num	8			% pts hospitalized with septicemia, 2010
123	shrdy4_f	Num	8			F: Standardized Total Days Hospitalized Ratio, 2010
122	shrty4_f	Num	8			F: Standardized Total Admission Ratio, 2010
233	size	Num	8			Facility size
121	smry4_f	Num	8			F: Standardized Mortality Ratio, 2010
237	strata	Num	8			Strata for faclity selection
140	totstas_f	Num	8			Number of Hemo Stations
235	urban	Num	8			Flag for Urban (vs. Rural)
161	vbact100m10_f	Num	8			October 2011 Access Related Bacteremia (DFR)
163	vbact100m11_f	Num	8			November 2011 Access Related Bacteremia (DFR)
165	vbact100m12_f	Num	8			December 2011 Access Related Bacteremia (DFR)
143	vbact100m1_f	Num	8			Jan 2011 Access Related Bacteremia (DFR)
145	vbact100m2_f	Num	8			Feb 2011 Access Related Bacteremia (DFR)
147	vbact100m3_f	Num	8			Mar 2011 Access Related Bacteremia (DFR)
149	vbact100m4_f	Num	8			Apr 2011 Access Related Bacteremia (DFR)
151	vbact100m5_f	Num	8			May 2011 Access Related Bacteremia (DFR)
153	vbact100m6_f	Num	8			June 2011 Access Related Bacteremia (DFR)
155	vbact100m7_f	Num	8			July 2011 Access Related Bacteremia (DFR)
157	vbact100m8_f	Num	8			Aug 2011 Access Related Bacteremia (DFR)
159	vbact100m9_f	Num	8			Sept 2011 Access Related Bacteremia (DFR)
230	vbact100z_f	Num	8			Access Related Bacteremia (DFR)
135	vcathm16_f	Num	8			F New Measures: HD Access Type: Catheter, 7-12/2010

#	Variable	Type	Len	Format	Informat	Label
136	vcg90m16_f	Num	8			F New Measures: HD Access Type: Catheter>90 days, 7-12/2010
332	year	Num	8			year