Colorado Department of Public Health and Environment

Health Facility Acquired Infections Disclosure Initiative
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An Assessment of Implementation of CDC's Core Interventions to Prevent Dialysis-Related Bloodstream Infections Based on Recent Annual Dialysis Center Practices Surveys

Introduction

As required Colorado's Healthcare Associated Infections (HAI) Disclosure Law, (CRS 25-3-601), Colorado outpatient dialysis centers began submitting dialysis-related infection data to the Colorado Department of Public Health and Environment (CDPHE) in March 2010. The Disclosure Law mandates that facilities report their HAI data through the National Healthcare Safety Network (NHSN), a national web-based surveillance and reporting system managed by the Centers for Disease Control and Prevention (CDC). Since January 2012, outpatient dialysis centers participating in the Centers for Medicare and Medicaid Services (CMS) End-Stage Renal Disease (ESRD) Quality Incentive Program are required to monitor patients for HAI and report HAI data into the NHSN or face fiscal penalties which are tied to reimbursement rates for treatment.

In reporting HAI data into the NHSN, dialysis centers must complete an annual practices survey, which requests information on infection control practices and implementation of CDC recommended core interventions for dialysis bloodstream infection (BSI) prevention, found at: http://www.cdc.gov/dialysis/prevention-tools/core-interventions.html

The nine core interventions for dialysis BSI prevention recommended by CDC are:

1. Surveillance and feedback using NHSN
2. Hand hygiene observations
3. Catheter/vascular access care observations
4. Staff education and competency
5. Patient education/engagement
6. Catheter reduction
7. Chlorhexidine for skin antisepsis
8. Catheter hub disinfection
9. Anti-microbial ointment

Methods

The NHSN annual survey was used to estimate how well Colorado dialysis facilities are following the CDC core interventions for dialysis BSI prevention. While the annual survey does not specifically address all nine interventions, it indirectly assesses the implementation of most of the interventions and other activities related to the recommended interventions. The list below presents a description of CDC's recommended

interventions to prevent dialysis-related BSIs, along with relevant survey items, summary responses from outpatient dialysis centers in Colorado, and CDPHE efforts to address the recommended interventions.

Results

Survey responses from both 2014 (n=62) and 2015 (n=74) surveys are presented to assess changes in practice and adoption of the CDC core interventions.

1. **Surveillance and feedback using NHSN**

Description: Conduct monthly surveillance for bloodstream infections (BSI) and other dialysis events using NHSN; calculate facility rates and compare to rates in other NHSN facilities, and; actively share results with front-line clinical staff.

There is no specific item within the NHSN survey which directly addresses this intervention. However, all Colorado outpatient dialysis facilities actively report monthly dialysis events using NHSN, and the data is used by CDPHE. CDPHE provides dialysis facilities with quarterly feedback reports containing their facility-specific infection rates and a state aggregate comparison. Facilities are encouraged to utilize these reports in their quality improvement efforts. CDPHE staff have implemented and delivered training to facilities on accessing infection related data by using NHSN's data analysis functions. The number of facilities that actively share results with front-line clinical staff was not determined in this survey.

2. **Hand hygiene observations**

Description: Perform observations of hand hygiene opportunities monthly and share results with clinical staff.

There are two items within the NHSN survey which address hand hygiene interventions, as follows:

NHSN survey item: Proportion of dialysis facilities indicating that they performed hand hygiene audits of staff monthly or more frequently.

In 2014, 84% of dialysis facilities indicated that they performed hand hygiene audits at least monthly; in 2015, the proportion was 88%.

NHSN survey item: Proportion of dialysis facilities indicating that they participated in a national or regional initiative focused on hand hygiene.

In 2014, of the dialysis facilities that participated in a national or regional initiative, 77% indicated that they participated in an initiative focused on hand hygiene; in 2015 the proportion was 58%. It is unknown why this proportion may have declined, but possible reasons might include facilities' recent participation in such initiatives, fewer initiatives offered, and incorporation of routine hand hygiene auditing practice in their facilities resulting in decreased need for participation in such initiatives.

3. **Catheter/vascular access care observations**

Description: Perform observations of vascular access care and catheter accessing quarterly; assess staff adherence to aseptic technique when connecting and disconnecting catheters and during dressing changes, and; actively share results with clinical staff.

NHSN survey items: Proportion of facilities indicating they perform observations of staff vascular access care and catheter accessing practices at least quarterly; and proportion of facilities indicating they perform observations of staff vascular access care and catheter accessing practices at least annually.

The proportion of facilities indicating they performed observations of staff vascular access care and catheter accessing practices at least quarterly increased from 89% in 2014 to 93% in 2015. The proportion of facilities saying they performed these observations at least annually increased from 89% in 2014 to 96% in 2015.

4. **Staff education and competency**

Description: Train staff on infection control topics, including access care and aseptic technique. Perform competency evaluation for skills such as catheter care and accessing every 12 months and upon hire.

No NHSN survey item directly assessed staff education and competency evaluations. However, implementation of this intervention may be indirectly assessed by reviewing the competency evaluations addressed in item 3 above. There was an increase from 89% in 2014 to 93% of facilities in 2015 indicating they performed observations of staff vascular access care and catheter accessing practices at least quarterly, and an increase from 89% (2014) to 96% (2015) who reported they performed these observations at least annually.

5. **Patient education and engagement**

Description: Provide standardized education to all patients on infection prevention topics including vascular access care, hand hygiene, risks related to catheter use, recognizing signs of infection, and instructions for access management when away from the dialysis unit.

No survey item directly assessed patient education and engagements efforts. However, 53 dialysis facilities that participated in national or regional infection prevention projects in 2014, and 54 dialysis facilities that participated in 2015 were asked to specify the primary focuses of those initiatives. In 2014, 58% of those projects focused on patient education and engagement for infection prevention; in 2015, this declined to 50%. It is unknown why this proportion may have declined, but possible reasons might include facilities' recent participation in such initiatives, fewer initiatives offered, and incorporation of standardized patient education practice in their facilities resulting in decreased need for participation in such initiatives. NHSN survey results do not specify the individual topics that were presented to patients during the 2014 and 2015 education efforts.

6. **Catheter reduction**

Description: Incorporate efforts (e.g., through patient education, vascular access coordinator) to reduce catheters by identifying and addressing barriers to permanent vascular access placement and catheter removal.

While efforts to address barriers to catheter reduction were not directly assessed in the NHSN survey, there was a slight reduction in the proportion of facilities participating in national or regional initiatives focused on catheter reduction from 63% in 2014, to 60% in 2015.

Based on NHSN data, there was little change in the types of vascular accesses used for dialysis in Colorado outpatient dialysis facilities from 2014 to 2015.

2014/2015 Vascular Accesses in Use for Chronic, Maintenance, Non-Transient Hemodialysis Patients*

Vascular Access Type	2014	2015
Arteriovenous fistula (AVF)	75%	74%
Tunneled central venous catheter (CVC)	14%	16%
Arteriovenous graft (AVG)	10%	10%
Non-tunneled CVC	0%	0.03%
Other type (e.g., hybrid, hero graft)	0%	0.17%

*Data Source: January 2014 and February 2015 NHSN Dialysis Center Practices Surveys

Colorado's aggregate AVF rate is 74% which exceeds the 68% AVF use goal recommended by CMS. CMS currently recommends a long-term CVC (prevalent) use rate of 10%. The results show a slight increase in catheter use (all types) from 2014 to 2015. Because NHSN data do not distinguish between incident and prevalent catheters, it is unclear whether this increase is due to an increased placement of CVCs in new patients, or an increased CVC usage in prevalent patients. Since most vascular access related infections are found in patients with CVCs, a further reduction in catheter usage, either incident or prevalent, may positively impact the state's future infection rates.

7. **Chlorhexidine for skin antisepsis**

Description: Use an alcohol-based chlorhexidine (>0.5%) solution as the first line skin antiseptic agent for central line insertion and during dressing changes.

NHSN survey item: Proportion of facilities using different antiseptic types when the CVC dressing is changed.

2014/2015 Antiseptic/Disinfectant Used for CVC Exit Site Care *

Antiseptic/Disinfectant Type	% of Facilities	
	2014	2015
Chlorhexidine with alcohol (e.g., Chloraprep, Chlorascrub).	23%	74%
Chlorhexidine without alcohol	5%	10%
Sodium hypochlorite solution (ExSept, Alcavis)	60%	10%
Alcohol	7%	4%
Povidone-iodine	0%	1%
Other (e.g., Hibiclens)	7%	1%

*Data Source: January 2014 and February 2015 NHSN Dialysis Center Practices Surveys

These results show a considerable increase in the use of chlorhexidine with alcohol, the recommended antiseptic to be used for catheter care. This change may be attributed in part to a change in policy implemented by one large dialysis corporation in 2014.

8. **Catheter hub disinfection**

Description: Scrub catheter hubs with an appropriate antiseptic after cap is removed and before accessing. Perform every time catheter is accessed or disconnected. Disinfectant should be compatible with catheter composition.

NHSN survey item: Proportion of facilities using different antiseptic types to scrub the catheter hubs when caps or lines are disconnected.

2014/2015 Antiseptic/Disinfectant Used to "Scrub the Hub" *

Antiseptic/Disinfectant Type	% of Facilities	
	2014	2015
Alcohol	19%	72%
Sodium hypochlorite (e.g., Alcavis)	61%	16%
Chlorhexidine with alcohol	5%	5%
Chlorhexidine without alcohol	5%	4%

*Data Source: January 2014 and February 2015 NHSN Dialysis Center Practices Surveys

Between 2014 and 2015, more facilities indicated they are using alcohol to clean catheter hubs rather than sodium hypochlorite products. This increase may be attributed in part to a change in policy implemented by one large dialysis corporation in 2014. At this time, the CDC does not recommend a specific product be used for disinfection of the catheter hubs, but rather recommends the use of a disinfectant that is compatible with the catheter.

9. **Antimicrobial ointment**

Description: Apply antibiotic ointment or povidone-iodine ointment to catheter exit sites during dressing change.

NHSN survey item: Proportion of facilities reporting routine application of antimicrobial ointment to the exit site during CVC dressing change.

The proportion of facilities reporting routine application of antimicrobial ointment to the CVC exit site during dressing changes has increased from 13% in 2014, to 15% in 2015. While there was a slight improvement in use of antimicrobial ointment, it is noted that of the 9 core interventions recommended by the CDC, Colorado dialysis facilities use ointment application during dressing changes the least. The reason for the underutilization among Colorado facilities is not clear and will be explored further through our Dialysis Infection Prevention program.

Conclusions

This bulletin highlights the implementation of the CDC core interventions for dialysis BSI prevention in Colorado, based on the NHSN annual survey. Findings indicate improvement in certain recommended interventions (audits of infection prevention practices, CVC care, staff competency, use of chlorhexidine with alcohol, and use of scrub the hub protocol); other interventions (CVC reduction, patient education regional/national initiatives, and use of antimicrobial ointment at the exit site) were not as uniformly implemented or showed little to no improvement between 2014 and 2015, suggesting that more work is needed to ensure consistent implementation of recommended practices to minimize infection risks among this vulnerable patient population. These results will be used by CDPHE to continue to educate dialysis facilities on the nine core interventions and other critical infection control practices.