Catheter and Access Infections

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and other CDC collaborative members

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Nothing to Disclose

The findings and conclusions in this report are those of the author and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Introduction/Background

- 2003: first unlicensed dialysis technician
- 2005: studied and received CCHT
- 2007: became chief technician and educator
- 2008: bio-medical and water
  - On NRAA list of experts
- 2010: supervisor
- 2012: dialysis coordinator
What makes me want to change things?

- Perfect dialysis patient
- Infection settled on spine
- Paralysis and other issues
- Decreased quality of life
Summary

- Highlight several infection prevention issues affecting the care of chronic outpatient dialysis patients
- Discuss bloodstream infections and accesses
- CDC collaborative
  - Catheter care
  - Access care
- What can you do to help?
Dialysis in the United States

- More than 5,600 dialysis centers
- Provide care for about 413,000 patients on PD or HD (384,000 HD)
- Centers are usually freestanding
- Two providers have about 60% of centers and care for about 60% of patients
Infection Prevention in Outpatient Dialysis Settings

- Minimum standards set by CMS Conditions for Coverage
- Generally follows CDC's Recommendations for Preventing Transmission of Infections Among Chronic Hemodialysis Patients (2001)
- Most facilities not overseen by Infection Preventionist
  - Infection Prevention generally responsibility of a single facility staff member (nurse)
  - This person often has multiple responsibilities

CDC recommendations available at: http://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf
Issues Surrounding Infection Control in Outpatient Dialysis Settings

- Vulnerable population
  - Multiple exposures to healthcare (MDROs)
- Frequent access to bloodstream required
- High potential for environmental blood contamination
- On-site ancillary support often lacking
  - Lab capacity
  - Consultation
- Often crowded/shared, “high intensity” treatment space
  - Emphasis on efficiency
BLOODSTREAM INFECTIONS
Change in Adjusted All-Cause & Cause-Specific Hospitalization Rates, by Modality

Period prevalent ESRD patients. Adj: age/gender/race/primary diagnosis
USRDS 2012 Annual Report
## BSI Risk Factors

<table>
<thead>
<tr>
<th>Study</th>
<th>AV fistula</th>
<th>AV graft</th>
<th>Permanent CVC</th>
<th>Temporary CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHSN 2006</td>
<td>0.5/100 pt months</td>
<td>0.9/100 pt months</td>
<td>4.2/100 pt months</td>
<td>27.1/100 pt months</td>
</tr>
<tr>
<td>Dopirak et al.</td>
<td>0.13/100 pt months</td>
<td></td>
<td>3.5/100 pt months</td>
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</table>

2009 – Estimated to be 41,000 central line-associated bloodstream infections in US hospitals

2008 – Estimated to be 37,000 access-related bloodstream infections among outpatient dialysis patients with catheters
<table>
<thead>
<tr>
<th>Interventions: Surveillance and Catheter Care</th>
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</thead>
<tbody>
<tr>
<td><strong>Surveillance and data feedback using NHSN</strong></td>
</tr>
<tr>
<td><strong>Chlorhexidine for skin antisepsis</strong></td>
</tr>
<tr>
<td><strong>Catheter hub cleansing</strong></td>
</tr>
<tr>
<td><strong>Antimicrobial ointment or chlorhexidine-impregnated sponge dressing</strong></td>
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</tbody>
</table>

Interventions: Practice Audits with Feedback

<table>
<thead>
<tr>
<th>Hand hygiene observations</th>
<th>Perform monthly hand hygiene audits with feedback of results to clinical staff.</th>
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<tbody>
<tr>
<td>Catheter care/vascular access observations</td>
<td>Perform quarterly audits of vascular access care and catheter accessing to ensure adherence to recommended procedures. This includes aseptic technique while connecting and disconnecting catheters and during dressing changes. Share results with front-line clinical staff.</td>
</tr>
</tbody>
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Collaborative Audit Tools & Protocols
http://www.cdc.gov/dialysis/collaborative/tool-resources/index.html
### Interventions: Education & Catheter Reduction

<table>
<thead>
<tr>
<th>Staff education and competency</th>
<th>Provide regular training of staff on infection control topics, including access care and aseptic technique. Perform competency evaluation for skills such as catheter care and accessing at least every 6-12 months and upon hire.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient education and engagement</td>
<td>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.</td>
</tr>
<tr>
<td>Catheter reduction</td>
<td>Pursue efforts to reduce catheters (e.g., through patient education, vascular access coordinator) by identifying barriers to permanent vascular access placement and catheter removal.</td>
</tr>
</tbody>
</table>

Bloodstream infection rates before and after intervention in 17 facilities participating in the CDC Dialysis Bloodstream Infection Prevention Collaborative

Yi S et al. Reduction in Bloodstream Infections in Outpatient Hemodialysis Centers Participating in a CDC Prevention Collaborative. 2012 Annual NKF Spring Clinical Meeting, Washington DC
Access-related bloodstream infection rates before and after intervention in 17 facilities participating in the CDC Dialysis Bloodstream Infection Prevention Collaborative

Yi S et al. Reduction in Bloodstream Infections in Outpatient Hemodialysis Centers Participating in a CDC Prevention Collaborative. 2012 Annual NKF Spring Clinical Meeting, Washington DC
Collaborative Website & Tools

Dialysis Bloodstream Infection (BSI) Prevention Collaborative

The CDC Dialysis BSI Prevention Collaborative is a partnership aimed at preventing bloodstream infections (BSIs) in hemodialysis patients. The prevention collaborative is open to freestanding and hospital-based outpatient dialysis facilities across the country. Participating facilities measure BSIs using the dialysis event surveillance module in the National Healthcare Safety Network (NHSN), and are using a package of evidence-based practices to prevent these devastating infections.

Dialysis BSI Prevention Collaborative Topics...

About the Collaborative
Approach, Benefits of Joining...

Collaborative Interventions
Bloodstream, Staff Education, Catheter...

Audit Tools and Protocols
Toolkits, Forms, Training, Protocols...

News and Reports
Collaborative & Dialysis News...

Contact Us:
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Atlanta, GA 30333
800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
24 Hours/Every Day

cdciinfo@cdc.gov
Summary: Future Needs

- **Antimicrobial use**
  - Better understanding of inappropriate use
  - Interventions to target common areas:
    - Blood culturing
    - Surgical prophylaxis
    - Failure to de-escalate or discontinue antimicrobials with negative cultures

- **MDROs**
  - Evaluation of MDRO transmission in these settings
    - Need for change in Recommendations
    - Additional high risk groups (e.g., Patients on antibiotics)

- **BSI prevention**
  - Better understanding of the Epidemiology
  - Additional interventions (e.g., role of needleless connectors)
What can a tech do?

- Recognize your importance
- Make sure you follow policy and procedure
  - Accessing catheters
  - Cleaning accesses
  - Don’t cut corners
- Make suggestions for change
  - Step forward and speak up
  - Create a culture of safety
- Encourage unit participation in CDC collaborative
Thanks for your attention.
Questions?