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?

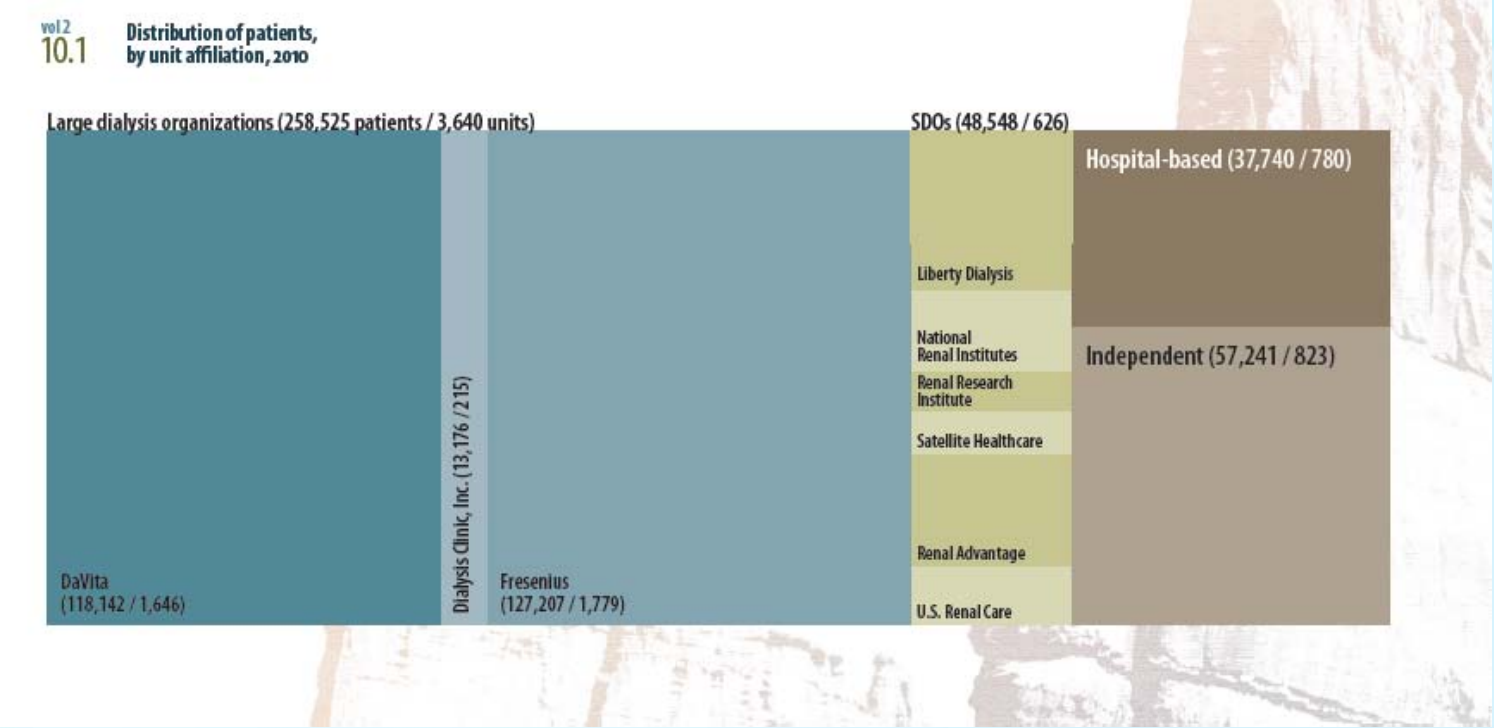
- Perfect dialysis patient
- Infection settled on spine
- Paralysis and other issues
- Decreased quality of life

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

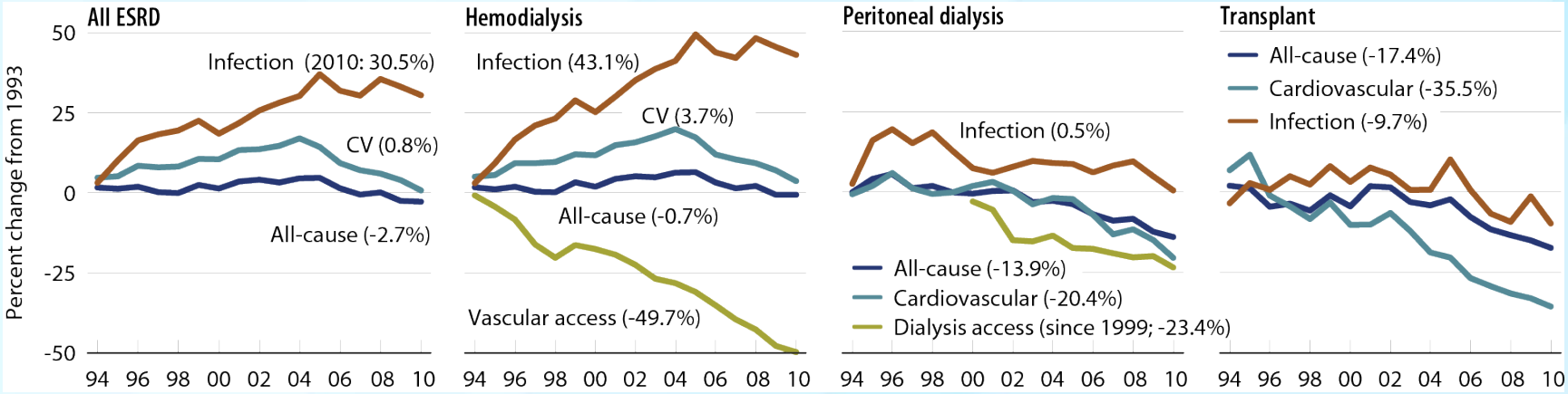
CDC recommendations available at: http://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf

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

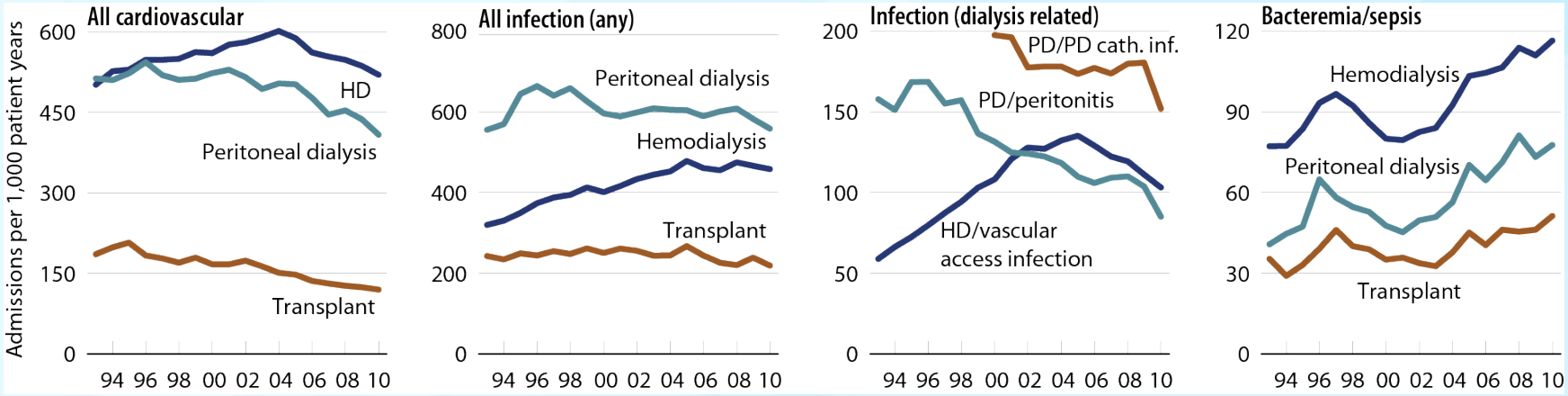


Period prevalent ESRD patients. Adj: age/gender/race/primary diagnosis

USRDS 2012 Annual Report

Adjusted Hospitalization Rates, by Principal Diagnosis & Modality

51% increase



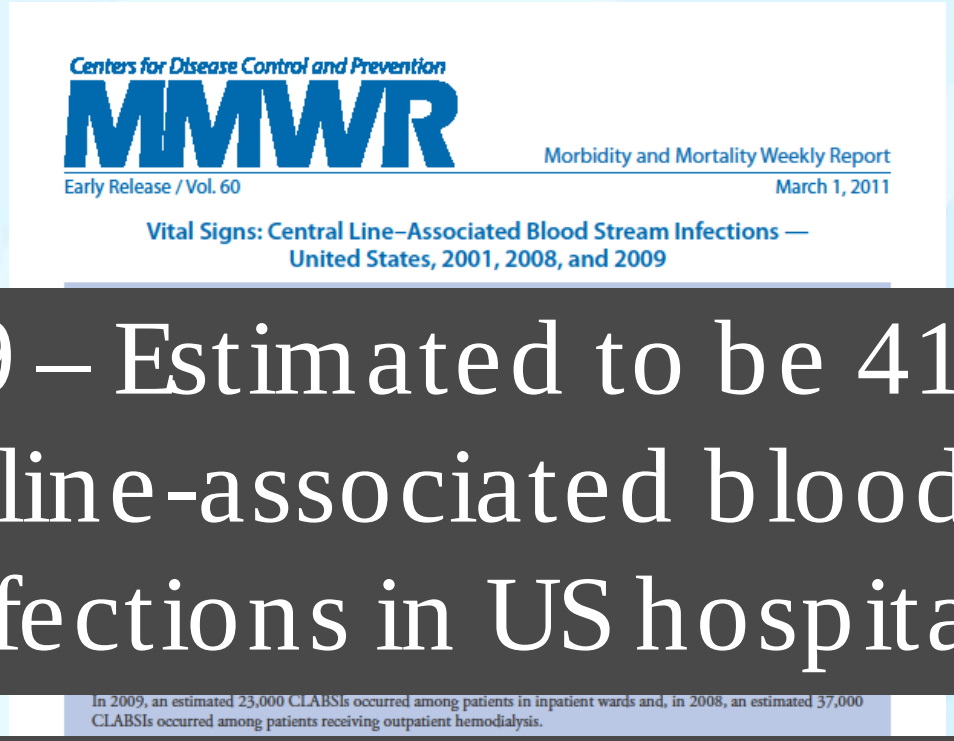
Period prevalent ESRD patients. Adj:age/gender/race/primary diagnosis;
USRDS 2012 Annual Report.

BSI Risk Factors

Study	AV fistula	AV graft	Permanent CVC	Temporary CVC
NHSN 2006	0.5/100 pt months	0.9/100 pt months	4.2/100 pt months	27.1/100 pt months
Dopirak et al.	0.13/100 pt months		3.5/100 pt months	

Klevens et al. Semin Dial 2008:; 21:24-28

Dopirak et al. Infect Control Hosp Epidemiol 2002; 23:721-724



Centers for Disease Control and Prevention

MMWR

Morbidity and Mortality Weekly Report

Early Release / Vol. 60 March 1, 2011

Vital Signs: Central Line–Associated Blood Stream Infections — United States, 2001, 2008, and 2009

In 2009, an estimated 23,000 CLABSIs occurred among patients in inpatient wards and, in 2008, an estimated 37,000 CLABSIs occurred among patients receiving outpatient hemodialysis.

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

Interventions: Surveillance and Catheter Care

Surveillance and data feedback using NHSN	Conduct surveillance for BSIs and other dialysis events using CDC's National Healthcare Safety Network (NHSN). Calculate facility rates and compare to rates in other facilities using NHSN. Actively share results with front-line clinical staff.
Chlorhexidine for skin antisepsis	Use an alcohol-based chlorhexidine (>0.5%) solution as the first line agent for skin antisepsis, particularly for central line insertion and during dressing changes. Povidone-iodine, preferably with alcohol, or 70% alcohol are alternatives.
Catheter hub cleansing	Cleanse catheter hubs with an appropriate antiseptic after the cap is removed and before accessing.
Antimicrobial ointment or chlorhexidine-impregnated sponge dressing	Apply bacitracin/gramicidin/polymixin B ointment or povidone-iodine ointment to catheter exit sites during dressing change OR use a chlorhexidine-impregnated sponge dressing.

http://www.cdc.gov/dialysis/collaborative/interventions/index.html

Interventions: Practice Audits with Feedback

Hand hygiene observations	Perform monthly hand hygiene audits with feedback of results to clinical staff.
Catheter care/ vascular access observations	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.

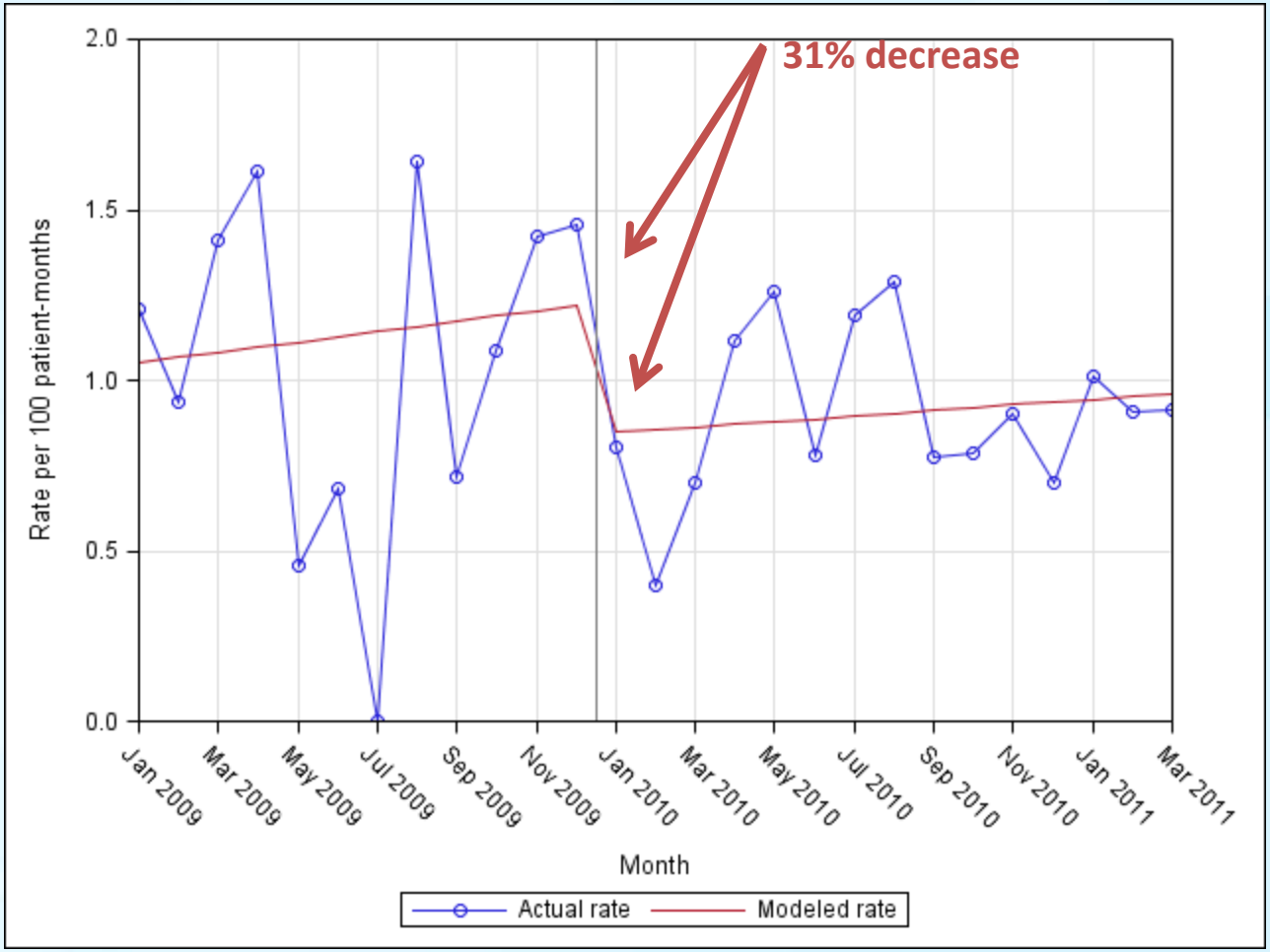
http://www.cdc.gov/dialysis/collaborative/interventions/index.html
Collaborative Audit Tools & Protocols
http://www.cdc.gov/dialysis/collaborative/tool-resources/index.html

Interventions: Education & Catheter Reduction

Staff education and competency	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.
Patient education and engagement	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.
Catheter reduction	Pursue efforts to reduce catheters (e.g., through patient education, vascular access coordinator) by identifying barriers to permanent vascular access placement and catheter removal.

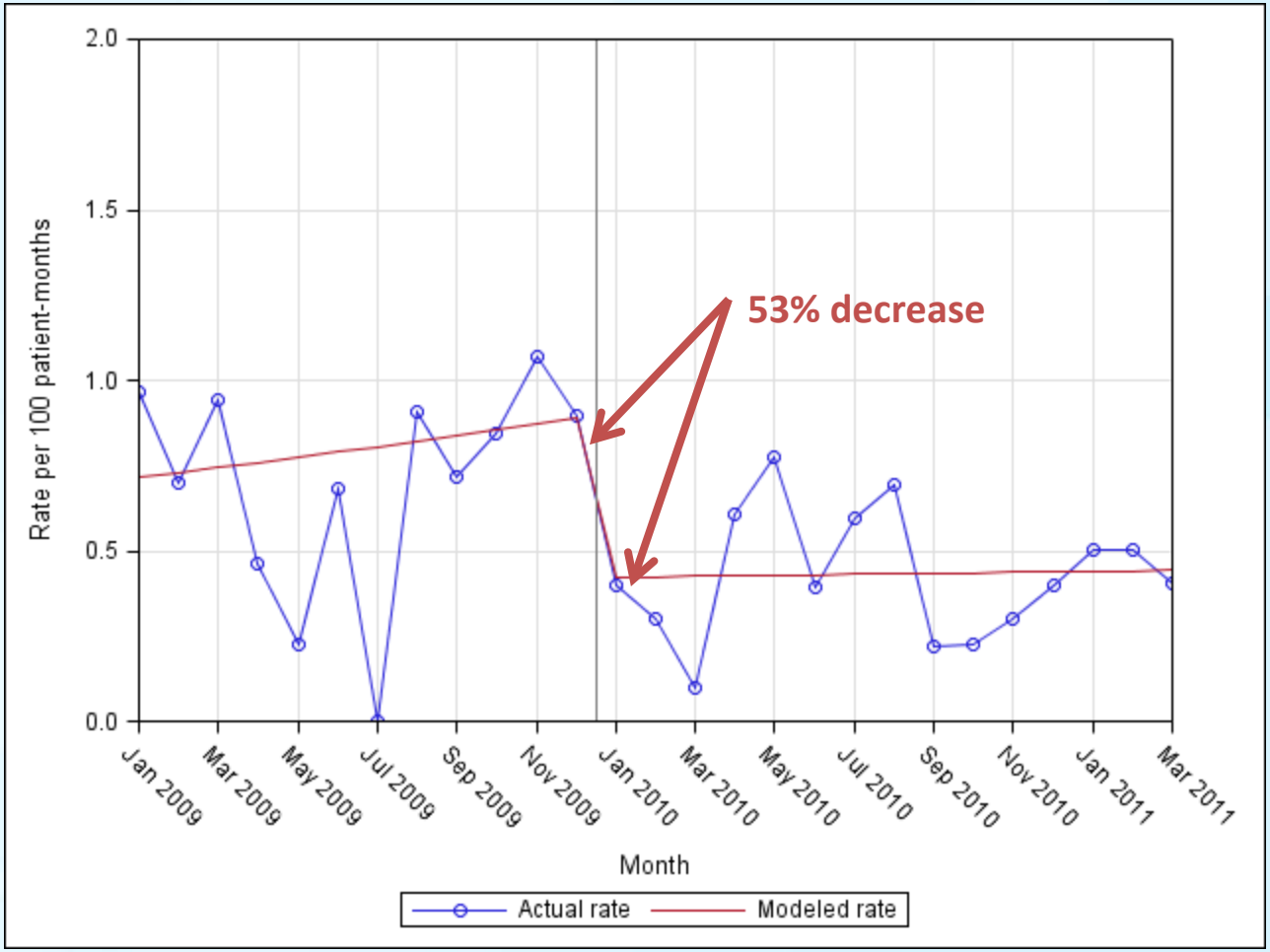
http://www.cdc.gov/dialysis/collaborative/interventions/index.html

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



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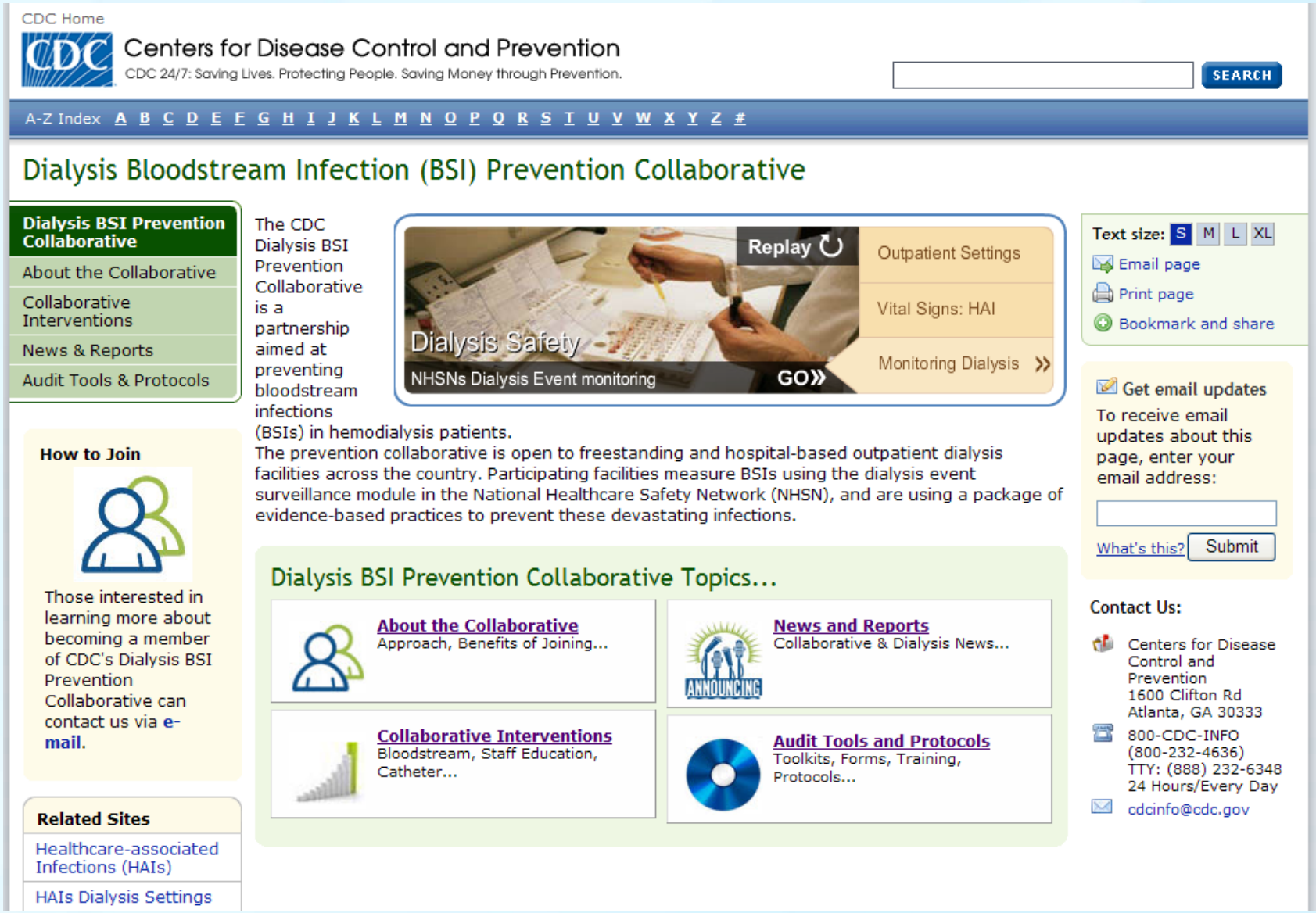
Collaborative Website & Tools



http://www.cdc.gov/dialysis/collaborative/

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?