

# Introduction to the CDC Dialysis Collaborative

National Center for Emerging and Zoonotic Infectious Diseases  
Division of Healthcare Quality Promotion



# Outline

Today I will:

- Describe how big a problem bloodstream infections are among hemodialysis patients
- Describe a national collaborative we will be participating in to address this problem
- Talk about what being in the collaborative entails
- Talk about your role in the collaborative

# Bloodstream infections in hemodialysis

# The problem

- Bloodstream infections (BSIs) are a potentially devastating complication of hemodialysis. For example:
  - Hemodialysis patients with *S. aureus* BSI...
    - Can have complications such as endocarditis (infected heart valve) and osteomyelitis (infected bone); occurring in 21-31% of these patients
    - Require hospitalization for an average of 9-13 days
    - Incur significant costs. Total costs for these infections average about \$21,000-\$24,000
    - Are at risk for death. About 19% of these patients die within 12 weeks of the infection

# National burden: A cause for concern

- CDC estimates 37,000 central line-associated bloodstream infections (CLABSIs) may have occurred in U.S. hemodialysis patients in 2008
- National data from the U.S. Renal Data System show that...
  - Hospitalizations for BSI among hemodialysis patients has increased 47% since 1993

# BSI risk factors

- The most important risk factor for BSI among hemodialysis patients is vascular access type
  - Rates of BSI in patients with central venous catheters are about **8 times** that seen in patients with fistulas
  - Although there has been a big push to increase the use of fistulas and decrease catheters nationwide, the number of patients with catheters in dialysis centers has not changed much (averages about 25%)

# CDC collaborative to prevent bloodstream infections

# Goal of the collaborative

The goal of the collaborative is simple...

To engage a number of motivated dialysis centers to work together to prevent bloodstream infections among hemodialysis patients



# Collaborative characteristics

- The collaborative involves
  - Outpatient hemodialysis centers from around the country
  - Providers who share ideas, success stories and challenges
  - Technical support from subject matter experts at the U.S. Centers for Disease Control and Prevention in Atlanta, Georgia

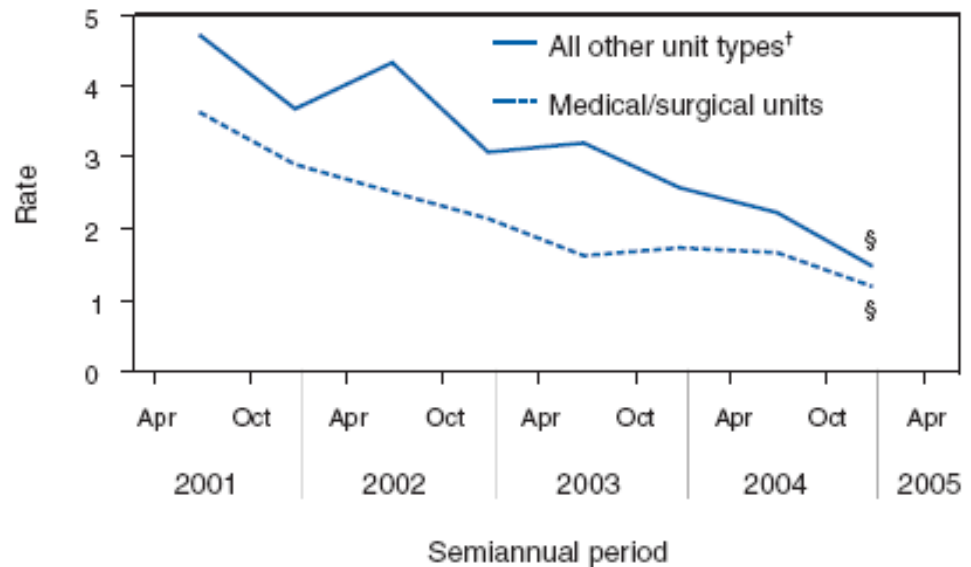
# Have collaboratives worked in other settings to decrease CLABSI?

## Pittsburgh Regional Health Initiative

### Interventions Included:

- Engagement of leadership
- Promotion of best practices
- Maximal barrier precautions
- Use of chlorhexidine for skin cleansing prior to insertion
- Avoidance of femoral site for central lines
- Use of recommended insertion-site dressing practices
- Removal of central line when no longer needed
- Educational module about BSI
- Measurement of CLABSI and reporting of rates back to facilities

**FIGURE.** Central line–associated bloodstream infection rate\* in 66 intensive care units (ICUs), by ICU type and semiannual period — southwestern Pennsylvania, April 2001–March 2005



\* Pooled mean rate per 1,000 central line days.

<sup>†</sup> Includes cardiothoracic, coronary, surgical, neurosurgical, trauma, medical, burn, and pediatric ICUs.

<sup>§</sup> p < 0.001.

**Overall rate reduction of 68%**

# Another collaborative success story

- Michigan Keystone Project
- Goal was to decrease CLABSIs in 103 intensive care units in Michigan
- Basic interventions:
  - Hand hygiene
  - Full barrier precautions during central line insertion
  - Skin cleansing with chlorhexidine
  - Avoiding femoral site for catheters
  - Removing unnecessary catheters
  - Use of catheter insertion checklist to make sure things done correctly
  - Change in safety culture

Ultimately reduced CLABSIs by 66%!

**What does being in the  
collaborative entail?**

# Collaborative process

- Facilities work together to develop a package of interventions to prevent BSI
- Each facility will then work to implement the interventions in their practice
- Each facility will track the number of BSIs using a CDC national surveillance system to see what happens to these infections over time
- Facilities will also keep track of how well staff are using the prevention interventions

# Collaborative interventions

# CDC's Core Interventions for Dialysis BSI Prevention

- 1. Surveillance and feedback using NHSN** – Conduct surveillance for BSIs and other dialysis events and enter events into 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.
- 2. 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.
- 3. Hand hygiene surveillance** – Perform monthly hand hygiene audits with feedback of results.
- 4. 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
- 5. Patient education/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.

# CDC's Core Interventions for Dialysis BSI Prevention

- 6. 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.
- 7. Catheter reduction** – Incorporate efforts (e.g., through patient education, vascular access coordinator) to reduce catheters by identifying barriers to permanent vascular access placement and catheter removal.
- 8. Catheter hub cleansing** – Cleanse catheter hubs with an appropriate antiseptic after the cap is removed and before accessing.
- 9. Antimicrobial ointment or chlorhexidine-impregnated dressing** – Apply bacitracin/gramicidin/polymixin B ointment or povidone-iodine ointment to catheter exit sites during dressing change OR use a chlorhexidine-impregnated dressing.



# Your role in the collaborative

# How can you help?

- To be successful, everyone's input is needed
  - Speak up when you see things that might be improved. Good ideas for change can come from anyone.
    - In one MRSA collaborative, a custodian devised a better way to get rid of gowns that would not contaminate the person who was removing it. The custodian brought up his idea to the people in charge of the collaborative; they adopted his idea and shared the practice with other facilities who also now use it

# How can you help?

- Remember to practice good hand hygiene and work to use other best practices every time you care for patients
- Ask questions if there are things being done that you do not understand
- Pay attention to how well you, your co-workers, and your patients are doing at using the prevention interventions
- In a respectful way, let people know when they are not performing patient care practices correctly

# What do you get out of the collaborative?

- Chance to work with other motivated dialysis facilities to prevent these devastating infections
- Feedback describing rates of infections at your facility
- Chance to influence national policy on the prevention of these infections
- Chance to help your patients!