



End Stage Renal Disease(ESRD) Network Learning and Action Network (LAN) Series: Bloodstream Infection (BSI) Quality Improvement Activity

June 5, 2018

Note: Computer speakers or headphones are necessary to listen to streaming audio or get dial-in information from registration confirmation email.

Streaming Audio

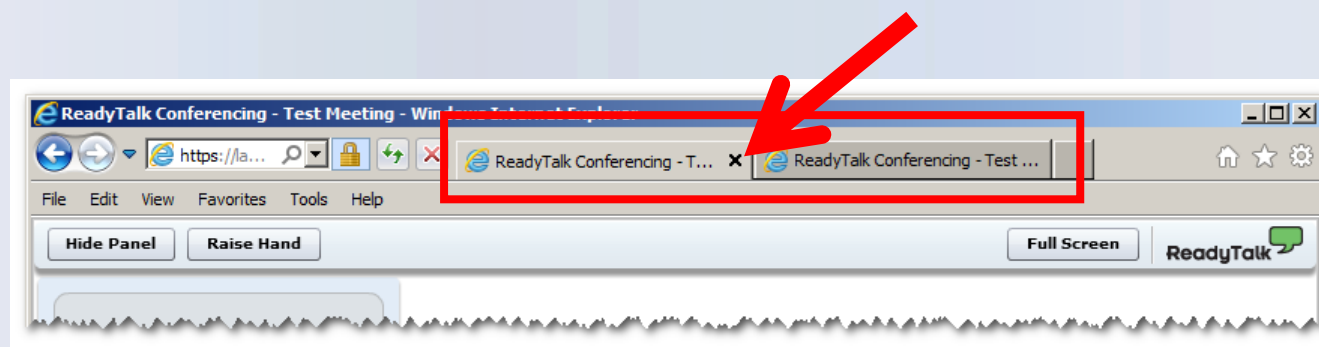
- **Audio for this event is available via INTERNET STREAMING**
- No telephone line is required.
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- NOTE: A limited number of phone lines are available if you are experiencing poor audio quality – send us a chat message!



Note: Computer speakers or headphones are necessary to listen to streaming audio.

Troubleshooting Echo

- Hear a bad echo on the call?
- Echo is usually caused by multiple connections to a single event.
- Close all but one browser/tab and the echo will clear up.

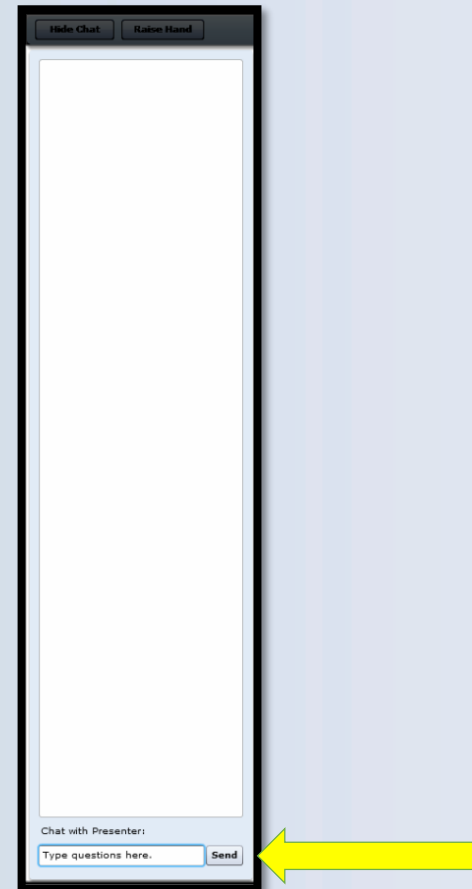


Example of Two Connections to Same Event

Note: *Computer speakers or headphones are necessary to listen to streaming audio.*

Submitting Questions

Type questions in the “Chat with Presenter” section, located in the bottom-left corner of your screen.



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Welcome

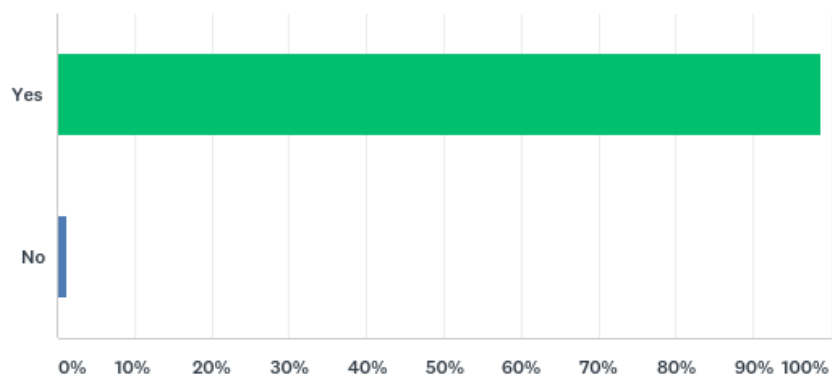
Learning and Action Networks (LANs) bring people together around a shared idea, opportunity, or challenge to offer and request information and experiences to improve the identified topic of discussion.

As a participant in today's LAN activity we encourage you to:

- Engage in the chat box. Share your approaches and experiences related to the information being shared and ask questions.
- Apply the information and knowledge being shared to your own facilities and practices to help reduce bloodstream infections.

Pre-Work Feedback – Question 1

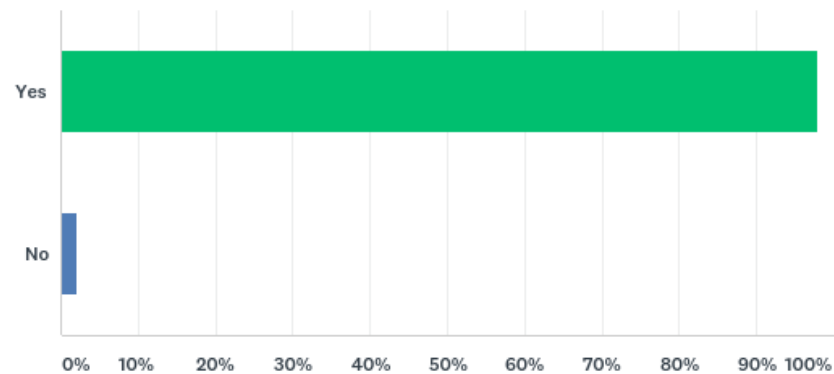
Q1 Do you wait for patients to leave the station before you start disinfecting the station?



| ANSWER CHOICES | RESPONSES |
|----------------|--------------|
| YES | 702 (98.73%) |
| NO | 9 (1.27%) |
| TOTAL | 711 |

Pre-Work Feedback – Question 2

Q2 Do you clean the prime bucket between every patient?



| ANSWER CHOICES | RESPONSES |
|----------------|--------------|
| YES | 688 (98.01%) |
| NO | 14 (1.99%) |
| TOTAL | 702 |



Questions to run on...

- What one idea to reduce bloodstream infections are *you* excited to try at *your* facility?
- What steps will *you* take to implement a new idea to prevent bloodstream infections in *your* patient population?
- What actions have *you and your facility* taken to reduce bloodstream infections and how can *you* share that to help other patients?

CE Credit Process: Certificate



Bloodstream Infection (BSI) Quality Improvement Activity (QIA) Learning and Action Network (LAN) Call - June 5, 2018

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If you do not receive an email after you register, please have your IT staff allow automatic emails from the following domain: hsag.com. Most healthcare facilities block automatic replies. You will need to be able to receive these automatic responses for future events too.

Another way to get around the automatic response issues with healthcare facilities is to register under your personal email account.

New User Link:

<https://lmc.hshapps.com/register/default.aspx?ID=d1075dce-b577-42ea-958f-ca1ec9d51084>

Existing User Link:

<https://lmc.hshapps.com/test/adduser.aspx?ID=d1075dce-b577-42ea-958f-ca1ec9d51084>

Submit Feedback

Outpatient Hemodialysis Environmental Cleaning and Disinfection

CMS and ESRD National Coordinating Center
Learning and Action Network (LAN)
June 5, 2018

Sheila Segura, RN, BSI, CIC
Dialysis Liaison Infection Preventionist
Healthcare-Associated Infections Program
Center for Health Care Quality
California Department of Public Health

Objectives

- Describe the relationship between the healthcare environment and healthcare-associated infections (HAI)
- Review Centers for Disease Control and Prevention (CDC) recommendations to reduce HAI in dialysis settings
- Review observed gaps in dialysis station disinfection practices
- Discuss adherence monitoring of environmental cleaning and disinfection practices and feedback to staff
- Discuss additional environmental considerations

Note: This presentation is limited to the physical environment, i.e., it does not address water, ventilation, or sharps safety issues.

The Role of the Environment in Healthcare-Associated Infections

Burden of Hepatitis C in Healthcare

- HCV kills more persons than HBV*
 - CDC 2014 hepatitis mortality data
 - HCV 19,659 deaths
 - HBV 1,843 deaths

[*cdc.gov/hepatitis/hcv/statisticshcv.htm](http://cdc.gov/hepatitis/hcv/statisticshcv.htm)

Transmission of Hepatitis C in Healthcare

- In 2015, CDPH provided support/consulted on four incidents of HCV transmission or outbreaks in healthcare facilities, including one in a dialysis center
- In response to increased cases of HCV, the CDC sent a health alert asking facilities to evaluate practices, including:
 - *Assess current infection control practices and environmental cleaning and disinfection practices to ensure adherence to infection control standards*

More transmission...

- In Nov/Dec 2012 – six patients at a hemodialysis clinic were diagnosed with new HCV infection
- In the outbreak investigation of this clinic
 - Lapses in infection control were identified
 - Visible and invisible blood was identified on multiple surfaces at the clinic
- Conclusion : *“...Infection control breaches were likely responsible. This outbreak highlights the importance of rigorous adherence to recommended infection control practices in dialysis settings.”*

Nguyen DB, Gutowski J, Ghiselli M, et al. A large outbreak of hepatitis C virus infections in a hemodialysis clinic. *ICHE*, 37:125-133, 2016

Transmission of Hepatitis C in Healthcare

- HCV can survive on environmental surfaces at room temperature for up to 3 weeks
- HCV can still be infectious on environmental surfaces and equipment when blood has dried
- Spills and dialysis stations must be wiped with an approved disinfectant

[cdc.gov/hepatitis/hcv/cfaq.htm](https://www.cdc.gov/hepatitis/hcv/cfaq.htm)

Role of Surfaces in Transmission of Other Pathogens

- Surface contamination has an important role in transmission of:
 - Multidrug-resistant organisms such as methicillin resistant *Staphylococcus aureus*(MRSA), Vancomycin resistant enterococcus (VRE), norovirus, *C difficile*, and *Acinetobacter* spp.
- Extent of patient-to-patient transmission is proportional to the level of environmental contamination

Weber DJ, “Role of hospital surfaces in the transmission of emerging health care-associated pathogens: norovirus, *Clostridium difficile*, and *Acinetobacter species*” *Am J Infect Control*. Jun Supplement 1 (2010)

Environmentally-Related Sources for Bloodborne Virus Infections in Hemodialysis Patients

- Patient → equipment → patient
 - Hepatitis B virus (HBV) or hepatitis C virus (HCV) contamination on devices, tubing, supplies, surfaces
- Patient → equipment → staff → patient
 - HBV or HCV contaminated surfaces touched by staff then transmitted with contaminated gloves or hands
- Patient → staff → patient
 - Direct contamination of staff members' hands/gloves with blood
 - Simultaneously caring for HBV positive patients and susceptible patients by same staff member

Guidelines for the Prevention of HAI in Dialysis Centers

CDC Recommendations for Preventing HAI in Dialysis Settings

- CDC Update to the 2001 Recommendations for Preventing Transmission of Infections in Chronic Hemodialysis Patients, 2016
- CDC/HICPAC Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008
- CDC/HICPAC Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings, 2017

Cleaning and Disinfection Terminology

Cleaning

- Use detergent, water and friction
- Removes blood, body fluids, and other contaminants from objects and surfaces

Disinfection

- Kills many or all remaining infection-causing germs on clean objects and surfaces
 - Use an EPA-registered hospital disinfectant
 - Follow label instructions for proper dilution



Source: CDC

Cleaning must be done before disinfection

Wear gloves during the cleaning/disinfection process

Suggested Practices for Cleaning

- Be systematic – use the same approach to cleaning each time, to avoid missing a step (checklist)
 - Clean first using friction to remove soil
 - Then, wet (and re-wet as necessary) surfaces to achieve desired wet contact time
- Equipment, including glucometers, must be cleaned with friction and allow wet contact time.
 - Follow manufacturers instructions

Before Beginning Routine Disinfection of the Dialysis Station

- Disconnect and take down used blood tubing and dialyzer from the dialysis machine
- Discard tubing and dialyzers in a leak-proof container
- Check that there is no visible soil or blood on surfaces
- Ensure that the priming bucket has been emptied
- Ensure that the patient has left the dialysis station**
- Discard all single-use supplies. Move any reusable supplies to an area where they will be cleaned and disinfected before being stored or returned to a dialysis station
- Remove gloves and perform hand hygiene



Center for Clinical Standards and Quality/Survey & Certification Group

Ref: S&C: 17-32-ESRD

DATE: June 02, 2017

TO: State Survey Agency Directors

FROM: Director
Survey and Certification Group

SUBJECT: End Stage Renal Disease (ESRD) Facilities: Cleaning the Patient Station

Memorandum Summary

- **Cleaning the ESRD station between patients:** The Centers for Disease Control and Prevention (CDC) has recommended that a dialysis station, in order to prevent cross contamination, be completely vacated by the previous patient before the ESRD staff may begin cleaning and disinfection of the station and set up for the next patient.
- **Precaution:** CMS reiterates that patients should not be moved from the dialysis station until they are clinically stable.

Safe Handling of Dialyzers and Blood Tubing

- Before removing or transporting used dialyzers and blood tubing, cap dialyzer ports and clamp tubing
- Place all used dialyzers and tubing in leak-proof containers for transport from station to reprocessing or disposal area
- If dialyzers are reused, follow published methods (e.g., AAMI standards) for reprocessing

AAMI is the Association for the Advancement of Medical Instrumentation



Source: CDC

Routine Disinfection of the Dialysis Station- AFTER patient has left station

- Wear clean gloves
- Apply disinfectant to all surfaces in the dialysis station using a wiping motion (with friction)
- Ensure surfaces are visibly wet with disinfectant. Allow surfaces to air-dry
- Disinfect all surfaces of the emptied priming bucket. Allow the bucket to air-dry before reconnection or reuse
- Keep used or potentially contaminated items away from the disinfected surfaces
- Remove gloves and perform hand hygiene

*Do not bring patient or clean supplies to station
until these steps have been completed*

Disinfecting the Dialysis Station

REMEMBER

- All equipment and surfaces are considered to be contaminated after a dialysis session and therefore must be disinfected



Source: CDC

Dedicate Supplies to a Single Patient

- Items taken away from the dialysis station must be:
 - Disposed of
 - Or
 - Cleaned and disinfected before being taken to a common clean area or used on another patient
- Unused medications or supplies taken to the patient's station must never be returned to a common clean area (e.g., medication vials, syringes, alcohol swabs)



Disinfecting the Dialysis Station

- After the patient leaves the station, **disinfect** the dialysis station (including chairs, trays, countertops, and machines) after each patient treatment
 - Wipe all surfaces
 - Surfaces should be wet with disinfectant and allowed to air dry
 - Give special attention to cleaning control panels on the dialysis machines and other commonly touched surfaces
 - Empty and disinfect all surfaces of prime waste containers



Source: CDC

What is 'wet contact time'?

- Wet contact time is the time required for a disinfectant to kill microorganisms on a pre-cleaned surface
- A surface must be physically cleaned before it can be disinfected
- Organisms resistant to multiple antibiotics are not more resistant to disinfectants than sensitive organisms when the “the manufacturer’s recommended dilution” is used

Rutala WA; Weber. DK, Selection of the Ideal Disinfectant, *ICHE*, Vol 35(7), 2014

Common Gaps in Environmental Cleaning

Common Gaps in Environmental Cleaning -1

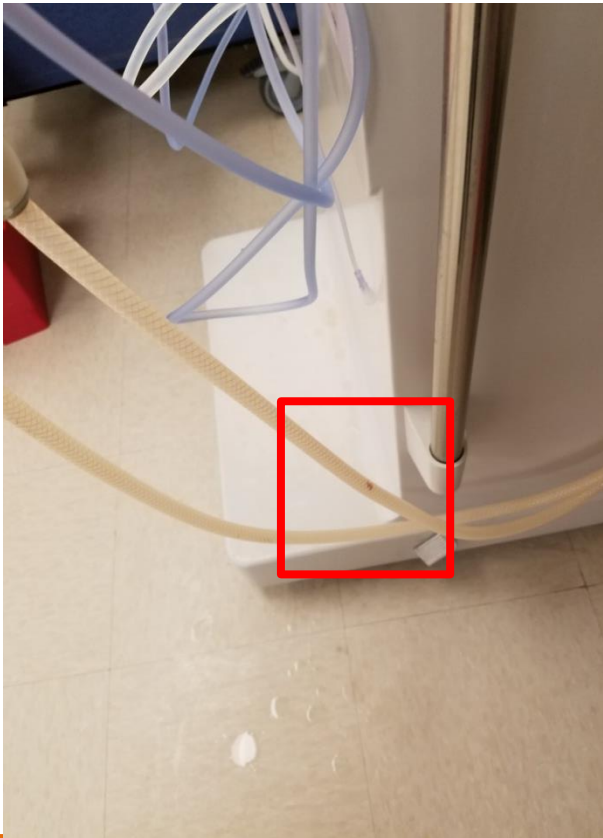
- Movable equipment (thermometer, glucometer) not cleaned between patients
- Priming buckets missed or inadequately disinfected
- No 'time out' to allow station to empty prior to beginning cleaning and disinfection
- Machines and chairs only quickly damp-dusted
 - Inadequate wet contact time to achieve disinfection
- Sinks next to medication preparation areas splash onto the 'clean' area

Common Gaps in Environmental Cleaning - 2

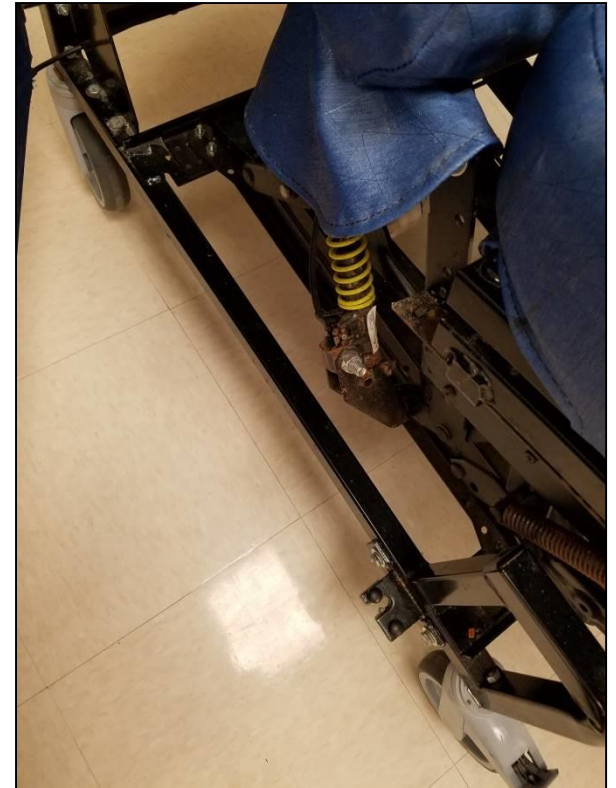
- Not cleaning blood spills or splatters; including prime buckets on side of machine
- Not properly cleaning or disinfecting commonly touched environmental surfaces between patients (e.g. machine, chair or station)
- Not cleaning tubes and drains on machine
- Sharing equipment and supplies that were not disinfected
- Contaminated gloves worn to access clean disinfectant



Found after the unit had been “cleaned” and ready for the next patient



Wipe down all surfaces.....



Dialysis Station Checklist Available on CDC Website

Checklist: Dialysis Station Routine Disinfection

This list can be used if there is no visible soil on surfaces at the dialysis station. If visible blood or other soil is present, surfaces must be cleaned prior to disinfection. The proper steps for cleaning and disinfecting surfaces that have visible soil on them are not described herein. Additional or different steps might be warranted in an outbreak situation. Consider gathering necessary supplies¹ prior to Part A.

Part A: Before Beginning Routine Disinfection of the Dialysis Station

- Disconnect and takedown used blood tubing and dialyzer from the dialysis machine.
- Discard tubing and dialyzers in a leak-proof container².
- Check that there is no visible soil or blood on surfaces.
- Ensure that the priming bucket has been emptied³.
- Ensure that the patient has left the dialysis station⁴.
- Discard all single-use supplies. Move any reusable supplies to an area where they will be cleaned and disinfected before being stored or returned to a dialysis station⁵.
- Remove gloves and perform hand hygiene.

Audit Tool: Hemodialysis Station Routine Disinfection Observations

| Discipline | All supplies removed from station and prime bucket emptied | Gloves removed, hand hygiene performed | Station is empty before disinfection initiated** | New clean gloves worn | Disinfectant applied to all surfaces and prime bucket | All surfaces are wet with disinfectant | All surfaces allowed to dry | Gloves removed, hand hygiene performed | No supplies or patient brought to station until disinfection complete |
|------------|--|--|--|-----------------------|---|--|-----------------------------|--|---|
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Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **O**=other

Duration of observation period: _____

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

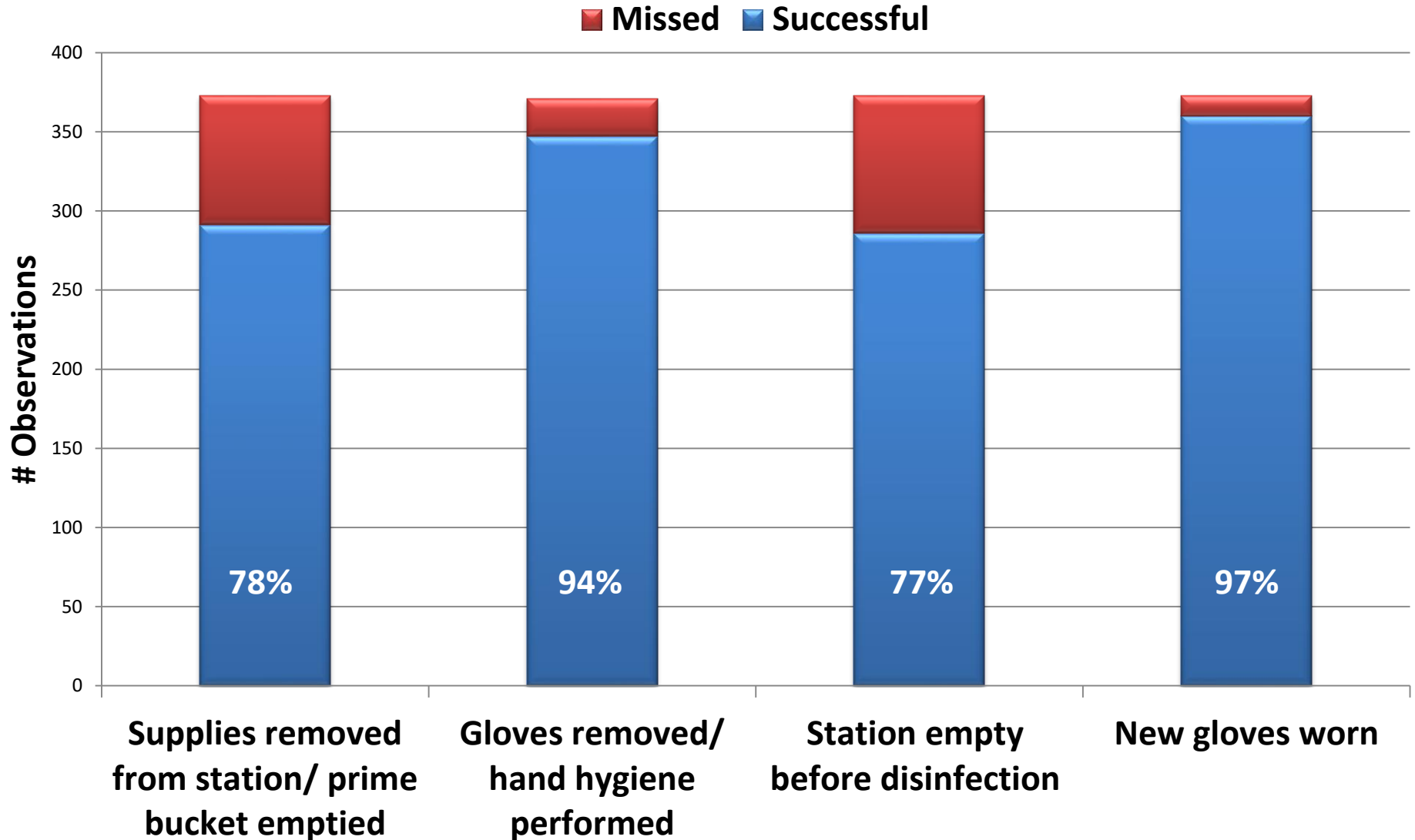
Are BSI Prevention Practice Recommendations Performed Routinely?

Results of CDPH HAI Program Liaison IP Environmental Cleaning and Disinfection Observations

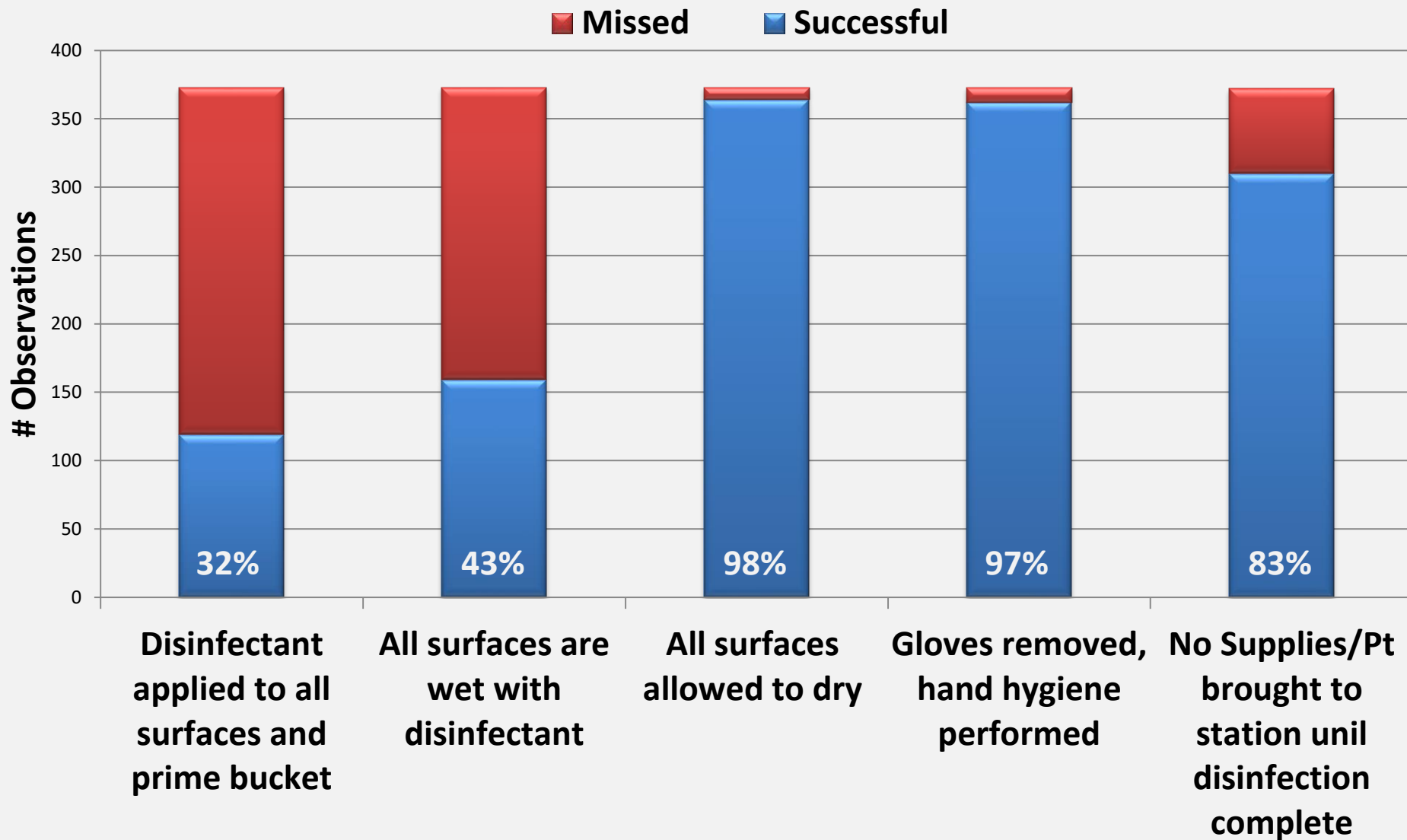
Dialysis Outpatient Facility Assessments

- In 2016-2018 CDPH HAI Program staff performed 96 onsite facility assessments in outpatient hemodialysis centers
- Station routine disinfection observations were included in the assessments in addition to other core interventions known to prevent bloodstream infections

Routine Disinfection of Dialysis Station 2016-2018 (n=96 Facilities)



Routine Disinfection of Dialysis Station 2016-2018 (n=96 Facilities)



**Are BSI Prevention Practice
Recommendations Used Routinely in YOUR
facility?**

You won't know if you don't monitor!

Additional Environmental Considerations

Educate Clinical Staff

- Train staff upon hire and at least annually with return demonstration of competency
- Observe cleaning and disinfection process and share results with clinic staff

Separate Clean Areas from Contaminated Areas

- **Clean** areas are for the preparation, handling and storage of medications and unused supplies and equipment
- **Contaminated** areas are where used supplies and equipment are handled
- **Have a method** for knowing which equipment has been cleaned and what is still dirty

Remember: Treatment stations are contaminated areas!



Clean area

Source: CDC

Additional Environmental Considerations -1

- Hand hygiene areas must have
 - Adequate number of stations and evidence of use
 - Adequate soap, paper towels, trash cans
 - Alcohol hand rub at or near patient stations
 - Placement of alcohol-based hand rub dispensers in compliance with fire code
 - See www.nfpa.org or www.ashe.org

Additional Environmental Considerations – 2

- Use only federal Environmental Protection Agency (EPA)-registered hospital-approved disinfectants
- Keep disinfectants near area where equipment disinfection is being performed.
- Follow manufacturers directions (i.e. contact time, dilution)
- Standard and transmission-based precautions followed as appropriate

Appendix A Regulatory Framework for Disinfectants and Sterilants,
<https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a2.htm>

Additional Environmental Considerations - 3



What is on an EPA label?

Label Describes:

- What it will kill
- Directions for use, including wet contact time to achieve disinfection
- EPA Registration Number

CalOSHA Bloodborne Pathogens Standard

- Sharps containers
 - Placed appropriately, i.e., not too high, not directly under glove box or electrical outlet
 - Changed when not more than $\frac{3}{4}$ full
 - User friendly (close to point of use; container open so sharps can be dropped directly into bucket)
 - Safety devices accessed prior to disposal



California Code of Regulations, Section 8,5193 Bloodborne Pathogens Standard

<https://www.dir.ca.gov/title8/5193.html>

More Bloodborne Pathogens Standard



Medical (Biohazardous) Waste

- Store in covered leak proof container with biohazard symbol
- Store separately from other waste, in red bags
- Appropriately contains sharps containers and bloody tubing
- Not stored on site for longer than 7 days

Note: Any room where biohazardous materials are contained or stored must have signage, (e.g., lab, storage areas) and specific wording. The waste holding area must be locked.

California Medical Waste Management Act

<https://www.cdph.ca.gov/certlic/medicalwaste/Documents/MedicalWaste/2013/MWMAfinal2015.pdf>

Summary

- The environment plays a significant role in transmission of bacteria and viruses
- CDC evidence based guidelines provide recommendations to prevent HAI related to the environment
- Consistent adherence to evidence based infection prevention practices will reduce transmission of HAI to patients and healthcare workers
- Feedback to staff of adherence to environmental cleaning performance measures is an important step in reducing transmission of HAI

Questions?

For more information,
please contact any
HAI Liaison IP Team member

Or email

HAIProgram@cdph.ca.gov



Facility Testimonial

Barbara Peck
Fresenius Niskayuna Dialysis Center

CE Credit Process: Certificate



Bloodstream Infection (BSI) Quality Improvement Activity (QIA) Learning and Action Network (LAN) Call - June 5, 2018

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Existing User Link:

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