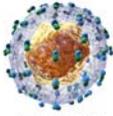


# Hepatitis C



STRATEGIES TO PREVENT SPREAD OF HEPATITIS C IN THE WORKPLACE

NORMA GOMEZ, MBA, MSN, RN, CNE

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## It does happen!

"A recent publication describes a dialysis facility where an outbreak of HCV continued for 5 years before being detected, highlighting the importance of HCV screening to identify these infections early and prevent further transmission.

HCV transmission can be prevented when proper infection prevention and environmental disinfection practices are consistently followed."

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## Outbreaks

### 2012 outbreak

- Patient was identified when negative on admission and then converted to HCV-antibody positive
- Found 18 cases
- Patients were dialyzed on same shift (or consecutive shift) and in adjacent stations
- Infection control issues identified
  - Hand hygiene
  - Clean and dirty sinks not labeled
  - Medication cart was used
  - Vascular access cleaning
  - Environmental cleaning
  - Adequate space for each station

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### Dialysis Implications

- HCV may be a factor in the cognitive impairment that occurs more frequently in HD patients than in the general population.
- Severe impairment on the Mini-Mental State Examination was more frequent in HCV+ HD patients compared with matched HCV- controls: 10 of 22 (45.4%) versus 3 of 23 (13%).
- HCV+ patients also had significantly greater impairment on visual attention and psychomotor speed scores, and borderline significant impairment on working memory scores.
- Suggesting that treatment to clear the virus should be initiated early after the infection is detected.

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### Dialysis Implications

- HCV-positive patients have a significant (41%) increased risk of requiring a red blood cell transfusion and a 15% increased risk of having their hemoglobin level drop below 8.5 g/dL compared with HCV-negative patients.
- Reasons for the elevated risk for anemia related events among HCV-positive patients may include GI blood loss due to portal hypertension, coagulation deficiencies, and/or hypersplenism, according to researchers.

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### Dialysis Characteristics for Transmission

- Station separated from each other by short distances
- Sinks not available at each station
- Staff have frequent contact with blood or blood containing devices
- Some facilities lack clean and dirty utility rooms
- Medication area often not separate
  - Use of multi-dose vials
- Lack of standardization for cleaning and disinfecting equipment

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### Dialysis Patient Characteristics for Transmission

- Access to blood
- Chronic HBV and HCV co-infection may accelerate liver disease



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### Prevention Tools



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## Hand Hygiene




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## Opportunities for Improvement

Infection Control is ALWAYS most frequently cited on surveys

V-Tag	Rank	Frequency
V113: Wear gloves, hand hygiene	1	37%
V122: Clean, disinfect surfaces and equipment	2	32.4%
V143: Aseptic technique for IV medications	5	14.5%
V147: CVC Care	6	14.2%
V116: Items taken to the station disinfected, dedicated, discarded	7	14.2%
V115: PPE worn as appropriate	8	14.1%
V117: Clean/dirty areas, medication prep, no common carts	13	11.1%

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## WHY SHOULD YOU WASH YOUR HANDS?



Under the right growing conditions (i.e. inside gloves), certain strains of bacteria will multiply every ten minutes, creating a colony of millions in a very short time

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**FACT: DID YOU KNOW...**

That microbial count is higher underneath your fingernails than anywhere else on your hands?

That research has shown artificial nails, like rings, to substantially increase bacterial counts on hands, both before and after washing and should not be worn when caring for patients

**Germ Farm**



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**CLEAN FACILITY, DIRTY HANDS?**

Hand transfer is a significant mode of transmission, for both bacteria and viruses, from person to person, person to surface, and from surface to person



**GLOVES ARE NOT A SUBSTITUTE FOR HANDWASHING!**

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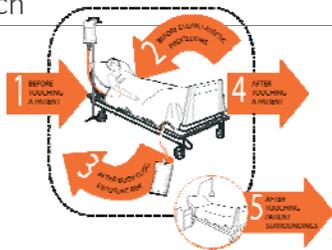
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The "My 5 Moments for Hand Hygiene" approach



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### 5 stages of hand transmission

one	two	three	four	five
Germ present on patient skin and immediate environment surfaces	Germ transfer onto health-care worker's hands	Germ survive on hands for several minutes	Suboptimal or omitted hand cleansing results in hands remaining contaminated	Contaminated hands transmit germs via direct contact with patient or patient's immediate environment




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### Prevention Tools




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### Personal Protective Equipment (PPE)



Personal Protective Equipment (PPE) is equipment that protects you from contact with potentially infectious materials.

PPE may include gloves, masks, gowns, faceshields, protective eyewear, pocket masks, or other resuscitation devices

You must use appropriate protective equipment each time you perform a task

After completing the task, remove all protective equipment and place it in the designated area or container for washing, decontamination, or disposal.

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Task	Gloves	Lab coats/scrub	Gown or apron	Mask with eye protection or full face shield
HCW				
Patient set-up	X		X	X
Cannulation	X		X	X
Decannulation	X		X	X
Central line connection, disconnection	X		X	X
Providing snack		X		
Adjusting dialysis machine—no patient contact	X	X		
Transporting and pouring chemicals	X		X/gown	X
Reprocessing equipment and dialyzers	X decontamination gloves (used once)		X/gown	X
HBV isolation	X		X/gown	determined by task
Central line insertion	Full sterile barriers (sterile gown/gloves/barriers, full face protection)			
Central line removal	X		X	X
Patient				
During cannulation or decannulation			barrier over clothing	
Central line connection, disconnection/dressing change				X
Visitors	X		X	

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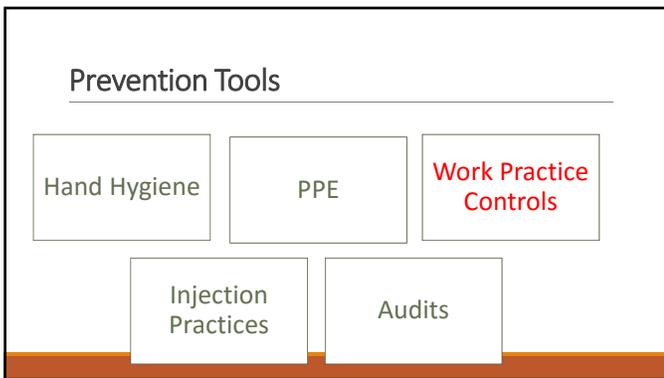
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### Practices and controls

- Workplace controls
- Environmental controls
- Engineering controls

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## Work Practice Controls

- Reduce the likelihood of exposure to pathogens by changing the way a task is performed
  - Work practice controls refer to the processes and procedures used to ensure that work is conducted in a safe and healthy manner.
- Work practices to learn and follow include:
  - Hand hygiene, to protect both patients and workers
  - Following Standard Precautions
    - Minimizing splashing or spraying of any potentially infectious material
    - Proper decontamination and sterilization of equipment and supplies
    - Cleanup, care, and maintenance of supplies and equipment
    - Proper disposal of used supplies and equipment
  - Keeping all food and drink away from areas where blood or OPIM are present
  - Avoiding eating, drinking, smoking, applying cosmetics or lip balm, or handling contact lenses where there is a risk of contamination

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## Environmental Controls

- Environmental controls help prevent the transmission of infection by reducing the concentration of pathogens in the environment.
- Such measures include environmental cleaning (housekeeping); cleaning, disinfecting, and sterilizing patient equipment; waste management; and linens (textiles) and laundry management.

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## Disinfection

- Environmental surfaces such as floors and tabletops should be cleaned or disinfected on a regular basis, when spills occur, and when they are visibly soiled.
- All disinfectants and sterilizing chemicals have a degree of toxicity necessary to kill the microorganisms. In general, the lowest level of product that will do the job should be used to minimize exposure of healthcare workers to toxic chemicals.
  - Low-Level Disinfection - used to clean the environment and items that touch only intact skin. It does not kill bacterial spores and is less active against some gram-negative rods, such as pseudomonas and mycobacteria.
  - Intermediate-Level Disinfection - kills most viruses, bacteria, and mycobacteria using a chemical germicide registered as a tuberculocide by the EPA. It does not kill bacterial spores.
  - High-Level Disinfection - kills all organisms except high levels of bacterial spores. It is used for patient-care equipment that touches intact mucous membranes, called semi-critical devices, such as laryngoscopes or endoscopes.

Refer to CDC Guidelines for Environmental Infection Control in Health-Care Facilities

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## Biohazardous Waste

Laboratory waste

Human surgery specimens or tissues

Waste, which after it leaves the facility and any time after, still contains recognizable blood or fluid blood products



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## Engineering Controls

- Engineering controls isolate (contain) or remove the pathogens hazard from the workplace.
- Examples include sharps disposal containers, self-sheathing needles, and sharps with engineered sharps injury protection and needleless systems.
- Splatter shields on medical equipment associated with risk-prone procedures or locking centrifuge lids isolate or contain the hazard.
- Hand hygiene is also an engineering control, since it removes microorganisms from the workplace.

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## Sharps-Related Controls



In 2000 federal laws were enacted to protect healthcare workers against needlesticks; these laws require that healthcare facilities evaluate and provide safe needles. OSHA's Bloodborne Pathogens Standard requires that employers:

Use engineering controls or work practices that "eliminate or minimize exposures" (OSHA 2001, CPL2-2.44D)

- Involve employees in the selection process
- Provide effective safe needles and sharps
- Provide training covering PPE, how to use safe-needle devices, and limitations of such devices

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## Sharps Handling

A needlestick or a cut from a contaminated sharp can lead to infection from a bloodborne pathogen.

Proper handling and disposal of sharps greatly reduces this risk.

Sharps containers should be closable, puncture-resistant, and leak-proof on the sides and the bottom. They must be labeled or color-coded.

- Discard needle/syringe units without attempting to recap the needle whenever possible.
- If a needle must be recapped, never use both hands. Use the single-hand "scoop" method.
- Never break or shear needles.
- To move or pick up needles, use a mechanical device or tool, such as forceps, pliers, or broom and dustpan.
- Dispose of needles in labeled sharps containers only.
- When transporting sharps containers, close the containers immediately before removal or replacement to prevent spillage or protrusion of contents during handling or transport.
- Fill a sharps container up to the fill line, or two thirds full. Do not overfill the container.

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## Prevention Tools




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## Safe Injection Practices

Safe injection practices were added to the CDC's Standard Precautions in 2007 after several outbreaks of disease due to bloodborne pathogens were traced back to injection therapy, often in outpatient settings.

- Unsafe practices have resulted in:
  - Transmission of bloodborne viruses, including hepatitis B and C, to patients
  - Notification of thousands of patients to possible exposure to these pathogens and recommendation that they be tested for HBV, HBC, and HIV
  - Referral of providers to licensing boards for disciplinary action
  - Malpractice suits filed by patients

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### Recommended Practices

- Ensure proper hand hygiene before handling medications.
- Maintain aseptic technique throughout all aspects of injection preparation and administration.
  - Medications should be prepared ("drawn up") in a designated clean medication area that is not adjacent to areas where potentially contaminated items are placed.
- Never administer medications from the same syringe to more than one patient, even if the needle is changed.
- Never use the same syringe or needle to administer IV medications to more than one patient, even if the medication is administered into IV tubing, regardless of the distance from the IV insertion site.

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### Recommended Practices

- Never enter a vial with a syringe or needle that has been used for a patient if the same medication vial might be used for another patient.
- Dedicate vials of medication to a single patient.
  - Medications packaged as single-use must never be used for more than one patient.
  - Never combine leftover contents for later use.
  - Medications packaged as multi-use (such as insulin) should be assigned to a single patient whenever possible.
  - Never use bags or bottles of intravenous solution as a common source of supply for more than one patient.

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### Prevention Tools



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## Dialysis Implications Summary

### Screen chronic hemodialysis patients for HCV antibody

- On admission & every 6 months if susceptible
- ALTs monthly

### Observe & improve parenteral medication storage, handling, and preparation

- Safest option: use separate, clean med prep room for all parenteral medications
- Dedicate medication vials to single patient

### Educate clinical staff

- Basic concepts: hand hygiene, aseptic technique

### Observe & improve disinfection of the station

- Separate treatment shifts and processes

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## Resources

CDC - <https://www.cdc.gov/hepatitis/policy/vhnet.htm>

KDOQI Clinical Practice Guideline for Hemodialysis Adequacy: 2015 Update

University of Washington Hepatitis C – online course. <http://www.hepatitisc.uw.edu/>

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