

ASN Dialysis Advisory Group

# ASN DIALYSIS CURRICULUM

# Prevention of Transmission of Non-Access Related Infections in Dialysis Patients

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# Infection Transmission Methods

- **Transmission routes**

- Physical contact
- Blood-borne transmission
- Respiratory (droplet)

- **Patient-to-patient or staff-to-patient transmission could occur through**

- Contaminated devices, equipment, or supplies
- Environmental surfaces
- Hands of personnel

# Principles to Prevent Infection Transmission in Hemodialysis Units

- **Infection control precautions for all patients—Universal Precautions**
- **Cleaning and disinfection**
- **Routine serologic testing for hepatitis B and C**
- **Hepatitis B vaccination**
- **Isolation of hepatitis B–infected patients (not hepatitis C, human immunodeficiency virus (HIV), or other infections)**

# Universal Precautions for Hemodialysis

- **Staff should use gloves whenever caring for a patient or touching equipment**
  - Change gloves and clean hands between patients every time
- **Anything taken to, or kept on, a patient's machine should be considered contaminated**
  - Either throw it away or decontaminate it before the next patient's use
- **Medications should be prepared in an area away from the patient's machine and only one patient's medications should be administered at a time**
  - No common trays or carts should be taken from one patient's machine to another
  - Do not puncture single-use vials more than once

# Universal Precautions for Hemodialysis

- **Staff members should wear protective gear (gowns, face shields, eyewear, and masks) when initiating or terminating hemodialysis (HD) treatment, cleaning dialyzers, and centrifuging blood**
- **Staff members should not eat or drink in patient care areas or the laboratory**
  - There are no **CDC or federally mandated** restrictions on patients eating food during treatment

# Cleaning and Disinfection

- **Careful mechanical cleaning to remove debris should always be done before disinfection**

	Low-Level Disinfection	Intermediate-Level Disinfection
Gross blood spills or items contaminated with visible blood		X
Hemodialyzer port caps		X
Interior pathways of dialysis machine		X
Water treatment and distribution system	X	X*
Scissors, hemostats, clamps, blood pressure cuffs, and stethoscopes	X	X
Environmental surfaces, including exterior surfaces of HD machines	X	

\*Water treatment and fluid concentrate distribution systems require more extensive disinfection if significant biofilm is present within the system.



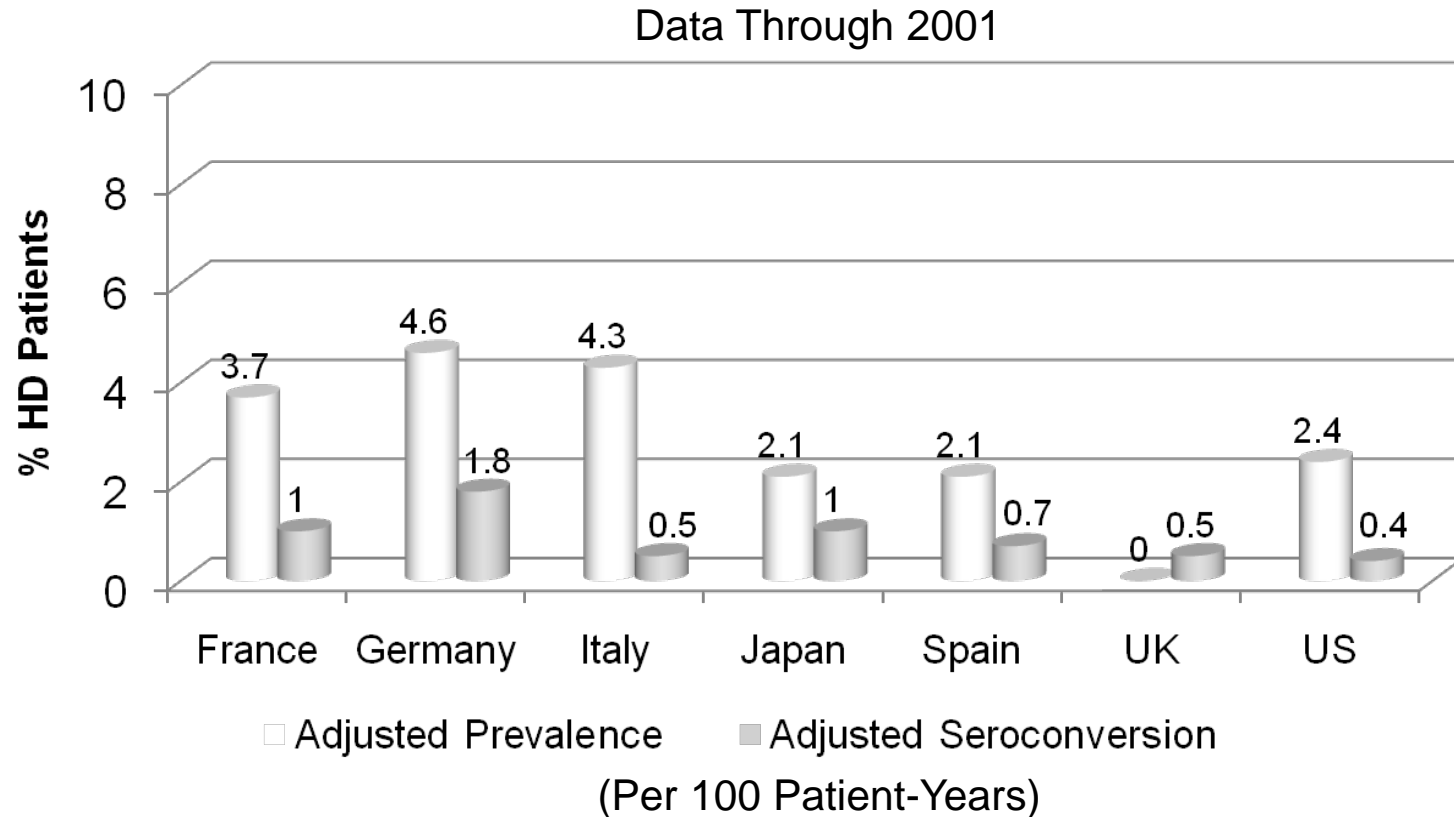
# Dialyzer Reuse and Infection Control

- **Dialyzer reuse is an economic reality in many units and countries**
- **Use single-use dialyzers for**
  - Hepatitis B surface antigen–positive (HepBsAg+) patients
  - Patients with acute bacterial infections being treated with antibiotics
  - All hospitalized patients—whether acute kidney injury patients or hospitalized chronic dialysis patients
- **Dialyzer reuse in HepBsAg+ patients places both patients and staff at risk**

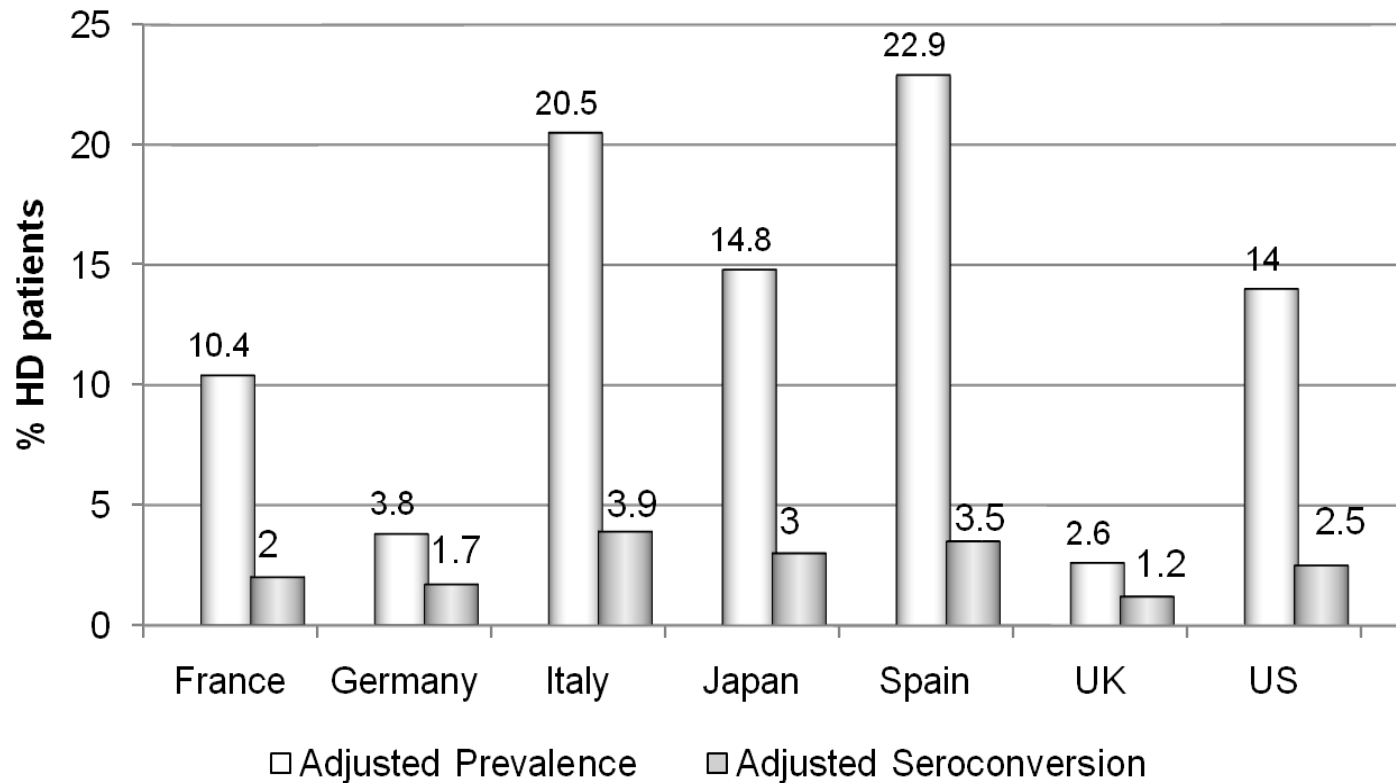
# Blood-Borne Infections Can Be Transmitted in HD Units

- **Hepatitis**
  - Hepatitis B
  - Hepatitis C
- **HIV**
- **Bacterial infections (during episodes of bacteremia)**

# Hepatitis B—Prevalence and Seroconversion in HD Units



# Hepatitis C–Prevalence and Seroconversion in HD Units



# Principles to Prevent Transmission of Blood-Borne Infections in HD Units

- **Universal Precautions (as discussed in previous slides)**
- **Monitoring for early detection of seroconversion**
  - Routine monitoring of Hep B and C serologic status
- **Hepatitis B immunization**
- **Isolation of hepatitis B–infected patients**

# Monitoring for Early Detection of Seroconversion

- **Requirements for admission to dialysis unit**

- HepBsAg, hepatitis B core antibody (HepBcAb), and anti-hepatitis B surface antibody (HBsAb) status
- Hepatitis C virus (HCV) and HIV status

- **Monthly monitoring**

- Alanine transaminase (ALT) (serum glutamic pyruvic transaminase [SGPT])
- HepBsAg (in patients not immune to hepatitis B)

- **Annual monitoring**

- HepBsAb
- HCV

# Monitoring for Early Detection of Seroconversion

- **Monitoring not recommended**
  - Routine monitoring of patient HIV status
  - Serologic testing of staff members

# Hepatitis B Vaccination Principles

- **All dialysis patients not immune to hepatitis B should be immunized**
- **Check seroconversion (HepBsAb titers > 10 mIU/ml)**
- **If patients fail to seroconvert, consider repeating regimen or alternative schedules**
- **Those patients that do seroconvert should be routinely monitored for HepBsAb titers annually**



# Hepatitis B Vaccination—All Non-immune Patients (HD and Peritoneal Dialysis)

	Recombivax HB			Engirex-B		
	Dose	Volume	Schedule	Dose	Volume	Schedule
≥ 20 years						
Pre-Dialysis	10 µg	1.0 ml	0, 1, 6 mo	20 µg	1.0 ml	0, 1, 6 mo
Dialysis	40 µg	1.0 ml	0, 1, 2, 6 mo	40 µg	2 – 1.0 ml doses at one site	0, 1, 2, 6 mo
< 20 years	5 µg	0.5 ml	0, 1, 6 mo	10 µg	0.5 ml	0, 1, 6 mo
Staff	10 µg	1.0 ml	0, 1, 6 mo	20 µg	1.0 ml	0, 1, 6 mo

# Isolation Precautions for HepBsAg+ Patients

- **There should be a separate room/area, dedicated machines, equipment, and instruments for HepBsAg+ patients**
  - These cannot be shared with HepBsAg– patients
- **The separation of HepBsAg+ and HepBsAg– patients should be complete**
  - Staff who care for HepBsAg+ patients should only treat patients who are immune to hepatitis B (titers > 10 mIU/ml)
- **No dialyzer reuse**

# Isolation Precautions

- **Isolation precautions are not recommended for HCV+ and HIV+ patients**
- **Universal Precautions are sufficient to prevent infection transmission**

# Principles for Prevention of Selected Droplet Infections

- **Universal Precautions for the transmission of infections**
- **All dialysis patients should have these immunizations**
  - Annual influenza immunization during the flu season
  - Pneumovax immunization—two doses at 5 year intervals
- **All dialysis patients should undergo purified protein derivative (PPD) testing at the time of admission to dialysis unit and annually thereafter**