

Management of exposure to HBsAg (+) & HCV (+) dialysis patients in a dialysis setting

Definitions:

Exposure: Patients who are dialyzed in the same room or environment as a documented HBsAg (+) dialysis patient are considered to be exposed. Blood contamination of environmental surfaces through shared chairs, tables, equipment, supplies and staff is a viable vehicle for transmission of hepatitis B virus (HBV) in the dialysis setting.

Baseline status: All dialysis patients should have a record of HBV test results documented at the time of initiating dialysis in a new facility. Baseline testing should include: HBsAg, anti-HBsAg and anti-HBc.

Testing now: Testing is recommended for exposed patients as soon as the exposure is recognized. If there is a delay in recognition of the exposure, these test results cannot be considered reflective of patient status at the time of exposure. However, results can still be used for patient management in accordance with CDC dialysis guidelines¹ and categories below.

Vaccination if exposure \leq 1 week ago: If the exposure occurred within the last week, these vaccines should be offered to exposed patients as soon as possible. Hepatitis B immune globulin (HBIG) offers passive immune protection (3-6 months) against HBV and is most likely to be effective if given within 1 week after a percutaneous exposure.² Passively acquired anti-HBs can be detected for 4-6 months post HBIG administration. Hep B vaccine, if indicated, can be administered at the same time as HBIG at an anatomically different site.

Vaccination if exposure $>$ 1 week ago: While data are limited, HBIG is unlikely to be effective if administered more than 7 days after a percutaneous exposure and more than 14 days after a sexual exposure.² Follow the vaccine recommendations listed in the columns.

One-time testing \geq 12 weeks after exposure: If the patient was not previously HBsAg (+) or total Anti-HBc (+), testing for HBsAg should be conducted \geq 12 weeks after exposure. If the patient is HBsAg (-) at 12 or more weeks after exposure, then hepatitis B infection due to this exposure can be ruled out. If HBsAg (+) at 12 weeks, repeat all hepatitis B serologies (anti-HBs, anti-HBc total, and HBsAg) in 6 months. *NOTE: Hepatitis B vaccine can result in a false positive HBsAg, so delay testing for HBsAg $>$ 4 weeks after vaccination or test with HBV DNA.*

HCV: Patients that either seroconvert from anti-HCV (-) to (+) or who are already known to have HCV are not required to dialyze in isolation and can participate in dialyzer reuse programs. HCV is not efficiently transmitted through occupational exposure.

Dialysis Request for investigation:

- Complete list of all patients currently being dialyzed at the facility and a hepatitis summary report with all current and previous (3 months prior to event) hepatitis testing.
- Create a spreadsheet for the tracking/follow up of individuals that are susceptible, have an immunity status that's unknown and those that labs are needed. All patients that were immune as evidenced by the presence of anti-HBs can be ruled out as the as both the source a person suspected of being infected.

Table. Management of exposure to an HBsAg (+) patient in a dialysis setting, according to baseline status of the exposed dialysis patient

Baseline (prior to exposure) patient status ³	Recommended:				Comments
	Testing now	Vaccination if exposure \leq 1 week ago ²	Vaccination if exposure > 1 week ago	One-time testing \geq 12 weeks after exposure	
Known HBsAg (+) or seroconversion from HBsAg (-) to (+)	--	--	--	--	Dialyze in isolation. <u>Annual testing for HBsAg.</u> <u>HBsAg, IgM anti-HBc and anti-HBc testing 1-2 months later. 6 months later test for HBsAg and anti-HBs.</u> *Consider phylogenetic sequencing for comparison with index case HBV DNA
Known Anti-HBs (+) and Total Anti HBc (+) and HBsAg (-)	--	--	--	--	Natural immunity.
Known vaccine responder • Completed Hep B vaccine series AND	Anti-HBs (quantitative)	If anti-HBs < 10 IU/mL, administer Hep B vaccine	If anti-HBs < 10 IU/mL, administer Hep B vaccine	If anti-HBs < 10 IU/mL immediately after exposure,	Vaccine induce immunity (once booster dose is give <u>resume retesting annually</u> for anti-HBs).

Baseline (prior to exposure) patient status ³	Recommended:				Comments
	Testing now	Vaccination if exposure ≤ 1 week ago ²	Vaccination if exposure > 1 week ago	One-time testing ≥ 12 weeks after exposure	
<ul style="list-style-type: none"> • Anti-HBs ≥ 10 IU/mL • Anti HBc (-/unknown³) • HBsAg (-) 		booster dose per CDC dialysis guidelines ¹	booster dose per CDC dialysis guidelines ¹	then test HBsAg at ≥ 12 weeks after exposure ⁴	Retesting immediately after the booster dose is not necessary.
Susceptible: Vaccine non-responder <ul style="list-style-type: none"> • Documented 6 doses of vaccine • Post-vaccine Anti HBs < 10 mIU/mL • Total Anti-HBc (+/-) • HBsAg (-) 	HBsAg ⁴ monthly per CDC dialysis guidelines	Administer 1 dose of HBIG immediately and 1 dose in a month ⁶ .	--	HBsAg ⁴	<u>Monthly HBsAg testing.</u> If HBsAg is negative at ≥12 weeks after exposure, transmission did not occur due to this exposure If not already done, HBV DNA should be checked for persons with isolated Anti-HBc (+) who have not responded to vaccination with Anti-HBs ≥ 10 mIU/mL
Susceptible: Unvaccinated <ul style="list-style-type: none"> • HBsAg (-) • Total Anti-HBc (-/unknown³) • Anti-HBs (-/unknown) 	HBsAg ⁴ monthly per CDC dialysis guidelines for dialysis ^{1,5}	HBV vaccine with or without HBIG immediately at anatomically separate sites. Continue vaccine series per CDC dialysis guidelines ^{1,6}	Initiate Hep B vaccination series per CDC dialysis guidelines ¹	HBsAg ⁴	If HBsAg is negative at ≥12 weeks after exposure, transmission did not occur due to this exposure
Susceptible :Vaccination in progress <ul style="list-style-type: none"> • HBsAg (-) • Total Anti-HBc (-/unknown³) 	HBsAg ⁴ monthly per CDC dialysis guidelines for dialysis ^{1,5}	HBV vaccine with or without HBIG immediately at anatomically separate sites	Continue Hep B vaccination series per CDC dialysis guidelines ¹	HBsAg ⁴	If HBsAg is negative at ≥12 weeks after exposure, transmission did not occur due to this exposure

Baseline (prior to exposure) patient status ³	Recommended:				Comments
	Testing now	Vaccination if exposure \leq 1 week ago ²	Vaccination if exposure > 1 week ago	One-time testing \geq 12 weeks after exposure	
		Continue vaccine series per CDC dialysis guidelines ^{1,6}			
Isolated anti-HBc (+) <ul style="list-style-type: none"> • HBsAg (-) • Anti-HBs (-) 	Anti-HBs, Igm anti-HBc, anti-HBc, HBV DNA (on separate serum sample)	--	--	--	<ul style="list-style-type: none"> • If total anti-HBc is negative, consider patient susceptible, and follow recommendations for vaccination. • If total anti-HBc is positive and IgM anti-HBc is negative, follow recommendations for vaccination. <ul style="list-style-type: none"> • If anti-HBs is <10 mIU/mL even after revaccination, test for HBV DNA. • If HBV DNA is negative, consider patient susceptible (i.e., the anti-HBc result is a false positive), and test monthly for HBsAg. • If HBV DNA is positive, consider patient as having past infection or “low-level” chronic

Baseline (prior to exposure) patient status ³	Recommended:				Comments
	Testing now	Vaccination if exposure \leq 1 week ago ²	Vaccination if exposure > 1 week ago	One-time testing \geq 12 weeks after exposure	
					<p>infection (i.e., the anti-HBc result is a true positive); no further testing is necessary.</p> <ul style="list-style-type: none"> - Isolation is not necessary because HBsAg is not detectable. <ul style="list-style-type: none"> • If both total and IgM anti-HBc are positive, consider patient recently infected and test for anti-HBs in 4–6 months; no further routine testing is necessary. <ul style="list-style-type: none"> • Isolation is not necessary because HBsAg is not detectable⁷
HCV (-) <ul style="list-style-type: none"> • Anti-HCV (-) • HCV RNA (-) 	--	--	--	--	<p>Monthly ALT testing and anti-HCV every 6 months.</p> <p>HCV RNA to be performed when ALT elevations exist with anti-HCV (-).</p> <p><i><u>Isolation is not required!</u></i></p>

Baseline (prior to exposure) patient status ³	Recommended:				Comments
	Testing now	Vaccination if exposure ≤ 1 week ago ²	Vaccination if exposure > 1 week ago	One-time testing ≥ 12 weeks after exposure	
HCV seroconversion <ul style="list-style-type: none"> • Anti-HCV (-) to anti-HCV (+) • HCV RNA (- or +) 	Anti-HCV, HCV RNA, ALT	--	--	--	If ≥1 patient seroconverts in a 6-month period, anti-HCV testing every 1-3 months for anti-HCV (-) patients for a period of 6 months is necessary to capture new infections. <i>Isolation is not required!</i>
HCV (+) <ul style="list-style-type: none"> • Anti-HCV (+) or • HCV RNA (+) • 	--	--	--	--	<i>Isolation is not required!</i>

¹CDC Dialysis guidelines are found at: <https://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf> or <https://www.cdc.gov/dialysis/guidelines/index.html>

²CDC Hep B vaccination guidelines, including post-exposure guidelines are found at: <https://www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6701-H.PDF> or <https://www.cdc.gov/vaccines/vpd/hepb/index.html> or <https://www.cdc.gov/hepatitis/hbv/pep.htm>

³ If there is no record of hepatitis serologies (i.e., missing anti-HBc or anti-HBs or HBsAg), repeat all serologies now. If the patient is known anti-HBc (+), that marker does not have to be repeated.

⁴ Transient HBsAg positivity can occur for up to 18 days following vaccination and up to 52 days among hemodialysis patients. Delay HBsAg testing until >30 days post vaccination and 60 days for hemodialysis patients, or test for HBV DNA. <https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm> or <https://www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6701-H.PDF>

⁵ For acute dialysis patients, test for HBsAg now and 12 weeks after exposure.

⁶ Refrain from testing anti-HBs for 6 months after receipt of HBIG. <https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm> or <https://www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6701-H.PDF>

⁷ Prevention and Management of HCV Infections. <https://www.cdc.gov/dialysis/guidelines/index.html> or <https://www.cdc.gov/mmwr/PDF/rr/rr5005.pdf>