Management of Hepatitis B (HBV) in Renal Transplant Recipients and Donor

University Hospitals of Leicester NHS
NHS Trust

RRCV CMG
Renal, Respiratory, Cardiac and Vascular

1. Introduction

The risk of HBV transmission after transplantation from a donor with active or previous HBV infection is determined by the HBV status of the donor and the immune status of the recipient.

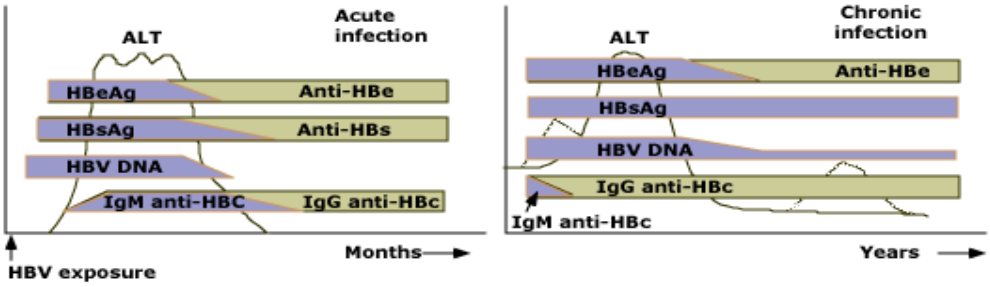
Transplantation from Hepatitis B +ve (HBV+) donors has traditionally been avoided. However, it is now recognised that in certain circumstances the risks and benefits of transplanting such organs can be justified.

All potential transplant patients should be vaccinated prior to transplant

Potential organ donors have their Anti-HBc and HBsAg status tested. Organs from Anti-HBc +ve, HBsAg –ve donors are offered to transplant centres willing to accept such kidneys. In addition, potential recipients may have previously had hepatitis B which could be reactivated in the post transplant period as a consequence of their immunosuppression.

Hepatitis B virus and the serological response

The first serologically detectable response to the infection is a positive Hepatitis core antibody (Anti-HBc) and this probably persists life long. The presence of hepatitis surface antigen (HBsAg) indicates active infection which can be confirmed and quantitated by a Hepatitis B DNA PCR.

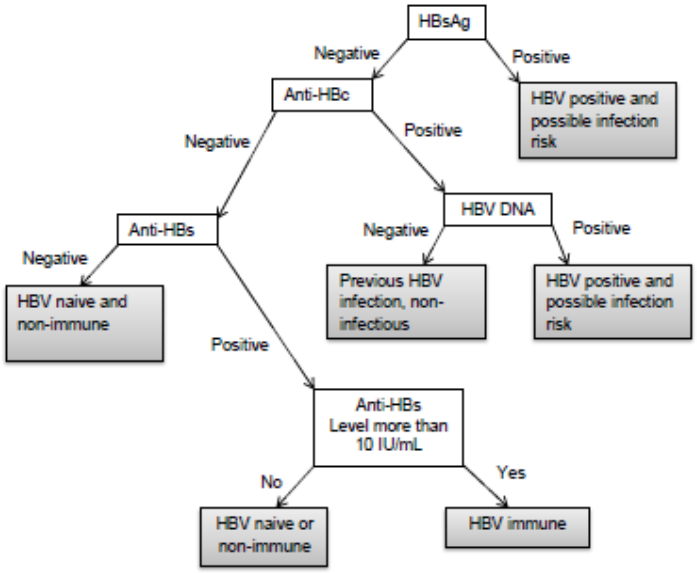


Risk of hepatitis B transmission

Status	HBsAg	Anti-HBc	HBV PCR	AntiHBs	Comment
HBV positive	Positive				Infection risk to others
HBV positive	Negative	Positive	Positive	Positive	Infection risk to others
Previous HBV infection	Negative	Positive	Negative	Positive	Non-infectious to others
HBV naïve or non-immune	Negative	Negative	Negative or titre less 10IU/ml		At risk themselves
HBV immune/vaccinated	Negative	Negative	Positive titre > 10IU/ml		Vaccinated, not at risk/not a risk to others

- Patients who have had an appropriate serological response with clinically resolved infection (Anti-HBc +ve, HBsAg –ve and Anti-HBs +ve) can still reactivate at a later date, usually when immunosuppressed. This is because 'dormant' viral DNA present within the hepatocyte nucleus can reactivate the infection and cause subsequent liver injury.
- Patients who have had an appropriate serological response with clinically resolved infection (Anti-HBc +ve, HBsAg –ve and Anti-HBs +ve) can still have viral DNA detected in their blood periodically. They are therefore still potentially infective to other individuals.

Flow chart interpretation of serology results



2. Scope

This guideline is intended to guide doctors, nurses, pharmacists working on the renal transplant ward. Clinical guidelines are 'guidelines' only. The interpretation and application of clinical guidelines will remain the responsibility of the individual practitioner. If in doubt consult a senior colleague or expert.

3. Recommendations, Standards and Procedural Statements

3.1 Transplantation of kidney from a Hepatitis B positive donor

3.1.1 Assessment of risks and benefits

In the UK, most patients are vaccinated against hepatitis B (although not all respond). In addition, anti-viral therapy is available as a means of prophylaxis.

The use of an Anti-HBc +ve kidney for any individual recipient needs a joint decision between the consultant transplant surgeon, the consultant nephrologist and the patient. Advice may also need to be obtained from the on-call microbiologist or virologist. The risk of viral transmission needs to be balanced against a variety of factors which determine the patient's risk of staying on dialysis and their need for a transplant e.g. age, co-morbidity, dialysis access and complications, transplant number, level of sensitization and length of wait.

3.1.2 Serological testing of donor to assess suitability for donation.

	Donor status	Recommendation fro Transplant
HBsAg +	Active infection	UNSUITABLE
HbsAg – Anti-HBs ab + Anti-HB c -	Vaccinated	Suitable
HbsAg – Anti-Hbs ab – Anti-HB c -	No previous exposure	Suitable
HbsAg – AntiHBs ab + Anti-HB c +	Previous exposure	Suitable Rick of reactivation in recipient – needs hepatology advice (see below)

3.1.3 Recipient risk stratification when receiving an organ from a HepB core antibody positive donor.

Recipient Anti-HBc status	Recipient Anti-HBs status	Risk of Hep B viral transmission
+	+	Low
-	+	Low
+	-	Intermediate
-	-	High risk

3.1.4 Patient information and consent

A patient who is being considered as a potential recipient of a kidney from Anti-HBc +ve donor needs to be informed of this fact. They need to know they will require additional anti-viral therapy to minimize the risk of transmission and be made aware of the duration of this therapy. They also need to know that they could develop hepatitis B in the future and the discussion needs to be clearly documented in the patient's notes and the risk of viral transmission should be included on the patient's consent form.

3.1.5 Lamivudine prophylaxis for recipient

Lamivudine should be used as prophylaxis against viral transmission for patients at high risk when receiving a Anti-HBc +ve kidney.

A single stat dose should be prescribed pre-operatively and once a day dosing thereafter. This should be adjusted according to the patients GFR.

Dose based on GFR

> 50	100mg od
30-50 mls/min	100mg first dose then 50mg od 15-30 mls/min 100mg first dose then 25mg od
5-15 mls/min	35mg first dose then 15mg od
<5 mls/min	35mg first dose then 10mg od Haemodialysis or *Peritoneal dialysis – dose as in*

GFR <5.

Important interactions

Trimethoprim – inhibits excretion of lamivudine – avoid concomitant use with high dose co-trimoxazole.

Antivirals – avoid concomitant use with IV ganciclovir, foscarnet and emtricitabine.

Monitoring

Monitor ALT level monthly
HBV DNA PCR every 3 months
Most patients remain under follow up by Hepatolgist

Discontinuation

Lamivudine should be continued for at least 12 months. Prior to stopping the patient should have Hepatitis serology and Hepatitis B DNA PCR checked. This should be discussed with a Hepatologist

If the serology or PCR indicates active infection/reactivation then this should be discussed with the hepatologists.

If it is negative then the lamivudine can be stopped. The patients should then have Hepatitis serology and Hepatitis B DNA PCR checked every 3 months to look for evidence of reactivation. If it is negative 12 months after stopping lamivudine then no further testing is required unless there is subsequent clinical suspicion of a viral hepatitis.

3.2 Transplantation of a kidney into a Hepatitis B positive recipient

3.2.1 Recipient assessment.

All patients who are assessed for transplantation should have their Anti-HBc and HBsAg status tested.

Those who are HBsAg +ve should have HepB DNA checked and be referred to see a hepatologist.

Those who are Anti-HBc +ve, HBsAg –ve and Anti-HBs positive i.e. controlled or 'dormant' infection should have:-

3.2.1.1 Liver ultrasound
3.2.1.2 Liver fibroscan

This is to look for evidence of hepatocellular carcinoma and/or liver cirrhosis.

If either scan is abnormal then the patients should be referred to see a Hepatologist. If both scans are normal then patients can proceed to transplant listing.

3.2.2 Lamivudine Prophylaxis

Lamivudine prophylaxis should be used for uncomplicated patients with controlled or 'dormant' infection to reduce the risk of reactivation.

This should be for 12 months after transplantation and this should follow the dosing schedule, monitoring and discontinuation protocol in consultation with a Hepatologist - as detailed above.

4. Education and Training

None required.

5. Monitoring and Audit Criteria

Key Performance Indicator	Method of Assessment	Frequency	Lead
No. of patients HepB vaccinated pre-transplant	Proton data	Bi-annually	SC
No. of Anti-HBc +ve kidneys used	Transplant audit	Annually	Transplant team

6. Legal Liability Guideline Statement

See section 6.4 of the UHL Policy for Policies for details of the Trust Legal Liability statement for Guidance documents.

7. Supporting Documents and Key References

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8. Key Words

Kidney transplant, Hepatitis B.

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Written by: Date:	S Carr	**Title:**	Consultant Nephrologist
Reviewed by	Dr Topham Prof Feehally Renal Transplant MDT Dr Delahooke		
Approved by: Date:	CG Policies Group	Review date	May 2018

REVIEW RECORD

DATE	ISSUE NUMBER	REVIEWED BY	DESCRIPTION OF CHANGES (IF ANY)
30 Dec 13	1	T Delahooke`	None.
27 Apr 16	2	S Carr	Revised – added new flow charts. Updated references.
10 Dec 18	3	S Carr	No changes required.