



The RPSG

The Renal Patient Support Group

Renal & Infections



Hepatitis C Virus (HCV) Infection in CKD

- CKD patients with have a higher prevalence of HCV infection compared with general population (Ladino et al. 2016).
- HCV-infected CKD patients with accelerated rate of renal insufficiency can have an increased risk of developing End-Stage Renal Disease (ESRD) (Ladino et al. 2016).
- Infection with HCV has been implicated as being causative in most patients with mixed cryoglobulinemia (colour pigmentation) and several histological forms of glomerular injury (Ladino et al. 2016).





Hepatitis C (HCV) Virus Infection in CKD

- HCV in patients with ESRD has exceeded that of the general population, and transmission of virus has been evidenced in dialysis patients (Ladino et al. 2016).
- The risk of transmission is an ongoing hazard and an increased number of acute HCV infection events among patients undergoing maintenance haemodialysis has also been evidenced (Ladino et al. 2016).



Ladino, M., Pedraza, F., Roth, D. (2016) Hepatitis C Virus Infection in Chronic Kidney Disease, *J Am Soc Nephrol*, 27; 2238-2246.



Hepatitis C Virus – Prevention in Dialysis Centres

Precautions had been identified at dialysis clinics, emphasizing the need for continuously improving infection control practices and environmental disinfection procedures accompanied by adherence to Centres for Disease Control and Prevention (CDC) HCV screening protocols (Ladino et al. 2016).



- Ladino, M., Pedraza, F., Roth, D. (2016) Hepatitis C Virus Infection in Chronic Kidney Disease, J Am Soc Nephrol, 27; 2238-2246.



Hepatitis C Virus (HCV) in ESRD Patients

- Studies have shown that HCV infection is associated with an increased mortality in patients with ESRD (Ladino et al. 2016).
- Transplanting an anti-HCV-positive patient can be accompanied by a significantly decreased risk of death compared with those remaining on the waiting list (Ladino et al. 2016).
- HCV-infected renal recipients have an increased hazard ratio for death - transplantation continues to offer these patients a significantly improved survival compared with those remaining on forms of RRT (Ladino et al. 2016).



Ladino, M., Pedraza, F., Roth, D. (2016). Hepatitis C Virus Infection in Chronic Kidney Disease, *J Am Soc Nephrol*, 27; 2238-2246.

Hepatitis C Virus (HCV) in transplant Patients

- HCV is a systemic disease with important extrahepatic consequences (Ladino et al. 2016).
- HCV infection is a primary cause of liver disease in renal transplant recipients (Ladino et al. 2016).
- HCV-infected recipients are at increased risk of recurrent membranous nephropathy and transplant glomerulopathy (Ladino et al. 2016).



Ladino, M., Pedraza, F., Roth, D. (2016). Hepatitis C Virus Infection in Chronic Kidney Disease, *J Am Soc Nephrol*, 27; 2238-2246.

Methicillin-Resistant Staphylococcus Aureus (MRSA)

- MRSA Bloodstream Infection (BSI) has been a major concern in healthcare systems, due to its high incidence rates (Cuervo et al. 2015).
- The vascular catheter (in place for some RRT patients) can be a frequent source of MRSA-BSI (Cuervo et al. 2015).
- Haemodialysis patients (especially dialysed through a venous catheter) are at a particularly high risk for this infection (Cuervo et al. 2015).



Cuervo, G., Camoez, M., Shaw, E., et al. (2015). Methicillin-resistant Staphylococcus aureus (MRSA) catheter-related bacteraemia in haemodialysis patients, BMC Infectious Diseases, 15; 484.

Methicillin-Resistant Staphylococcus Aureus (MRSA)

- Haemodialysis patients with MRSA infections have longer hospitalisations, with higher costs (Cuervo et al. 2015).
- Patients with MRSA infections often receive antibiotic treatment with glycopeptides (Cuervo et al. 2015).



Cuervo, G., Camoez, M., Shaw, E., et al. (2015). Methicillin-resistant Staphylococcus aureus (MRSA) catheter-related bacteraemia in haemodialysis patients, BMC Infectious Diseases, 15; 484.

MRSA Bacteraemia

- MRSA bacteraemia has been defined as the presence of at least one positive blood culture for MRSA in a patient with clinical signs and symptoms of sepsis (Cuervo et al. 2015).
- Vascular catheter-related bacteraemia is diagnosed using clinical and microbiological criteria (Cuervo et al. 2015)



Cuervo, G., Camoez, M., Shaw, E., et al. (2015). Methicillin-resistant *Staphylococcus aureus* (MRSA) catheter-related bacteraemia in haemodialysis patients, *BMC Infectious Diseases*, 15; 484.

CKD Infections

High rates of infections in patients who undergo dialysis can be attributed to infection owing to:

- Dialysis access, white blood cell and complement dysfunction from contact with dialysis membranes
- Iron overload, exposure to bacteria and pyrogens from contaminated dialysis water systems or inadequately cleaned dialysis machines



Narayanan, M. (2019). The many faces of infection in CKD: Evolving paradigms, insights, and novel therapies, *Adv Chronic Kidney Dis.*, 26(1); 5-7.



Risk Factors of infections

- Risk factors for infection not related to kidney replacement therapy could apply at all stages of pre-dialysis, including the causes and treatment of kidney disease, comorbidities, reduced vaccine effectiveness, and high levels of exposure to health-care facilities (Narayanan 2019).



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Peritoneal Dialysis and Infections

- Despite the progress in newer technologies and antimicrobial therapy, PD-related infections remain common and serious complications (Narayanan 2019).



Narayanan, M. (2019). The many faces of infection in CKD: Evolving paradigms, insights, and novel therapies, *Adv Chronic Kidney Dis.*, 26(1); 5-7.



***Clostridioides difficile* infection in CKD patients**

Patients in CKD are at higher risk of *Clostridioides difficile* infection, which is the most common cause of transmissible nosocomial infection in health-care facilities (Narayanan 2019).



Narayanan, M. (2019). The many faces of infection in CKD: Evolving paradigms, insights, and novel therapies, *Adv Chronic Kidney Dis.*, 26(1); 5-7.

Prevention of Hepatitis B Virus (HBV)

Implementation of infection control precautions:

- Vaccinating against HBV
- Avoiding dialyser reuse in patients positive for hepatitis B surface antigen
- Screening blood donors (wherein a patient may also require blood transfusion owing to anaemia) for HBV markers





Multi-drug-Resistant Organisms

RRT patients can be affected by the deluge of multidrug-resistant organisms that have emerged as important causes of healthcare-associated infections (Narayanan 2019).



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Collaborative Effort in Preventing Infections

The collaborative efforts in prevention infection include:

- Following Standard Operating Procedures and Best Practices
- Improvements in antimicrobial prescribing practices
- Rigorous implementation of standard infection control measures for hygiene and aseptic handling of central venous catheters



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