

RPSG & KDARs Collaborative



The RPSG

The Renal Patient Support Group

Renal, Pharmacy & Medication

Polypharmacy

- Polypharmacy, in effect is a continuous use of multiple drugs to treat a single disorder or condition/s (Masnoon et al. 2017).
- The lack of a transparency and universal definition of polypharmacy (minor, moderate, and major) makes it challenging for healthcare professionals to best advise and when considering drugs, efficacy and best practice (Masnoon et al. 2017).
- Multiple medications are poorly defined in literature and there are several definitions which can add complexity (Sutaria et al. 2016).
- Polypharmacy is associated with adverse outcomes including mortality, falls, adverse drug reactions and length of hospitalization (Masnoon et al. 2017).



- Masnoon, N., Shakib, S., Kalisch-Ellett, L., Caughey, G. (2017). What is polypharmacy? A systematic review of definitions, *BMC Geriatrics*, 17(1), 230.
- Sutaria, A., Liu, L., Ahmed, Z. (2016). Multiple medication (polypharmacy) and chronic kidney disease in patients aged 60 and older: a pharmacoepidemiologic perspective, *Ther. Adv. Cardiovasc. Dis.*, 10(4), 242-250.

Polypharmacy

- The phenomenon of multiple medications is directly related to the number of co-morbidities or multi-morbidities (Sutaria et al. 2016).
- CKD patients are prescribed multiple medications to prevent progression of disease (Sutaria et al. 2016), but also help manage some of the attributed co-morbidities or multi-morbidities.
- More medications are added to control complications of CKD such as metabolic disorders, bone disorders, anaemia and other complications (Sutaria et al. 2016).



Polypharmacy

- Multiple medications might have complex interactions with foods and nutrients, which could lead to compromised nutritional status (Sutaria et al. 2016).
- A recent study informs that CKD patients have higher prevalence of inappropriate medication prescriptions, mostly antibiotics and antihypertensives (Sutaria et al. 2016).
- It often implies a negative situation involving unnecessary medication (Sutaria et al. 2016), and therefore this is becoming wider concern in terms of healthcare management.
- The most known predictors for polypharmacy implementation include age, female gender, poor self-reported health, low educational status (Sutaria et al. 2016).



Sutaria, A., Liu, L., Ahmed, Z. (2016). Multiple medication (polypharmacy) and chronic kidney disease in patients aged 60 and older: a pharmacoepidemiologic perspective, *Ther.Adv.Cardiovasc.Dis.*, 10(4), 242-250.



Hepatitis B Virus (HBV) Vaccination

- Advanced age, male, gender, previous blood transfusions are associated with poor seroconversion rates (Janus et al. 2008).
- Patients with CKD must be immunized as soon as possible and before starting dialysis, where possible (Janus et al. 2008).
- The use of HBV vaccine and preventive measures have helped reduce the annual incidence of HBV infection in patients on dialysis (Janus et al. 2008).
- It is important to vaccinate CKD patients and recommended vaccination schedule is four doses of 40µg of Engerix B vaccine at 0, 1, 2 and 6 months or three doses 20 µg of Recombivax HB vaccine at 0, 1 and 6 months (Janus et al. 2008).



Varicella Vaccination

- Varicella is a common benign infectious disease in the paediatric population. But it may be severe and even fatal in immunocompromised ESRD children. Furthermore, zoster disease, a form of varicella usually occurs in adult and elderly population (Janus et al. 2008).
- Response to varicella vaccination has tested well in dialysis patients and it was generally well-tolerated and protective (Janus et al. 2008).
- Varicella infection was frequent and serious amongst non-immunized post-transplant patients (Janus et al. 2008).
- For patients older than 12 years, available guidelines recommend two doses of 0.5ml with no booster doses (Janus et al. 2008).



Janus, N., Vacher, L.V., Karie, S., Ledneva, E., Deray, G. (2008).
Vaccination and chronic kidney disease, *Nephrol.Dial.Transplant.*, 23,
800-807



Influenza Vaccination

- Influenza is a common infection that is responsible for many deaths (Janus et al. 2008).
- Because of the virulence and the pathogenic power of this virus, influenza vaccination is recommended in the CKD population (Janus et al. 2008).
- The risk of hospitalization or death is decreased in vaccinated HD patients compared with non-vaccinated HD patients (Janus et al. 2008).
- Studies demonstrated that influenza vaccination is safe and effective in patients with CKD despite and impaired antibody response (Janus et al. 2008).



- Janus, N., Vacher, L.V., Karie, S., Ledneva, E., Deray, G. (2008). Vaccination and chronic kidney disease, *Nephrol.Dial.Transplant.*, 23, 800-807.



Influenza Vaccination

- Vaccination against influenza is associated with decreases mortality and results in decreased hospitalization (Janus et al. 2008).
- Antibody titres can be lower than in healthy population. However, satisfactory protective rates can be reached by annual vaccination (Janus et al. 2008).
- The correction of Vitamin-D deficiency among HD patients can improve immune response (Janus et al. 2008).
- A single dose of 15µg has demonstrated decent efficacy in CKD population (Janus et al. 2008).



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Staphylococcus aureus Vaccination

S. aureus is a major cause of nosocomial and community-acquired infections (Janus et al. 2008).

Patients undergoing dialysis represent a high-risk group of developing infection to *S. aureus* due to the violation of the skin barrier (Janus et al. 2008).

ESRD patients may have an impaired immunological response, with a 50% reduction of IgG levels 6-months after a 25µg vaccination (Janus et al. 2008).

Renal patients reach protective antibody levels only for about 6 months (Janus et al. 2008). There is no current recommendation for the use of *S. aureus* (Janus et al. 2008).



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Pneumococcal Vaccine

- The burden of pneumococcal infections in CKD patients is high, the cost of pneumococcal vaccination is low.
- Pneumococcal vaccination should be administered to all patients with CKD as early in the disease as possible.
- CKD patients over the age of 19 should receive a dose of pneumococcal conjugate vaccine-13 first, followed by a dose of pneumococcal polysaccharide vaccine at least 8 weeks later.
- The second dose of pneumococcal polysaccharide vaccine is recommended 5 years after the first dose of it for persons ages 19-64 years.





Adjuvant Therapy

- Another way to improve the immunological response of vaccines in ESRD patients is to use an adjuvant therapy to vaccination, in order to stimulate the immune system (Janus et al. 2008).
- One of the most important investigations relating adjuvant drugs was granulocyte macrophage colony-stimulating factor (or GM-CSF). This can help prompt the proliferation and maturation of cells into granulocytes and macrophages (Janus et al. 2008).



ACKNOWLEDGEMENTS

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