Proton pump inhibitor use and chronic kidney disease – a clinical audit

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Background

Proton Pump Inhibitor (PPI) use is known to be associated with interstitial nephritis causing acute kidney injury (AKI). However, recent studies suggest that patients taking PPIs are more likely to develop chronic kidney disease (CKD), independent of AKI.[1,2]

Proton Pump Inhibitors (PPIs) are commonly prescribed drugs for acid suppression and are often in the top 10 drugs prescribed in Australia by both number and cost to the PBS.[3] Anecdotally, many patients once commenced on a PPI continue to take them for long periods of time without an appropriate indication

Aims

To measure the incidence of proton pump inhibitor (PPI) use in renal and general-medical inpatients with chronic kidney disease (CKD), identify the rate of inappropriate and long-term (>6months) PPI use in these patients and to observe CKD progression in this subgroup of patients.

Methods

A prospective audit was conducted over a two week data collection period. Resources used, data collection process, inclusion and exclusion criteria are summarized in the flow diagram below (see Figure 1).

Therapeutic Guidelines Gastrointestinal was used in consultation with a gastroenterologist to compile a list of appropriate PPI indications. Gastro-oesophageal reflux disease (GORD) was assumed in the absence of a documented indication.

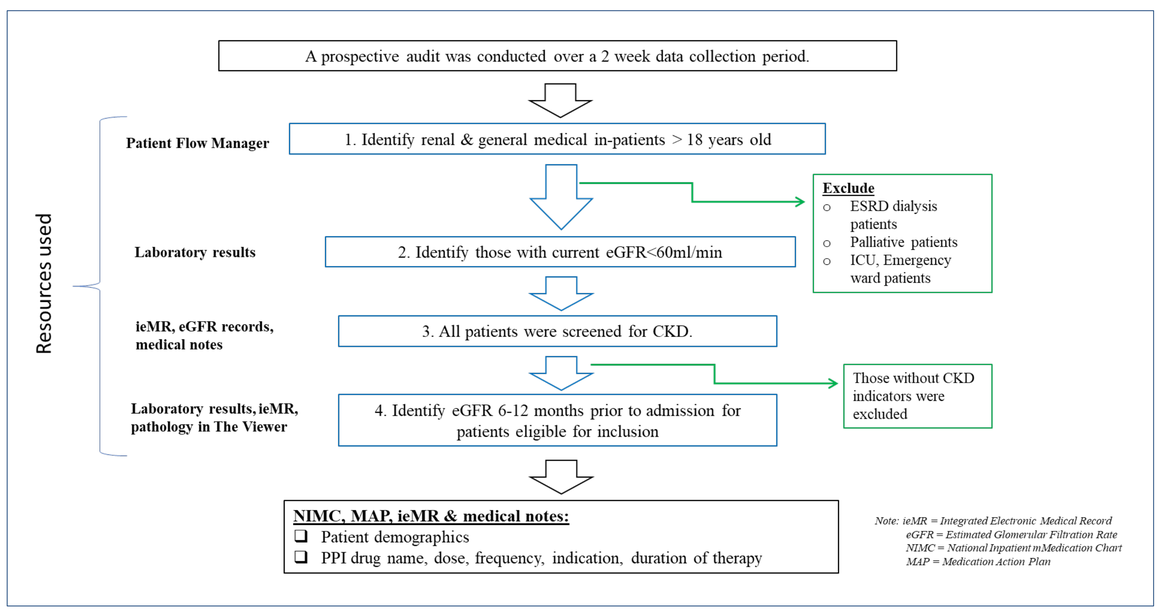

Figure 1 – Flow diagram summarising study methods

Results

The results are summarized in Figures 2, 3 and 4 below. 87 renal and general-medical inpatients with CKD were eligible for inclusion. 63% (55/87) were taking a PPI. Of these, 62% (34/55) were using the PPI inappropriately. 44% (24/55) of PPI users were taking the PPI long term (>6months) and of these, 58% (14/24) had CKD progression, as determined by a >10% drop in eGFR compared to previous records.

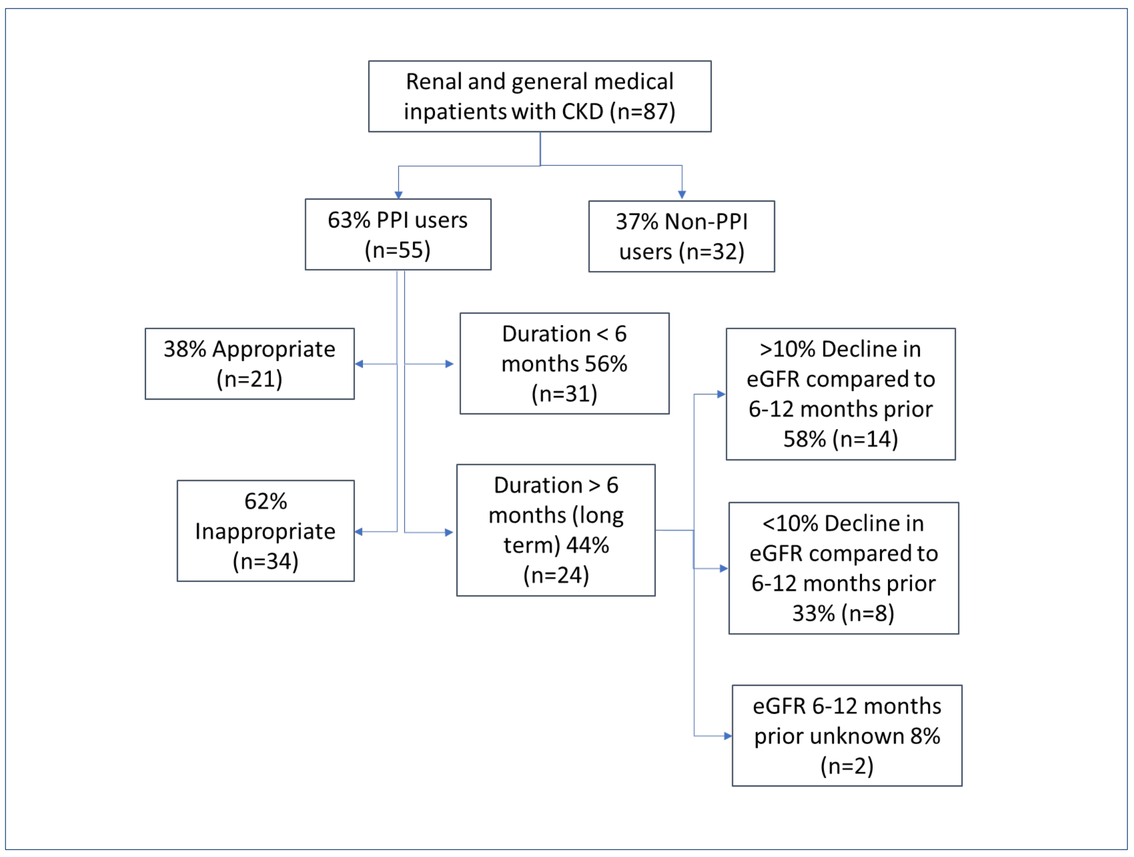

Figure 2 – Flow diagram summarising results

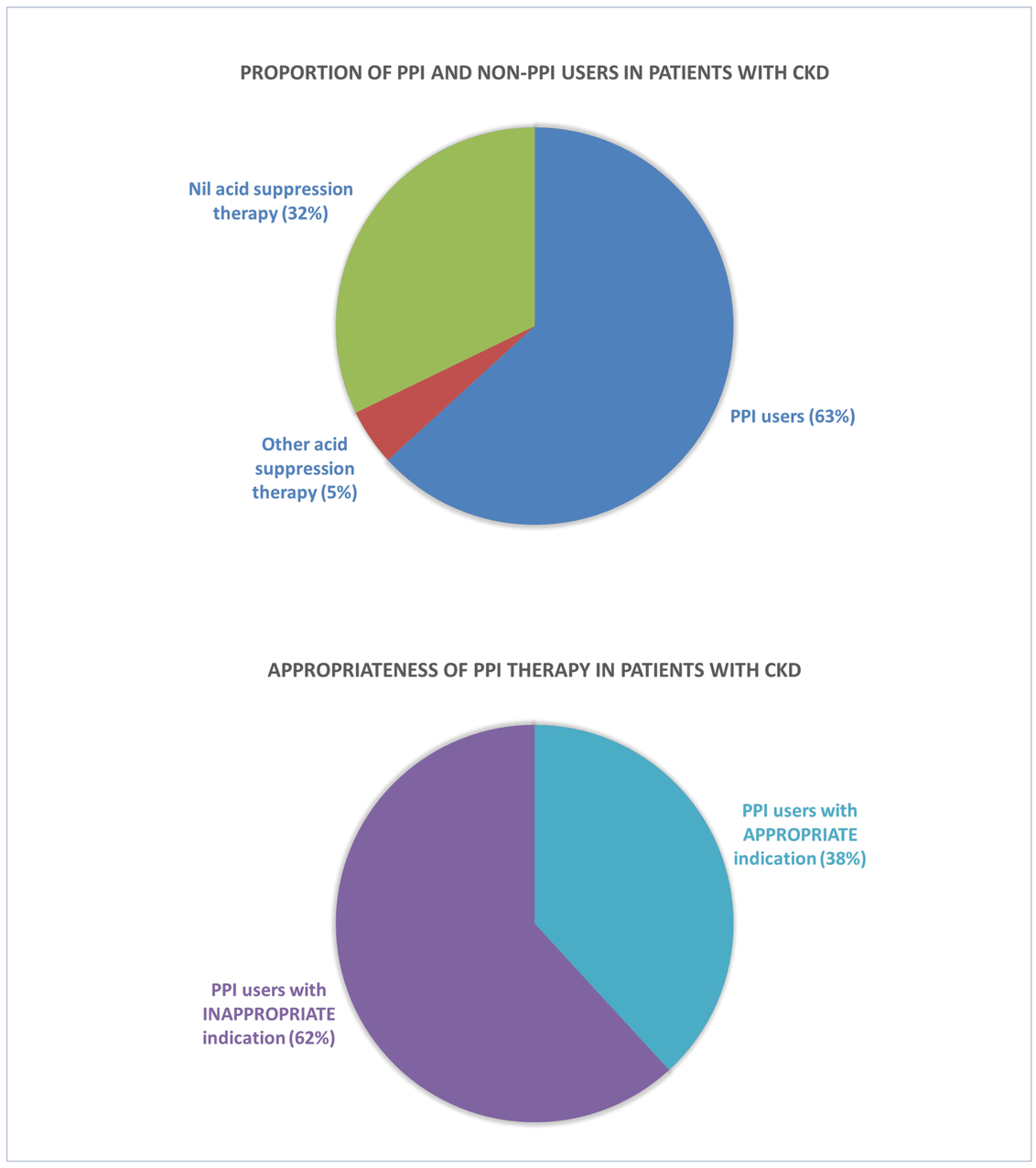

Figure 3 – Proportion of CKD patients taking PPIs and appropriateness of therapy

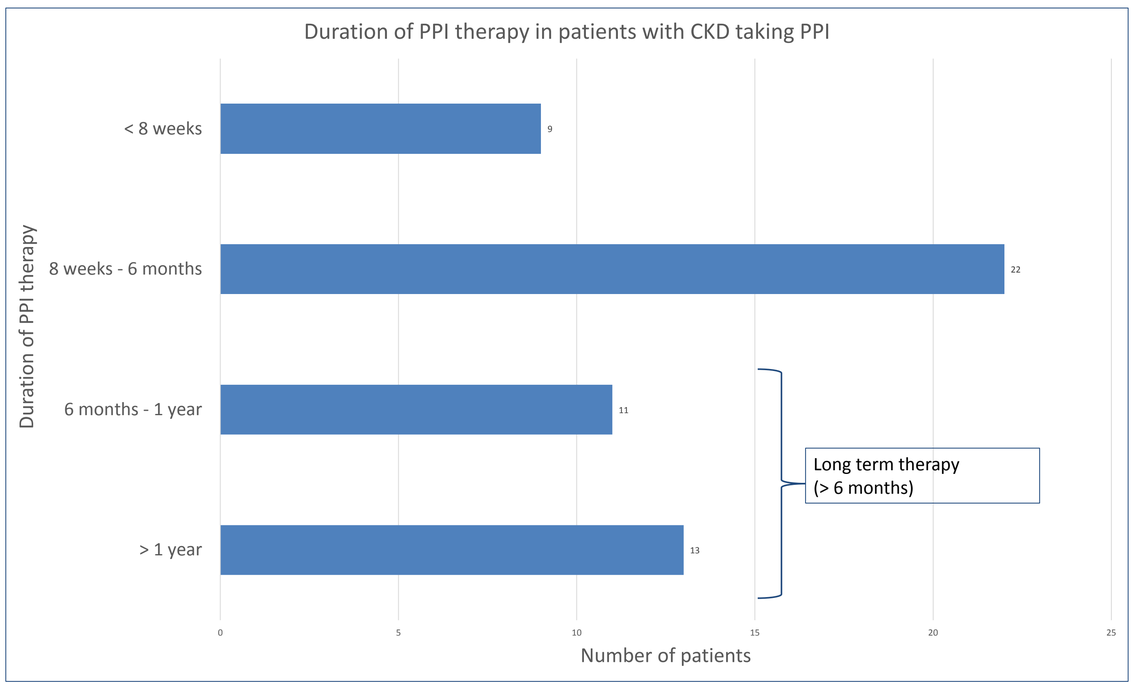

Figure 4 – Duration of PPI therapy in patients with CKD

Conclusion

Over half of the renal and general-medical inpatients with CKD were PPI users. Many use them long-term, potentially without an appropriate indication. There is a hypothesized risk of CKD progression with long-term PPI use. Further research is required to evaluate if limiting PPI use reduces the risk of both development and progression of CKD.

References

1. Xie Y, Bowe B, Li T, Xian H, Yan Y, Al-Aly Z. Long term kidney outcomes among users of proton pump inhibitors without intervening acute kidney injury. Kidney Int. 2017; 91: 1482-94.
2. Lazarus B, Chen Y, Wilson F, Sang Y, Chang A, Coresh J, Grams M. Proton pump inhibitor use and risk of chronic kidney disease. JAMA Intern Med. 2016 Feb 1; 176(2): 238-46.
3. https://www.nps.org.au/australian-prescriber/articles/top-10-drugs-2016-17

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