Improving quality of care; does a proactive review of patients with deteriorating renal function in a local HIV/Renal Virtual Clinic lead to changes in ART?

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Introduction

Local HIV-renal guidance created in a diverse East London HIV Clinic aimed to **detect early deterioration in renal function** and, via referral to a Renal-HIV Virtual Clinic (VC), encourage a **proactive switch** off potentially nephrotoxic antiretroviral therapy.

Criteria for switch off TDF (and onto TAF or non-TDF regime) or off ATZ/LPV third agent:

1. eGFR <60 ml/min on repeat measurement
2. uPCR >50 mg/mmol on repeat measurement

Criteria for review in local Renal/HIV virtual clinic (VC). Any of:

1. eGFR >60ml/min (i.e. not requiring immediate switch) and uPCR 15-50 mg/mmol
2. Phosphate <0.8 mmol/l if on TDF, eGFR >60 and uPCR <15.

Other criteria for review in local virtual clinic, not specifically assessed in review of notes:

1. Declining eGFR
2. Abnormal Fractional Excretion phosphate (if on TDF)
3. Glycosuria in non-diabetic (confirmed on repeat) (TDF)
4. Microscopic haematuria (ATZ/LPV)
5. Leucocyturia (ATZ/LPV)

Fig 1: Local Guidelines for referral switch off TDF/ ATZ / LPV and for referral to HIV/Renal VC

Aims & Objectives

The broad aim of the project was to **reduce avoidable ART toxicity** and to find the outcome of any ART switch recommendation made in the VC.

Method

E-prescribing systems flagged patients on: TDF, ATZ or LPV over 6 months in 2019, and all eGFR, uPCR and serum phosphate results were collated.

→This data was then filtered by the parameters in the local guidelines in Fig. 1 above to find **those meeting criteria for switch off ART** or for **discussion in virtual HIV/renal VC**.

→Those patients then underwent **VC structured reviews** by a Consultant Nephrologist July 2020 - September 2022, considering : **HIV history**, **co-morbidities**, **risk factors for TDF toxicity**, **tubulopathy parameters**, and **eGFR trend**. The summary (no concern vs sub-clinical vs overt) included recommended investigations and switch advice if relevant and appropriate. Renal health promotion advice was included where applicable. This was emailed to the patient's usual HIV physician and copied into the electronic clinical notes.

→Six months after the last VC reviews had been sent out, the clinical records were revisited. The outcomes were recorded: if ART switch had taken place, and eGFR trend following switch where appropriate.

79-year old white British man diagnosed with HIV in 2010. Good suppression of viral replication on TDF/FTC/EFV since then. Other co-morbidities of DVT and spinal degenerative disease.

Normal renal function, normotension and a historically normal renal tract on imaging although he has persistent low-grade proteinuria (A2 range) and has been intermittently hypophosphataemic in the past.

At increased risk of TDF toxicity (age). Persistent proteinuria may reflect sub-clinical tubular toxicity but in isolation would not currently mandate TDF withdrawal. A switch away from TDF could be considered if he is found to be phosphaturic on further testing, provided this is in line with holistic care. Would benefit from fractional excretion of phosphate when feasible (nb this simply requires spot urine creatinine and urine phosphate paired with serum creatinine and serum phosphate. An online calculator for FEPhos is available at http://www.scymed.com/en/smnxps/pshpb390.htm - please refer to "Chronic kidney disease in people living with HIV" guidelines on WeShare for guidance on interpretation).

Fig. 2: Example VC review summary sent out to patient's clinician and included in clinical notes.

Results

Total 1106 of clinic patients were on TDF, ATZ or LPV. 292 had eGFR <60ml/min, and/or uPCR >15mg/mmol of whom 160 remained in care, and had not been transferred off potentially nephrotoxic ART in the interim. 70/160 required case review based on latest clinical data, all of whom were on TDF. The demographics of these patients can be seen in Fig. 4. The prevalence of diabetes, hypertension and CV disease was 13%, 29% and 6% respectively.

34% of the 292 were taking concomitant cobicistat or RTV. 90% were deemed high risk for renal toxicity. Of the remainder; 68 had transient abnormalities not requiring review and 22 needed further testing (repeat uPCR). 36/70 (51%) warranted switch according to clinical criteria. In 32/70 (46%) further testing or monitoring was recommended. Of the patients warranting switch, 23/36 (64%)were switched at or by the next clinician appointment, all to TAF or a two-drug regimen. 36% (13/36) were not switched, in 8/13 these cases the emails or clinical notes appear not to have been reviewed by clinician; reminders have been sent; in 5/13 the patients were LTFU or deceased.

Of the 32/70 where a switch was not initially indicated, but further testing was recommended (for phosphaturia, proteinuria); repeat testing was not carried out in 13/32 and was carried out in 8/32 cases; normal in 6 and abnormal and requiting a switch off TDF in 2 cases. A switch off TDF had pre-emptively taken place in 11/32 cases, and remaining 2 showed improvement in most recent investigations.

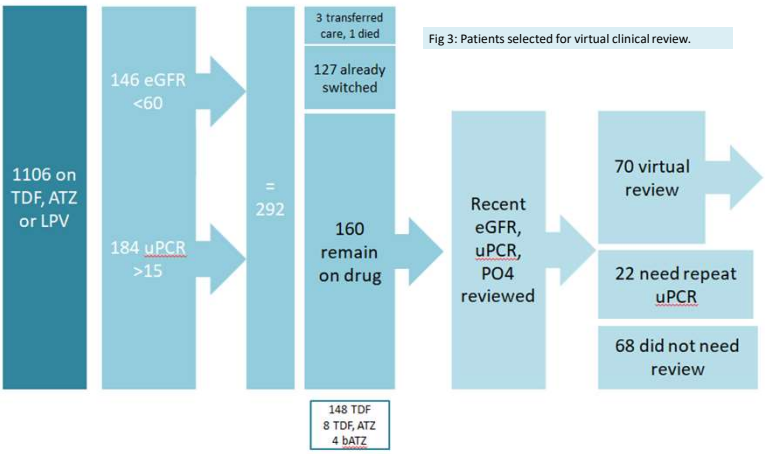

Fig 3: Patients selected for virtual clinical review.

	Patients reviewed in VC
Mean age	53
Gender	M 70% F 30%
Diabetes	13%
Hypertension	29%
On Cobicistat/ritonavir boosted regimen	34%
eGFR average	69ml/min
Hypophosphataemia present	33%
Major fracture	3%
Osteoporosis	1.5%

Fig 4: Demographics of patients reviewed in VC.

Conclusions

Overall, 6% (70/1106) of patients on ATZ/TDF/LPV had either sub-clinical toxicity or met criteria to switch. 90% of these patients were 'high risk' (age >40, hypertension, diabetes, CV disease or concomitant RTV). 23/36 (64%) meeting criteria for switch were switched owing to VC recommendation. **While long term TDF is safe in the majority, patients can be stratified for risk of tubular toxicity and contra-indications to ongoing use or sub-clinical toxicity detected early through periodic monitoring, given effective alternatives now exist.**