

# Renal toxicity in a cohort of PrEP users

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## Introduction

- Renal toxicity is one of the most important side effects of tenofovir disoproxil fumarate (TDF) and several studies have shown that it usually is a mild and reversible event (1,2)
- Pre-exposure prophylaxis (PrEP) users could take TDF for an increasing number of years, with an intake similar to that people living with HIV usually have.
- The aim of this study was to assess the frequency of decline in renal function and characteristics of people affected of it in a real-life cohort of people using PrEP based on TDF/emtricitabine (FTC).

**Table 1 Characteristics of PrEP users (n=143)**

	Median/number of people	IQR/frequency
<b>Male sex</b>	142	99%
<b>Age, years</b>	36	31-45
<b>BMI, median</b>	24.6	23.5-25.7
<b>Comorbidities</b>	32	23%
<b>Use of NSAIDs</b>	9	6%
<b>Use of creatine and protein supplements</b>	18	13%
<b>Use of any recreational drugs</b>	9	6%

## Results (2)

- Twelve/92 (13%) experienced an increase in creatinine levels equal or greater than 0.3 mg/dL.
- These people were older than the group without creatinine change, median(IQR) 47(37-51) vs. 35.5 (32.0-44.5) years; p=0.021), used more often daily PrEP versus on-demand PrEP (58% vs 20%, p=0.004), used NSAIDs more frequently (25% vs 6%; p=0.031) (Table 2).

## Study Design and methods

- Retrospective cohort study evaluating the decline of renal function
- Study population: people starting TDF/FTC-based PrEP at our Hospital between 2018 and 2023.
- Inclusion criteria: age ≥18 years, almost one follow-up visit assessing renal function after PrEP start.
- Primary endpoint: to evaluate the decline of renal function after PrEP exposure.
- Renal toxicity was defined as an increase of 0.3 mg/dl of creatinine, a threshold considered significant when assessing the development of renal function by Kidney Disease Improving Global Outcomes (KDIGO) definitions. (3)

## Results (1)

- 185 people had at least one visit for PrEP counselling: 143 started PrEP during the study period and 139 had almost one follow up visit.
- Among them, 99% were males, 91% were Caucasians; median age was 36 years (IQR 31-45) and median baseline body mass index (BMI) was 24.6 (IQR 23.5-25.7).
- Thirty-two (23%) of them had at least one comorbidity, in the majority of cases a gastroenteric disease. Nine (6%) used nephrotoxic therapies such as Non Steroidal Anti Inflammatory Drugs (NSAIDs), 18 (13%) used protein supplements and creatine and 9 (6%) used almost one recreational drug. (Table 1)
- One hundred and twenty four PrEP users were tested at least once for creatinine with a median value of baseline creatinine of 0.9 mg/dL (IQR 0.8-1.0). Out of these, 92 had at least a creatinine value after the PrEP start.

**Table 2 Factors associated with increased of creatinine ≥0.3 mg/dl**

Variables	People with creatinine increase ≥0.3 mg/dl (n=12)	People without creatinine increase ≥0.3 mg/dl (n=80)	P value
<b>Age, median (IQR)</b>	47(37-51)	35.5 (32.0-44.5)	0.021
<b>Ethnicity, n (%)</b>			0.962
<b>Caucasic</b>	11 (92)	73 (91)	
<b>Others</b>	1 (8)	7 (9)	
<b>Osteoporosis at time of start PrEP, n (%)</b>	0 (0)	1 (1)	0.697
<b>Chronic kidney failure at time of start PrEP, n (%)</b>	1 (8)	1 (1)	0.117
<b>Comorbidities n (%)</b>	6 (50)	19 (24)	0.057
<b>Use of NSAIDs, n (%)</b>	3 (25)	5 (6)	0.031
<b>Use of creatine and protein supplements, n (%)</b>	3 (25)	9 (11)	0.187
<b>Use of anabolic drugs, n (%)</b>	1 (8)	2 (3)	0.289
<b>Any recreational drugs, n (%)</b>	1 (8)	6 (8)	0.919
<b>Daily vs on demand PrEP, n (%)</b>	7 (58)	16 (20)	0.004

## Conclusion

- Renal toxicity due to TDF is an important issue to consider. To assess the possible risk factors for developing renal toxicity, such as older age, use of NSAIDs, and daily dosing regimen, it is crucial to tailor the monitoring of renal function during the PrEP intake in particular key populations.
- Further studies on the creatinine recovery after PrEP discontinuation are needed, especially facing an increasingly older population with comorbidity and polypharmacy among PrEP users.

## References

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