

# Antiretroviral Laboratory Monitoring and Implications for HIV Clinical Care in the Era of COVID-19 and Beyond

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## Background

In the era of COVID-19, providers are delaying laboratory testing in people with HIV (PWH) to avoid unnecessary exposures despite antiretroviral guidelines recommending periodic testing. The purpose of this study was to examine the clinical significance of periodic renal, liver, and lipid testing.

## Methods

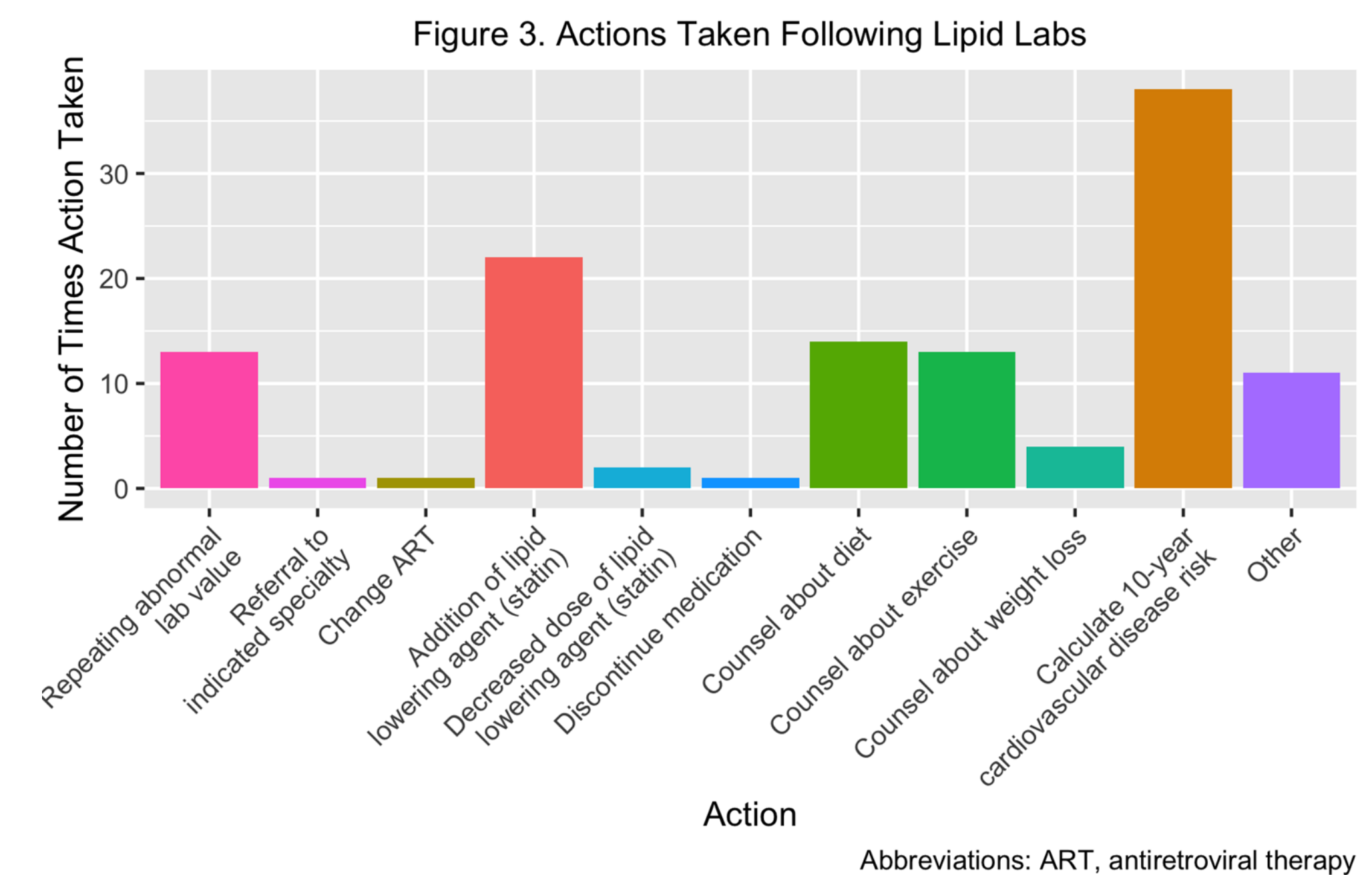
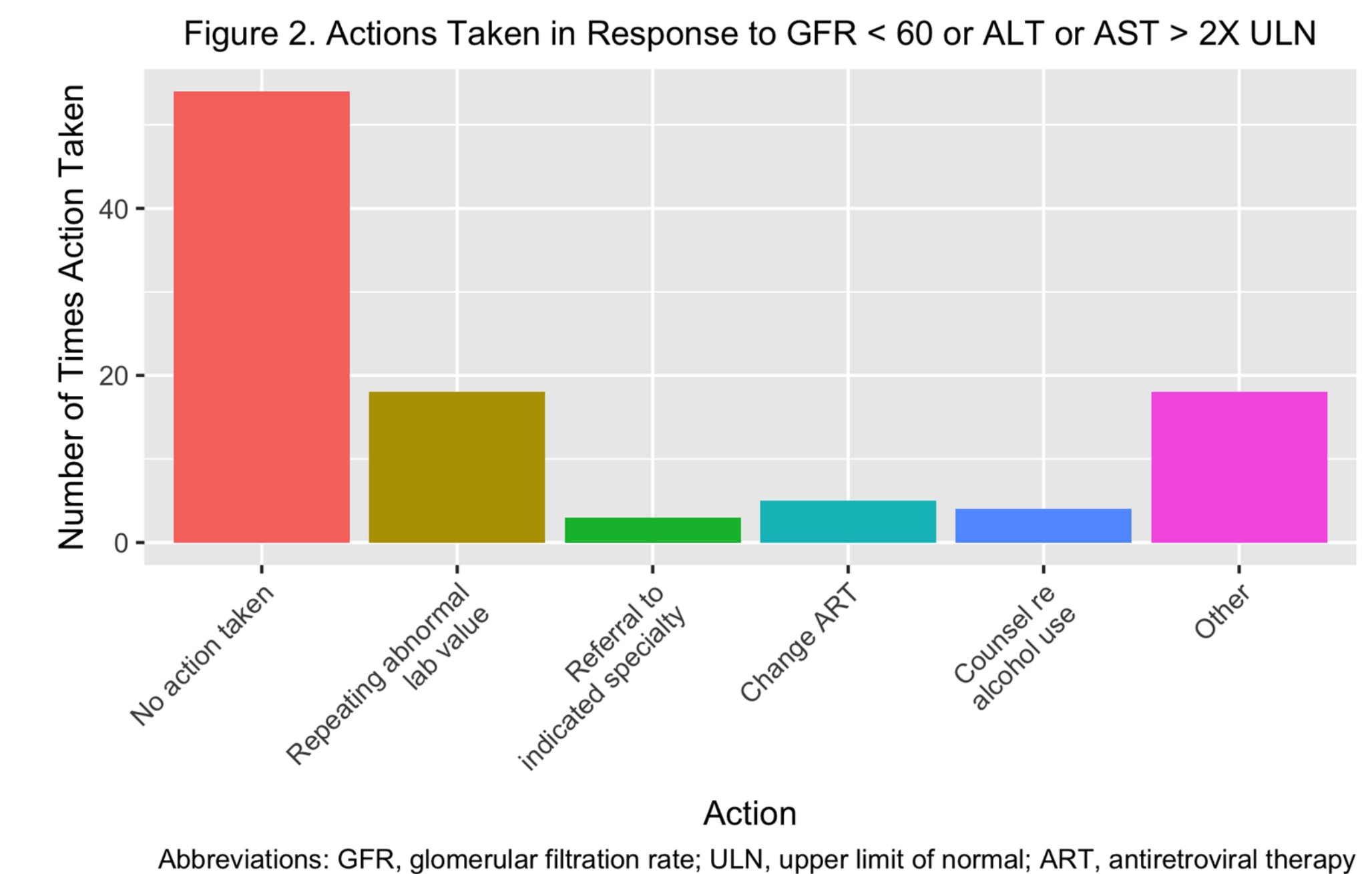
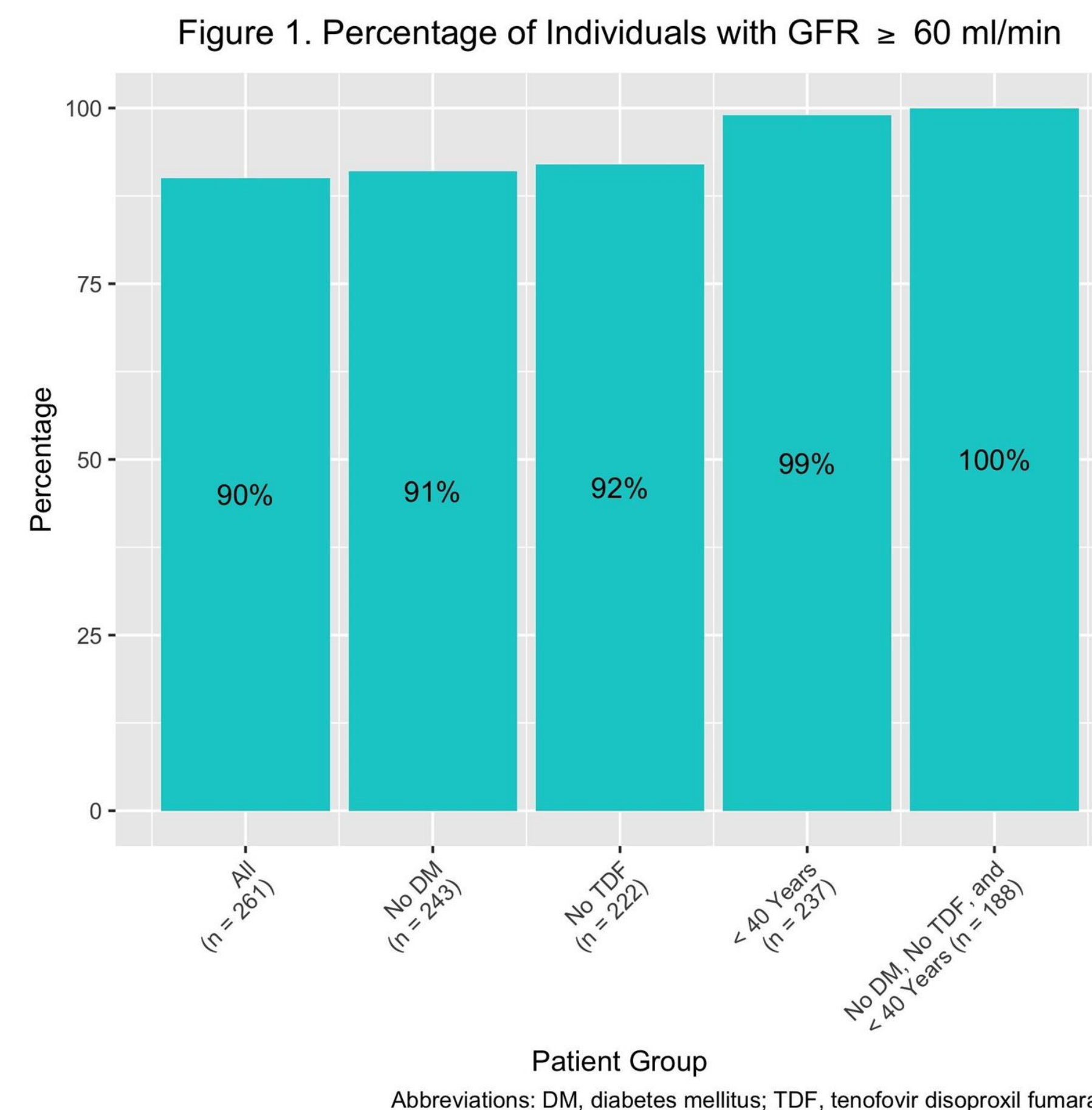
We reviewed the charts of 261 people with HIV (PWH) who initiated outpatient care at an academic HIV clinic between 1/1/16 and 12/21/18, had at least two clinic visits, and had at least one set of CMP labs at least seven days after starting antiretroviral therapy (ART). This included 946 comprehensive metabolic and 278 lipid panels. Analysis included frequency distributions, descriptive statistics, and Poisson models with 95% confidence intervals (CI).

**Table 1. Characteristics of Participants**

Characteristic	% n/median
Age in Years, Median (Range)	40 (18-75)
Biological Male Sex	85 (223)
Race	
Asian	2 (5)
Black	18 (47)
Native American	2 (4)
White	74 (194)
Other	4 (11)
Ethnicity	
Hispanic	29 (75)
Non-Hispanic	71 (186)
Sexual Orientation	
Heterosexual	28 (72)
Men who have Sex with Men	58 (152)
Bisexual	12 (32)
Unknown	2 (5)
Illegal Drug Use Other Than Marijuana	15 (39)
CD4 Cell Count (cells/ $\mu$ l)	
< 200	12 (32)
201-500	35 (92)
> 500	52 (137)

## Results

Eighty-five percent (221) of PWH had no laboratory abnormalities while on ART. The most common abnormality was a glomerular filtration rate (GFR) < 60 ml/min found in 10% of PWH. Multivariate analysis revealed that diabetes mellitus (DM) was associated with an increased risk of GFR < 60 ml/min (estimated rate ratio 2.23, 95% CI 1.17-4.25) and age < 40 years was associated with a decreased risk (estimated rate ratio 0.02, 95% CI 0.00 – 0.12). When a GFR was < 60 ml/min or an AST or ALT was >2X upper limit of normal (ULN), no action was taken in 53% of the cases. When an action was taken, the most common was repeat testing (18%). After a lipid panel result, the most common actions were to calculate a 10-year cardiovascular risk score (32%) and add a statin (18%). Taking action after lipid panel results was strongly associated with age  $\geq$  40 (estimated rate ratio 9.1, 95% CI 3.3-24.9). ART was changed in seven PWH based on GFR, AST/ALT, or lipid panel results. There were four individuals with poor outcomes including cerebrovascular accident, acute renal failure, end stage renal disease, congestive heart failure, myocardial infarction, and death. Contributing factors were DM, hypertension, and hypercholesterolemia.



## Conclusion

Individuals < 40 years without comorbidities had a low risk of having clinically significant renal and liver function abnormalities and rarely had actions taken after renal, liver, or lipid results. In the era of COVID-19 and beyond, it may be prudent in certain groups to delay or eliminate liver, renal, and lipid testing to eliminate exposure, reduce cost, and avoid patient anxiety.