

# A reflective process led by a family physician to develop a renal-protection surveillance tool for HIV patients newly started on dolutegravir



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A group of Vanguard Community Health Centre doctors embarked on a Health System's Improvement (HSI) project with the aim of reducing harm to renal function in patients who were either commenced on or switched to a dolutegravir (DTG)-based antiretroviral therapy (ART) regimen since 2019, when the usual monitoring and evaluation of ART-regimen switches were disrupted by the coronavirus disease 2019 (COVID-19) pandemic. This intended harm-reduction exercise, involving a reflective process that was facilitated by the family physician, led to the development of a *Vanguard Renal Protection Surveillance tool*, which is now used at Vanguard to detect and prevent renal decline.

**Keywords:** HIV; renal protection; health system improvement; South Africa; Dolutegravir.

## Introduction

Vanguard Community Health Centre (VCHC) is a primary care facility in the Western Cape (WC), South Africa (SA). During the first wave of the coronavirus disease 2019 (COVID-19) in 2020, the facility began switching HIV-positive people from an efavirenz-based first line antiretroviral regimen (EFV-BR) to a dolutegravir-based regimen (DTG-BR). Because the COVID-19 demanded additional attention from health care workers (HCWs), the switch lacked the usual rigour in monitoring adverse events that may come with the introduction of new medicines.<sup>1</sup> Informal and unofficial local feedback from colleagues alleged that there could be serious decline in renal function associated with this DTG-BR. This decline was said not to be related to the known and expected increase in serum creatinine of less than 15% from dolutegravir (DTG),<sup>2</sup> nephrotoxicity from tenofovir (TDF)<sup>3</sup> or HIV-associated nephropathy.<sup>4</sup> The concern of possible nephrotoxicity, associated with this new medication, prompted the authors at VCHC to develop a special surveillance system for detecting early renal impairment, so that if necessary, they could implement earlier remedial actions. The project was led and coordinated by the facility's family physician (FP), who had experiences of several other WC Health System's Improvement (HSI) programmes.<sup>5,6,7</sup>

## Development of the surveillance tool for renal function

The aim of the initiative was to develop a surveillance tool that could assist clinicians to prevent and/or detect early renal decline in patients who had been commenced on a DTG-based regimen. The tool was developed through rounds of piloting, reflection and discussions amongst the authors and other practitioners at VCHC (in the main, the nurses). This was also seen as an opportunity to train staff on adverse drug reporting (ADR).

The first task was the drafting of the Vanguard Renal protection Surveillance Tool (VanReST). The tool included potential risk factors for renal disease that had been identified from the SA Primary Health care and Adult Standard Treatment Guidelines.<sup>8,9</sup> The VanReST (Figure 1) was used to audit folders of HIV-positive people (ranging from children/adolescent  $\geq 35$  kg and  $\geq 10$  years to adults), who had been commenced on or switched to a fixed regimen of tenofovir/lamivudine/dolutegravir (TLD) since 2019. The audit intended to review 60 systematic randomly selected folders.

Three medical officer and community-service medical officer pairs were allocated 20 folders to review using VanReST. Protected time was set aside to allow each duo to audit five folders per session, and then reflect on their experience and document their feedback. These reflections were

A. Respond to the questions with yes (Y), no (N) or not-applicable (N/A). Where investigations are not seen, kindly check on the NHLS-site for results and populate the result in the appropriate space in the patient's notes. Where necessary, kindly make notes at the bottom of the last notes to notify clinicians of concern that require to be followed up. Complete ADRs where indicated.

Folder no.	1	2	3	4	5
Is the patient clerked on an ICS?					
Are you able to identify easily in the ICS if a patient has comorbidities (including co-infection with TB)?					
Are you able to assess if there are adherence concerns?					
If BMI is of concern, is there evidence of any appropriate action taken to manage it?					
Was the last CD4 done $\geq$ 200?					
Was VL known when the patient was commenced on or switched to a DTG-based regimen?					
Is there evidence to support that renal function (eGFR) was known when TEE was switched to TLD?					
If there had been a visit to the emergency unit, was urinalysis done? Check if the presentation warranted a kidney function follow-up (e.g. sepsis, dehydration, pedal oedema, etc.)					
If they were diabetic, is there a record showing that of HBA1c done in the last year?					
If HBA1c > 7%, are you able to see if an action was taken to optimise diabetic control (inspect both the notes and the medicine script)?					
If on metformin, did the dose need to be adjusted when TLD was started?					
If they had hypertension, is BP well-controlled (< 140/90)?					
Generally, are you happy with the way NSAIDs are/were prescribed for this patient? Any other nephrotoxic medication?					
Inspect the prescriptions and comment if there are medication concerns that require an action from a clinician? (e.g. potential drug-drug interactions)					
In the last visits, did the patient have symptoms of renal failure? (e.g. shortness of breath, oedema, oliguria)					
Are there opportunities that were missed to complete ADR reporting forms?					
Is there a clear management plan and a follow-up date documented at the last visit?					

NHLS, National Health Laboratory Service; ICS, Integrated Care stationery for primary care in the Western Cape; TB, tuberculosis; BMI, body mass index; VL, viral load; eGFR, estimated Glomerular Filtration Rate; TEE, fixed dose oral medication that includes tenofovir disoproxil fumarate, emtricitabine and efavirenz; TLD, fixed dose oral medication that includes tenofovir disoproxil fumarate, lamivudine and DTG; HBA1c, haemoglobin A1c test that measures the amount of blood sugar attached to haemoglobin; BP, blood pressure; ADR, adverse drug reaction.

**FIGURE 1:** Vanguard renal protection surveillance tool for patients on antiretroviral therapy.

shared with the whole team and were used to refine the tool over several rounds. Once all the folders had been reviewed, the documented feedback was handed in and thematically analysed by the FP and a medical officer. The findings were presented to the HIV unit staff, most of whom had special training in antiretroviral therapy (ART) management and they also gave feedback on the project.

Only 22 folders had a complete set of medical notes. The researchers however, felt that the surveillance tool (Figure 1) was fully developed and reviewing more folders would not refine it further. Table 1 summarises the key themes from the feedback: support for use of tool; poor record keeping as the main barrier to monitor renal function and lack of common understanding of the revised ART protocols with DTG.

**TABLE 1:** Reflections on the project, recommendations, and improvement plans.

Theme	Quote	Recommendations and improvement plans
VanReST was found to be useful in promoting renal health and its continued use was supported	'From limited data, it seems that there is no increase (in month 4, creatinine compared to baseline level).' (D2, CS3, M) 'It helped to create awareness around possible renal impairment in patients on TLD.' (D3, MO4, F) 'We need to use this information to implement changes that can address these gaps.' (D1, MO2, F) 'Enables us to monitor all the patients on TLD and report any ADRs.' (D3, MO4, F)	<b>VanReST</b> to be adopted at Vanguard and be made a desk-top essential in all consulting rooms. ADR training implemented during the period of study The FP to champion surveillance
A cascade of challenges experienced in locating and/or obtaining complete medical records disrupted continuity of care and made it difficult to do a comprehensive renal-risk surveillance.	'Procuring the folders has been a challenge.' (D1, MO1, M) 'Outside folders were difficult to find.' (D2, CS2, F) 'Why are the inners (ART-clinic visit notes) and outers (cover of folder & rest of notes) filed separately?.' (V, PN1, F) 'We see patients on what is referred to as duplicates, you cannot call a new folder a duplicate ... there is nothing there.' (V, PN2, F)	Unit manager and clinicians to campaign for a reliable storage and retrieval of folders.
Comments that indicated that there was no common understanding of the latest ART protocols amongst clinicians	'Also, from my time in ARV clinic, it seems like they aren't strictly doing renal functions after starting DTG like we expected.' (D2, MO3, F) 'After switching from TEE to TLD, the VL, creatinine, eGFR are done routinely, that is, after 12 months and annually as per guidelines. No extra bloods are taken.' (D3, MO4, F)	SM (our infectious diseases champion) to present updates of the latest ART protocols and ensure every clinician has a correct copy.

D1, reflections from document 1; D2, reflections from document 2; D3, reflections from document 3; V, Verbal comments from stakeholders in a feedback session; CS, community service doctor; MO, medical officer; PN, professional nurse; m, male; F, female; VanReST, Vanguard Renal Protection Surveillance Tool; TEE, fixed dose oral medication that includes tenofovir disoproxil fumarate, emtricitabine and efavirenz; TLD, fixed dose oral medication that includes tenofovir disoproxil fumarate, lamivudine and dolutegravir; DTG, dolutegravir; ADR, adverse drug reaction; ART, antiretroviral therapy; VL, viral load; eGFR, estimated glomerular filtration rate.

## The family physician's reflections on the journey taken to address an 'unavoidable' serious concern

It was necessary to lead by being 'present' and not allow the overwhelming COVID-19 pandemic activities to derail the process. The methodology unfolded 'as we went along' whilst I held focus for the team. The main challenge encountered at the initial stages was to convince stakeholders that the project was not meant to generate nor analyse quantitative data, but rather to 'clean up' the whole system related to renal health.

A bonus of this project has been two-fold: firstly, it gave our young doctors opportunities to experience distributive leadership, to engage in reflective exercises and to advocate for a safe, accessible and continuous healthcare service for HIV-positive people. Secondly, since starting to use the tool, the nurses seem to appreciate the importance of evaluating one's own practice. They were increasingly reporting on blind spots they identified and gaps that they were closing.

This short report demonstrates how a FP can lead the team in terms of clinical governance to improve quality of care and

patient safety. In this example, audit and feedback not only improved care, but also developed a useful tool that could be used going forward. At the same time, the FP capacitated the team of medical officers and nurses to develop skills in quality improvement, monitoring and evaluation. The exercise highlighted the importance of informational continuity that is essential for high quality primary care and the need to implement new clinical guidelines.

## Conclusion

A renal protection surveillance system was developed and implemented at VCHC out of a concern for possibly missing cases of nephrotoxicity during the disruptions of health services during the intersection of the HIV and coronavirus pandemics. The VCHC staff believe that the potential of the surveillance tool will be enhanced by an improved medical record management system. The report illustrates the contribution of FPs to clinical governance and leadership within a primary healthcare team.

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## Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

## Authors' contributions

M.N. supervised and coordinated the whole project and the writing and editing of the article. J.O. assisted with the supervision of the study and data analysis. I.J. proposed the research and managed timelines for the study. All authors contributed equally to conceptualising the study, in protocol writing, in the research and in analysis of data.

## Ethical considerations

This narrative project was stimulated by a call by the *African Journal of Primary Health Care & Family Medicine* (PHCFM) to submit a short report on how they contribute to African health systems. M.N., as the head of clinical governance at the Community Health centre, approved that this project of

developing a tool to prevent and to survey for early nephrotoxicity amongst people living with HIV be shared in PHCFM as an example of health systems improvement led by a family physician in a large Community Health centre serving an average of 30 000 patients per month.

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## Data availability

The sources for the criteria to survey renal health are South African National Standard treatment guidelines that are referenced in the article. The typed reflective statements of the researchers are available electronically.

## Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of University of Cape Town or Western Cape Department of Health.

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