Digital medication adherence technology

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favourable treatment outcomes. The question is not so much whether to undertake digital surveillance, but rather when and for whom. As the authors themselves state “Different reasons for non-adherence require different interventions, and current one-size-fits-all approaches may need further refinements”. We agree without reservation with this sentiment, provided “refinements” go beyond the use of digital technologies alone.

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References

Digital medication adherence technology: towards personalised TB care

To the Editor,
We would like to thank Noeske and Kuaban for their views on our article on digital medication adherence support for TB care.1,2 Naturally, we welcome the opportunity to further elaborate on the issues raised.

The authors appear to make two main points: first, that digital medication adherence tools alone are not the ultimate solution for better TB outcomes, and second, the implementation of digital solutions needs more attention. Although we agree that these are important issues, we take a different approach. We presented an optimistic, forward-looking perspective on the potential for digital adherence support to optimise TB care, whereas the authors appear to have a more conservative, historical perspective. As an illustration, Noeske and Kuaban refer to what the Inca Trail (presumably) used to be in the past, while we referred to the Inca Trail in terms of what it is today. In line with this, the reference the authors suggest to “balance” our optimism summarises mostly non-TB-specific studies performed several years ago, whereas we provided an up-to-date overview of the most recent TB-specific randomised controlled trials, in addition to the study by Acosta et al.3 Second, although Noeske and Kuaban seemingly interpreted digital adherence tools to be the “holy grail”, we refer to digital adherence technologies as the “holy grail” to support TB care (as the full title states). TB care has as its ultimate goal a cure for TB, an issue on which we can all agree.

Noeske and Kuaban conclude their remarks by highlighting a highly relevant issue1 – with which we entirely agree – about the context4 and patient population for which digital TB adherence support should be used. Indeed, most technologies require smartphone coverage and/or relatively expensive equipment that is not readily available or affordable in many high TB burden settings. To overcome this, affordable alternative tools may be required in some locations, with more advanced tools in others. In terms of functionality, most of the currently studied digital tools focus on monitoring adherence and on providing reminders only. Monitoring alone will not enhance TB outcomes, but it does provide the healthcare provider with additional data and insights into how to optimally support patients, thereby reducing treatment failure and associated costs.5,6 To note, digital tools mostly record patterns of intake and not the reasons behind missed doses. The latter would require more in-depth patient interviews and a better understanding of the trade-offs between needs and concerns associated with TB drug treatment.7 Here, healthcare providers have a key role in identifying these reasons. Once these reasons are clear, supporting interventions need to be tailored to the identified adherence “phenotype”, be it erratic (e.g., forgetfulness), intelligent (intentionally not taking, e.g., because of side-effects, shame, financial reasons) or unwitting (e.g., not knowing when or how to take it).8 From other fields, we have learnt that reminders are most likely to be beneficial for erratic non-adherence; motivational interviews and shared decision making may be most useful for intelligent non-adherence; and additional education and self-management plans may be explored for unwitting non-adherence.9 To provide personalised support, toolkits, such as those developed for asthma and COPD, may help providers select the right intervention for the adherence issue identified.

Finally, we would like to stress that we do not believe that digital adherence support will replace patient-healthcare provider interactions, but that digital adherence support can definitely strengthen the patient-provider interaction and help in tailoring TB care.

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References 

3HP almost doubled the uptake of TB preventive treatment among PLHIV 

Dear Editor, 
We read with interest the recent paper by Oxlade et al. in the Journal.1 We recognise that programmatic management of TB preventive treatment (TPT) is essential for achieving the goals of the End TB Strategy.2 The United Nations High-Level Meeting (UNHLM) targets are to provide TPT to at least 30 million people from 2018 to 2022.3 We are far from meeting this goal, having only reached a cumulative population of 8.7 million by 2020.4 As Oxlade et al. noted, the major reasons for low uptake of TPT in high and intermediate TB incidence countries are low priority, fragmented implementation, limited access to diagnostics and drugs, financial constraints and misunderstanding the patient perspective, including acceptability.1 Acceptance has been historically low due to the duration, and limited tolerability, of 6–9-month isoniazid-based regimens. Shorter, equally effective, but less toxic TPT regimens are now recommended by the WHO, which are more acceptable to patients and healthcare workers (HCWs).5 

Ethiopia has embraced the UNHLM TPT targets and WHO guidelines, and since 2020, has been implementing a 3-month weekly dose of isoniazid and rifapentine (3HP) among people living with HIV (PLHIV) through the IMPAACT4TB project.6 Implementation has been coordinated by the Ministry of Health (MoH), engaging with all relevant stakeholders, which has led to a national 3HP scale-up. In IMPAACT4TB-supported facilities in Ethiopia, the average TPT coverage among PLHIV newly initiated on antiretroviral therapy (ART) increased from 33% to 69% with the introduction of 3HP (Figure). The introduction in early 2021 of the fixed-dose combination therapy has further improved the uptake of 3HP. 

Programmatic data from Ethiopia suggest that the introduction of 3HP increased acceptance among both HCWs and PLHIV. HCWs are confident to provide TPT to their clients and to provide counseling to address adherence for treatment completion. Our findings are congruent with an earlier study from Uganda that showed that PLHIV favour the self-administered use of 3HP (with a single check-in and refill visit) compared to weekly directly observed treatment.7 Further qualitative research among PLHIV revealed that the once-weekly dosing schedule was considered a potential facilitator for acceptance and completion of 3HP.8 The same study group found that 93% (95% confidence interval 90.2–94.9) of patients completed 3HP in a programmatic setting, which outperforms completion rates of daily regimens.9 Additional research is needed to understand how the uptake of 3HP could be further optimised. 

Despite significant challenges due to COVID-19, and a delay in rifapentine supply due to nitrosamine impurity, we successfully introduced 3HP in Ethiopia under close to programmatic conditions. Several COVID-19 prevention measures were put in place. First, the 3HP supply was aligned with the 3-month dispensing of antiretroviral drugs for newly initiated PLHIVs. Second, monitoring for symptoms of active TB and adverse events related to 3HP was conducted monthly by phone. Third, cascade training for HCWs and clinical officers was conducted virtually. 

In conclusion, we demonstrated that the programmatic implementation of 3HP brought dramatic improvements to the uptake of TPT among PLHIV newly initiating on ART in Ethiopia. A clear TPT strategy led by the MoH, paired with an acceptable

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