

Best practices in digital health to improve antiretroviral treatment adherence

Chris Smith ^{1,2} Michelle Helena van Velthoven³

To cite: Smith C, van Velthoven MH. Best practices in digital health to improve antiretroviral treatment adherence. *BMJ Health Care Inform* 2020;**27**:e100215. doi:10.1136/bmjhci-2020-100215

Accepted 24 August 2020

COVID-19 has disrupted routine health service delivery and there is increasing use of digital interventions to reduce exposure of patients and healthcare workers to SARS-CoV-2 infection.¹ For HIV drug adherence monitoring, service providers may be of interest to adopt best practices in digital health but it is important that interventions described in trials can be replicated in real-world practice. Pooled analyses suggest that text message interventions are associated with increased adherence,² but service providers should examine individual trials in detail before deciding on a specific approach.

For example, a randomised controlled trial by Gross *et al*³ in 2019 reported no effect of a two-way mobile-delivered intervention on detectable viral load at 48 weeks among people taking antiretroviral therapy. However, a similar study by Lester *et al*⁴ in 2010 did report an effect on viral suppression at 12 months.

Both trials evaluated two-way mobile phone interventions. In the Lester trial, participants were sent weekly Short Message Service ‘SMS’ messages in the local language asking ‘How are you?’ to which they were expected to respond by text message. In the Gross trial, participants were sent daily, and then weekly, SMS messages in the local language asking ‘Everything ok?’, to which they were expected to respond by calling a central number. In both trials, failure to respond to messages triggered an attempt at phone counselling by healthcare workers. In the Lester trial, 4171 out of 11983 (35%) responses would have required a phone call. In the Gross trial, 248 out of 250 participants (99%) met the criteria for phone contact at least once. Despite both studies involving a significant amount of phone counselling, they have been described as ‘SMS interventions’ and the content and possible effect of phone counselling are not discussed.⁵

While it is possible that the effect of the interventions is attributable to the text messages, the possible role of phone counselling should be acknowledged. Phone counselling enables personalised support to be delivered. Concerns can be addressed and content tailored accordingly in a way that is not possible with automated messages. However, phone counselling can be resource intensive and costly.

Distinctions should be made when pooling results of studies that use automated digital health interventions and those that include phone counselling. It is important to correctly describe the nature of digital health interventions as this will have implications for replicability and scale.

Contributors CS wrote the letter. He is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. MHV provided important intellectual feedback and revised the letter. Both authors gave final approval of the completed version.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; internally peer reviewed.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID ID

Chris Smith <http://orcid.org/0000-0001-9238-3202>

REFERENCES

- 1 Peek N, Peek N, Sujjan M, *et al*. Digital health and care in pandemic times: impact of COVID-19. *BMJ Health Care Informatics* 2020;**27**:1–3.
- 2 Taylor D, Lunny C, Lolić P, *et al*. Effectiveness of text messaging interventions on prevention, detection, treatment, and knowledge outcomes for sexually



© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹School of Tropical Medicine and Global Health, Nagasaki University, Nagasaki, Japan

²Clinical Research Department, London School of Hygiene and Tropical Medicine, London, UK

³Nuffield Department of Primary Care Health Sciences, Oxford University, Oxford, UK

Correspondence to

Dr Chris Smith; christopher.smith@lshtm.ac.uk



- transmitted infections (STIs)/HIV: a systematic review and meta-analysis. *Syst Rev* 2019;8:1–22.
- 3 Gross R, Ritz J, Hughes MD, *et al*. Two-Way mobile phone intervention compared with standard-of-care adherence support after second-line antiretroviral therapy failure: a multinational, randomised controlled trial. *Lancet Digit Health* 2019;1:e26–34.
 - 4 Lester RT, Ritvo P, Mills EJ, *et al*. Effects of a mobile phone short message service on antiretroviral treatment adherence in Kenya (WeTel Kenya1): a randomised trial. *Lancet* 2010;376:1838–45.
 - 5 Mills EJ, Lester RT. Mobile phone-enabled adherence in HIV/AIDS. *Lancet Digit Health* 2019;1:e4–5.