Video/Virtually Observed Therapy for patients with drug-resistant tuberculosis in Eswatini: a rapid response to COVID-19 lockdown measures

*Aung Aung[1], **Michelle Daka**[1], Abiy Tamrat[2], Takudzwanashe Gwitima[1], Tendai Chidhuro[1], Marie Luce Tombo[1], Debrah Vambe[3], Barbara Rusch[2], Alex Telnov[2], Iza Ciglenecki[2], Bernhard Kerschberger[1]

[1]Médecins Sans Frontières (MSF), Nhlangano, Eswatini; [2]MSF, Geneva, Switzerland; [3]National Tuberculosis Control Program (NTCP), Mbabane, Eswatini

*MSFCH-Shiselweni-NAM1@geneva.msf.org

What challenge or opportunity did you try to address? Were existing solutions not available or not good enough?

The COVID-19 pandemic has prompted lockdown measures in many places, but patients continued to travel for essential health services. Since COVID-19 has potentially adverse health outcomes among patients with drug-resistant tuberculosis (DR-TB), innovative strategies for medication adherence that minimise travel and the chance of exposure are needed.

Why does this challenge or opportunity matter – why should MSF address it?

Historically, directly observed therapy (DOT) has been provided in health facilities, requiring patient travel, or by community treatment supporters (CTS), who travel to patients. The World Health Organisation (WHO) recommends the use of digital methods to support treatment adherence. In response to the COVID-19 pandemic and in collaboration with the National Tuberculosis Control Program (NTCP), we implemented video/virtually observed therapy (VOT) in Shiselweni, Eswatini in May 2020. This allowed the daily observation of patients taking their medication to be done using video messages rather than in-person.

Describe your innovation and what makes it innovative

The aim of VOT is to support patients with drug adherence using a secured smartphone application. Patients were provided with a sim-implanted, application-installed smartphone with monthly internet subscription and shown how to take and share videos. Nurses reviewed the videos through a web-based dashboard, assessed adherence, and provided feedback. Videos could not be recovered from the smartphone and were retained for a maximum of 45 days on the server.

Who will benefit (whose life / work will it improve?) and were they involved in the design?

Patients who were eligible for VOT (living in network coverage area, smartphone literate, and consented to share videos of themselves) were registered on the web-based platform, which generated login details for the application called SureAdhere©. Those that did not meet the eligibility criteria continued with DOT, provided by community treatment supporters or family treatment supporters.

What objectives did you set for the project – what did you want to achieve and how did you define and measure success (improved service, lower cost, better efficiency, better user experience, etc.)?

We reviewed patient adherence every month and followed the user experience to understand future scale up. Medical teams and patients also benefitted from instant communication using the application.

What data did you collect to measure the innovation against these indicators and how did you collect it? Include if you decided to change the indicators and why

The number of patients using VOT for adherence support was collected routinely in the monthly TB register. Individual adherence levels were shown in adherence calendars on the web-based dashboard and nurses produced monthly adherence levels for the VOT cohort.

How did you analyse this data to understand to what extent the innovation achieved its objectives? Did this include a comparison to the status quo or an existing solution?

We retrospectively analysed data to assess VOT uptake among the total DR-TB treatment cohort. Adherence was classified into levels: excellent (100%), good (>90%), or moderate (<90%).

Were there any limitations to the data you collected, how you collected it or how you analysed it, or were there any unforeseen factors that may have interfered with your results?

We were unable to compare our results with the adherence levels of patients using conventional DOT since routine DOT data was not collected electronically. Some delays in video transmission were experienced due to connectivity issues.

What results did you get?

In May 2020, 18 (43%) of 42 patients fulfilled the eligibility criteria and started VOT, increasing to 25 (61%) of 41 patients in November 2020. Two patients using VOT completed treatment with successful outcomes. An adherence level of perfect was observed in all patients undergoing VOT during May and June 2020. Adherence decreased monthly until October 2020 at which 20 (77%) of 26 patients had excellent adherence, four (15%) had good adherence, and two (8%) had moderate adherence. In November 2020, 20 (80%) of 25 patients had perfect adherence and five (20%) had good adherence.

Comparing the results from your data analysis to your objectives, explain why you consider your innovation a success or failure?

We were able to provide adherence support despite the pandemic outbreak. Although average adherence levels did not remain excellent for all patients, the majority of patients achieved favourable adherence, and we were able to quantify adherence using this method.

To what extent did the innovation benefit people's lives / work?

We implemented VOT relatively swiftly after lockdown measures began in Eswatini, thereby providing timely adherence support to patients with DR-TB.

What are the next steps for the innovation itself (scale up, implementation, further development, discontinued)?

Uptake of VOT among patients with DR-TB was improving although maintaining perfect adherence was difficult. VOT will be included as an adherence support method for all eligible patients in upcoming research on oral short-course treatment for DR-TB.

Is the innovation transferable or adaptable to other settings or domains?

The application is straightforward, and the dashboard can be used to easily identify adherence problems to allow for prompt patient support. It gives a clear overview of adherence levels and has enabled direct communication between the patients and healthcare workers.

What broader implications are there from the innovation for MSF and / or others (change in practice, change in policy, change in guidelines, paradigm shift)?

In this context, VOT was used to minimise the possibility of physical exposure to SARS-CoV-2 and to overcome COVID-19 travel restrictions. However, the NTCP are interested in using VOT as the standard of care adherence monitoring method for eligible patients in DR-TB programmes.

What other learnings from your work are important to share?

VOT was well-received by patients and healthcare workers, although a proportion of patients still preferred in-person DOT. Controlling monthly internet usage and restricting the use of other smartphone applications were required. Data protection advice was sought at headquarters level. Access to the VOT application is password-protected and we are confident that privacy and confidentiality have been respected according to ethics guidelines.

Ethics

This description and evaluation of an innovation project fulfilled the exemption criteria set by the MSF Ethics Review Board. It was conducted with permission from Monica Rull, Medical Director, Operational Centre Geneva, MSF.

Michelle Daka

Michelle is a nurse by profession; she studied in Zimbabwe and graduated as a registered nurse in 2005 at Mpilo School of Nursing. She has recently completed her Master's in Public Health at the University of Roehampton, UK. She has a vast professional working experience of almost 16 years in the medical field, acquired since 2005 with her work in Zimbabwe. Since 2011, Michelle has been working as a tuberculosis ward nurse in a drug-resistant tuberculosis ward in the Kingdom of Eswatini, working with MSF and in collaboration with the country's Ministry of Health. Since 2012, Michelle has then become a tuberculosis zone supervisor, health zone supervisor, and head of clinical activities, all as part of her recent years' experience working with MSF. She is currently working as a nursing activity manager in MSF's tuberculosis/HIV project, in the Shiselweni region of the Kingdom of Eswatini. She likes exploring and learning new things.