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LETTER

A home-based care programme for rifampicin-resistant TB

Dear Editor,

COVID-19 has spread across the globe in a devastating fashion. This has led to increased pressure on healthcare systems, significant morbidity and mortality,[1] and has put certain populations at particular risk, including those living with TB.[2] Treatment for rifampicin-resistant TB (RR-TB) is characterised by multiple visits to health facilities, which might increase the risk of nosocomial COVID-19 transmission, with clinics and public transport being potential hotspots for transmission. Moreover, healthcare services for people with TB may be unattainable during the COVID-19 pandemic due to efforts to decant healthcare facilities.[3] In South Africa, where there are high burdens of HIV and TB, including RR-TB, it has been critical to reduce the risk of these vulnerable populations (who already face tenuous socio-economic circumstances) from contracting COVID-19.

Médecins Sans Frontières (MSF) has experience implementing differentiated models of care having collaborated with the city and provincial Departments of Health in Khayelitsha, Cape Town, in supporting the RR-TB and HIV programmes for the past decade.[4] During the COVID-19 pandemic, MSF assisted in providing a comprehensive COVID-19 response to reduce the resulting transmission, morbidity, and mortality. A differentiated home-based care (HBC) programme was implemented as a part of the response to protect or 'shield' people living with RR-TB deemed at highest risk in our setting of morbidity and mortality from COVID-19 (i.e., >55 years old, or with diabetes mellitus or hypertension),[5] and also to support the overburdened healthcare systems.

Prompting the HBC activities was a modification to the RR-TB treatment guidelines, which no longer recommended daily directly observed therapy (DOT). As standard of care since late 2018, the majority of RR-TB patients are treated with injectable-free regimens. Furthermore, many people living with RR-TB who were previously hospitalised were discharged to the community as a result of COVID-19. The HBC programme was implemented by a MSF team of well-trained health care workers, who delivered medication, performed full clinical reviews, monitored side effects, and offered counselling and treatment support. This support was scheduled monthly for the majority of patients, but the care plan was individualised for patients thought to require more frequent follow-up. The team consisted of a nurse, general practitioner, counsellor, driver, and, where necessary, a social worker and health promotion officer. Not all these team members attended the household at the same time. The social worker and health promotion officer only attended the households in which social challenges were identified, and thus further patient support was required. Any counselling support required following enrolment was provided telephonically by the city counselling team supported by the MSF counsellor. The Figure describes HBC eligibility and services that were provided as a component of the differentiated model of care, all of which were line with the adapted national monitoring guidelines.[6,7]

Between 1 May 2020 and 31 August 2020, 33 RR-TB patients received RR-TB services within their homes. The reasons for enrolment were as follows (not mutually exclusive): high-risk for COVID-19 ($n = 15$, 45.5%), post-exposure management, including the provision of TB preventive therapy (TPT; levofloxacin) for RR-TB contacts 0–18 years of age ($n = 14$, 42.4%), social or adherence challenges ($n = 6$, 18.2%), non-ambulatory ($n = 4$, 12.1%), paediatric cases ($n = 3$, 9.1%), or required carbapenem-based RR-TB treatment ($n = 2$, 6.1%). Nine (27.2%) patients were enrolled in HBC for more than one reason. The 15 high-risk patients met at least one of the following indications: >55 years of age ($n = 11$, 73.3%), hypertension ($n = 9$, 60.0%), or diabetes mellitus ($n = 7$, 46.7%). Overall, 82 HBC sessions were conducted and the median number of HBC sessions per patient, including the enrolment visit, was 2 (interquartile range 1–4).

This differentiated model of home-based RR-TB care was a risk reduction strategy for RR-TB patients and their contacts deemed at high risk of contracting COVID-19. Given the high infection rates in the community (approximately 250 COVID-19 cases detected daily in early May 2020; Khayelitsha carried one-third of the burden of newly diagnosed cases in the Western Cape during the first wave),[7] several patients were still diagnosed with COVID-19 before or during the HBC intervention. Three (9.1%) patients were enrolled in HBC after a diagnosis of COVID-19, as they were still considered high risk for severe disease and three (9.1%) were diagnosed with COVID-19 after being enrolled in HBC.

The success of implementing HBC has implications for the RR-TB programme beyond the shielding

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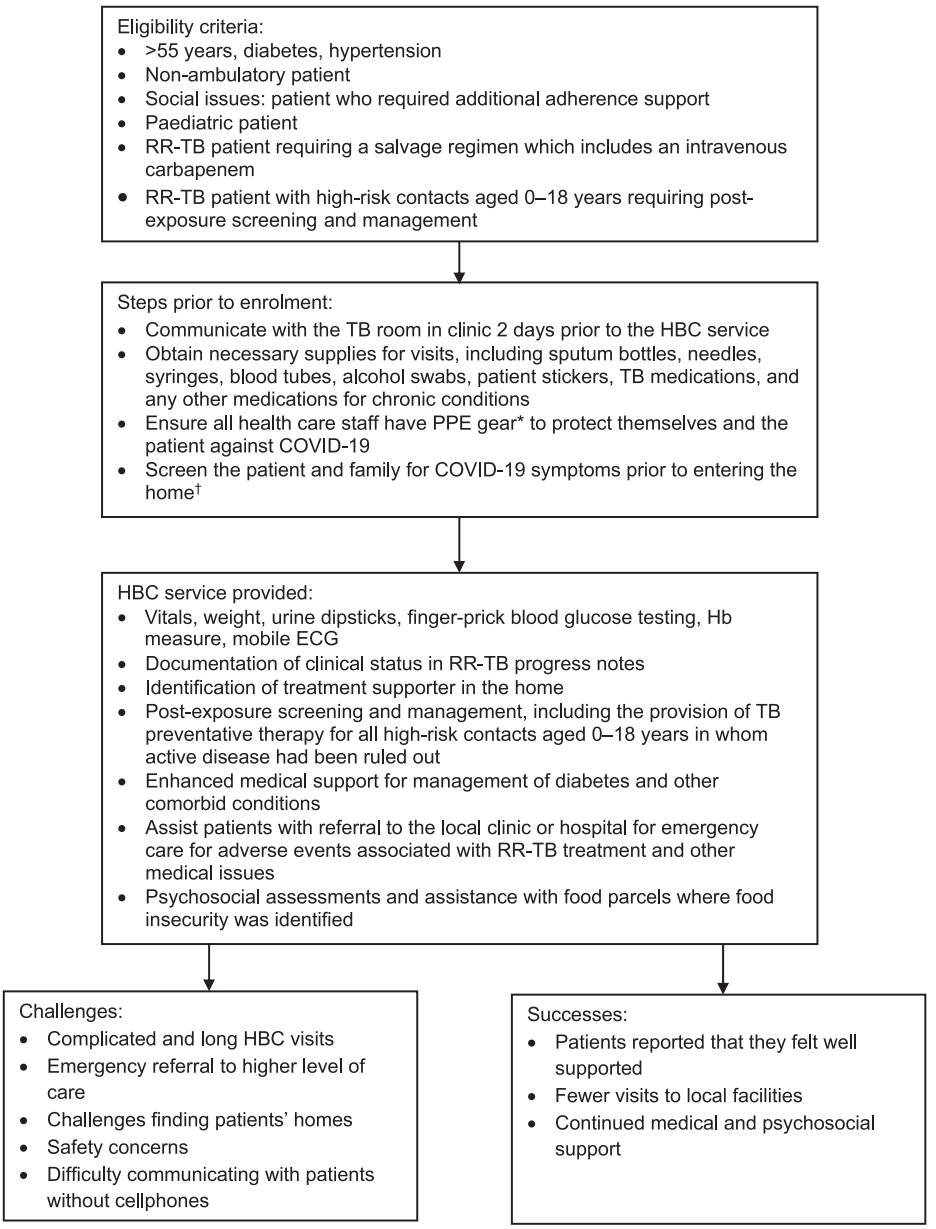

Figure Flow diagram depicting the Médecins Sans Frontières home-based care service for RR-TB patients, including eligibility criteria, steps prior to enrolment, services provided, and success and challenges associated with the service. *PPE worn by the clinical team included a N95 mask, a disposable apron, surgical gloves, and navy blue scrubs (the colour choice was important considering the stigma in the community regarding COVID-19). Due to limited supplies PPE was not provided to the patients, although they were given cloth masks from partner organisations. †Following the guidelines in the Western Cape, symptom screening for COVID-19 included assessment of fever (≥38°C), cough, shortness of breath and sore throat; this was conducted daily for the clinical team and prior to entering the patient's household when a HBC visit was being conducted. There was likely some overlap between COVID-19 and TB symptoms, but routine COVID-19 testing was not available at the time this programme was carried out. Individuals who screened COVID-19 positive were referred for COVID-19 testing if they met the testing criteria at the time. RR-TB = rifampicin-resistant TB; HBC = home-based care; PPE = personal protective equipment; Hb = haemoglobin; ECG = electrocardiogram.

benefit of vulnerable patients. Patients reported that they felt supported by the HBC team, through the provision of quality health care services at home, telephonic counselling, and social support in the form of food packages. The opportunity to provide care at the household level enabled the HBC team to gain a broader understanding of the patients' psychosocial challenges. Witnessing first-hand the home environments and challenges the patients faced contributed to the team providing a more comprehensive package

of care, which included the development of referral pathways to stakeholders in the community to assist in the management of the individual social challenges. The HBC visits also allowed for the simultaneous screening of household contacts for TB with immediate sputum testing for those with symptoms and TPT initiation for those without. The successes associated with this intervention highlight opportunities to consider HBC as an ongoing component of a differentiated model of care for RR-TB that could be sustained post-COVID-19.[9,10] However, multiple challenges encountered in the households frequently resulted in complicated and lengthy visits, with some lasting several hours. Some patients required emergency referral to higher levels of care (such as those with low oxygen saturation) and organising transport from the household was challenging. Some patients did not have mobile phones, which made communication challenging. In such cases, care for patients was managed through their primary health care facility or by visiting the home to assess willingness to participate in HBC. Also, due to the informal structure of houses within Khayelitsha, it was sometimes difficult to locate patients' homes and occasionally impossible to enrol patients in HBC if they were located in areas with safety concerns. In such examples, the MSF HBC team continued to provide support to these patients at the facility level. Due to the social difficulties that are known to impact people living with RR-TB,[11] retaining some patients in care was not straightforward. The multifaceted challenges faced by RR-TB patients necessitate a multidisciplinary team approach in providing HBC.

COVID-19 has had a major impact on the Khayelitsha community. The RR-TB HBC team has worked in collaboration with local clinics to launch HBC interventions to mitigate the health consequences of this. In adapting these services, we were able to assist a variety of RR-TB patients at high risk for COVID-19, or those who were non-ambulatory or had psychosocial challenges. We were also able to approach people living with RR-TB and their family members, allowing us "fast track" post-exposure screening and management, including the initiation of TPT among high-risk household contacts 0–18 years of age. HBC should be an option for patients moving forward, reducing the need for "centralised" primary health care models. TB has long embraced a 'one size fits all' approach, but our HBC programme embodies how differentiated models of care should become an integral feature of future TB services.

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