

be implemented to reduce the risk and minimise the consequences of such spread.^{2,3} These include increased surveillance among countries receiving pilgrims after the Hajj. Unfortunately, such post-Hajj surveillance is not implemented in many countries, especially in those with scarce resources, which represent the largest proportion of Hajj pilgrims. The establishment of a harmonised Hajj health information system proposed previously⁵ would, among other things, allow systematic follow-up of health events among pilgrims after the Hajj, hence enabling rapid detection and management of communicable diseases potentially introduced via pilgrims and strengthening global health security.

We declare no competing interests.

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The long shadow post-tuberculosis

The meta-analysis investigating the excess mortality after tuberculosis published by Kamila Romanowski and colleagues¹ is an important piece of work confirming a long-held

belief by health workers in the field; however, death frequently comes only at the end of prolonged periods of suffering and morbidity. We would like to highlight the hidden epidemic of chronic disease, impairment, and social costs after microbiological cure of tuberculosis, as discussed by Sumona Datta and Carlton Evans in the Comment² accompanying the Article.¹

WHO estimates that 54 million people have survived tuberculosis since the year 2000,³ with estimates of residual lung damage ranging from 18% to greater than 80%.⁴ Post-tuberculosis damage straddles the intersection of communicable and non-communicable diseases, and is likely to be one of the most important causes of chronic lung disease globally, yet it has received little attention as a non-infectious complication of tuberculosis primarily affecting the world's poor.

The First International Post-Tuberculosis Symposium was held in Stellenbosch, South Africa, on July 22–23, 2019, to discuss priorities and gaps that need to be addressed in order to provide guidance in this neglected area. The symposium involved 68 delegates across 12 disciplines from five continents, representing more than 27 institutions. Historically, inconsistency and lack of consensus in nomenclature and terminology have hampered work in this field. Using the Delphi process, the Symposium voted to embrace the non-discipline-specific adjective “post-tuberculosis” for future work in this area, with a majority vote of 84% after three rounds.

During this meeting the need for a comprehensive post-tuberculosis research agenda was emphasised and various important aspects were highlighted. First, heterogeneity between patients, in terms of severity and phenotypic outcomes,⁴ remains largely unexplained and contributes to difficulties in accurate estimation of disease burden. Second,

to develop prevention strategies, the mechanisms of damage during tuberculosis require further elucidation. Furthermore, former patients with tuberculosis—which include large numbers of children—are known to have a heightened risk of recurrent tuberculosis,⁵ highlighting the need for integrated care strategies to prevent and manage both recurrent disease and post-tuberculosis lung damage.

Seen through the eyes of several patient representatives, there is a need to advocate for health and wellbeing after completion of tuberculosis treatment, and to address socioeconomic consequences, including post-tuberculosis stigma and disabilities. The shadow of tuberculosis is long for many former patients, and in the words of one: “When we started tuberculosis treatment, no-one told us that it would never leave us”.

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Effective prison-based treatment and linkage to care after release

We read with interest Lara Tavoschi and colleagues' Article on the management of infectious diseases in European prisons.¹ The authors describe the high burden of communicable diseases, including hepatitis C virus (HCV), in European prisons and how prioritising health care in this sector has benefits for both prisoners and the broader community. Similarly, in Australia, there is a disproportionately high HCV seroprevalence among people in prison, reaching up to 50% among those who inject drugs.²

WHO has prioritised the elimination of HCV as a public health threat by 2030,³ and the prison setting must be used to engage prisoners living with HCV in care to achieve these targets. The high prevalence in prisons of both HCV infection and people who inject drugs, and the short average length of incarceration, make prisons ideal for diagnosing infection and providing short-duration, highly effective direct-acting antiviral (DAA) therapy. In this setting, we recently described a nurse-led model of care for HCV treatment in prison that was safe and achieved cure rates greater than 95% among prisoners.⁴ These data endorse Tavoschi and colleagues' recommendations and show that system-wide prison programmes are feasible and effective. Importantly, more than 80% of these prisoners had never engaged in specialist HCV care in the community,

and 68% reported injecting in the month before incarceration. Prison-based health care can engage people who do not traditionally participate in HCV care and interrupt onward-transmission networks.

Another important health-care gap is linkage to care after release from prison. In a pilot study, we evaluated the rate of successful linkage to HCV care among recently released prisoners. All prisoners had a comprehensive HCV assessment while incarcerated and were planned for treatment before release. On release, participants were referred to a local primary care practice with a detailed summary of their clinical work-up to streamline DAA prescription. There were no cost barriers to treatment uptake. The rate of treatment uptake was determined by registration with the national drug authorisation registry, required before DAA treatment can be dispensed. Among 75 former prisoners, only 19 (25%) were prescribed DAAs within 6 months of release. Of these, seven (37%) commenced treatment in prison when re-incarcerated during this period. Re-incarceration was the only predictor significantly associated with DAA initiation.

This period of time immediately after release from prison can be challenging, characterised by competing priorities including renegotiating social networks, finding stable accommodation, and managing recidivism.⁵ There is a need for new models of care to optimise linkage to care after release from prison for this vulnerable population.

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Living in the shadows of hepatitis

Viral hepatitis is a substantial public health problem with an annual mortality rate of 1.34 million deaths, which is similar to mortality from HIV (1.1 million) and tuberculosis (1.4 million).¹ The most common causes of viral hepatitis are the five distinct hepatotropic viruses: hepatitis A to E. Hepatitis B and C have been shown to attack the liver and cause both acute and chronic diseases. Globally, an estimated 257 million people have chronic hepatitis B infections and another 71 million suffer from hepatitis C infections.

The prevalence of viral hepatitis infections varies by geographical region, but Middle East and North Africa (MENA) has been identified as the region most affected by viral hepatitis worldwide. The main culprits for this widespread prevalence of viral hepatitis are factors such as socioeconomic conditions, migration, vaccination, and treatment policies. The MENA region shows wide range of viral hepatitis causes, viraemic prevalence, and diversity in hepatitis B and C genotype distributions.² Although hepatitis A and