Tuberculosis control in postcolonial South India and beyond:
Fractured sovereignties in international health, 1948-1960

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Abstract
Between 1948 and 1960, South India (Madras State) and Southeast Asia emerged as global centres for tuberculosis control. This article attempts to situate tuberculosis control of these two regions within the broader context of international health. It investigates the unique ways in which tuberculosis control in Madras state reflected the inner tensions between the notional magic bullet approach, which focuses on specific cures to root out the cause of the disease, and a more holistic approach that relates disease prevention to overall well-being of the population. The implementation of tuberculosis control across South India and Southeast Asia shed light on the nature of the post-colonial state sovereignty in public health. Across India, as in Southeast Asia, the state sovereignty appertaining to the implementation of health policy was fractured, as evident in the opposition to the Bacillus Calmette–Guérin (BCG) vaccination. Based on a wide range of archival materials, this article examines tuberculosis control in South India and Southeast Asia between 1948 and 1960. It situates tuberculosis control within the context of nationalist discourse and preventive medicine. In doing so, it adds not only to the historiography of tuberculosis in non-Western contexts, which has hitherto focused on India, Sri Lanka, Africa, or the Caribbean, but also to the relatively new field of Southeast Asian medical history.

Keywords
Tuberculosis and post-WW II national reconstruction, India and Southeast Asia, BCG vaccine and rumoured power, fractured postcolonial health sovereignties
Introduction

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis. It typically affects the lungs, but can affect other organs as well. The disease is spread in the air when people who are infected with pulmonary tuberculosis expel bacteria by coughing. TB is a major global health problem today. Alongside AIDS, it is the leading cause of death worldwide. In 2014, there were an estimated 9.4 million new cases of TB. The most common method for diagnosing TB remains sputum smear microscopy, in which bacteria observed in sputum samples are scrutinised under a microscope. Without treatment, death rates remain high. During the 1940s, effective drug treatments for TB, such as isoniazid and streptomycin, were developed for the first time although M. tuberculosis became drug resistant (defined primarily as resistance to isoniazid by 1952).

The ancient Indians knew pulmonary tuberculosis as Raja Yakshma (Sanskrit for chronic respiratory ailments), and ancient Greeks described it as phthisis (the Greek word for waning). The Charaka Samhita (a Sanskrit treatise on Ayurveda or traditional Indian medicine) mentions that Chandra (The Moon God of the Hindu pantheon) suffered from consumption as a result of a curse pronounced by his father-in-law Daksha on account of excessive attachment to his wife Rohini. Ayurvedic surgeon Susruta (6th century BCE) noted that tuberculosis was accompanied by several complications, notably chronic cough, pain in the chest and throat, fever, pain in the joints, difficulty swallowing, spitting of blood and phlegm, loss of appetite, alteration of voice, and drooping of shoulders. Ancient Indian physicians treated the disease with emetics, purgatives, and recognised the importance of a meat-based diet in restoring the bodily humours that would aid the full recovery of patients.

By the nineteenth century, consumption was seen in new ways. In popular culture, the portrayal of consumptives—selected ostensibly by their youth and beauty—endowed the disease with a biting tragedy. The Romantic poets, most notably John Keats, perceived a correlation between tuberculosis, genius, and heightened sensibility. In 1882, the thirty-nine-year-old German bacteriologist Robert Koch, proponent of the germ theory announced his discovery of M. tuberculosis as the causative agent of tuberculosis. The germ theory of disease framed sufferers of tuberculosis as a public health menace, who were confined to sanatoria, which separated infectious patients from the healthy.

In 1903, Albert Calmette, who was in-charge of the Pasteur Institute at Lille, along with French veterinarian and bacteriologist Camille Guérin, undertook research on the tubercle bacillus. In 1906, they discovered that immunity against tuberculosis is established by the presence of a living, but avirulent tubercle bacilli, in the body. Fifteen years later, in 1921, the BCG vaccine (named after Calmette and Guérin) was created. In Scandinavia, the extensive use of BCG vaccination as a preventative measure, accompanied by improvement in living and working conditions during the twentieth century, brought about the greatest decline in tuberculosis.

Between 1943 and 1944, during World War II, tuberculosis ravaged Yugoslavia, Poland and other parts of Eastern Europe. In early 1945, a comprehensive effort was made by United Nations Relief and Rehabilitation Agency (UNRRA) to determine the needs of people in war-ravaged Europe. The UNRRA identified TB as a public health problem and provided emergency medical supplies to affected countries. The UNRRA’s work in TB control has subsequently been continued by the World Health Organisation (WHO) since 1948. Ludwigs Rajchman (who had earlier officiated as the Head of the Health Organisation of League of Nations) was very much interested that UNICEF (United Nations Children’s Fund) played a pro-active role in post-World War II international health during the late 1940s. There was a great deal of suspicion in WHO circles about Rajchman’s intentions, especially by the USA, since Rajchman had a clearly articulated vision of socialised medicine, which advocated state intervention in public health. A major bone of contention between the WHO and the UNICEF was the use of the BCG vaccination as a prophylactic measure against TB worldwide. The WHO expressed reservations regarding the large-scale use of the BCG vaccination in anti-TB programs across the world, as the vaccine had never been used for mass immunisation across the USA, and it had a low shelf life and would deteriorate easily in a tropical climate. The French government was solidly behind Rajchman in promoting the use of BCG. The large-scale use of BCG in mass vaccinations coincided with a discovery of high incidence of TB among the world’s children.

In 1948, the UNICEF signed a Joint Enterprise Agreement with the WHO and Scandinavian societies, such as Danish Red Cross, Norwegian Help for Europe, and the Swedish Red Cross. The chief objective of the Joint Enterprise of the International Tuberculosis Campaign (ITC) was to carry out BCG vaccination of children and young adults in affected countries. Mass BCG vaccination was
regarded as an emergency measure to stem the occurrence of new cases of TB. The first stage of any mass vaccination against TB was the tuberculin skin test. A person who is infected with TB bacteria is expected to mount an immune response in the skin containing the bacterial proteins and would be considered a positive reactor. Only those individuals whose skin did not mount any immune response in reaction to the tuberculin skin test (non-reactors) would be vaccinated.

Whereas the history of tuberculosis control in post-independent South India, South Africa, and the Caribbean have recently received much scholarly attention, a transnational history of tuberculosis control across South and Southeast Asia, and the ways in which tuberculosis control shaped the discourse on nation-building, have thus far been largely ignored. Likewise, stigma associated with reporting tuberculosis cases and the role of private philanthropy in tuberculosis control in the postcolonial period remains neglected.

By discussing the anti-tuberculosis campaigns in four postcolonial South and Southeast Asian nations, namely India, Indonesia, the Philippines, and Burma, between 1948 and 1960, this article links the political history of decolonisation in India and Southeast Asia, to the history of international health, more generally. Since the publication of Randall Packard’s *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* in 1989, various studies have been published documenting TB control in international health contexts, the most recent being Christian McMillen’s monograph *Discovering TB: A Global History*, published in 2015; and, Niels Brimnes’ *Languished Hopes: Tuberculosis, the State and International Assistance in Twentieth Century India*, published in 2016. Whereas McMillen adopts a transnational approach to analyse resistance to BCG campaign in Madras on one hand, and shortcomings of tuberculosis treatment in Nairobi on the other, he fails to provide the political context (decolonisation) that affected the operationalisation of tuberculosis control in newly-independent nations during the 1950s.

In his book, Brimnes argues that the history of tuberculosis exposes two incarnations of the state in India. Whereas the colonial state was largely non-interventionist in matters of tuberculosis prevention and control, the postcolonial state—infused with nationalist rhetoric—was committed to national development based on science, technology, and economic planning. In the decade after independence— with the hope that technology could circumvent questions related to the correlation between poverty and ill health—India declared an outright war on disease. However, opposition to BCG vaccine revealed weaknesses in implementation of health policy at the state and district levels. There were considerable regional differences within India that affected local responses to tuberculosis control. Brimnes’ account of tuberculosis control in India is state-centric and overlooks the role of private organisations, particularly the Tuberculosis Association of India. Likewise, his characterisation of resistance to BCG vaccination—as the tension between international intervention and national integrity—overlooks the political circumstances in South India, conducive to emergence of A.V. Raman (a sanitary engineer from Madras deeply influenced by Gandhi’s idea of rural reconstruction and hygiene, and was the editor of *People’s Health* magazine, which was in circulation between 1946 and 1951) and C. Rajagopalachari or Rajaji (who officiated as the Governor General of India between 1948 and 1950, and later as the Chief Minister of Madras state between 1952 and 1954) as vocal opponents of the campaign.

This paper contributes to the scholarship on post-World War II international health more generally. Between 1946 and 1949, South and Southeast Asian nations declared de facto political independence from colonialism, starting with the Philippines in 1946. Subsequently, the process of reorganisation of health services and political conflicts (such as the partition of the South Asian subcontinent and integration of princely states into the Indian Union; the four-year Indonesian Revolutionary struggle against the Dutch, 1945–49; the Huk Balahap Rebellion, which began as a peasant insurrection in Luzon, the Philippines; the commencement of the Second Indochina War in the mid-1950s; and ethnic strife in Burma) affected the collection of vital health statistics. Therefore, this study cannot infer that the BCG campaigns across South and Southeast Asia succeeded in reducing the burden of TB. Yet, disparate archival records ranging from Government Orders of Madras State, WHO and UNICEF archives, and Indonesian and Filipino articles on TB force us to re-examine how and why the BCG campaign was implemented in South India (Madras state), and Southeast Asia (Burma, Indonesia, and the Philippines) between 1948 and 1960, and also the tensions in South and Southeast Asian public health between a narrow biomedical approach that focused on the control of individual diseases and a holistic approach that linked public health with broader questions related to nation-building.

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10For a rare exception see Sunil Amrith, “In Search of a Magic Bullet for Tuberculosis: South India and Beyond, 1955–65,” *Social History of Medicine* 17, no. 1 (2004):113–30. Amrith’s article examines social and economic factors influencing compliance of individual patients with anti-tuberculosis drugs in South India.


12For the most recent study documenting TB control in international health contexts refer McMillen, *Discovering TB*. See also Niels Brimnes, *Languished Hopes: Tuberculosis, the State and International Assistance in Twentieth Century India* (Hyderabad: Orient Blackswan, 2016), 280–81.


Tuberculosis and national enfeeblement: The case of India

Every attempt to single out the social determinants contributing to the incidence of tuberculosis in colonial India must inevitably focus on the everyday experiences of millions of invisible tuberculosis patients whose lives were lived inside a constellation of social conditions that made them susceptible to the disease. These conditions included poor housing, spitting in public places, eating from a common utensil, sleeping together in the same room, shutting off openings meant for light for the sake of purdah, and low per-capita intake of milk and meat.16

By the early twentieth century, tuberculosis in India was largely urban in its distribution. According to Arthur Lankester, a Medical Missionary from the Church Missionary Society, phthisis caused more deaths in Calcutta than either cholera or plague in 1913.17 But, accurate statistics for deaths due to phthisis are not available for the early twentieth century as the disease was often misdiagnosed as fever.18 The incidence of tuberculosis in Bombay, Madras and Calcutta was concentrated in the mill areas of the city, where the death rates rose to over 4 per 1000 population. The migrant population of these cities consisting of students and labourers—some of whom were infected with the disease due to cramped living conditions—would return to their native villages, spreading the disease further. Young women of Calcutta between the ages of fifteen and forty—very much confined to their home due to the purdah system—lacked fresh air and showed a higher susceptibility to consumption than men.19

Tuberculosis control in British India was largely due to the voluntary efforts of medical missionaries and local physicians. In 1939, concerned physicians and missionaries established the Tuberculosis Association of India with the help of private subscriptions and support from the King Emperor Anti-Tuberculosis Fund. It envisioned the prevention, control, and treatment of tuberculosis patients and undertook epidemiological investigations on subjects appertaining to tuberculosis. It is evident from the proceedings of the inaugural Tuberculosis Workers’ Conference convened in New Delhi (1939) that members of the Tuberculosis Association of India approached the disease from a social perspective. At this Conference, Amulya Chandra Ukil, Bacteriologist at National Medical Institute in Calcutta presented his epidemiological investigations on tuberculosis that he had carried out in a Calcutta slum. He noted that poverty influenced tuberculosis in two ways: (a) overcrowding; and, (b) undernourishment, due to families’ inability to purchase protein-rich foods, such as meat, which made undernourished people susceptible to the disease. During the 1930s, Ukil had deployed BCG vaccination to protect villagers who were seeking employment in industries and was convinced of its value as a prophylactic measure.20 However, the use of BCG as a prophylactic measure prior to 1948 was not widespread.

On 15 August 1945, six days after the conclusion of World War II, The Antiseptic—a monthly medical journal, with nationalist overtones published in Madras—contended that tuberculosis, leprosy, and cancer were the three most dangerous scourges that ravaged India. The war against tuberculosis was no less important or damaging than the war against militarist Japan.21 The article complimented Lady Linlithgow for encouraging the establishment of anti-tuberculosis organisations and clinics on a nation-wide basis, but warned of the effect that the provincial governments were complacent in thinking that they had solved the problem of tuberculosis by allowing private philanthropies to start clinics as and when required.22 The Madras public were not satisfied with half-hearted measures and were agitating for the establishment of tuberculosis sanatoria in various parts of the Presidency. Tuberculosis control formed the trope of post-World War II reconstruction in British India.23

In November 1946, at the dawn of Indian independence, P.V. Benjamin, the then Technical Advisor of the Tuberculosis Association of India and subsequently TB Advisor to the Government of India, addressed the Fourth Tuberculosis Workers’ Conference in Delhi. In his lecture, he noted that the tuberculosis problem in India was a very vast one.24 A total of 500,000 people died every year due to this disease and 2.5 million individuals suffered from active tuberculosis, some of them lived in their homes and infected their relatives.25 At the time, India needed at least 4400 clinics to treat TB patients, whereas the actual number of clinics was only 120.26 As India’s resources in combating tuberculosis were limited, Benjamin recommended that it was essential to train health personnel in TB work in urban conurbations.

16Purdah refers to the social practice in South Asian Hindu and Muslim households of screening women from men by means of a curtain.
18Ibid.
20TB Association of India, Transactions of the Tuberculosis Workers’ Conference Held in New Delhi, November 1939, Under the Auspices of the Tuberculosis Association of India (New Delhi: Tuberculosis Association of India, 1939), Shelfmark 31009, Wellcome Library Closed Stores Medical.
22Editorial, “Fight the Big Three,” 457.
23Health was a provincial subject since 1919, in accordance with the Government of India Act (1919). An inadvertent consequence of transferring health to provincial government was increased politicisation. Disease control campaigns had to operate under the constraints of politicised provincial administration with limited funding. For details, see William Summers, “Cholera and Plague in India: The Bacteriophage Inquiry of 1927–1936,” Journal of the History of Medicine and Allied Sciences 48 (1993): 275–301, 282.
25Ibid.
26Ibid.
In 1947, TB was the leading cause of mortality in Madras state. Practically one out of seven deaths in the state could be attributed to the disease. K. Vasudeva Rao, Honorary Secretary to the TB Association of Madras noted that as TB was a social disease, attributed to poverty and lack of awareness about treatment, and an organised anti-tuberculosis campaign would go a long way in reducing the incidence of the disease. He noted that the high incidence of TB in Madras city and state was due to inadequacies of a rice-based South Indian diet, which had a limited nutritional value, stunted the growth of the population, producing a set of unhealthy people.

In the above paragraphs, I have contextualised the emergence of TB as a social disease in colonial India, the introduction of BCG as a prophylactic measure, and the ways in which tuberculosis became a component of post-War national reconstruction. At the time, members of the Tuberculosis Association of India were divided regarding the prophylactic value of BCG.

The BCG conundrum in South India

This section contextualises widespread opposition to BCG vaccination in South India in the aftermath of Indian independence (1947). It also examines the fissured nature of the postcolonial state in implementing its own health policy. Whereas, as independent India’s first Governor General, at the Sixth Tuberculosis Workers’ Conference in Calcutta, Rajaji exhorted that physicians and Indian citizens put up a joint front against tuberculosis, four years later, as Chief Minister of Madras State, he opposed BCG vaccination. In this context, Rajaji’s paradoxical position with respect to tuberculosis control could be explained from a political perspective.

In November 1948, the Government of India and ITC signed an agreement that started a six-month BCG demonstration campaign—during which international BCG teams would train their local counterparts on effective TB prevention—a move that was primarily targeted at protecting schoolchildren from the disease. Interest of the local authorities in India in the BCG campaign varied from outright acceptance of the vaccine to resistance. The tuberculosis problem in India could be considered in its true perspective by regarding India as a continent and not as a country. There were regional differences within the country with regards to tuberculosis incidence and prevalence rates. In West Bengal, for instance, there was a good deal of misunderstanding regarding the role of the UNICEF, the ITC, and the WHO in the implementation of the anti-tuberculosis programme. The percentage of vaccinated people was miniscule. The BCG campaign in West Bengal was impeded due to opposition from private physicians who were apprehensive that the vaccination programme would interfere with their lucrative medical practice. They spread rumours among the general public that BCG vaccination was potentially dangerous.

Unlike resistance to BCG vaccination, which largely dominated India’s public health landscape in 1949, the state of Travancore and Cochin presented an anomaly. With respect to tuberculin testing and vaccination, there was enthusiasm among parents and schoolchildren alike, which was lacking in other parts of India. In Travancore and Cochin, the local press sensitised the public regarding the prophylactic value of BCG.

Inaugurating the BCG vaccination campaign in Madras city on 15 February 1949, the then Governor of Madras, the Maharajah of Travancore, expressed concern that even after the attainment of political independence in 1947, India had a great deal to do in raising the standard of living of the common man. One of the planks for raising standards of living was the fight against diseases, especially TB, which took a heavy toll on the population. He expressed guarded optimism that the scheme of BCG vaccination was one of the most useful weapons in the fight against TB.

The BCG campaign was challenged immediately by Raman. On 3 February 1949, prior to the commencement of the BCG campaign, Raman alleged that the then Health Minister of Madras State, A.B. Shetty, papered over conflicting opinions of doctors, and blindly followed WHO directives to justify the launch of the BCG campaign in Madras. Shetty tried to silence critics by pointing to the success of the experimental mass vaccination against TB in Madanapalle. Shetty accused Raman of being a “hot gospeller” on the behalf of environmental hygiene. Raman’s opposition to BCG vaccination started from his idea of promoting environmental hygiene, a well-intentioned idea, which had created a scare in the minds of the people. Governments had to face opposition to the measures they introduced, whether it was Zamindari abolition, Religious Endowments Bill, or BCG vaccination. Shetty defended the vaccination campaign by stating that BCG vaccination was purely voluntary. As proof, conclusive for establishing the safety of the vaccine, he further...
referred to Transactions of the Commonwealth and Empire Tuberculosis Conference (London, 1947) and the International Congress on BCG (Paris, 1948)\(^49\).

Raman astutely exploited disagreements among international medical experts to suggest that the vaccination against TB was still in the experimental stage. To this effect, he published the latest available results on the BCG trials\(^46\). The February 1950 edition of *People’s Health* cited a French publication *La Vie Claire* on compulsory vaccination\(^41\). The editor of *La Vie Claire* noted that the Soviet Five Year Plan did not seek to make BCG compulsory, but attempted to study the efficacy of the vaccine vis-à-vis other techniques of combating TB. Furthermore, the article cited one French doctor Ferru, a delegate at the First BCG Congress (1948), who inferred that BCG was only an inferior vaccine incapable of guaranteeing real protection against TB\(^42\). Furthermore, Raman launched an attack in *People’s Health* on Rajkumari Amrit Kaur, the then Union Minister of Health, for introducing mass vaccination in the country flippantly and irresponsibly, and against India’s opposition parties for not deriving political capital out of the popular opposition to BCG\(^43\). In the March edition of *People’s Health* Raman noted, “The more the facts come to light, the more we are convinced that the ulterior motive for the campaign in this country is to use the people of this country as human guineapigs\(^44\).”

Raman looked to M.K. Gandhi and the WHO Preamble—which defines health positively as complete physical, mental, and moral well-being and not merely as the absence of disease or infirmity—for inspiration while opposing the BCG campaign. In the January 1950 editorial of *People’s Health*, commemorating Republic Day, he despaired about the health conditions of newly-independent India:

> The illiterate feels; he cannot think. All he knows is a change from the Union Jack to the Tri-colour, a change from Wavell to Rajaji, the substitution of *rajpramukhs* [governors] for Highnesses, have meant no change in his health, no improvement in his living conditions—not to mention a positive deterioration in the last two years. He is in no fettle to be ecstatic about the 26\(^{th}\) of January this year\(^45\).

By improvement of living conditions, Raman meant that the Ministry of Health fulfil minimum requirements for Indians, such as clean food, clean water, and a clean home. Raman’s relentless crusade against BCG led the Madras government to postpone mass vaccinations. *People’s Health* ceased publication in 1951. A year later, Rajaji became the Chief Minister of Madras State, a position that he relinquished in 1954.

During his tenure as Chief Minister, Rajaji disagreed with Nehruvian centralised planning and subsequently founded the Swatantra Party by 1959. From a political perspective, Rajaji’s opposition to BCG vaccination must be seen in terms of his opposition to the centralising tendencies of Delhi\(^46\). At the time, in order to compensate for the shortfall in public health spending in Madras state, Rajaji mobilised private philanthropy and established the *Maharaja of Bhaavnagar Kshayrog Fund* (a corpus fund instituted in the name of the former Governor of Madras, to treat indigent tuberculous patients). However, the Ministry of Health at Delhi expressed reservations with respect to the Madras Health Ministry administering a special corpus fund for treating tuberculous individuals rather than strengthening existing public health institutions. In 1954, Rajaji resigned as Chief Minister of Madras, due to his controversial educational reforms. As a fiscal conservative, he sought to reconcile between reducing the cost of primary education on one hand, and increasing the enrolment of students, on the other. He advocated to the effect that children learn the vocations of their parents after school. This policy received much censure from the opposition DMK (Dravida Munnetra Kazhagam) party, which accused Rajaji of perpetuating the Hindu caste-based traditional occupation (also known as *kala kalvi thittam* in Tamil). At the time of his resignation as Chief Minister of Madras, Rajaji developed anti-statist views, partly as a result of his disagreements with Nehruvian Big Science, and increased state intervention into the private lives of citizens\(^47\).

Soon after abdicating as Chief Minister, Rajaji tapped into popular resistance to the BCG campaign that had been brewing in Madras state, since A.V. Raman’s articles critiquing the campaign appeared in *People’s Health* between 1949 and 1950. In Tanjore and Madurai districts, a large number of people would not come out for tuberculin test and BCG vaccination\(^48\). In his pamphlet, “BCG Vaccination: Why I Oppose It,” Rajaji anchored his critique of the BCG vaccine in modern science, claiming:

> I am not against modern “western” therapy or modern science. BCG has nothing to do with the principles of modern western therapy. If at all, it is akin to the principles of Homoeopathy. It proceeds on a creed very similar to that of homoeopathy, namely, that diseases are to be dealt with by the administration in mild forms of things that produce identical symptoms. The difference is that the homoeopath does not introduce what multiplies in the human body, but the BCG man introduces a large body of living multiplying organisms, which are intended to remain alive in the body of the patient to produce the intended result\(^49\).

\(^49\)Ibid.

\(^46\)Ibid.


\(^41\)Ibid.

\(^42\)Dole, “French Doctors,” 150.


Rajaji marshalled arguments from The Lancet, and various articles from the Journal of the American Medical Association to substantiate his argument against BCG vaccination.

Furthermore, while opposing BCG on scientific grounds, Rajaji also noted that treatment with wonder drugs like isoniazid, although in the experimental stage produced promising results, was limited. In his booklet, Rajaji included unverified complaints of children developing infections after the intake of the BCG vaccine. All the complaints were received after he initiated opposition to BCG. The range of complaints that Rajaji received ranged from blindness, skin diseases, and mental ailments. Some of the Tamil newspapers of the time, particularly Dina Thanthi, reflected the general uneasiness in rural areas with mass vaccinations. In the district of Cuddalore, on 14 September 1955, schoolchildren launched a strike against the BCG, as it was alleged in the local newspaper that students were coerced into accepting the vaccine by the principal. Rajaji’s pamphlet contained ten cases highlighting tales of children taking ill and dying, but only one case highlighted that the complications supposedly induced by BCG were due to epidemic encephalitis. In order to assuage public fears regarding BCG, the Madras government issued a booklet entitled “Truth about BCG: Why the Government has Launched a Mass Campaign.” The booklet inferred from available statistics that whereas the tuberculin-tested population in the state was 15 million, only 22 people reported side-effects, due to BCG, indicating that the vaccine was harmless. The vaccine used in Madras state was identical to the one used in Ceylon, Malayia, and Burma, but no single case of complaint had been received from any of these countries.

The anti-BCG campaign in Madras state, led by Raman (between 1949 and 1950), and subsequently by Rajaji during the mid-1950s highlighted national anxieties that Indians were being used as experimental subjects by the WHO and international aid agencies. Both Raman and Rajaji adroitly exploited cleavages within the Republican party to substantiate his argument against BCG vaccination.

Fractured postcolonial health sovereignties: TB control in decolonising Southeast Asia

Tuberculosis control in newly-independent nations of South and Southeast Asia were part of the nationalist rhetoric, which associated tuberculosis as an endemic disease, and vitiated the overall productive capacity of the population. This section explores the organisational shortcomings of the TB control programme, with a focus on Indonesia, the Philippines, and Burma.

Between 1952 and 1960, tuberculosis control in post-colonial Indonesia was framed both as a social-hygienic and as a socio-medical problem. Conceptualising TB as a social-hygienic problem involved educating patients and their families about the infectiousness of the disease, training patients to scientifically dispose sputum, ration administration of prescribed medicines, especially isoniazid, and administer BCG vaccinations to infants as a prophylactic measure. As a socio-medical problem, Indonesian physicians perceived TB as a curable disease at the individual level—with the availability of wonder drugs—particularly isoniazid. In 1952, the Indonesian Ministry of Health, in collaboration with the WHO Regional Office for Southeast Asia operated a pilot TB demonstration project in Bandung to investigate the prevalence of tuberculosis and suggest preventive measures.

In 1952, when the project was initially implemented, as Bandung was facing an acute shortage of hospital beds, the TB demonstration centre was forced to adopt ambulatory chemoprophylaxis—visiting patients’ homes, educating patients and their families about the infectiousness of the disease, administering drugs, such as isoniazid and streptomycin, and providing follow-up on treatment of TB patients. The Bandung TB project was administered directly by the Indonesian Ministry of Health between 1952 and 1954. However by 1954, the Ministry of Health devoted administration of the project to the Inspectorate of Health of West Java. The municipal services of Bandung city were not involved in the execution of the project as they lacked sufficient funding. The project thus suffered from administrative and financial bottlenecks. The then Minister of Health Johannes Leimena attempted to integrate TB within the framework of preventive health services in the so-called Bandung Plan. However, the plan had to be aborted, due to a lack of finances, which consequently inhibited treatment and follow-up of individual TB patients.

Concomitant with the establishment of the TB demonstration centre in Bandung in 1952, the Ministry of Health also initiated mass BCG vaccination of infants. However, within a few months, the BCG campaign in Indonesia ran into technical trouble, as the vaccine caused fevers among newborn infants, under the age of one, causing Leimena to reassess the long-term benefit of using mass vaccinations against TB. At Bandung, the BCG team encountered...
passive resistance from the Chinese community in Indonesia, who opposed administration of the vaccine\textsuperscript{55}. In Jakarta and Bandung, complaints emerged that vaccine lots —imported from Manila, of varying potencies—administered to children induced fevers\textsuperscript{55}. In Bandung, a rumour circulated that BCG made the incipient weak\textsuperscript{55}. Subsequently, the WHO distanced itself from the BCG campaign by issuing a statement to the effect that it had advised Ministries of Health to exempt children under the age of one from vaccination\textsuperscript{55}.

The BCG campaign extended to the entire archipelago by 1956\textsuperscript{65}. The campaign’s performance across Indonesia was variable. The province of North Sumatra, in particular, had among the best organised BCG campaigns in Indonesia as nearly 95\% of the population was covered by tuberculin surveys\textsuperscript{65}. But, in Makassar, the capital of South Sulawesi province, the health authorities received complaints—of side-effects such as abscesses—from people who had undertaken the tuberculin test. Incidentally, the complaints coincided with a smallpox outbreak in Makassar in 1956\textsuperscript{65}. Due to the fear associated with tuberculin testing and vaccination, and the stigma associated with the detection and isolation of smallpox cases, locals actively resisted the BCG campaign\textsuperscript{65}.

From the archival sources, it is unclear whether the resistance to BCG in South India influenced parallel developments in Indonesia. But, given the episodes of resistance to the vaccine under disparate circumstances, as in the Indian context, one could adduce that disagreements between WHO consultants, Indonesian physicians, and the diverse ethnic groups inhabiting the archipelago could be due to terminological and conceptual ambiguities regarding the framing of tuberculosis\textsuperscript{56}.

Tuberculosis was the leading cause of morbidity and mortality in the Philippines during the 1950s. In 1951, the US Public Health Services (USPHS) assisted the Filipino Department of Health in establishing a laboratory at Alabang for the domestic production of BCG. The Philippines officially inaugurated its mass BCG campaign in October 1951, with financial support from the UNICEF. BCG vaccination was initiated on an experimental basis in the province of Pangasinan, in the Visayan group of islands constituting the Philippine archipelago. Public address units, supplied by the UNICEF were used by the provincial teams in Pangasinan to educate the local population regarding TB prevention. However, tuberculin testing of the population, and the administration of BCG to negative reactors, were suspended indefinitely in 1951 due to typhoons\textsuperscript{66}. The vaccination coverage was incomplete, as less than 50\% of children under the age of six were reached\textsuperscript{66}. In 1951, when the mass BCG vaccination program began in the Philippines, less than eleven full-time doctors were available\textsuperscript{66}. In the Philippines—as in the case of Indonesia—infants under the age of one, who were administered the vaccine, developed complications\textsuperscript{67}. The parents of affected infants notified the local health authorities. Not surprisingly, the WHO cited technical difficulties appertaining to the shortcomings of BCG vaccination, and noted that a vaccine of high potency was used\textsuperscript{67}.

In 1956, the Philippines initiated its first pilot TB control project in the northern province of Ilocos Norte with technical assistance from the USA, on the condition that TB control would be integrated into the rural health services\textsuperscript{67}. While it was one thing to use mobile X-ray units and wonder drugs like isoniazid to treat tuberculosis patients, it was yet another to follow-up on treatment. Surveillance and follow-up of treated cases was a weak branch in tuberculosis control in the Philippines throughout the 1950s\textsuperscript{67}. The Philippine health authorities did not have accurate prevalence studies of TB throughout the archipelago when the BCG vaccination campaign was initiated in 1951. Diagnosis for TB was based only on radiological findings and not bacteriological examinations. Patients could not follow-up on treatment, as isoniazid and streptomycin were unaffordable. In the mid-1950s, the Department of Health divested disease control in the Philippines to the rural health units, who were already over-burdened with public health education, environmental sanitation, maternal and child health, and smallpox vaccination\textsuperscript{67}. The rural health units could not follow-up on individual cases. Between 1954 and 1958, the national mortality rate attributed to TB only registered a marginal decline from 114 per 100,000 to 104 per 100,000 individuals\textsuperscript{67}.

\textsuperscript{57}Ibid.
\textsuperscript{58}Ibid.
\textsuperscript{59}Borchgrevink and Hien, “BCG Campaign.”
\textsuperscript{60}Ibid.
\textsuperscript{61}Neelakantan, “Eradicating Smallpox,” 71.
\textsuperscript{62}Ibid. Smallpox cases in Makassar during the 1956 outbreak were often isolated in a leprosy ward.
\textsuperscript{63}According to the Chinese medical cosmology, diseases are cured by restoring the natural balance between the complementary opposing forces, \(\text{yin} (\approx)\) and \(\text{yang} (\bar{\approx})\). The BCG vaccine disrupted the body’s natural process of healing.
\textsuperscript{64}“Memorandum from Anton Geser to I.C. Fang WHO Regional Committee for the West Pacific (WPRO) Regional Director: Narrative Report for October 1952,” File DC-TB, WHO Registry Files, WHOA.
\textsuperscript{65}Ibid.
\textsuperscript{66}Ibid.
\textsuperscript{68}Ibid.
\textsuperscript{69}Vivek Neelakantan, “Disease Eradication and National Reconstruction in Indonesia and the Philippines during the Early Decades of the Cold War,” IIAS Newsletter 71 (2015):4–5.}
Subsequent to Burma’s independence in 1948, the government took an initial step in TB control by opening a TB ward in the Rangoon General Hospital. In July 1951, a separate TB demonstration centre was set up at Rangoon with assistance from the UNICEF. At the same time, the government initiated a mass BCG campaign. The tuberculin tests administered at the Rangoon clinic indicated that 80% of the population over the age of fifteen tested tuberculin positive. Between 1951 and 1957, 4.5 million people across Burma were tuberculin tested, and 1.44 million vaccinated. Prior to 1956, the WHO faced bureaucratic hassles in obtaining requisite permissions from the Burmese Director of Health Services for conducting surveys determining the incidence and prevalence of the disease across the country. In 1956, the WHO and the Burmese government drew up a plan for the systematic treatment of tuberculous patients at the Rangoon clinic with isoniazid, donated by the UNICEF.

By the mid-1960s, it was noted that the defaulter rate at the Rangoon TB clinic was high. Defaults were observed to be given the wrong address, making it difficult for public health personnel to follow up on the treatment of individual patients. The default rate was particularly high among Rangoon schoolchildren, who were put on isoniazid treatment subsequent to being diagnosed as tuberculosis positive. Many students did not return to the clinic to collect the second supply of medications and because of wrong addresses, remained non-traceable. Another reason for defaulting on treatment was the mishandling of treatment cards at the Rangoon Health Centre. As a result, patients often were issued two treatment cards, which only showed part of a treatment administered. There was a considerable difference between patients who suffered with infectious TB and those who suffered from unconfirmed lung TB. Those patients who had infectious TB and were administered streptomycin injections on a daily basis were more likely to cooperate in the hope of getting relief from suffering. In contrast, patients who had unconfirmed lung TB were administered a single-drug therapy involving isoniazid, which they had to administer themselves without any supervision or training.

Tuberculosis treatment and prevention across Southeast Asia during the 1950s had to compete with other public health programs, such as malaria eradication, maternal and child health, and environmental sanitation. Across South and Southeast Asia during the mid-1950s, when the BCG campaigns were well-underway, there was a noticeable gulf between citizens’ aspirations for freedom from disease and chronic poverty that inhibited disease control programmes. In his short story “My Kampung,” published in 1952, when disease eradication programs in Indonesia were underway, Toer’s tones alternate between pessimism and sarcasm. He boldly declares that a “small guerrilla squad” (referring to the Indonesian revolutionaries (1945–49) are cautious and not likely to lose more than ten people in two years, but in my Kampung (neighbourhood), people die a “cheap death.” He then enumerates the deaths due to preventable diseases. There is one person who dies of chronic venereal disease; the mother who kills her child with an overdose of worm medicine; and the print-setter who dies of lead poisoning, and countless victims of tuberculosis. Toer implicitly mocks the utopia of a world free of disease. Toer’s short story illustrates the limitations of using disease control as a technological fix to public health problems in developing countries.

Conclusions

The BCG conundrum in South India (1948 to 1956), and resistance to the vaccine in Indonesia (1952–53) highlighted rumoured power and the limits of international health intervention. Ruth Rogaski’s nuanced study of Japanese public health intervention in Manchuria, particularly the suspicion aroused by the mass vaccination campaign against tuberculosis, is of relevance to the paper. The vaccine carried an assortment of meanings—ranging from being an object of fear, a potent symbol of healing, or an emblem of state authority. Resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state’s interventionist ambitions and nationalist critique of health policies of the colonial government. The vaccine was probably the first encounter of the colonial populations of British India and the Dutch East Indies to state medicine. It is not surprising that the local press in postcolonial India and Indonesia assessed international health through the efficacy of BCG.

This study reveals the benefits of linking the history of tuberculosis in Southern India and Southeast Asia to the broader question of decolonisation in the aftermath of World War II. Even as South and Southeast Asian nations were attaining political independence, there was a growing awareness of the economic and social underpinnings of TB. Yet, governments were forced to turn to silver

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78 Ibid.
79 Ibid.
81 Ibid.
82 Ibid.
bullets in the hope that they could address logistical issues, such as a serious shortage of doctors. During the 1950s, as during the preceding colonial period, there existed a dualism between health policy formulation at the centre and implementation at the level of local governments. These dualisms made it difficult for TB control to be integrated within the overall framework of public health activities of the postcolonial state.

Competing interests
No competing interests were disclosed.

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George Dehner
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In this article the author sketches out an ambitious, and I agree, important thesis on post-World War II tuberculosis (TB) control and more broadly international health in South and Southeast Asia. Transnational discussion of health programs related to TB control have thus far generally overlooked the political aspects of decolonization in their reviews making this study a welcome addition to the literature on international health. Regrettably, the author is not completely successful in achieving this stated goal.

The author sets out a difficult task: namely, to examine tuberculosis control and the Bacillus Calmette-Guerin (BCG) vaccination programs in India, Burma, Indonesia, and the Philippines. The colonial experience of these states, under the control of the British, Dutch and the United States respectively, differ as does their experiences during the Second World War and their painful and chaotic national births. These states may share common experiences in public health under the colonial regimes and in their early national periods, but the author must do more to highlight these commonalities and not just assume them.

Further complicating the author’s self-assigned task is that the vehicle for examining tuberculosis control in these new nations is the UNICEF-funded and WHO-led BCG inoculation programs. The author rightly points out that in this post-war period the WHO emphasized bio-medical technical approaches to disease threats. US financing and diplomatic muscle greatly shaped international health tactics in the 1950s and 1960s and this technical approach mirrored US solutions to public health problems. Narrow-focused technical programs stood in contrast to more holistic frameworks that marked some pre-war League of Nations Health Organization programs and that re-emerged in international health debates at the WHO-sponsored Alma-Ata conference in 1978. But the BCG example is problematic because US public health officials—British health officials as well—were highly skeptical about the vaccine’s effectiveness. While some US health officials were willing to concede that BCG might be effective in protecting children in places where TB was rampant, the major support for the program came from Scandinavian states. Therefore, a discussion of the contested nature of the BCG vaccine would be appropriate in the background section portion of the introduction.
The author asserts that health programs were a component of nation-building; a point admirably demonstrated in the India discussion. However, this high standard is not maintained in the examples from the other states of South and Southeast Asia that comprise this study. For example, it would be useful for the author's argument to know more about the motivations for the 1956 pilot TB program in the Philippines (8). Who were the driving forces in initiating this program—the Filipino government or the United States? Did the WHO have a role? Also, it is not clear from this summary if the program revolved around a BCG distribution system or was there some other model that was being pursued? In similar fashion, it is pertinent to know if the bureaucratic hassles faced by the WHO survey of TB in Burma were part of an assertion of Burmese government independence in matters of health or the result of disputes between central and local authorities (9). Fuller accounts and discussions of these cases would help to bolster the author’s argument.

The article as written has much to commend it. The section on India is the most fully developed and the one most completely supportive of the author’s conclusions. Expanding the political aspects of TB control, clarifying the unifying elements in their nationalist formation, and tightening up the transitions between sections will go a long way in making this article more effective. In the conclusion, the author states that “resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state’s interventionist ambitions ...” and that there existed a “dualism between health policy formulation at the centre and implementation at the level of local governments” (9-10). These are intriguing assertions, but the article needs to do more to provide evidence that these conclusions are true for nations in the region beyond India.

**Competing Interests:** No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

**Author Response 11 Apr 2018**

**Vivek Neelakantan**, Indian Institute of Technology Madras, Chennai, India

**George Dehner, Comment 1:** The BCG example is problematic because US public health officials, British officials as well, were highly sceptical regarding the vaccine's effectiveness. Elaboration of the contested nature of the BCG vaccine would be appropriate.

**Response:** Contested nature of the BCG vaccine expatiated on page 5, V. 2, in a separate paragraph.

**George Dehner, Comment 2:** “The author asserts that health programs became a component of nation-building; a point admirably demonstrated in the India discussion. However this high standard is not maintained in the examples of other states of South and Southeast Asia that comprise this study. For example, it would be useful to know more about the motivations of the 1956 pilot TB program in the Philippines:
Who were the driving forces, the WHO or the US? Did the WHO have a role? It is not clear whether the program revolved around a BCG distribution system or was there some other system being pursued? In a similar fashion it is pertinent to know if the bureaucratic hassles faced by the WHO survey of TB in Burma were part of an assertion of Burmese government independence in matters of health or the result of disputes between central and local authorities? Fuller account of the case studies would help bolster the author's arguments.

**Responses:** I have expatiated on the Philippines' case study so that the narrative is not gravitated towards India. The pilot project in Ilocos Norte was implemented with technical assistance from the US. It did not exclusively on administering BCG vaccinations but relied on a three-pronged strategy, i.e. (a) administering tuberculin tests and vaccinating the detected negative reactors to the tuberculin test, (b) detecting the disease through radiography and (c) treating the infected individuals with isoniazid or streptomycin.

In the case of Burma, the bureaucratic hassles faced by SEARO officials in getting the tuberculosis prevalence survey sanctioned was a part of the Burmese government's attempts to assert its sovereignty in health matters. This was a very helpful suggestion and I have incorporated it while narrating the Burmese experience of TB control during the 1950s.

Additionally, in the case of Indonesia, I have also added on how TB shaped nationalist imagination and the consequent mobilisation mentality. For Burma, I have expatiated on how U Nu's Pyidawtha ideology shaped the Burmese approach to disease. In the Philippines, the nationalist rhetoric was less explicit although there was an added emphasis on the economic aspects of TB. I have also added a fresh account with respect to the inner tensions between magic bullet approach and a more holistic approach that linked health with nation building. Examples provided not only from India (original version) but also from Indonesia, and the Philippines. In the case of Burma, most of the inner tensions in public health could be teased out from a fuller use of *SEARO Regional Director's Annual Reports* rather than the voice of local physicians.

**George Dehner, Comment 3:** Expanding on the political aspects of TB control, and clarifying the unifying elements in their nationalist formation and tightening up the transitions between sections will go a long way in making the article more effective.

**Response:** I have rewritten the conclusion. The underlining unifying feature of TB control in India and Southeast Asia (the three examples provided) is the notion of fractured sovereignties. I have spelt out the administrative fractures in great detail in the conclusion and to shore up the argument, have provided briefly how administrative fractures have impeded TB control to this day, with reference to WHO End TB strategy. I have also smoothed the transitions between sections so that the narrative is cohesive.

**Competing Interests:** Nil
Susan Heydon
School of Pharmacy, University of Otago, Dunedin, New Zealand

Tuberculosis remains a global health problem with many challenges facing its control, both related to the disease and the wider context. While increasing scholarship now exists about tuberculosis control in many parts of the world in countries post-independence, this paper aims to add a new approach offering a transnational history of tuberculosis control across South and Southeast Asia. Other themes relate to stigma and private philanthropy. The author discusses anti-tuberculosis campaigns in India, Indonesia, the Philippines, and Burma between 1948 and 1960, particularly exploring their links with discourse about nation building. The very different case studies in this paper pinpoint the limits of national and international public health interventions; they also highlight the importance of the local context in an age post Second World War of enthusiasm for the possibilities of international public health policies and programmes and reliance on technology. In so doing we are reminded of the need to look beyond a narrow biomedical approach to public health problems. Tuberculosis is the issue in this paper, but the point is relevant more broadly.

Considerable research has been undertaken using a wide range of archival sources and a transnational approach has the potential to offer valuable insights. My reservation is not with the research and the overall argument, but with the way it has been presented. Currently, I find the paper disjointed as it reads as a series of separate examples beginning with India and then moving to Southeast Asia. The balance of the content is also weighted towards India and this I find lessens the impact of the other three and also interesting case studies. Should the title include ‘Southeast Asia’ rather than the more enigmatic ‘beyond’?

Transnational as a term has different understandings and I note that the abstract does not mention ‘transnational’, although the paper does. I think, however, that such an approach looking across borders could be useful in pulling the paper together. International public health operated within a world of nation states. The Philippines is a member of the Western Pacific region the other three are in the South-East Asia region. Could something be said more broadly about the fluid regional WHO environment at this time and nation building discourse?

Lastly, a comment on a point made in the conclusion – rather than governments being ‘forced’, the use of ‘magic bullets’ (technology) was often easier and for many preferred; it also avoided having to deal with harder underlying social and economic issues.

Some specific points:
1. TB is the leading cause of death worldwide from infectious disease – not overall.
2. Some of the sentences are much too long – for example on page 3 ending with footnote 15.

Competing Interests: No competing interests were disclosed.
I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Vivek Neelakantan, Indian Institute of Technology Madras, Chennai, India

Susan Heydon, Comment 1: “The paper is disjointed and reads as a series of separate examples beginning with India and then moving to Southeast Asia. The balance of the paper is weighted towards India and this I find, lessens the impact of the other three and also interesting case studies. Should the title include “Southeast Asia” rather than the more enigmatic beyond?”

Response: I have substituted the more ambiguous “beyond” with Southeast Asia in the title to better reflect on the scope of the paper. I have also expatiated TB control in Indonesia, the Philippines and Burma so that the narrative is not biased towards India. I have also tightened transitions between paragraphs to improve the flow of the narrative.

Susan Heydon, Comment 2: “Transnational, as a term has different understandings. I note that the abstract does not mention ‘transnational’ but the paper does. I think that such an approach looking across borders could pull the paper together. The Philippines is a member in the West Pacific region, the other three in the Southeast Asia region. Could something be said about fluid regional WHO environment at this time and nation-building discourse?”

Response: I have emphasised “transnational” in the abstract of the paper to spell-out the scope of the paper. I have emphasised the birth of the SEARO and WPRO (WHO Regional Offices of Southeast Asia and West Pacific) to emphasise how the WHO, in the 1950s, supported disease eradication programs through pilot health demonstration projects (in this case TB). The regionalisation of the WHO has provided better context to the narration of TB Control projects in Indonesia, the Philippines, and Burma. I have spelt out the framing of TB in nationalist imagination in Indonesia (L.G.J. Samallo’s interpretation) and Burma (Pyidawtha). Although data for the Philippines is not available, I have spelt out the rhetoric around TB in the Philippines at the time, framed in terms of poverty.

Susan Heydon, Comment 3: Rather than being forced, the use of magic bullets was often easier.

Response: I have co-opted the reviewer’s comment in the conclusion.

Susan Heydon, Comment 4 (a) TB is the leading cause of death worldwide, not overall.

Response: I have co-opted the suggestion. The statement has been revised in accordance with the latest WHO statistics on TB (2017).

Susan Heydon, Comment 4 (b) V.1. Some sentences are too long, for e.g. page 3, footnote 15
Response: I have split the sentences for clarity. For purposes of smooth flow of narrative, I have split the long-winding sentences into simpler sentences for enhancing the clarity of the paper. Page 3, footnote 15 of V. 1. The introduction of Rajaji and A.V. Raman moved to the footnote for improving flow of the main text. Page 6, of V2.

**Competing Interests:** Nil

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Liping Bu
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Shirish N. Kavadi
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The study of tuberculosis control is usually conducted about the efforts of individual countries to evaluate the outcome and draw lessons. In this article, Vivek Neelakantan tries to break the boundaries of individual nations to draw out certain patterns of TB control campaigns in four different countries of South and Southeast Asia, namely India, Indonesia, the Philippines, and Burma. The focus of analysis is on the politics of anti-BCG vaccination in South India, Madras state to be more precise, where local politicians spread and exploited popular fear of the side-effect of the vaccine for their own political agenda to counter the central control of the government in New Delhi. Private physicians were another major group of power who opposed the vaccination campaign, as they were concerned that the BCG vaccination would reduce their lucrative medical practice. The major proponents for the BCG vaccination were the national governments and international organizations such as WHO, UNICEF and ITC. These actors regarded the TB control, and disease prevention in general, as an integral part of nation-building and improvement of human lives. In his study, Neelakantan finds that there were various tensions existing between the local implementation and the central planning. There were also tensions between the narrow biomedical approach that targeted one individual disease such as TB that was promoted by international organizations and the holistic approach that targeted diseases with broader commitment to socioeconomic improvement in nation-building by post-colonial governments.

The author states that his study situates TB control within the broader context of international health, but the article does not provide a clear picture of international health in either the South Asia/Southeast Asia region or even broader context. A specific discussion of the context of international health will also help to clarify how implementation of TB control in South Asia/Southeast Asia sheds light on the nature of post-colonial state sovereignty in public health. The author asserts that by discussing TB campaigns in the four countries the article links their political history of decolonization to the history of international health. This part of the article is
weak since the political history of decolonization in these countries has not been discussed. In this regard, an examination of the nationalist discourse in the four countries and the local states of India on preventive medicine and TB control will help readers understand the politics of public health and nation-building in that region. In doing so, the author may want to re-define the title of the article to better reflect the content.

In the discussion of regional differences within India (p. 5), it would help if the author explained, if data available, the differences in incidence and prevalence rates in West Bengal and Travancore and Cochin (present day Kerala) and how people viewed TB before writing about the different responses to the BCG vaccination campaign. Incidentally, Bengal and Travancore also have rice based diets. Did similar perceptions exist in these two provinces with respect to prevalence rates and diet? In terms of people's view and understanding of disease and prevention, it is helpful to provide a brief historical account of public health in these different regions. Kerala today is viewed as a model with respect to public health in India mainly due to its unique modern history. Travancore was a Princely State and not part of British India. The Rockefeller Foundation was deeply involved in developing public health programs and the public health department in that state.

As to the change of Rajaji's stand after he took over as Chief Minister of Madras state, it is not clear whether the change was a result of Raman's campaign of popular sentiment or of Rajaji's opposition to Delhi's centralizing tendencies or a combination of both. A further clarification or elaboration would help. Were the nationalist anxieties that Raman and Rajaji had about Indians being used as experimental subjects shared by others in India either in official and non-official circles and by professionals and non-professionals? A broader Indian context will help explain the question. Kavadi's “Medicine, Philanthropy, and Nationhood” in Public Health and National Reconstruction in Post-War Asia (Bu and Yip, 2015) would enrich the argument.

The “fractured sovereignties”, as Neelakantan terms them, were, in fact, of many different natures. Some were political fights between the local and the central governments, some were inadequacies of administrative capability and deficiency of supplies, and others were tensions in the negotiation of sovereignty over disease control between international demands and national necessities. For instance, in Madras it appeared more political, with Raman and Rajaji each promoting their own agenda; whereas in Burma and the Philippines the fractures were located within the bureaucracy or associated with technical difficulties. The author needs a bit more analysis of the fractures in health policy implementation and post-colonial health sovereignties. The idea of ‘fractures’ has been discussed by other scholars with reference to various levels, entities, actors in the political and administrative structure and system, namely, Bhattacharya, Harrison and Worboys (2005), Sanjoy Bhattacharya (2006), Ryan Johnson and Amna Khalid (2011), and Kavadi (2015 & 2016).

The author could have gone into a bit more details to discuss Indonesia, the Philippines and Burma. It would be useful to know how different national governments handled the dissemination of knowledge about disease and the TB control. In other words, did the governments do a good job in popular education about TB and its prevention and treatment? One also wishes that the author elaborated more on whether the South India opposition to BCG vaccine stood out as a unique case or a representative example of anti-TB campaigns in India in general. It may be useful to look at Margaret Jones’ article (2016) on TB control in Sri Lanka during 1948-1990, which was not about BCG but a community-oriented control model that also faced obstacles and resistance.
in implementation.

**Competing Interests:** No competing interests were disclosed.

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Liping Bu and Shirish Kavadi, Comment 1: The article does not provide a clear picture of international health in either South or Southeast Asia. A specific discussion on international health will also clarify how TB control in Southeast Asia sheds light on the nature of postcolonial sovereignty.

Response: I have contextualised the pilot TB control projects in each of the countries within the framework for the emergence of the WHO and establishment of its regional offices in New Delhi and Manila. I have also eliminated the tenuous link between decolonisation and TB control, given the lack of data and have instead reshaped the argument in favour of fractured sovereignties, a recurring theme in all four countries and how these administrative fractures have undermined TB control to the present day (a point illustrated in the conclusion).

Liping Bu and Shirish Kavadi, Comment 2: Change of Rajaji’s strategy towards BCG after he took over as Chief Minister?

Response: The context was political. He opposed the centralising tendencies of Delhi. Domestically, his educational reforms were controversial as his opponents denounced him for promoting *kula kalvi thittam*, or caste-based hereditary occupation through his educational strategy. As Niels Brimnes pointed out, Rajaji did not have an alternative to state-medicine (BCG) unlike his friend A.V. Raman, the editor of *People’s Health*.

Liping Bu and Shirish Kavadi, Comment 3: “Fractured Sovereignties as Vivek Neelakantan points out, were in fact of many different natures.”

Responses: A helpful observation and I have underlined the fractures as the key theme in the conclusion of V. 2 of the article. Fractured sovereignties in Madras were more political. While discussing Madras, I have highlighted the fight within Madras itself between competing priorities of the state government, in a separate paragraph dedicated to T.S.S. Rajan, Minister of Health of Madras, and a colleague of the Minister of Health A.B. Shetty.

I have expatiated the argument on the notion of fractured sovereignties in the conclusion. The recommending readings Sanjoy Bhattacharya’s *Expunging Variola*, and Shirish Kavadi’s chapter published in Liping Bu and Ka-Che Yip's edited volume were very helpful for strengthening the argument. I did not consult *Fractured States*, as I have deleted the tenuous assertion earlier made between decolonisation and TB control. Margaret Jones’
article is helpful to understand the shortcomings of WHO-sponsored anti-TB campaign in Sri Lanka grafted onto the extant health system. I have incorporated Margaret Jones’ analysis in the paragraphs focusing on extant historiography. In the conclusion, I have clarified that the South Indian opposition to BCG, spearheaded by A.V. Raman was hardly unique in the history of BCG campaigns across Asia. In the Philippines, similar issues were raised with respect to the vaccine’s efficacy. But, the opposition to BCG was steamrolled only to resurface by the mid-1950s when Filipino paediatricians reported complications, a point also shared by India and Indonesia.

Liping Bu and Shirish Kavadi, Comment 4: “In discussion of regional differences within India, it would help if the author explained, if data available, the differences in incidence and prevalence rates in West Bengal and Cochin (present-day Kerala) and how people viewed TB before writing about the different responses to the BCG vaccination campaign?”

Responses: Unfortunately, data for incidence and prevalence rates for TB in Bengal and Cochin, for the early 1950s is not available. I have also seriously taken into account the observation of Shirish Kavadi that the Rockefeller Foundation’s work in Travancore was instrumental in shaping the favourable public opinion of the local press in Travancore and Cochin states after Indian independence, towards BCG. While this is true, the Rockefeller Foundation did not concentrate on TB control in India during the 1950s (the focus was on the Caribbean, instead). For e.g. Henrice Altink’s article in Medical History. Therefore I have not mentioned the Rockefeller Foundation’s role in shaping public opinion in Cochin and Travancore towards BCG, for the early-1950s. Given the vastness of India, comparable to a “continent,” and not a country, in the view of a WHO technical report, I found it feasible to concentrate on one part of India, i.e. Madras state for which I had locally-available archival materials.

Competing Interests: Nil

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Christian W. McMillen
Cocoran Department of History, University of Virginia, Charlottesville, VA, USA

Let me note from the outset that the author’s research project and the questions he is asking combined with the sources he is interrogating—such as the Indonesian language primary documents I doubt many others have ever examined—have the potential to broaden historians’ understanding of the post-World War II global health landscape. For the author is doing research on areas largely ignored by others; he is asking vital questions of critical importance to many
scholars working in the field.

The present article—well conceived, though not always well executed—attempts to link the history of anti-tuberculosis campaigns in India, Burma, Indonesia, and the Philippines. The author has set for himself an ambitious agenda that is partially fulfilled. While I admire the effort to connect the history of TB control in these four countries as a way to make an argument about decolonization in the post-World War II era the author will need to do more work to make his claims less subject to criticism. To my mind there are too many unsubstantiated arguments. The author’s principle argument is that “Resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state’s interventionist ambitions and nationalist critique of health policies of the colonial government.” However, the argument is well substantiated only for India where a significant anti-BCG vaccination campaign stymied progress in the south. In Indonesia, on the other hand, while the author makes clear that the BCG campaign faced barriers from the start—“organisational shortcomings of the TB control programme”; “passive resistance from the Chinese community”; and complaints that BCG caused fevers—it is not clear that any of this had anything to do with resistance to the colonial or postcolonial state. The connections in the Philippines and Burma are even more tenuous. In Burma, the author notes, there was a high defaulter rate at the Rangoon TB clinic. Why is this not explored. The reader is left to assume that the details regarding the high defaulter rate are offered in support of the author’s overall claims about resistance to the colonial and post-colonial state. But I don’t see the connection.

As noted above, in the conclusion the author writes: “Resistance to vaccination in postcolonial contexts stems from the association of the vaccine with the colonial state's interventionist ambitions and nationalist critique of health policies of the colonial government.” This is a provocative and compelling hypothesis and one that the author soundly argues was the case in South India. But the examples from Indonesia, Burma, and the Philippines do not support it. This does not make the claim incorrect; it does point to the need for the author to shore up the claims. This could be done in a longer piece or one of similar length that does not give such lopsided coverage to India—the section on India is longer on its own than the section covering the other three countries. Further on in the conclusion the author writes, “This study reveals the benefits of linking the history of tuberculosis in Southern India and Southeast Asia to the broader question of decolonisation in the aftermath of World War II.” I would agree that benefit could come from linking the history of TB to the history of decolonization. I am thus eager to see how the author will make that connection less tenuous in future publications.

**Competing Interests:** No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.
critique of health policies of the colonial government.”

**Response:** I have deleted the unsubstantiated claim as historiography/ primary sources were deficient for Burma (Myanmar). The scope of the paper is limited to TB control in the first decades of independence. The contention about decolonisation and TB control was also tenuous due to the primary sources skewed in favour of India. Instead of focusing on the tenuous linkages between decolonisation and TB control, I have revised the argument. I have expatiated on the notion of fractured sovereignties, an underlining theme impeding TB control in India and Southeast Asia. Fractured sovereignties existed at different levels, a point I have highlighted in the conclusion. I have also highlighted how administrative fractures in public health have affected the WHO's End TB Strategy towards the end of the paper.

**Christian McMillen, Comment 2:** The author notes that the BCG campaign faced organisational barriers from the start. For example, passive resistance of the Chinese community, complaints that the BCG vaccine had caused fevers. But, this had nothing to do with the resistance to the postcolonial state. Examples from Indonesia, Burma, and Philippines, do not support it.

**Response:** I agree with your comment. Given the bias of secondary literature towards India, I had to rewrite the argument in favour of administrative fractures. I have expatiated on the BCG campaigns in Philippines and reservations of local physicians, the way the government steamrolled on opposition toward BCG (early 1950s), and the recrudescence of opposition, led by Filipino paediatricians towards the mid-1950s when it was alleged that vaccination led to the death of infants. I have rewritten entire paragraphs on Burma so that the scope of the paper is tightened to reflect on the time-frame between 1948 and 1960, when U Nu's Pyidawtha ideology reigned influential and shaped the political culture of health. I have deleted the references to high rate of default at the TB clinic in Rangoon (1964) as it falls beyond the scope of the article. I have instead, focused on administrative fractures that had a decisive influence on the momentum of the anti-TB campaign in Burma.

**Christian McMillen, Comment 3:** “This study reveals the benefits of linking the history of TB control in South India and Southeast Asia to the history of decolonisation. I am thus eager to see how the author will make that connection less tenuous in future publications?”

I have deleted the tenuous claim due to lack of adequate archival sources for countries in Southeast Asia. Instead, I have highlighted the tensions between the notional magic bullet and a more comprehensive approach that linked health to broader questions (as highlighted in the BCG controversy in India, the Philippines, and the nationalist framing of TB in Indonesia, added in the revised version). Also, the notion of fractured sovereignties offers an invaluable insight to knit together the history of TB in disparate international contexts.

**Competing Interests:** Nil