

**PREVENTIVE MEDICINE AND "MISSION
CIVILISATRICE"
Uses of the BCG Vaccine in French Colonial Vietnam
between the Two World Wars**

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INTRODUCTION

This paper is part of a broader analysis of French health policy in colonial Vietnam¹ (1860–1945), and in particular of the campaigns organized in the region by the French administration against the most important epidemic and endemic diseases, during a key period in the history not only of the emergence of biomedicine and its principal preventive strategies, but also of state intervention into public health issues in Europe and in the West in general.

The fight against tuberculosis, one of the most deadly local endemic diseases, is a very revealing example of the contents, complexity and ambiguity of French health policy in Vietnam. Probing the decision to use the Bacille Calmette-Guérin (BCG) vaccine in the 1920s will be particularly helpful for better understanding the function of public health in the colonizing process and in the relationship between colonizer and colonized. The use of BCG in Vietnam, which was both early and extensive in comparison with its use in France as we will see, seems likely to provide us with important new ways of understanding the role of the colonial empire in driving scientific experimentation and "progress", in particular by revealing the colonial administration's autonomy from metropolitan imperialist directives which, when not absent, were often not responding to local needs.

This analysis is based on a variety of sources, including several modern histories of tuberculosis, archival data on health conditions in Vietnam (*Centre des Archives d'Outre-mer*, *Archives Nationales du Viêt nam*, *Institut Pasteur de Paris*) and of course the medical and popular press, including both colonial and locally published "Indochinese" journals and newspapers.

¹ It should be noted that the use of the term "Vietnam" to describe the Vietnamese country is an anachronism with reference to the time period we are writing about. We nevertheless use it for purposes of clarity.

HEALTH POLICY IN INDOCHINA: CONTENTS AND OBJECTIVES

The Civilizing Mission: The Key Role of Education and Health

The French colonization of the Vietnamese territory, within the framework of the *Union indochinoise* (Indochinese Union) or *Indochine française* (French Indochina), began with the colonization of South Vietnam (Cochinchin) in the 1860s.² Among the weapons of pacification, and particularly of exploitation and "civilization"—the twin justifications of modern European imperialism—there was an emerging medical science much celebrated for its recent triumphs, particularly in the fields of public health and disease prevention. Indeed, medical science promised to reduce native mortality and morbidity in order to increase and strengthen a local labour force from which much was expected.³ It would not be possible, however, to concretize a real implementation of this "civilizing process" until the pacification of the Indochinese Peninsula at the turn of the 20th century.

In 1905, Governor-General Paul Beau set up the rudiments of Indigenous Medical Assistance (*Assistance Médicale Indigène*, AMI), a health policy that resolved to serve the indigenous population with a public health care system offering free care to civil servants and "indigents." At the time, there emerged yet another manifestation of the "white man's" civilizing mission: an educational policy, deployed through a programme that was called, beginning in 1907, *Enseignement Franco-indigène* (Franco-Indigenous Education). Though theoretically allowing all Indochinese children to take courses in their native language, the programme's principal goal was to "civilize" the young generation of colonial subjects, so that they would become both defenders of the Western presence in the region as well as competent members of the colonial administration.⁴

² Indochina was an administrative unit created in 1887 as the *Union indochinoise*, after almost 40 years of pacification by the French colonizers. The unit included five countries: Tonkin in the north, Annam in the centre, Cochinchina in the south (making up what is now Vietnam), Cambodia, and Laos. Indochina disappeared once and for all after the French defeat at Diên Bien Phu in 1954. For a general overview of the history of French Indochina see: P. Brocheux and D. Hémery, *Indochine. La colonisation ambiguë, 1858–1954* (Paris: La Découverte, 2002, 2nd edition).

³ Without entering into a debate on the concept of a colony of "exploitation", one might note that the colonization of Indochina had at the outset three objectives: a political objective (spreading French influence throughout the world), an economic objective (the exploitation of local resources) and a humanitarian one (helping "primitive societies" to advance). Physicians contributed to the achievement of all three objectives.

⁴ P. Bezançon, *Une colonisation éducatrice? L'expérience indochinoise, 1860–1945* (Paris: L'Harmattan, 2002).

These two programmes accounted for the bulk of French social policy in Indochina, and were tightly intertwined from the outset, together avowedly seeking to produce civilized minds in healthy bodies. Hygiene courses were introduced very early (from the 1870s) into the educational curriculum, and teachers, both French and native, were expected to check the cleanliness of students and inquire into local conditions of health and family life.⁵ While it is true that we find a similar medical-educational collaboration in France during this period, it seems clear that such an association would take on particular meanings in a context of domination.⁶ In addition, if the goals of extending the benefits of medical science were burdened by imperialistic intentions—it is undeniable, for instance, that in the Indochinese context, it was in the wealthy regions of Vietnam, in particular the deltas of the north and south, and not in Cambodia and Laos, that educational and medical efforts were concentrated⁷—their success also depended on an adaptation to local and foremost pathological realities.

The Reproduction of a Model: Health Policy in Vietnam Through World War I

Early in the colonization of the Indochinese Peninsula, French ignorance of tropical pathologies, in addition to the prevalence of serious epidemic and endemic diseases (smallpox, cholera, malaria, venereal disease, intestinal parasites, dysentery, beriberi, etc.), made it difficult for the first colonial physicians to do more than erect a *cordon sanitaire* to protect the "whites" from local fevers. It was through the deployment of mass campaigns of smallpox vaccination and the construction of the first civilian hospitals in the 1860s that health officials began to envision a health plan for the natives.⁸ Still, prophylactic and therapeutic treatments were lacking for many diseases, at least until bacteriology began to have an impact in the last decades of the 19th century. Indeed, it was in the 1870s and 1880s that scientists discovered the bacteria which caused leprosy, typhoid,

⁵ In the 1870s, hygiene was taught orally in primary schools in Indochina. The use of written materials including textbooks on hygiene resulted from a 1906 decision by the *Conseil de perfectionnement de l'enseignement indigène* (Counsel for the improvement of native teaching). It was also this same year that courses in physical education were officially introduced in primary and secondary schools.

⁶ An association which seems not in fact to have had obtained the effects that had been hoped for in passing the law of October 30, 1886 which prescribed the teaching of hygiene in classes of science and morality in France: L. Murard and P. Zylberman, *L'Hygiène dans la République. La santé publique en France ou l'utopie contrariée, 1870–1918* (Paris: Fayard, 1996), p. 352.

⁷ As a consequence of the adoption of these priorities, the sources on the medicalisation of Vietnam are more numerous and therefore justify our focus on that territory in this article.

⁸ L. Monnais-Rousselot, *Médecine et colonisation. L'aventure indochinoise, 1860–1939* (Paris: CNRS Editions, 1999), pp. 84–90.

tuberculosis, cholera, tetanus, and plague, to name only the most common ones.

At the turn of the 20th century, several measures of urban public health policy (policy decrees on sanitation and cleanliness, the creation of municipal hygiene committees), as well as for the control of certain "at risk" populations, such as prostitutes and schoolchildren, illustrate that a health policy targeting the indigenous population was being formulated.⁹ And in 1897, the highest colonial authority of the region, Governor-General Paul Doumer, officially established the first system of civilian medical assistance by naming a health director in each of the five territories of the Union, and by enforcing in Cochinchina a French law from 1892 requiring that all medical practitioners possess proper diplomas.¹⁰

Subsequently, in 1905, Governor-General Paul Beau created the AMI, a vast plan containing both preventive and curative measures. The AMI was built around hygiene education, campaigns against the main endemic and epidemic diseases, and a tightly knit hospital network. Two years later, Beau articulated the general principles "of hygiene and protection of public health" which rested above all on mass education and mass persuasion.¹¹ The directives found in these documents remained the foundations of Indochinese health policy, even as it was developed and refined over time.

In 1911, Governor-General Albert Sarraut proposed new sanitary reforms that, without questioning the general orientation of the AMI, reflected a new willingness to adapt health policy to local needs. In Sarraut's opinion, "in concentrating on the extension and organization of the hospital network, we have neglected the work of hygiene and prevention."¹² According to Albert Clarac, the Inspector General of Health Services during Sarraut's mandate, the indigenous population showed a limited interest in the free health care system offered by the French administration. Together, Clarac and Sarraut defined a new programme. The goals of their programme were ambitious, aiming particularly at the development of structures to quarantine the contagious, the construction of a functioning mobile medical corps, the prevention of venereal diseases and the general provision of safe drinking water. If hospitalization and office visits continued to be the guiding principles of the AMI, there was also much talk about the need to

⁹ Centre des Archives d'Outre-Mer (CAOM, Aix-en-Provence, France), Fonds du Gouvernement Général (Gougal), dossier 6707.

¹⁰ CAOM, Ancien Fonds Indochine (AF Indo), carton 323, Y01 (6).

¹¹ CAOM, Gougal, dossiers 6719/ 6742; CAOM, Fonds de la Résidence Supérieure du Tonkin (RST) Nouveau Fonds (NF), dossier 275.

¹² Archives Nationales du Vietnam (ANVN), centre no. 1 (Hanoi), RST, dossier 10999.

provide assistance to lepers, to the mentally ill, to pregnant women, and above all to the rural, isolated population.¹³

The Reorientation of Health Policy between the Two World Wars: Policy towards Society and Children

Nevertheless, it is not until the 1920s that a genuinely Indochinese health policy—as opposed to a colonial policy—a policy detached from the French model and possessing a certain organizational and functional autonomy, began to take form. World War I represented a turning point in French colonial policy. The theory of association swept away that of assimilation, a shift that was manifested in the decision of former Minister of Colonies Albert Sarraut, during his two mandates as Governor-General, to build a social programme adapted to the needs of the Indochinese.¹⁴ This shift was facilitated by a greater understanding of the region and its sociocultural characteristics. The French colonial doctor, through his work as part of the AMI and with the help of Indochinese *médecins auxiliaires* (assistant doctors trained at the Hanoi Medical School from 1902 onwards), had learned a great deal about local diseases, and the reactions and symptoms of local patients. As a result of this learning process, the original health policy gave way to a more varied package of tailored health policies—a Vietnamese health policy, a Cambodian health policy, a Laotian health policy, as well as policies for plantations coolies, for children, for local worthies, etc.—which claimed to be both more individualized and humanized.¹⁵

The shift from assimilation to association, and towards a more localized approach to health care, became evident in a series of developments. First, the formation of a denser network of rural dispensaries, infirmaries, and maternity wards, while public health authorities demanded of medical practitioners both a greater physical presence and a greater mobility in rural areas so that they could "go to the sick."¹⁶ In 1925, the Health Inspector General officially added a "demography and social preservation unit" to its ranks and a programme of Rural Assistance was established in 1927. Finally, an independent Social Assistance Service

¹³ ANVN, centre no. 1, RST, dossier 10999; ANVN, centre no. 2 (Ho Chi Minh City), Fonds du Gouvernement de la Cochinchine (Goucoch), IA.8/234 (2).

¹⁴ A. Sarraut, *La mise en valeur des colonies françaises* (Paris: Payot, 1923).

¹⁵ Monnais-Rousselot, *Médecine et colonisation*, pp. 74–76.

¹⁶ In the words of Governor-General Merlin, who argued repeatedly over the course of his term (1925–1930) that colonial and native doctors should seek out their patients to the greatest extent possible, instead of waiting—sometimes in vain—for the sick to come to their offices: see ANVN, centre no. 1, RST, dossier 48024.

opened in 1929. At the same time the health establishment launched campaigns against "social diseases", those thought to be determined, at least in part, by the sociocultural environment (bad habits, poverty, malnutrition, overcrowding): pulmonary diseases (tuberculosis, pneumonia, bronchitis), ocular diseases (trachoma), venereal diseases (syphilis, gonorrhoea), and cancers.¹⁷

In South Vietnam, the Saigon-Cholon agglomeration gives us a good idea of the extent and content of medico-social activities in the 1930s, as it was a city with a strong European presence—touted as a shining example of the advantages of colonialism—but was at the same time seen as a hotbed of social diseases caused by all sorts of "promiscuity and deviance."¹⁸ Many specialized medical structures had been built there in the space of a few years: an antituberculosis institute, a cancer-prevention service, an ophthalmology clinic, and an ear-nose-and-throat clinic. An insane asylum (Bien Hoa, 1919), child welfare institute (1927) and an institute of antivenereal prevention (1929) came to be part of the public services dispensed by the AMI in the area. The public sector also benefited from the assistance of the Cholon Hospital Group, a particularly active complex, financed by private interests. In addition, a municipal hygiene office specifically oversaw urban hygiene problems and began to carry out sanitation campaigns in the region.

While the most health decisions continued to emphasize the protection of the public in general, others targeted some groups—those particularly affected by certain diseases perhaps, but also crucial to French colonial interests—more directly. Among the groups whose protection was a priority were factory and plantation workers, who benefited from new laws instituted from 1924 regulating conditions that affected their health: surveillance of food, life conditions, clothing, provision of drinking water and removal of excrement, organization of the fight against malaria and against beriberi, and sustained medical attention to their families.¹⁹

However, it was the attitude towards the young Indochinese and especially the young Vietnamese that changed the most notably during this period. For a long time, the fight against umbilical tetanus—a widespread condition that had motivated a general policy of encouraging childbirth in

¹⁷ See L. Monnais-Rousselot, *Colonisation et problèmes sociaux: une intervention médicale. L'expérience de l'Indochine française, 1860–1954*, in H. Dorvil and R. Mayeur (Eds.), *Problèmes sociaux*, t. 1: Théories et méthodologies (Sainte Foy: Presses de l'Université du Québec, 2001), pp. 511–540. On the idea of "social disease" applied to the colonial tropical context, see M. Harrison and M. Worboys, "A disease of civilisation. Tuberculosis in Britain, Africa, and India, 1900–1939" in L. Marks and M. Worboys (Eds.), *Migrants, Minorities, and Health. Historical and Contemporary Studies* (London and New York: Routledge, 1997), p. 103.

¹⁸ ANVN, centre n°2, Goucoch, dossiers 3228–3230; Goucoch IA.8/077 (3)–(6).

¹⁹ Monnais-Rousselot, *Colonisation et problèmes sociaux*.

maternity wards—had dominated state intervention in child care. In the 1920s, hospital statistics on neonatal tetanus illustrated that this problem was largely solved, opening the way for policy initiatives focused more directly on the child.²⁰ Children and infants received special treatment in children's hospitals and maternity wards, where specialized practitioners worked together with indigenous midwives who had received Western training in medical schools, who also organized home visits and *gouttes de lait* (free distributions of pasteurized milk). The post of Medical Inspector of Schools had already been established in 1915. A rational vaccination plan, that included the three smallpox inoculations that had been made compulsory for every "Indochinese child" in 1908, was made more concrete by a multi-level programme of education.

This programme touched not only children but also those around them. This was evident in reorganized campaigns against malaria and venereal disease, which was, in the opinion of colonial doctors, the focal hereditary pathology; the education of women on the issues of dietary hygiene and pregnancy;²¹ the fight against abortion, malnutrition, and deformities; and the increase in the numbers of child care centres (kindergartens, nurseries). Collaboration between religious, private, and public institutions—who saw the issue of child protection as being important enough to move them beyond conflicts of detail or principle—grew stronger. This collaboration was overseen and coordinated by the Service of Social Assistance from 1929 onwards. In 1934, the Conference on Childhood organized at Saigon even enunciated new ideas concerning the importance of the psychological well being of the colonized child and of its juridical rights.²²

Beyond all this, a full understanding of Indochinese health policy between the two World Wars requires an examination of one particular initiative at the crossroads of social and child protection: the fight against tuberculosis. This juncture is particularly evident in the timing of the introduction of BCG, which made its entry into the world of vaccination in the 1920s.

²⁰ L. Monnais-Rousselot "La médicalisation de la mère et de son enfant: l'exemple du Vietnam sous domination française, 1860–1939", *Bulletin Canadien d'Histoire de la Médecine/ Canadian Bulletin for the History of Medicine*, 19 (2002): 47–94.

²¹ According to colonial physicians, Indochinese mothers had some habits that ran counter to basic principles of hygiene. For example, the practice of "pre-chewing rice" shocked them almost as much as native methods of cutting the umbilical cord, since it allowed for the easy spread of certain diseases.

²² Congrès de l'Enfance, Saigon 1–2 juillet 1934, *Comptes-rendus*, Saigon, 1934.

THE BCG VACCINE IN FRANCE

An Overview of the Prevention of Tuberculosis in France

Until the invention of antibiotics (Streptomycin, 1943) and particularly until their effectiveness was proved in the decade after World War II, pulmonary tuberculosis remained an incurable disease and therapeutic efforts were disappointing.²³ Health authorities in Europe noted their inability to control the ravages of tuberculosis on urban populations. Since the end of the 19th century and the progress of medicine and social hygiene, it had become increasingly clear that tuberculosis was not an unhappy hereditary affliction reserved to the elite but rather the work of a germ (the Koch bacillus discovered in 1882) in close association with the effects of material living conditions.²⁴

Unable to cure the disease or to offer open-air treatment in sanatoria to all who were sick, authorities came to concentrate on mass prevention: the fight against alcoholism, attention to poor work conditions and promiscuity. At the turn of the 20th century, the fight against tuberculosis had become in France a symbol and a tool of both health policy and social control: in the name of this battle, the state and its doctors entered furnished rented rooms (assumed to be inhabited by the poor), seeking to impose collective and individual hygienic practices, as well as medical visits. In order to achieve its goals, the campaign against tuberculosis also included

²³ Among the most deceptive were tuberculin and gold compounds. Robert Koch performed experiments with tuberculin beginning in the 1890s; the product was soon judged to be ineffective (C. Gradmann, "A Harmony of Illusions: Clinical and Experimental Testing of Robert Koch's Tuberculin, 1890–1900," *Studies in History and Philosophy of Biology and Biomedical Science*, 25(2004): 465–481). Tuberculin was nonetheless used by Calmette at the Saigon Laboratory to "cure" leprosy in 1890–1891 with disastrous results. The lymph then became a diagnostic skin test (CUTI, 1907), used in some Vietnamese hospitals as soon as 1912 ("L'épidémiologie de la tuberculose en Annam, *Bulletin de la Société de Pathologie Exotique*, 5(1912): 234–240) and was apparently still praised for its therapeutic efficacy by some colonial doctors in the interwar period (Archives de l'Institut Pasteur de Paris, Instituts Pasteur d'Indochine, "Lettre du Dr Normet, directeur local de la santé en Annam au directeur de l'Institut Pasteur de Paris, Hué, January 8th, 1926). On gold therapy and the clinical trials that proved its uselessness as a cure in the late 1920s, see T. Benedek, "The History of Gold therapy for Tuberculosis," *Journal of the History of Medicine and Allied Sciences*, 59, 1(2004): 50–89. Crisalbine (Sanocrysin), manufactured by Rhône-Poulenc was apparently one of the synthesized gold compounds used in Vietnam around 1935. But it may have been used, as was Allochrysin, to treat rheumatoid arthritis rather than tuberculosis at the time.

²⁴ See D. Barnes, *The Making of a Social Disease. Tuberculosis in Nineteenth Century France* (Berkeley: University of California Press, 1995). This theory does not mean that the notion of an inherited or acquired propensity (susceptibility) to develop the affliction disappeared. In fact, according to Harrison and Worboys, "A disease of civilisation," pp. 95–96: "clinicians regarded tuberculosis as a very variable disease, between individuals and even in the same individual over time, though epidemiological studies showed clear mortality patterns according to sex, occupation, geography and income, which might correlate to infection or susceptibility."

the education of the young. Beginning in 1901, the National Committee on the Prevention of Tuberculosis made an appeal to teachers, "no one is better placed than you to offer an effective aid against tuberculosis and its two most powerful assistants, alcoholism and unsanitary dwellings."²⁵

Ultimately, it was not until World War I that a broad-based policy was put in place, in a context of confusion between the fight against tuberculosis and national defense efforts.²⁶ The medical establishment sought above all to ensure that the sick would not contaminate those around them. In accordance with this priority, the Bourgeois Law (April 15th, 1916) set up social hygiene dispensaries and programmes of tuberculosis prevention at the provincial level. The mission of these dispensaries was to educate the public on how to avoid tuberculosis, but also to encourage tuberculosis patients to be cared for in health establishments. For the poor, the state organized free consultations with free distribution of medicines.

A second law was passed in 1919 that increased access to care in sanatoria for the poor, while at the same time illustrating the crushing financial burden of such an approach. It was not until the 1930s that France managed to establish a network of sanatoria capable of ministering to all those afflicted by the disease, and the mortality rate finally began to decrease.²⁷ As in Germanic and Anglo-saxon countries, the French gave priority to quarantine and hygienic control, to the prevention of the disease and its spread. The introduction of BCG in 1924 should have seemed most relevant, and yet.

Prehistory and Brief History of BCG in France

The prehistory of the tuberculosis vaccine goes back, of course, to the bacteriological research of the 1880s. Albert Calmette and Camille Guérin, early Pastorian,²⁸ worked on a strain of bovine tubercular bacillus isolated in 1901.²⁹ It took 12 years for them to sufficiently weaken the virulence of

²⁵ D. Dessertine and O. Faure, *Combattre la tuberculose, 1900–1940* (Lyon: Presses Universitaires de Lyon, 1988), pp. 50–53.

²⁶ P. Murard and L. Zylberman, "La mission Rockefeller en France et la création du Comité national de défense contre la tuberculose (1917–1923)", *Revue d'Histoire Moderne et Contemporaine*, 34 (1987): 258–281.

²⁷ P. Guillaume, *Du désespoir au salut: la tuberculose et les tuberculeux aux XIXe et XXe siècles* (Paris: Aubier, 1986).

²⁸ The epithet "Pastorian" was already in use in 1890 (A-M. Moulin, "Patriarchal Science: The Network of the Overseas Pasteur Instituts" in P. Petitjean, C. Jami and A-M. Moulin (Eds.), *Science and Empires* (Dordrecht: Kluwer, 1992), p. 311.

²⁹ Documents on the prehistory and early history of BCG can be found in the collections "Camille Guérin", "Albert Calmette" and the "Files on the BCG service", all of which are in the Archives of the Pasteur Institute in Paris. Of particular use are documents, which may be found in: GUE 3–6 (correspondence of Guérin, including that with Calmette); BCH 9–13/23–27.

their strains to make them feasible as vaccines (the first published results of their work date from 1913–1914 and appear in the *Annales de l'Institut Pasteur*). Despite this, the scientists soon insisted on the necessity of testing the vaccine on human subjects. Yet, it was not until July 1921 that BCG was tested for the first time on a newborn baby at the *Hôpital de la Charité* in Paris.³⁰ This experiment was followed by a phase of secret clinical trials and collaborations.³¹ A hundred and twenty infants were vaccinated between July 1921 and June 1922, and then 317 between July 1922 and the end of 1925. And of the 77 of these who remained in contact with the bacteria, only one appeared to have died of tuberculosis.

The first public conference marking the official introduction of BCG was finally given by Calmette before the Academy of Medicine on June 25th, 1924. Because of the results obtained—the vaccination was "probably efficient and its innocuousness was beyond doubt"³², the authorities authorized the Pasteur Institute to increase the size of its studies and to make the vaccine available, starting in July, to hospital maternity wards, antituberculosis dispensaries, and doctors desiring to make use of it. It was distributed by the *Comité National de Défense contre la Tuberculose* (National Committee against Tuberculosis), founded after World War I, with the financial help of the Rockefeller Foundation.³³ As the Minister for the colonies, Daladier had recommended the BCG to his colonial governors by the end of the summer. Strains of BCG were distributed to several foreign laboratories with ties to the Pasteur Institute or to certain of its members which were particularly active in the colonies (Senegal, Algeria, and Indochina) (see Annex 1).

The first positive results of an investigation of vaccinations in metropolitan French dispensaries, which came about in 1925, motivated the extension of the experiment to all age groups. Still, in 1927, only 21,200 people had been vaccinated in France. There had been a few problems—in

³⁰ The vaccine was to be administered orally during the first 10 days of life, due to the specific permeability of the mucous membranes during this early phase, and in three subsequent administrations (ideally on days 3, 5 and 7). The general idea was that the child, untouched by tuberculosis at birth, would nonetheless be exposed to it through his surroundings, his diet, his general weakness and the risks of infection. By raising the resistance of the newborn to the Koch bacillum, he would be protected throughout his entire life and infant mortality, being an important part of the threat of demographic decline in France at the time, would be reduced.

³¹ C. Bonah, "The 'Experimental Stable' of the BCG Vaccine: Safety, Efficacy, Proof, and Standards, 1921–1933", *Studies in History and Philosophy on Biological and Biomedical Sciences*, 36 (2005): 702.

³² A. Calmette, C. Guérin and B. Weill-Hallé, "Essai d'immunisation contre l'infection tuberculeuse", *Revue de la tuberculose*, 5 April 1924: 491.

³³ I. Lowy, "On Hybridizations, Networks and New Disciplines: The Pasteur Institute and the Development of Microbiology in France", *Studies in History and Philosophy of Science*, 25, 5 (1994): 675.

Hungary and in Chili—which raised doubts about the safety of the vaccine, and warned of risks associated with its production outside the network of Pastorian laboratories. In 1927–1929, several scientists and doctors, from France, Sweden and Great Britain, criticized Calmette's clinical trials and medical statistics. In the 1930s, the Lübeck catastrophe (77 dead out of 256 who received the vaccination in this northern German city) constituted a serious challenge to the continuation of BCG administration.³⁴ Although explanations were put forward to prove that BCG was not at fault—the French National Academy of Medicine reaffirmed the safety of the vaccine in 1931—the vaccine remained discredited for some time.³⁵

Setting aside these incidents and the negative publicity they generated in the media, one should note that BCG was, from the outset, used only on a limited scale in France and in Europe. The vaccine did not become obligatory in France until the 1950s and even then only for populations most at risk.³⁶ The fact that BCG was not mentioned at the National Conference on Tuberculosis in 1927 is quite revealing in this respect. According to Dessertine and Faure,³⁷ the social front had eclipsed the medical one in the fight against tuberculosis, despite the undeniable preventive and collective value of the vaccine. The procedure adopted in the case of children was to place them outside contaminated families or families at risk. Another reason the vaccination did not triumph was a widespread fear, in the postwar period, that vaccination would contaminate more than it would prevent.

In France, the diffusion of the BCG vaccine suffered from a number of unlucky circumstances. This seems, paradoxically, at least at first glance, not to have been the case in Indochina, particularly in Vietnam.

³⁴ The large-scale introduction of the BCG vaccination in the city of Lübeck led to a major scandal that focused public attention on medical experimentation with human beings, as well as reviving criticism previously voiced by the medical profession. According to C. Bonah, the trial following the catastrophe raised the first clearly identifiable public discussions on medical ethics in Europe, and led to the establishment of the first regulations for medical research on human beings in the Western hemisphere ("Experimental Rage": The Development of Medical Ethics and the Genesis of Scientific Facts. Ludwik Fleck: An Answer to the Crisis of Modern Medicine in Interwar Germany?" *Social History of Medicine*, 15, 2 (2002): 187–207).

³⁵ P. Menut, "The Lübeck catastrophe and its consequences for anti-tuberculosis BCG vaccination" in A-M. Moulin and A. Cambrosio (eds.), *Singular Selves. Historical Issues and Contemporary Debates in Immunology* (Amsterdam: Elsevier, 2002), p. 202.

³⁶ C. Rollet-Echalier provides statistics that reveal this lukewarm reception of BCG. Reworking the statistics of the BCG laboratory of the Pasteur Institute in Paris, Rollet-Echalier calculates that the percentage of newborns vaccinated in France was 0.56% in 1925 and 12.8% in 1930, after which it fell rapidly, *La politique à l'égard de la petite enfance sous la Troisième République* (Paris: Presses Universitaires de France, 1990).

³⁷ Dessertine and Faure, "Combattre la tuberculose".

THE BCG VACCINE IN INDOCHINA

Social Diseases and Tuberculosis Statistics

Before attempting to understand the place of BCG in Vietnam—which was used, as we will see, both early and extensively—it is necessary to sketch out a brief picture of endemic tuberculosis in the Indochinese region. The ravages of tuberculosis had been denounced by colonial doctors since the 1860s, when the first "head" of the Indochinese health system, Dr. Lalhuyeaux d'Ormay, took up his post (1863–1875). From the beginning of the 20th century, several colonial physicians commented—in their health reports and medical reviews—on the extremely contagious nature of Indochinese pulmonary tuberculosis as well as its high incidence, particularly in the colonial urban centres.³⁸ Dr. Angier was among those who studied the disease early on: in 1905, in his report on the Choquan (Cholon) hospital under his direction, he commented on the local pathology of tuberculosis, as well as of beriberi, eye infections and problems of mental health, paying careful attention to the specific manifestation of these diseases in indigenous patients.³⁹

It was not until the 1920s, however, that the medical community began to collect statistics on tuberculosis morbidity and mortality rates. By this time, statistical work on social diseases in general had multiplied in Western countries and colonies and gained greater analytical precision. In this context, it is important to note that tuberculosis was not on the list of infectious diseases that had to be reported (according to the law of January 7th, 1902 and enforced in French Indochina). Indeed, this is one of the arguments put forward by colonial doctors to explain the problems they encountered in tracking cases of tuberculosis and arriving at useful statistics, particularly given that "without full examinations, bronchitis and tuberculosis (are surely frequently) confused."⁴⁰

The numbers in annexes 2 and 3 reveal the importance of diseases caused by "social conditions" in the whole of Indochina (some 12% on average), but what stands out even more clearly is the fact that in the big

³⁸ Was tuberculosis a "disease of civilization" in colonial Vietnam? At least we can consider that the spread of this social disease was facilitated by colonial urbanisation, industrialisation and internal migrations.

³⁹ ANVN, Centre no. 2, Goucoch, IA.7/251 (2). One should note that the mortality rate for tuberculosis in France at the beginning of the 20th century fluctuated between 57.7/10,000 inhabitants of Paris and 24.5/10,000 in towns of fewer than 5,000 inhabitants.

⁴⁰ In 1931, the hospitals of Indochina listed bronchitis as the second leading cause of morbidity (Exposition coloniale internationale, Paris 1931, L. Gaide, *L'Assistance médicale et la protection de la santé publique en Indochine* (Hanoi: Imprimerie d'Extrême-Orient, 1931).

cities, tuberculosis, associated with other pulmonary and respiratory diseases (pneumonia, bronchitis, bronchopneumonia), constituted the primary cause of death among those hospitalized.⁴¹ While these statistics address a relatively localized phenomenon, they nevertheless gave a persuasive alarm signal for health policy makers to give greater attention to indigenous needs, social problems and the difficult conditions of daily life.⁴² This new awareness, part of a clearer understanding of the socioeconomic context of Indochina, was also associated with fears that an urgent situation was unfolding with deterioration of the Vietnamese deltas, which were increasingly overcrowded, subject to frequent revolts, on the brink of explosion.⁴³

A Special Handling of Tuberculosis

It thus seems logical that medico-social work of the 1920s and 1930s would make the fight against tuberculosis one of its priorities. Notably, in 1922, the first technical studies and health reports treating the specific nature of Vietnamese tuberculosis appeared. It was Calmette himself who first took up the study of the problem, asking that his colleagues in Indochina undertake an epidemiological study of the disease in 1912.⁴⁴ This ambitious French project was pushed aside by World War I, and was not taken up again until 1922. In that year, a dispensary of social hygiene and antituberculosis prevention was set up at the Saigon Pasteur Institute, the site of the first colonial experiments of its founder, none other than Calmette himself.

In 1923, a paper presented by Dr. Guérin and Dr. Lalung Bonnaire at the 5th Congress of the Far Eastern Association for Tropical Medicine (FEATM) on "Pulmonary Tuberculosis Research in Cochinchina" reported the results of the first Indochinese studies to medical representatives of several dozen countries implicated in the field of Asian public health.⁴⁵

⁴¹ Statistics for Hong Kong in the 1930s are very similar to the Vietnamese ones. According to M. Jones, tuberculosis accounted for 11% of all deaths within the Chinese community; in 1921, it accounted for 15% of all registered deaths (M. Jones, "Tuberculosis, Housing, and the Colonial State: Hong Kong, 1900–1950," *Modern Asian Studies*, 37, 3 (2003): 665.

⁴² We find similar trends during the interwar period in other colonial territories and colonized urban spaces, for instance in British neighboring Hong Kong (Jones, "Tuberculosis, housing," 663–64).

⁴³ At least this is how Brocheux and Hémery explain the marked increase in funds allocated to health care in Indochina, which oscillated between 1.65% and 3.78% of the total colonial budget in the 1920s, and then rose abruptly to 6.4% in 1931 (Brocheux and Hémery, *Indochine. La colonisation ambiguë*, 152).

⁴⁴ Archives de l'Institut Pasteur (Paris), Correspondance Albert Calmette – Noël Bernard.

⁴⁵ Drs. Guérin and Lalung Bonnaire, "Recherches sur la tuberculose pulmonaire en Cochinchine", in *Comptes-rendus du 5e congrès de la FEATM* (Singapore, 1923), pp. 737–753. Created in Manila in 1908, the goal of the FEATM was to contribute to the progress of medicine in the Far East. To this end, the FEATM held meetings on a regular basis on diseases of particular relevance to this part of the

They concluded that the main source of the diffusion of the disease in Vietnamese society was "interpersonal contact": contamination passed from person to person through the bacilla contained in sputum, the transmission of which was facilitated by adverse living conditions and poor nutrition. The pulmonary form of tuberculosis, which made up the vast majority of cases, occurred principally in the cities, particularly attacking children and the poor. Guérin and Lalung Bonnaire's paper advised that it was necessary for colonial authorities to act on the expressed intention of the Marseilles Congress on Public Health and Prevention (1922)⁴⁶: to work to increase private initiatives in order to create institutions of health and sanitation adapted to local populations and their resources.

Urban studies of tuberculosis continued to be undertaken in subsequent years. When Guérin and Lalung Bonnaire gave a second paper at the FEATM in 1925, they noted with pride the good results achieved in target groups, particularly schoolchildren. Their research, supported by the Laboratory of Tuberculosis of the Pasteur Institute of Saigon, enabled them to establish a "tubercular index (tuberculosis prevalence) of the indigenous population," which they estimated at 67%, a percentage very close to that found in urban areas in Europe at that time. Having completed their laboratory results, their research moved, as they put it "out into society" with the aim of adapting metropolitan French practices to the local needs of Cochinchina.⁴⁷

In 1925, while serving as Governor of Cochinchina, Dr. Cognacq, a practitioner attached to the AMI, had already traced the broad outlines of an innovative programme in social hygiene for the Saigon metropolitan area. With tuberculosis at the top of his priorities, he set up, in Cholon, a Committee for the Study of Tuberculosis (December 1923), made up of microbiologists, doctors, veterinarians, heads of hygiene, school inspectors and local worthies. The committee debated such topics as the identification of the disease, early diagnosis, treatment, protection of those exposed to the disease as well as of those "cured", "indirect means" to encourage the advance of hygiene, the improvement of living standards and the fight against "intoxications" (alcohol, opium).⁴⁸ Tuberculosis became the leading

world, and on experiments in progress to prevent or to treat such diseases. Such efforts were warmly embraced by regional medical organisations (L. Gaide, *Congrès scientifiques et sanitaires en Extrême-Orient, 1908–1930* [Hanoi: Imprimerie d'Extrême-Orient, 1930].

⁴⁶ Exposition coloniale de Marseille, *Congrès de la santé publique et de la prévoyance sociale. Rapports du Congrès* (Marseille: Imprimerie Nationale, 1922).

⁴⁷ Drs Guérin, Lalung-Bonnaire and Advier, "Premiers résultats de l'enquête sociale sur la tuberculose dans les écoles de Cholon", *Comptes-rendus du 6th Congrès de la FEATM* (Tokyo, 1925), 579–601. Reprinted the same year in *Archives des Instituts Pasteur d'Indochine*, 1 (1925): 189–212.

⁴⁸ ANVN, Centre no. 2, Goucoch, dossier 1353.

issue in the Governor's social policy, while collaboration with the Pastorians, who were then engaged in multiple experiments related to tuberculosis, seemed completely natural.

With the administrative assistance and political clout of the Cholon committee, the Pastorians decided to go to the very source of infection by undertaking a systematic study of children, the starting point of a medical study of Indochinese families. The Municipal Boys School of Cholon, with roughly 900 students at the time, became their main object of study.⁴⁹ The team of investigators included eight doctors (two of whom were Vietnamese), five carrying out X-ray examinations, two carrying out clinical examinations, and one, ear-nose-and-throat examinations. The investigators asked that teachers visit the home of each student and make out a family record for each. The data gathered through the teachers would then be analyzed at the Pasteur Institute. Subsequently, a more in-depth study would be carried out in the homes of the afflicted. The records of the students would be sorted, and they, along with their family members, would receive appropriate care.

Cholon city became increasingly interested in the project. Encouraged by the early results, the city even offered to provide funding for a *préventorium*—a sanitarium dedicated to prevention, the hospitalization of children's parents who were sick, a social assistance fund, as well as special buildings to be constructed on the grounds of the municipal hospital. Several Cochinchinese worthies set up "assistance committees" to raise funds for the provision of vacation colonies for young victims of tuberculosis.

Cholon, more than any other city, reflected a contemporary enthusiasm for the expansion of social assistance programmes. The fight against tuberculosis crystallized the efforts of various public, private, colonial and indigenous (both Chinese and Vietnamese⁵⁰) actors, on the front line of a collaboration that the Governor-General would soon systematically encourage. Cholon's experience soon inspired others. In Tonkin, the Antituberculosis League, created in the 1930s, was placed under the direction of Dr. Le Roy des Barres who, having opened a special office for tuberculosis patients, successfully campaigned to obtain public monies for the construction of a specialized hospital for tuberculosis treatment.⁵¹ In 1928, the idea of an antituberculosis dispensary opened minds and

⁴⁹ Guérin, Lalung-Bonnaire and Advier, "Premiers résultats de l'enquête sociale."

⁵⁰ It would probably be very interesting to explore the role played by the Chinese wealthy minority in spreading Western preventive measures and medical facilities in urban areas at this time, and especially in the Saigon area since Cholon was a Chinese city.

⁵¹ J. Bablet, "La prophylaxie sociale de la tuberculose", *Annales de l'Université de Hanoi*, 1 (1933).

pocketbooks in Hué, and Dr. Normet, Hué Health Director, succeeded in obtaining financing from both the Protectorate and from the League of Friends of Hué. Opened in the 1930s, the Pierre Pasquier Dispensary offered both examinations and care for the afflicted.⁵² The organization of fundraising events and the sale of antituberculosis stamps completed an impressive range of medico-social activities in the period of 1934–1939.

At the same time, we must remember that Cochinchina was among the first colonized territories to benefit from the BCG vaccine, and the first to make use of it in a structured, long-term way. The vaccine was first systematically administered to newborns on the AMI maternity wards of Saigon-Cholon in the final months of 1924, only a few months after Calmette's presentation at the Academy of Medicine, and virtually at the same time as the vaccine was introduced to two other colonial cities in Africa, Dakar and Algiers. By December 1924, the vaccine was also provided to maternity wards in Phnom Penh. Soon, the experiments in Cholon began to distinguish themselves from the efforts in Algeria and Senegal, which were more occasional and less structured.⁵³ Outside the French colonial world, tuberculosis is generally considered not to have attracted the attention of the colonial medical authorities, at least not until the 1940s and the advent of the World Health Organization's (WHO) massive international campaigns of immunization.⁵⁴

As for the expectations surrounding the thousands of vaccinations of 1924–1925, Pastorian J. Bablet noted: "Most of them (the vaccinated infants) will be tracked through their records; they will be seen and

⁵² ANVN, Centre no. 2, Fonds de la Résidence Supérieure d'Annam (RSA), dossier 3363; Goucoch, dossier 1353.

⁵³ In these countries, even if we find that BCG was used from 1924–1925 onwards, this usage was haphazard and not supported by a systematic anti-tuberculosis policy. As proof, see the medical press: articles on these experiments arrived late, towards the end of the 1920s. In addition, the statistics concerning rates of vaccination or sales of the vaccine are not found in the appropriate tables of the Pasteur Institute. Another statistical proof: between November 1924 and December 1927, only 1308 children were immunized in Algeria. In this case, the reason might be the less urgent nature of the fight against tuberculosis (E. Sergent and H. Rougebief, "Vaccination prémunitive antituberculeuse en Algérie par le BCG de novembre 1924 à fin décembre 1928", *Archives de l'Institut Pasteur d'Algérie*, 8 (1929): 118–124).

⁵⁴ In the British and in the Dutch empires, the fight against tuberculosis was slow to take off in the 1920–30s according to several authors (J. N. Parmer, "Health and Health Services in British Malaya in the 1920s," *Modern Asian Studies*, 23, 1 (1989): 49–71; Worboys and Harrison, "A Disease of Civilization," 108–116; R. Packard, *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* (Berkeley: University of California Press, 1989). And according to S. Amrith in *Plague or Poverty? The WHO, Tuberculosis and International Development, c. 1945–1980* (Centre for History and Economics, King's College: Cambridge, September 2002), 4 (accessible on http://www-histecon.kings.cam.ac.uk/docs/amrith_WHO.pdf) tuberculosis played no part in the internationalisation of health in the interwar period. An exception to this trend was the establishment of the International Union against Tuberculosis (IUAT) in 1920 as a non-governmental umbrella organization made up of voluntary national tuberculosis societies.

examined at the age of one, 18 months, two, and three; we will seek out the causes of death for those who died during the period; the percentage of those afflicted by tuberculosis will be noted for each age and will be compared with the percentage of tuberculosis children of the same age living in the same conditions who had not received the BCG vaccine."⁵⁵

At the same time, authorities undertook a campaign to convince the public of the benefits of the process—they were well aware of the hesitations of the indigenous population concerning preventive measures and, in particular, their resistance to the compulsory character of vaccination, especially of smallpox vaccination—with the assistance of several well-intentioned administrative and medical figures (the Drs. Lalung, Eliche, and Nguyễn Hong Wang for the Saigon area, Hervier in Phnom Penh). BCG seemed, however, less "aggressive" than other vaccines because it was administered orally.⁵⁶ In parallel, it was administered to babies who were born in urban medical facilities, that is, whose mothers and families were more likely to be familiar with prevention and biomedicine, and perhaps more willing to be medicalized.⁵⁷ Perhaps because of these particularities, the process of antituberculosis immunization apparently spread rapidly to all the major urban areas of Cochinchina, especially since the local health director, Dr. Lecomte, had personally given specific instructions to all AMI doctors to follow the procedure.⁵⁸

One might add that the movement was helped along by the fact the vaccine was provided to medical personnel free of charge. In fact, in the context of agreements between the Governor-General and the Pasteur Institute of Paris, the Pasteur Institute in Saigon and soon other affiliated institutes (*Instituts Pasteur d'Indochine*)⁵⁹ took care of everything:

⁵⁵ J. Bablet, "La prémunition antituberculeuse des nouveau-nés par ingestion de BCG en Cochinchine (1924–1925)", *Archives des Instituts Pasteur d'Indochine*, 2 (1925): 212.

⁵⁶ The oral route remained dominant in France and probably in its colonial empire until the 1950s, when BCG vaccination became obligatory nationwide. Alternative (subcutaneous or intravenous) methods for administration were predominant in Scandinavian countries and in North America in the 1930s (C. Bonah, "The Experimental Stable," p. 713). One should probably add that oral administration was also a simple practice that could be entrusted to medical personnel other than physicians.

⁵⁷ By medicalization we refer here to "a process by which non medical problems become defined and treated as medical problems" (P. Conrad, "Medicalization as Social Control", *Annual Review of Sociology*, 18 (1992): 209).

⁵⁸ Dr Lecomte, "L'assistance médicale en Cochinchine pendant l'année 1925", *Annales d'Hygiène et de Médecine Coloniale*, 25 (1927): 167–175.

⁵⁹ One should note that it was in 1925 that the three Pasteur Institutes of Saigon, Hanoi, and Nha Trang became officially the *Instituts Pasteur d'Indochine* (Pasteur Institutes of Indochina), by contract with the colonial administration: A contract which allowed them to function under the technical and financial control of the Pasteur Institute of Paris and not the Inspector General of Health Services of Indochina (Monnais-Rousselot, *Médecine et colonisation*, pp. 408–413). The basis of the entente was freedom of management in exchange for free distribution of vaccines. Monetary donations were coming annually from the General Government to compensate for the costs of this free distribution

identification of the afflicted, production of the vaccine, and distribution. The Institute nurtured the cultures produced from the strains sent from Paris. The living baccilla, kept emulsified in a glucose solution, were divided each morning into single doses of one centigram. The doses were subsequently distributed by the Institute's personnel to local sanitary installations, or sent outside the urban area. Directions for use, as well as forms designed to keep records of its administration, were dispensed together with the vaccines in weekly deliveries. If supplies were insufficient, a simple telegram to the Institute obtained quick supplemental deliveries.⁶⁰ In 1927, the first distribution of the vaccine reached Tonkin via the Pasteur Institute in Hanoi, and in 1928, the vaccines reached Hué.⁶¹ Once again, the intervention of the local health director, who was also director of the Hué laboratory affiliated with the Pasteur Institutes of Indochina, and convinced of the benefits of the vaccine, allowed BCG to be made widely available outside the imperial city even before it was locally produced in 1931.

According to statistics of the Pasteur Institutes of Indochina, 1,354 newborns received three doses of BCG in the maternity wards of Cholon between December 13th, 1924 and the 1st of October 1925, 484 in private maternity wards in Cholon-Saigon, 271 in the Roume maternity wards of Phnom-Penh, and 1,210 elsewhere in Cochinchina—for a total, during this period, of 3,352 immunizations. Between 1926 and 1931, some 300,000 newborns were immunized in the whole of Indochina, including 48,000 in Saigon-Cholon between 1925 and 1928. Moreover, numerous health reports confirm that these campaigns continued into the 1930s, even after the Lübeck incident. According, again, to statistics provided by the Pastorians, the annual provision of doses (not the production) continued to grow from 1924 (250 doses) to reach 114,050 in 1933.⁶² Considering that poor conservation practices and the short shelf life of the vaccine continued to prevent distribution in certain provinces, these numbers are impressive, especially when compared with similar data for France.

(CAOM, RST NF, dossier 3880) as the Pasteur Institute in Paris was used to receive regular state subsidies to cover the BCG production and distribution costs in France at the time. As Bonah writes "Calmette and the Pasteur Institute created a sort of alternative commerce, a sort of 'charity and public health business' where symbolic capital, reputation and service were exchanged against monetary donations and state subsidies" ("The experimental stable", p. 703).

⁶⁰ Archives de l'Institut Pasteur, Rapports de fonctionnement des Instituts Pasteur d'Indochine, 1924.

⁶¹ In fact, the first experimental use of the BCG vaccine in Annam probably took place during the summer 1925, just a few days after the first experiments in Cochinchina. Nevertheless, the distribution of the vaccine in the whole protectorate would have to wait for 1928 (Archives de l'Institut Pasteur, Service du BCG, carton BCG 37).

⁶² H.G.S. Morin, H. Jacotot and J. Genevray, "Les Instituts Pasteur d'Indochine en 1934", *Archives des Instituts Pasteur d'Indochine*, 20 (1935): 427–512.

Even if the campaign against tuberculosis in Indochina was not, as we have seen, limited to mass vaccination, these statistics on BCG make it clear the battle against the disease was fought along different lines from that in France. How can we explain this difference?

STEPS IN THE PROCESS OF THE USE OF BCG IN COLONIAL VIETNAM

The twin processes of colonial acclimatization to indigenous conditions and of the increasing autonomy of health policy in Indochina and especially in Vietnam could constitute a convincing argument for the originality of local practices of tuberculosis prevention in the 1920s. But I would like to go further and identify several factors that could explain more convincingly the relatively early and extensive use of BCG in Vietnam.

An Important Field for Scientific Experimentation or the Role of Pastorism Played in Vietnam

The idea of colonial Vietnam being a major field of scientific experimentation is neither new nor specific to the territory and to French Indochina, but we should not discount its importance. Vietnam was indeed the scene of various scientific experiments, experiments carried out in the absence of the type of attention, judgement, and debates that would have been focused on similar experiments in France. There were experiments in clinical research, therapeutic research, pharmaceutical research, and bacteriological research. These experiments remained largely immune not only from professional but also public reaction: abroad, the tendency was to use public health methods without consulting the public that would supposedly "benefit" from such methods, particularly since the local population was believed to be unable to judge the wisdom of such decisions, unable to protect itself, and in need of "civilization" through the imposition of proper medical practice at whatever expense. The early development of compulsory smallpox vaccination campaigns in Vietnam established long before they became compulsory in France is an eloquent illustration of this attitude.

We might look particularly at the bacteriological experimentation that accompanied the rise of Pastorism at roughly the same time, as Indochina became a French colony. Indeed, Indochina, beginning with Vietnam, would rapidly become the favourite overseas territory for Pastorians, the perfect

site for a strategic and easy pasteurization.⁶³ Revealing the scientific rivalries both in France and Europe at the time⁶⁴, the first overseas Pasteur Institute was created in Saigon in 1891, three years only after the inauguration of the Pasteur Institute in Paris. This branch was conceived and structured by none other than Albert Calmette, who was to remain in Cochinchina for several years to pursue various interests (cholera prevention, antirabies and snakebite serotherapy, rice alcohol and opium fermentation).⁶⁵ In the 1930s, the Pastorian network of Indochina was comprised of no fewer than four Institutes (Saigon, Hanoi, Nha Trang, Dalat) and three affiliated laboratories (Hué, Phnom Penh, Vientiane).⁶⁶ It thus made sense for Calmette to test the value of his vaccine in Indochina.

Given what we know about the extension of the Pastorians' prerogatives in the interwar period—their quasi-monopoly in the scientific world, their independence both from institutions of public service and of colonial administration, the exclusivity of their production and distribution of vaccines and serums—we might question the intentions behind their role in the diffusion of BCG in Indochina, as well as the real extent of its success, particularly in terms of popular acceptance. Indeed, we should not forget that the evidence of this success comes largely from sources produced by these Pastorians. These intentions seem especially significant in light of the fact that, in France at this time, the Pastorians were still experiencing difficulties imposing themselves and their preventive tools: they still needed to prove themselves within the medical community, the French public health administration as well as in the field of bacteriology at the European level, where they faced, in particular, strong German competition.⁶⁷ Pastorian

⁶³ Pasteurization is defined here as a process by which a whole society is transformed into a vast laboratory. See B. Latour, *Les microbes. Guerre et paix* (Paris: Editions A.M. Métailié, 1984).

⁶⁴ According to A. Guénel, in "The Creation of the First Overseas Pasteur Institute, or the Beginning of Albert Calmette's Pastorian Career," *Medical History*, 43 (1999): 1–2, "it was no accident that Pasteur's first tropical institute was set up in Indochina. European scientists coveted territory in the Far East and Asia in general. The German school had its disciples in Japan, and the English, especially Patrick Manson in China, earned a reputation as pioneers in the field of parasitology."

⁶⁵ Guénel, "The Creation of the First Overseas Pasteur Institute", pp. 9–20. One should also mention in this context the presence of a couple of other famous Pastorians in colonial Vietnam: Alexandre Yersin, discoverer of the plague bacillus (1894), and of the plague vaccine, also founder and director of the Pasteur Institute of Nha Trang (on the Annam coast, Central Vietnam) which produced the vaccine from the end of the 1890s; Paul-Louis Simond, discoverer of the flea's role in transmitting the plague, director of the Saigon Laboratory (1898) before becoming General Inspector of Health Services for Indochina.

⁶⁶ In 1938, 15 Pasteur Institutes existed officially: four in North Africa, four in Indochina, four in Sub-Saharan Africa and one each in Shanghai, Teheran and Athens.

⁶⁷ In his correspondance with several Pastorians working overseas, Albert Calmette states very clearly, as early as the 1890s, that colonies, and in particular Indochina, could serve as valuable tools for earning recognition in France for the scientific work of the Pastorians (Archives de l'Institut Pasteur, Fonds Albert Calmette).

activities in Indochina, including the diffusion of BCG, may have, in part, been the result of this perceived need to compete for status and acceptance.

Nevertheless, there is no doubt that the global production of vaccines (nine million doses of antismallpox vaccine; several million of anticholera and antiplague vaccines; 50,000 antituberculosis vaccines in 1928)⁶⁸ remained the Pastorian activity *par excellence*. In Vietnam, this activity was very well organized, extensively practiced and supported by different administrations.

Doctors, Scientists and Administrators: A Genuine Consensus?

To complete our reflexion on the Pastorian presence in Indochina as well as on the originality of Indochinese health policy, it seems important to bring up another point that may distinguish the Indochinese experience from the metropolitan model, and might help explain the diffusion of BCG: the successful collaboration formed in the fight against tuberculosis among the medical doctors of the AMI, bacteriological research scientists (basically Pastorians), and the health administration.

It seems clear that these three types of actor managed to find considerably more grounds for collaboration in Indochina than in France. Anne-Marie Moulin has pointed to the flexibility of Pastorian methods in describing the Pastorians' capacity to adapt themselves to different social and cultural environments.⁶⁹ This smooth collaboration can also be explained by the youth and flexibility of the local health policy. The colonial health administration and the Pastorians who were established in Indochina also had common interests and needs (public health needs but also economic problems).⁷⁰ Finally, we should not forget that, in the interwar period, the young Vietnamese medical elite was trained, at least in part, by Pastorians at the Medical School of Hanoi (1902), while they also worked with Pastorians in their laboratories before being entrusted with positions of responsibility at the Pasteur Institutes in the 1930s.⁷¹

⁶⁸ Archives de l'Institut Pasteur, Rapports de fonctionnement des Instituts Pasteur d'Indochine, 1928.

⁶⁹ Moulin, "Patriarchal Science", p. 318.

⁷⁰ We should mention here that one of the most original features of the Pastorian presence in Indochina was its "colonial promotion" of the local food industry and especially of some very lucrative products: rice alcohol, fish condiment (*nuoc mam*), production and control of the quality of opium, hevea and cinchona plantations (A-M. Moulin, "The Pasteur Institutes Between the Two World Wars. The Transformation of the International Sanitary Order" in P. Weindling (Ed.), *International Health. Organisations and Movements, 1918-1939* (Cambridge: Cambridge University Press, 1995), p. 248.

⁷¹ According to Moulin and Guénel, the network of Pastorian institutes overseas was closer to the colonial administration than the Pasteur Institute was to the French metropolitan government. The influence of Pastorian ideas on colonial health policies is proof of this close connection (Moulin, "Patriarchal Science", pp. 311-312; "The Pasteur Institutes between the Two World Wars", p. 257; Guénel, "The

In the fields of medicine and health in Indochina, the history of struggles over certain prerogatives was also quite different from that in France.⁷² As I have explained elsewhere, differences between the *Inspection générale des services de santé* and certain colonial doctors had produced violent debates, particularly concerning the prerogatives of military versus civilian physicians, and on the question of salary; differences of status between the Pastorians, seen as a privileged autonomous community, and the community of colonial doctors may have led to some animosity as well.⁷³ It is nonetheless important that we bear this in mind in order to better understand the nature of the fight against tuberculosis and the speed with which it came to fruition.

Nor should the cooperation between these professional worlds and private initiative be forgotten since, in the 1930s, there indeed seems to have been a genuine reconciliation between public and private in action on health care, under the supervision of the Service for Social Assistance created in 1929.⁷⁴ Charged with the mission of "providing a liaison between governmental authorities and public and private enterprises in the fields of social assistance and welfare," the Service paid particular attention to "the protection of children and orphans, the fight against social problems, the organisation of aid in the event of catastrophe, institutions working against prostitution, assistance to the elderly, invalids, those with incurable diseases, assistance to indigents, young girls, soldiers, sailors, the fight against poverty."⁷⁵

The creation of the Service was the outcome of pressing—and repeated—demands of doctors working in rural areas, who insisted, in a departure from the French insistence on maintaining secular control that such efforts rely on existing religious congregations and traditional local self-help organisations.

BCG: A Well-Adapted Health Measure, if Not a Perfect One

The consensus between Pastorians and non Pastorians, the colonial administration and the AMI doctors, private and public initiatives, were also the product, to some degree, of local health needs and local budgetary

Creation of the First Overseas Pasteur Institute", p. 7).

⁷² J. Léonard, *La médecine entre les savoirs et les pouvoirs. Histoire intellectuelle et politique de la médecine française au XIXe siècle* (Paris: Aubier Montaigne, 1981).

⁷³ Monnais-Rousselot, *Médecine et Colonisation*, pp. 252–256.

⁷⁴ Monnais-Rousselot, "Colonisation et Problèmes Sociaux".

⁷⁵ CAOM, RST NF, dossier 3890.

capabilities. Thus BCG might have been considered to be an adequate preventive tool because it was cheap and relatively easy to disseminate.

It was unrealistic to imagine a system of sanatoria as a solution to indigenous health needs, given the cost of the infrastructure (as had already been seen in France and in other industrialized countries) and the lack of enthusiasm among indigenous peoples for the isolation of the sick, whether they be lepers, victims of venereal disease, or mentally ill. Moreover, other local realities also limited the diversification of preventive measures. While personal hygiene, nutrition and living conditions were matters of concern, the lack of personnel and means, as well as the resistance of the targeted population—demonstrations in Hanoi and Saigon against the instructions of the colonial state on such matters, particularly against compulsory vaccination and the destruction of personal effects during epidemics, speak eloquently to this—made it difficult to implement measures targeting such conditions on a consistent basis. Use of the BCG vaccine was much easier to achieve on a large scale, especially through the school system.⁷⁶

Nor should we forget that the Pasteur Institutes of Indochina completely managed the production and distribution of the tuberculosis vaccine and that, in addition, they provided the vaccine without cost to the AMI. This presented a double advantage, which can be added to the others already mentioned to explain the preference for a tool of prevention whose efficacy remained to some extent untested.⁷⁷ Without being certain of protecting "well", they could at least protect "widely".

We mentioned above the consensus between doctors, research scientists, and administrators: this should be seen as the product of a profitable agreement about the value of certain techniques of mass protection; financial advantages for the administration, preventive feasibility for the medical practitioners, an experimental tool but also a means of gaining recognition for the Pastorian. The BCG was one tool around which this consensus could form, in large part because it was a vaccine; vaccination generally allowed the achievement of preventive action on a large scale among the indigenous populations and of a certain measure of control associated with the "civilization" of these people. We should not forget that the first studies of the determinants and prevalence of Vietnamese tuberculosis were carried out in schools in Cochinchina, and

⁷⁶ Morin, Jacotot and Genevray, "Les Instituts Pasteur d'Indochine", pp. 430–431.

⁷⁷ It was in 1928 that the safety of BCG was accepted by a committee of bacteriologists (The International Conference on Tuberculosis, under the control of the League of Nations). But as for immunity it procured, they remained ignorant. In the colonial context, publications at the time insisted that it was difficult to know to what degree BCG contributed directly to the fall in tuberculosis morbidity/mortality rates, if only because it was difficult to track the sick and the vaccinated.

these studies enabled researchers to understand not only the regional particularities of the disease but also how to learn, and how to protect the children from it—something very much in vogue at the time—as well as how to better impose, through education, an effective control in matters of public health and social order.

It seems also that the BCG vaccination was well accepted by the Vietnamese. While we must take this assertion with a grain of salt, as it comes largely from colonial and Pastorian sources, we still should not discount the possibility of a fairly widespread popular acceptance of the procedure, an acceptance that also seems to have been associated with a fairly ready adoption of Western explanations of the disease, modes of contamination, and of treatment.⁷⁸

These reflexions on the use of BCG in Vietnam in the 1920s underscore the following points: the considerable autonomy of health care in Indochina which, in many areas, distinguished itself from French metropolitan practices after World War I, both in the context of necessary adaptations to local conditions but also to other political, financial, and scientific realities; the influence of Indochinese Pastorianism which chose the region and particularly Vietnam as its favorite field of experimentation as well as of definitive legitimation in the first decades of the 20th century; the power of the vaccination itself in conditions of particular pathological urgency, as well as the fact that this weapon, in the specific case of the prevention of tuberculosis, helped to better understand the particular features of the disease in Vietnam, its prevalence as well as its determinants and manifestations.

Naturally enough, many questions remain unanswered or partially answered, notably questions concerning the statistical impact of the use of the vaccination (in terms of morbidity and mortality) as well as the sociocultural impact of these experiments during the colonial period. As for the use of BCG in Vietnam after the end of French colonization, we can readily understand its importance from the 1960s onwards in the Democratic Republic of Vietnam, seeing as the local production of such an effective vaccine was cause for undeniable feelings of national pride resolving as it did long term problems associated with antibiotic treatment that was both expensive and difficult to manage. At the same time, there is more work to be done before we can confidently identify the function of BCG in terms of health policy, of its reception by different groups—in particular the afflicted—particularly in comparing the particular

⁷⁸ Which was apparently the case in neighbouring China at the time according to B. Andrews ("Tuberculosis and the Assimilation of Germ Theory in China, 1895–1937", *Journal of the History of Medicine & Allied Sciences*, 52, 1 (1997): 114–157).

characteristics of BCG use in Vietnam with other ex-colonial and neighbouring countries.

To answer the question posed in the title of this article, "Was BCG vaccination in colonial Vietnam a tool of civilizing prevention between the two World Wars?" we can at least say the following: BCG was without a doubt a tool employed in the "medical civilization" (medicalization) of the native population. As to whether it was a tool of civilization, or of Westernisation, we must not forget that the organised, systematic use of this vaccine occurred much earlier than its organised, systematic use in France. From this perspective, colonial Vietnam was not at the periphery. Colonial Vietnam served as a precursor and an innovator in matters of preventive medicine, and even had a certain independence, an independence justified by local realities, and which worked to the benefit of a part of the medical and scientific establishment working overseas.

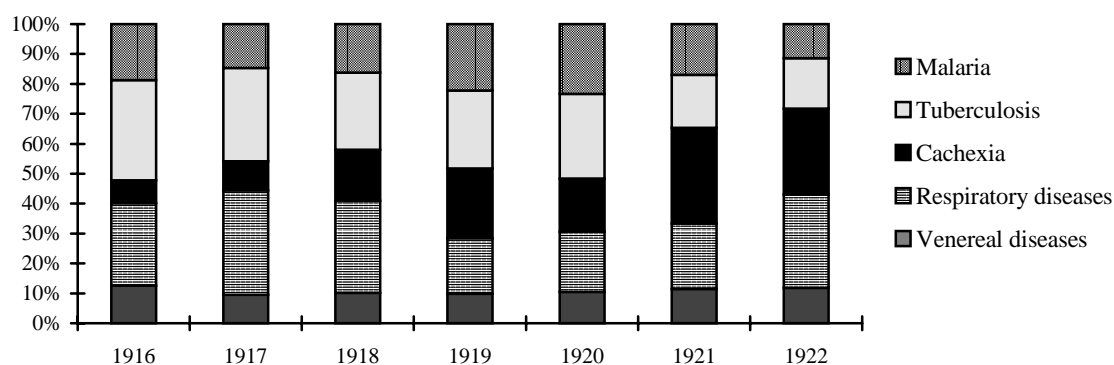
ANNEX 1

BCG Vaccination First Trials Worldwide (1924–1930)

Year	Country of trial	
1924	Senegal Indochina Algeria Belgium	Institut Pasteur (Saigon) Institut Pasteur (Algiers)
1925	Lettonia Italy Brazil Argentina Norway Sweden Greece USSR Mauritius	Red Cross Institut Pasteur (Thessaloniki)
1926	Poland Holland Spain Bulgaria Canada (Quebec) Roumania Hungary Germany	Institute of Hygiene (Sofia) Canadian Pastorians from Montreal
1927	Chili Cuba Madagascar Uruguay	Institut Pasteur (Tananarive) Antituberculosis Dispensary

ANNEX 2

Main Causes of Mortality in Hanoi *Hôpital Indigène du Protectorat*, 1916–1922



ANNEX 3

Hospitalizations Due to Social Diseases in Indochina, 1922–1936

		Year			
		1922	1923	1929	1936
Venereal & skin diseases	Cas	5,024	6,732	10,976	11,974
	Décès	107	?	?	2,154
Respiratory diseases	Cas	8,405	7,029	6,086*	14,985
	Décès	1,015	?	?	1,201
Tuberculosis	Cas	2,360	3,522	5,716	11,920
	Décès	626	?	?	1,231
Cancers	Cas	725	942	?	611
	Décès	35	?	?	85
Social diseases	Cas	16,514	24,617	?	50,521
	Décès	1,783	?	?	2,736
Hospitalizations total	Cas	13,3412	160,390	222,751	338,953
	Décès	8,718	?	?	14,405

* Not including cases of bronchitis

Source: Statistics drawn from the Rapports sanitaires annuels sent to the Inspector General of Health Services (CAOM).