

Key issues to insert American Medical to Post-war Taiwan

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Most scholarship on the history of Taiwanese society considers 1945 as either a starting point or an ending point. The history of the medical profession offers us a rich array of phenomena to trace transitions in Taiwanese society across this divide, in a way that is empirically grounded and analytically subtle. Formal medical education began in colonial Taiwan in 1897. What began as an intensive program in first-aid soon expanded to a formal medical school in 1902 and eventually became a part of the Japanese imperial university system in 1928. While the Japanese medical profession is most commonly associated with its German influences, colonial medicine in Taiwan also adopted several aspects of British tropical medicine, creating a truly unique hybrid.¹ Under this system, generations of medical

¹ Liu Shi-yung, "Building a Strong and Healthy Empire: The critical period of building Japanese colonial medicine in Taiwan," *Japanese Studies* 24(3): 301-314.

professionals in Taiwan were guided by professional criteria of German medicine in general practice and British standards in tropical medicine until the 1950s.

Captured at the end of World War II and formally transferred to Chinese rule (KMT government), Taiwan eventually grew to become part of China not only in administrative viewpoints but also in epidemic definitions. During the 1940s and early 1950s the Chinese governors of Taiwan were greatly tormented with various epidemics from China as well as friction within the medical profession. With a long history of accepting American teaching, Chinese medical professionals, especially military surgeons, attempted to remodel Taiwan's Japanese heritage of medicine to meet American criteria with a coating of nationalist propaganda. Ironically, without the immediate pressure of post-war epidemics, the effort to re-shape medical professionalism in Taiwan might merely have resulted in conflicts among medical factions. But between 1945 and 1952, epidemic plague and severe cholera were spread to Taiwan by Chinese emigrants and soldiers. Arguments over the appropriate medical model had to put aside and a search launched for better prevention and treatment. Defeating epidemics soon became the common ground to unite Japanese-trained and American-influenced medical professionals in Taiwan. Meanwhile, disagreement over Japanese sanitation versus American practice was forming after the new anti-malaria program was set.

General condition of public health in post-war Taiwan

Changes of government, inflation, economic depression, population movement, shortage of medication, and neglect of the public health infrastructure all contributed to the resurgence of infectious diseases in 1946 and 1947. Cases of cholera, small pox, and plague were reported on the island, and it was estimated that more than one million people were

infected with malaria during these years.² Japanese/colonial standards of sanitation and public health practice were, in most instances, far below current standards that the Rockefeller Foundation (RF) and the China Medical Board (CMB) had proposed to China since the 1930s.³ The 1945 standards that Taiwan had attempted to maintain had been allowed to deteriorate due to the diversion of labor and materials to the war effort. Vaccination programs against diseases such as smallpox were either completely discontinued or were not enforced. Environmental sanitation was virtually nonexistent, presenting a definite threat of epidemics of diarrhea, dysentery, typhoid and other enteric diseases. Public water supply and waste collection facilities had been severely damaged in areas that were bombed or which despaired of financial crisis. Those that escaped the devastation of war had deteriorated badly through neglect as well as the shortage of materials and supplies.⁴

The Rockefeller Foundation and China Medical Board were two major American resources that attempted to deal with problems in post-war Taiwan. They mostly emphasized that the future depended upon the continuation of the education and training of Taiwanese personnel in the theory and practice of sanitation works. According to one evaluation in 1946, sanitation in post-war Taiwan, learning from Japanese colonial rules, was a combination of modern and medieval practices. The use of night soil for fertilizer, public bathing in community bath houses, sleeping and living on wooden floors in small, damp houses, and many other customs presented various problems in public health. Before WWII, control of environmental sanitation in Taiwan was accomplished through the Sanitary Police Force. This police force was limited in budget and lacked proper training in public health.⁵ After 1952, long-range plans for future improvements were formulated by International Health Division of Rockefeller Foundation; however, the speed with which their project could be

² Department of Health. *Malaria Eradication in Taiwan* (Taipei: Department of Health, 1991), p. 35.

³ RAC archive, "Activities of the International Health Division in Japan Annual Report, 1950," RG 5, IHB/D, series 3, Box 217, Folder 600.

⁴ RAC archive, "Annual Report 1949," p. 3, RG 5, IHB/D, series 3, Box 217, Folder 600.

⁵ RAC archive, "Annual Report 1949," pp. 3-5, RG 5, IHB/D, series 3, Box 217, Folder 600.

accomplished was dependent to a great degree upon the cooperation of local governments and medical professionals in Taiwan.

From quarantine control to anti-malaria program

Prior to the WWII the colonial quarantine system in Taiwan was operated by local governments without national coordination. Quarantine provisions, therefore, varied according to local ground rules and lacked uniformity. The first step toward reorganization of the quarantine service was the adaptation and publication of port quarantine regulations in August, 1945. While stringent compared to the requirements of a modern standards based on CMB's suggestions, the high incidence of communicable diseases in Taiwan necessitated the adoption of such strict measures.

In order to stop the further spread of epidemics from costal China, new regulations for port quarantine were set according to contemporary standards. These regulations were prepared and became effective in December 1946. The seaports of entry were operated by Taiwanese personnel under the supervision of laboratory-trained Chinese officials under American supervision. Due to harsh conditions in post-war Taiwan, stringent immunization requirements were necessary in 1947 when the revised regulation was enforced to bring them more in line with standard international quarantine practices.⁶ Under the supervision of the Prevention Division of Southeast China, a section of National Health Administration of Chinese government and a channel to run foreign medical aids, quarantine controls proved successful in preventing the entry of communicable diseases into Taiwan. The largest mass emigration, approximately 2 million refugees to Taiwan between 1949 and 1950, was completed without the significant outbreak of epidemics.

⁶ RAC archive, "1947 Annual Report", RG 5, IHB/D, series 3, Box 217, Folder 600, pp. 1-14.

Despite effective quarantine control before 1950, the return of Chinese Republican government to Taiwan also ended the spread of diseases between the two sides of Taiwan Strait. With the threat of transmitting communicable diseases from China reduced, malaria, an endemic problem, again caught the Americans attention.

With financial support from the US government and the Rockefeller Foundation, the Joint Commission for Rural Reconstruction (JCRR) started to rebuild the health stations in every township in 1945.⁷ They also reestablished the formerly Japanese-led malaria research center (Taiwan Provincial Malaria Research Institute, TAMRI) as the scientific arm of control efforts and linked the research base in Taiwan to the headquarters in Nanjing.⁸ By the end of 1952, all 155 of the pre-war malaria stations had reopened. TAMRI held seven sessions of intensive four-week training courses for the 227 former technicians of the stations. The practice of “island-wide simultaneous malaria parasite surveys among preschool-age children” was resumed in 1950 and lasted for ten years. To organize this extensive survey, TAMRI, working with experts from RF, convened a series of meetings with the technicians of the anti-malaria stations. At these meetings, clean slides, anti-malaria drugs, report forms, and all other necessary supplies were provided. On December 17, 1951, the first survey since WWII was carried out, and blood smears were taken and examined. Among the 13,885 children examined in the survey, 1,198 (8.63%) tested positive for malaria.⁹

In addition to reestablishing the anti-malaria stations, JCRR also supported the establishment and building and of local health centers in every town. There were only 56 local health centers and 775 public health personnel in place between 1946 and 1949. With financial support from the JCRR, and prior American support, the numbers increased to 252 centers and 1,486 personnel in 1950, to 356 centers and 2,208 personnel in 1951, and finally

⁷ RAC archive, Richard Bradfield, “Trip to Far East,” pp.40-48; RG 5, IHB/D, series 3, Box 217, Folder 600.

⁸ RAC archive, Robert Briggs Watson, “Annual Report of Activities, 1946,” RG 5, IHB/D, series 3, Box 217, Folder 600.

⁹ RAC archive, “The Progress of Former Program in Formosa,” from “1950 Annual Report”, RG 5, IHB/D, series 3, Box 217, Folder 600.

in 1954, to 367 centers – one in every town on the island. Each health center had at least three fulltime personnel, consisting of a doctor, nurse, and midwife. The JCRR provided the centers with bicycles, medical supplies, and free medications. They even provided monthly financial support of US\$ 30 to 60 to cover the traveling expenses of the public health workers' home and school visits.¹⁰ Essentially, JCRR sponsorship made it possible for Taiwan to restore a functioning public health infrastructure within ten years of the war's end.

DDT: A New Chemical Weapon from American Friends

Also under JCRR sponsorship, TAMRI resumed the formerly Japanese-led research program in 1946 and initiated a series of new investigations that built on colonial knowledge but emphasized new medicines and technologies rather than prevention through public health infrastructure. TAMRI planned the environmental engineering of mosquito-breeding streams, particularly around the coal-mining towns of Jilong. They tracked the geography and seasonality of mosquito habitats in rice farming areas, and the relationship between mosquito prevalence and the growing seasons for rice. In addition, they conducted clinical trials for the new anti-malarial drug chloroquine, both for prophylaxis and cure. Most importantly, they experimented with new pesticides. Finding that spraying DDT on rice fields was ineffective – it was both laborious and inefficient in reaching mosquito larvae in paddy water – they concluded that residual spraying of houses was the best option.

The DDT program launched in 1951 directly linked anti-malarial activities in Taiwan to a global effort in partnership with the World Health Organization (WHO). With the aid of the new “chemical weapon,” namely the effective, long-lasting, and inexpensive pesticide DDT, the ambitious Global Malaria Eradication Program aimed to eliminate the parasite-carrying mosquitoes within every household. The eradication method developed by

¹⁰ RAC archive, “The Progress of Former Program in Formosa,” pp. 7-9, from “1950 Annual Report”, RG 5, IHB/D, series 3, Box 217, Folder 600.

Dr. Fred Soper, the world's most influential malaria expert after WWII, was based on modern warfare, in which task forces of uniformed men armed with spray guns went on search-and-destroy missions.¹¹ Taiwan was one of the first countries to embark on this “war on mosquitoes,” four years before the US-funded global malaria eradication program was announced at the eighth World Health Congress in 1955.

The 1951 agreement between the KMT government of Taiwan and the WHO was an “Expanded Program of Technical Assistance for Economic Development.” The first objective of this agreement was to assist the government in “the control of malaria and eventually the eradication of this disease in the whole island of Taiwan, with modern methods at the lowest feasible cost.”¹² The project aimed to control malaria and other insect-borne diseases and to improve the general health of the population, agricultural production, and the general economy of Taiwan. The eradication program was preceded for by two years of experiments to ensure that it would be evidence-based. There were scientific studies on the effectiveness of DDT spraying on different walls, field research into mosquito habitats, and cost-effectiveness studies of different eradication procedures.¹³ Even the operation models of the house-spraying teams were experimentally verified. The successful program benefited from generous financial and technical support from the US, excellent Japanese-trained local malariologists, well-trained house-spraying teams, and highly cooperative Taiwanese residents.¹⁴

Using the scientific evidence collected between 1952 and 1954, an island-wide anti-malaria DDT-spraying operation was finally undertaken in 1954. News coverage of the

¹¹ Andrew Spielman and Michael D'Antonio, *Mosquito: A Natural History of Our Most Persistent and Deadly Foe* (New York: Hyprion, 2001), p. 135.

¹² Taiwan Malaria Research Institute, *Annexes to the Plan of Operations for Malaria Eradication in China (Taiwan)*, Document 2025, 69.

¹³ See Watson and Liang, “Seasonal Prevalence of Malaria in Southern Formosa”; and Watson, Paul, and Liang, “A Report on One Year's Field Trial of Chlorguanide (Paludrine) as a Suppressives and as a Therapeutic Agent in Southern Taiwan (Formosa).”

¹⁴ Robert Briggs Watson, “Annual Report 1948,” pp. 23-25, RAC archive, RG 5, IHB/D, series 3, Box 217, Folder 600.

planned malaria eradication program had begun as early as July 13, 1952, well before spraying commenced. In a series of newspaper interviews, TAMRI director Dr. C. K. Liang explained the details of the program to the general public.¹⁵ On the eve of operations, in a letter to all county and city governments, Dr. Liang outlined the “principles of the publicity campaign for anti-malaria DDT-spraying operation.” He wrote that the operation was “an enterprise unprecedented in Taiwan.”¹⁶ For this reason the understanding and enthusiastic support of the people at all social levels was indispensable for the success of the operation, and a publicity campaign for the operation is of considerable importance accordingly.

TAMRI made handbills and posters for the campaign and suggested several actions, including attending villagers’ meetings, asking for school masters’ and local opinion leaders’ support, putting up the posters along main streets, using loudspeakers for local propaganda, and showing related slides at cinemas. They also suggested that local governments ask for news reporters’ support. While the sanitary policemen of the Japanese colonial period had long ago disappeared after WWII, there is some evidence that Taiwanese police forces were involved in the malaria eradication program. An “Order to Prohibit Wiping Off DDT after Being Sprayed” was issued by the governor of Taiwan in 1953; it stated that wiping off DDT in the course of general house-cleaning was a “serious mistake” and that doing so “not only nullified the great amount of insecticides and manpower used in the DDT spraying completely, but also greatly hampered the four years of malaria control in this project.”¹⁷

Following the conclusion of the Second Asian Malaria Conference for the Western Pacific and South-East Asia Regions in 1954, it was decided to extend the malaria eradication program in Taiwan for another two years in order to spray the whole island. The extended plan was to include the non-endemic metropolitan area in 1956, and would be limited to

¹⁵ See for example *Lianhebao*, “Bensheng sinian punue jihua: Sheng rueji yenjiusuo fangwen zhier,” July 14, 1952, and *Lianhebao*, “Fangnuezhidao shouchong miewen: Sheng rueji yenjiusuo fangwen zhiyi,” July 17, 1952.

¹⁶ *Lianhebao*, “Fangnuezhidao shouchong miewen: Sheng rueji yenjiusuo fangwen zhiyi,” July 17, 1952.

¹⁷ Taiwan Malaria Research Institute, *Annexes to the Plan of Operations*, Document 2004, 14.

high-endemic areas and the aborigine villages in 1957. The budget of the extended program was provided by the Council for United States Aid and Foreign Operations Administration. In May 1958, the government of Taiwan again signed a “Plan of Operations for Malaria Eradication in Taiwan, China, FY-1959-FY-1963.”¹⁸ The term “eradication” was widely used in the document prepared by the TAMRI.

Concluding remarks: Taiwanese confidence in American medicine

The final victory of the Taiwanese war against malaria came in 1965, when Taiwan entered the WHO Official Register of Malaria Eradication. The official WHO malaria-free designation was not an easy goal to achieve and was even more difficult to maintain. To stay in the WHO Official Register of Malaria Eradication, a country must have the financial resources and operational facilities to prevent the reintroduction of the disease. How did Taiwan reach the goal of eradication so soon and maintain its malaria-free status for so long? According to Spielman and D’Antonio, all successful malaria eradication programs either occurred in island countries or were directed against easy-to-kill mosquito species.¹⁹ It could very well be the case that Taiwan was the perfect size for an island and that *Anopheles minimus*, the major parasite-carrying mosquito in Taiwan, was an easily killed species of mosquito. Further, the strict border controls enforced by the Martial Law from 1949 to 1987 also made Taiwan an unusually restricted area for immigration and travel.²⁰ Nevertheless, the true story in Taiwan behind the simple metaphor of the “war against malaria” may be more complex than Spielman and D’Antonio suggest.

¹⁸ Taiwan Malaria Research Institute, *Annexes to the Plan of Operations*, Document 2025, 69; Document 2023, 46.

¹⁹ Spielman and D’Antonio, *Mosquito: A Natural History of Our Most Persistent and Deadly Foe*, p. 162.

²⁰ Martial law was imposed by Chiang Kai-shek in May of 1949 and was not lifted until 1987. It is the longest period of martial law in modern history. The travel ban to mainland China was not lifted until a few months after the lifting of martial law.

As the DDT program was so powerful and easy to implement, the functions of anti-malaria stations in collecting blood samples and providing necessary preventive education to the public eventually became unimportant. American aid to rebuild the colonial anti-malaria infrastructure was redirected to train more spraying teams and produce more DDT powder. The DDT program seemed so promising that the demand for preventive public education waned. Even the medicines for active malaria patients were neglected in all government reports.

Medication for treatment was not included in the long list of equipment, supplies, and technical literature to be provided by the WHO in 1952.²¹ A 1956 document also used the victory of anti-malaria before the 1960s to encourage the authorities “improving public health and medical infrastructure by American standards.”²² In the mean time, more medical professionals and public health workers were put under the training program provided by the Americans in Taiwan or aboard.²³ With the quick success of the DDT program, and a new generation of Taiwanese public health workers, trained by Americans, U.S. aid soon became a panacea for a great array of medical problems.

The impacts beyond the American financial support for the malarial eradication programs are clearly significant. Because of its reputation in quarantine control and malarial eradication before the 1950s, American medical professionalism eventually guided the medical reform in Taiwan between 1952 and 1965, creating new professional standards for the post-war generation. After 1955, the medical college of the former Japanese Imperial University eventually adopted the American system of medical education.

Within the overall process of medical professionalization in Taiwan, this transition from Japanese colonial medicine to American standards brought several major changes. In

²¹ Taiwan Malaria Research Institute, *Annexes to the Plan of Operations*, Document 2026, 79.

²² Taiwan Malaria Research Institute, *Annexes to the Plan of Operations*, Document 2027, 81.

²³ RAC archive, Richmond K. Anderson, “Rockefeller Foundation in Medical and Natural Science in the Far East, 1956-61,” RF, RG 1.2, series 600, sub-series; Asia, Box 3, Folder 18.

the colonial period the paternalistic model of the doctor–patient relationship was accepted. The doctor, often working alone in a private clinic, was the expert who decided what was in the best interests of his patients, who were passive. This comfortable model was upset after 1955 as American medical aid inserted American professional standards into the training and support of Taiwanese pupils. Most young medical students began receiving their training in an American style curriculum. By 1965, 78% of high-ranking medical professionals in the central government and university hospitals had received training at Harvard or Johns Hopkins, not to mention other institutions in the US, according to a preliminary survey. To them, well-equipped hospitals, not private clinics, were the preferred location for medical treatment, and the doctor-patient relationship they had been trained to perform now treated the patient as an active customer to whom the doctor provided a service.

Despite all the changes stemming from Taiwanese confidence in American’s capability of disease control, questions about changes in the transformation of medical professionalism must be considered in a broader context than simply the new training curriculum, the new expectations of the professional medical career, and the new condition of medical resources after the 1950s. There should be a much broader agenda to seek answers for such questions in the tangled inner reconstruction of the medical profession in Taiwan and in the external foreign-aid policy organizations of the U.S. The most important media between these two sides (Taiwan and US) would be Rockefeller Foundation and its coordinator the China Medical Board.