

SMALLPOX AND VACCINATION IN EARLY SINGAPORE (PART I) (1819—1829)

By Y. K. Lee

A brief introduction to the study of the medical history of early Singapore has already been outlined. (Lee, 1973). The reasons why developments in early Penang have to be referred to in Singapore's medical history have also been discussed (Lee, 1973).

Penang was founded in 1786. Jenner performed his first experiment on Vaccination in 1796, and the practice of vaccination spread rapidly. By 1800, it was being carried out in India and Ceylon.

The origin of Smallpox is unknown. It had been prevalent in India and China from the earliest times. (This might suggest its origins in the East, but it should be remembered that other parts of the world do not have a literature just as old.) Presumably it must also have been present in South East Asia for a long time.

The first written record of its prevalence in Penang was at the beginning of the 19th century. In 1805, because of the prevalence of Smallpox, the Medical Authorities in Penang wrote to the Governor and Council urging that Vaccination should be officially introduced into the Island. The "institution of vaccine inoculation" was approved on 22nd October 1805, and Assistant Surgeon Herriot was appointed the Medical Officer in charge. He was also requested to recommend the Establishment that was absolutely necessary for "a comparatively small place". It was his duty also to report monthly to the Chief Surgeon (as the Senior Surgeon was then called.) the number of patients vaccinated with success. This was how the practice of vaccination was introduced into the Straits—without fuss or overt opposition. (S.S.R., A. 1., 1805).

The first report of failures of Vaccination was made in July 1808. Mr. Chalmers, the Assistant Surgeon in charge (also known as the Superintendent of Vaccination) reported that he could not "keep up a supply of fresh vaccine" because of failures due to the hot weather and the small numbers of children vaccinated. The method commonly used then was arm-to-arm, which was

considered the normal method of propagation. He had to resort to using the dry crust which failed to take. He recommended suspension of the vaccination programme until a new supply of vaccine matter could be obtained from Bengal in order to prevent its falling into disrepute with the native population. It was appreciated even then that public co-operation was important in preventive medicine, and that any setback or mishap could undo previous good work:

"I have to request that you will be pleased to inform the Honourable the Governor and Council that in consequence of the scarcity of children and the frequent failures of late from the heat of the weather, I have found it impossible to keep up a supply of fresh vaccine matter and have therefore been obliged to resort to inoculation from the dry crust. This has generally been found equally effectual with the fresh matter from the arm, but lately I am extremely sorry to add that after various trials and repeated patient inoculation, the most recent crusts in my possession have failed in producing the genuine cow-pox. Be pleased to state also to the Honourable the Board that lest by continuing the inoculation from the crust, the disease should degenerate and thereby get into disrepute among the natives, I have judged it prudent to discontinue my operations for the time until a fresh supply of the good matter can be received from Bengal, and that the faith of the inhabitants may not be staggered by a knowledge of the real cause. It should be necessary for information to be circulated over the island 'that vaccination will cease for two or three months until the weather becomes more moderate and until a sufficient number of children be collected to keep up the disease.' "

(S.S.R., A. 4., 1808).

By January 1810, Vaccination had failed three times in Penang either because of lack of supply of vaccine matter or the development of complications. The Governor and Council however decided that some blame should be apportioned to the Medical Department. They ordered the allowance of the Assistant Surgeon in charge to be discontinued whenever the Vaccination programme ceased:

"The present being the third instance in which Vaccination has ceased on the Island under

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successive Surgeons, either from want of vaccine matter or from the appearance of irregular symptoms in the persons vaccinated, the Board feel themselves called upon to stop the personal salary of the Vaccinator until the Acting Head Surgeon shall report that Vaccination has again been commenced with success.

The Board are induced to adopt this measure not with a desire of casting any reflection whatever on the present Vaccinator, as it is understood that impure matter was in the present instance obtained from Calcutta, but with a view of impressing on the mind of the Assistant Surgeon in charge of that Department that the liberal allowance on this account was established in full confidence of the appointment being a public benefit and at all times efficient. The Board therefore direct that the allowance attached to this appointment be in future discontinued whenever the Head Surgeon may report that inoculation ceases on the island for want of vaccine matter". (S.S.R., A. 10., 1810).

This step had the desired effect, and the Head Surgeon reported one month later, on 15th February 1810, that Vaccination had been recommenced with success, thereby confirming the suspicions of the Authorities that the human factor had been partly responsible for the failures. With arm-to-arm vaccination, the supply of lymph was dependent on the vaccinator's satisfactory work. The Assistant Surgeon had his allowance restored to him. (S.S.R., A. 7., 1810).

The National Vaccine Establishment was founded in London in 1808 by the British Government. Its reports were regularly sent to Penang and were used by the Medical Officers for information and guidance. (S.S.R., I. 13., 1813).

In September 1813, an epidemic of Smallpox broke out in Penang. It is interesting to note the measures taken to contain this outbreak, and to compare them with the principles of Smallpox control of today. Control depends on the recognition of the sources of infection, routes of spread and factors affecting the susceptibility of the individual exposed. In 1813, the measures taken were the establishment of a lazaretto to isolate and control the sources of infection and for treatment of cases, and public vaccination. Prompt notification of cases is an important factor in the control of an outbreak. Nowadays, doctors have the responsibility of notifying the Health authorities. In 1813, householders were obliged to inform the authorities under threat of punishment if they failed to do so. Punitive and repressive measures are not part of present-day methods which seek to enlist public co-operation. The Police are not used

in the control of Smallpox epidemics as this creates a bad image with the public. But in 1813, because of primitive conditions, the Police played a prominent part. Public announcement regarding notification, treatment and vaccination had to be made by "beat of gong" by the Police. This was unavoidable as the Police Department was the best organised government department for dealing with the public. (They were even used to collect medical statistics). The Governor's letter of 23rd September 1813 to the Senior Surgeon will be quoted in full to enable the reader to appreciate the situation:

"I am directed by the Honourable the Governor in Council to acknowledge the receipt of your letter dated 22nd instant enclosing the Report of the several Medical Gentlemen regarding the appearance and progress of the Smallpox on this Island, and a further letter from you on the same date regarding that Disease.

The Governor in Council entirely approves the principle on which your recommendations for the establishment of a Lazaretto is founded, and will be ready to pay attention to any suggestion on that point which may be offered by you. With that view, the Board requests that you will recommend to Government any spot of ground with a building thereon which you may consider adequate to the purposes in view. The house, formerly the General Hospital, situated on the North Beach has occurred to Government, but the point of recommending any spot suited to the object in contemplation remains with you, and you are accordingly requested to make an early report thereon.

The Governor in Council proposes to publish throughout the Town by beat of gong, the threat of punishment to any individual who may have in his family a case of this nature, and who may not make the same known to the proper authority. In like manner, to offer medical care, attention and supply gratis to such as may be infected with the Disease, and who may be removed into the Establishment now in contemplation.

By these means, the Board trusts a speedy stop will be put to the infectious and dangerous Disease now abroad, and which be further secured by a supply of vaccine virus from the Establishment in Fort William (Calcutta) which it is the intention of this Government to recommend being effected by every opportunity." (S.S.R., I. 13., 1813).

At the same time, the Superintendent of Police was instructed to make the announcement regarding the Smallpox Hospital, the notification of

cases, the risk of being "fined or otherwise punished by the Magistrates" for failing to do so, and that smallpox cases would be treated at the Government expense and would "remain in hospital till cured." (S.S.R., I. 13., 1813). Arrangements were also made with the Medical authorities at Calcutta for a constant supply of vaccine.

By February 1814, the epidemic was more or less under control, and the Governor's Secretary wrote to the Senior Surgeon:

"... convey to Mr. Henderson the satisfaction and approbation with which the Board has observed the attention paid to the cases alluded to in his List and on the success which has attended his treatment of the unfortunate individuals labouring under that infection." (S.S.R., I. 14., 1814).

In addition to a non-immune population, the other reason why it was difficult to control Smallpox in Penang (and later in Singapore) was the importation of infection from abroad. It was hard enough to prevent the entry of infected civilians. The situation was made more difficult by the fact that being an outpost of the Empire, Penang had to afford medical aid to members of the British armed forces travelling to and from infected regions. One example will be quoted. In October 1816, the Governor received a request from the Officer Commanding the Troops on board a Troopship, for the sick to be landed as smallpox had broken out on board. General Orders were issued for the sick soldiers to be landed and accommodated in the General Hospital but "kept apart from any other patients". (The risks of admitting Smallpox patients into General Hospitals were not known then.) Permission was also granted "to land troops so that the boat can be fumigated". (S.S.R., A. 11., 1816). Some of these apparently healthy soldiers who were free to move about, were harbouring the disease.

In April 1817, it was decided that the Vaccine Department need not be under the immediate charge of the Assistant Surgeon, and a more junior officer, Sub-assistant Surgeon Palmer, was appointed to be responsible for Vaccination. (S.S.R., K. 3., 1817). In September of that year, he was granted an allowance under certain conditions:

"As the Governor in Council is sensible of the difficulty of constantly preserving the Vaccine Virus in effective use, and with the view of affording to the Sub-assistant Surgeon, the means of keeping it as frequently as possible in operation, and of exerting himself to that end, the Board is willing to allow the Establishment for the Vaccine Department being \$25 per month to be drawn quarterly by the Sub-

assistant Surgeon provided he obtains a certificate from the Senior Surgeon every three months that the virus has been successfully used in the previous quarter, otherwise the allowance will cease until it is again introduced." (S.S.R., A. 12., 1817).

Singapore was founded in February 1819, and by December, the Resident had decided that Vaccination should be introduced into the new Settlement, and he wrote to Penang for supplies of vaccine. On 27th December 1819, the Senior Surgeon was ordered to comply with this request:

"The Resident at Singapore having represented the want of a supply of vaccine virus at the Settlement, I am directed by the Honourable the Governor in Council to desire that you will take measures for forwarding the same by an early opportunity." (S.S.R., H. 3., 1819).

Sub-assistant Surgeon Thomas Prendergast was placed in charge of the Vaccine Department at Singapore until he left the Settlement in 1823.

In the meantime, in Penang, the Senior Surgeon having reviewed the problem, informed the Governor and Council, that the experience of the past ten years had demonstrated that the existing system was not adequate to maintain vaccination continuously. It was necessary for the Vaccinator to have two native assistants to search for and collect patients. This would cost the Government an extra \$20 per month, but he stressed that the additional expense was trivial and that "the importance of keeping up the virus" in Penang would outweigh this slight increase in expenditure. He also drew attention to the fact that the advantages would also extend to "Malacca, Singapore and Bencoolen which have been principally supplied with vaccine virus from here." (S.S.R., B. 5., 1820). This was not approved until 1823. (S.S.R., C. 5., 1823).

Another epidemic broke out in Penang in 1824, and it was the Superintendent of Police who advised the Senior Surgeon of "the prevalence of the Smallpox on the Island." The Police were better informed of what was going on among the population.

In January 1825, after having studied the 1824 Census of the population of Penang which had been supplied to him by the Superintendent of Police, the Governor called a meeting of his Council. He informed them that a "diminution of the population to the extent of 2300 since December 1823" had occurred and that the mortality was due largely to fever and Smallpox. It was felt by all present that this state of affairs was unsatisfactory, and it was decided that the Senior Surgeon should henceforth submit regular reports on the health of the inhabitants, and make recommendations should

anything untoward occur. The Senior Surgeon was also asked for a report on the Vaccination programme, and ordered that "unless already enforced it be considered an established rule that the payment of such establishment should cease whenever the vaccine matter is allowed to expire, to be renewed only on its introduction and activity". (S.S.R., H. 13., 1825).

And on 28th January 1825, the Senior Surgeon received this very stern letter from the Governor's Secretary:

"The Honourable the Governor in Council having had under his consideration the alarming degree to which the Smallpox has of late extended its ravages among the population of the Island, which subject has been more especially brought to his notice by the annual census of the population exhibiting a considerable diminution by mortality from that of last year, I am directed to desire that you will report for the information of the Government whether the vaccine virus is kept up and in what degree the practice of vaccination has been resorted to under an emergency as particularly requiring its interposition.

I am further directed to transmit an extract from the remarks on the present census of the population, and to desire that you will consider it your duty in future to submit to Government periodical reports of the general state of the inhabitants, the materials for which it is presumed you will obtain by communication with the Superintendent of Police, and in case of any particular disease prevailing in an unusual degree that you will state your opinion as to any measures that can be adopted by Government for removing or alleviating the same.

The Governor in Council has been further pleased to establish as a rule from the 1st proximo that the allowance of the Vaccine Establishment amounting to \$45 per month shall not be drawn unless accompanied by a certificate from you that during the period for which they are drawn, the vaccine disease has been kept up on the Island." (S.S.R., H. 12., 1825).

The Senior Surgeon's reply to this rebuke was prompt. On 2nd February 1825, he submitted his explanations and recommendations. He informed the Governor that both Mr. Palmer and he had applied to Calcutta for vaccine matter, but the Department of Vaccine Inoculation there had been tardy in complying with their requests, although the officer in charge had been informed "of our situation and entreating him to send us vaccine matter by every ship that left Calcutta to this place".

Another factor was that the captains of ships were also not very cooperative. The authorities in Calcutta when despatching the packets of crusts, sent no letters of advice, and the Medical authorities at Penang were left in the dark and had to rely on the goodwill of the Ships' captains. "It has just been accidentally discovered that a supply of virus has been brought by the Commanders of the ships Stanmore and Eliza, after several days in our harbour without intimating to anyone that they had these packets in their possession." The crusts sent from Bengal after all the unnecessary delay were often old and inert.

The third reason was the difficulty in obtaining public cooperation and participation. "... They (the Vaccinators) can only succeed in obtaining young subjects, adults invariably declining to submit to the operation". He recommended

"to the Honourable Board that with the view of inviting the native population generally to come forward and receive this salutary preventative, a notification be made by proclamation through the medium of the Police, and such necessary assistance be afforded to the Vaccinator and his Establishment to enable him to communicate the disease to the inhabitants of all ages and denominations as speedily as may be practicable."

He also recommended that quarantine measures be adopted: "As the Smallpox is of foreign origin and imported here by trading vessels from India or prowls from the Eastward, it would be a wise measure of policy in future, whenever a vessel is boarded on coming into harbour, to obtain a report of the health of the crew, and whether they have the Smallpox on board."

Mass vaccination of the Indian convicts was also proposed. "As several of the convicts have suffered from Smallpox, I would beg permission to recommend that the whole of that class on the Island should be forthwith subjected to the influence of vaccination in order to secure them from variolous infection hereafter."

He then proceeded to beg the Governor and Council to exonerate him and Mr. Palmer:

"During the late prevalence of Smallpox on the Island, I beg I may be permitted to assure the Honourable the Governor in Council, that I have not been an idle or inattentive observer, and had I deemed it judicious or advisable to establish a lazaretto or Smallpox Hospital, I should not have hesitated a single moment in recommending the measure to Government, but having ascertained that it was impracticable

and that people generally so far from consenting to go into a hospital, refused to be inspected or visited, I did not consider it right to incur any expense on that account. . . . From what I have stated above and likewise from the information conveyed by Mr. Palmer himself, I trust the Honourable the Governor in Council will not attach any share of blame to him for the non-renewal of the Vaccine Disease, and that upon re-consideration he will be pleased to grant the monthly allowance for the Vaccine Establishment as heretofore, which I feel assured will prove beneficial to the interests of humanity and the good of the Settlement." (S.S.R., H. 13., 1825).

Two weeks later, the Senior Surgeon reported that the vaccine brought by the ships Stanmore and Eliza, after an extensive trial, had failed. He recommended that

"as the Smallpox still continues to prevail though not to such an extent as it did a few months ago, and as we have been repeatedly disappointed in renewing the vaccine disease by means of supply of virus received from Bengal, . . . that with the view of transmitting it here in as perfect a state as possible by a succession of subjects during the passage, an application be made to the Supreme Government to that effect by the earliest opportunity." (S.S.R., H. 13., 1825).

By this the Senior Surgeon meant taking children on board ship and continuing arm-to-arm vaccination on a small number each week so as to maintain the infection to the end of the journey, and on arrival at Penang, to be disseminated throughout the Island.

The Senior Surgeon once again appealed for the services of the native assistants to be retained as they "have a very serious and important duty to perform". The Governor and Council agreed that employing assistants when vaccination was being successfully propagated and dismissing them when it failed, was not conducive to the success of the Vaccination programme. They resolved that the native assistants to the Vaccinator be employed on a permanent basis, "but that the Medical Officer in charge draw his personal allowance on certificate of the disease being kept up as already resolved." (S.S.R., H. 13., 1825). They also decided to write to the Supreme Government in India to instruct the Medical Department at Calcutta "to forward a supply of effective vaccine virus by every opportunity on the representation of the Senior Surgeon." (S.S.R., H. 13., 1825).

The shortage of vaccine matter was fortuitously solved by the presence of "vaccine disease at Malacca", and the Senior Surgeon managed to get a supply from there "at moderate expense" in March 1825 to renew the disease at Penang. (S.S.R., A. 20., 1825). Coincidentally, a supply of virus from Calcutta was also active and vaccination re-started in Penang. Mr. Palmer straightaway asked for an increase of allowance from \$25 to \$50 per month. He was allowed \$35. (S.S.R., H. 14., 1825).

By April 1827, the policy regarding the native assistants changed. Their pay was to be \$10 per month "only if the virus is kept up", otherwise it was reduced to \$6 per month.

The reader may wonder why so much has been written about happenings in Penang. It has already been explained (Lee, 1973) that Penang was the capital of the Straits Settlements until 1832 and the headquarters of the Medical Department of the Straits Settlements until 1835, and that developments there had an important bearing in early Singapore.

Smallpox was endemic in Singapore during the first ten years of its existence. The Senior Surgeon on 15th June 1827 recommended that the Vaccine Department in Singapore be re-organised on a proper basis. He recommended that a Vaccine Establishment be set up, consisting of the Residency Surgeon and two native assistants, to be run on the same lines as at Penang. He felt that this was a good time to start as a new Surgeon was arriving from Penang to take over duties at Singapore:

"Having been informed since my arrival at this Station that the Settlement has been seldom free from Smallpox for some years past and that at present it actually exists on the Island without any adequate means to control its baneful influence, I deem it a duty highly incumbent on me to recommend to the serious consideration of Government the propriety of appointing a Vaccine Establishment to be superintended by the Surgeon attached to the Residency with a suitable salary and two native vaccinators under him.

Under this arrangement I beg to recommend that Mr. Surgeon Henderson on his arrival here may be directed to engage as speedily as possible two respectable natives and to instruct them in the principles and practice of vaccination. The pay of such individuals, I wish to propose, may be fixed as at Penang, at \$10 per month so long as the disease is kept up on the Island, and in the event of its disappearance, the allowance in that case, to be reduced to \$6 each per month." (S.S.R., A. 47., 1827).

This recommendation was accepted by the Governor, who ordered that monthly returns of persons vaccinated should be submitted:

"...I am directed by the Honourable the Governor in Council to acquaint you that he approves of your engaging two persons at \$10 per month to be instructed as Vaccinators. In the event of the disease disappearing, their pay will be reduced to \$6 per month. To the Monthly Abstract will be attached a certificate by the Medical Officer in charge relative to the disease being kept up or otherwise.

The Honourable the Governor in Council is pleased to establish as a rule that monthly reports shall be submitted by the Medical Officers at the three Stations to the Head Civil Authority specifying the number of persons who are vaccinated, and you will be pleased to issue instructions accordingly." (S.S.R., Z.1., 1827).

Vaccination had a bad start in Singapore. By November 1827, the vaccination programme had failed. In February 1828, the Senior Surgeon on his tour of the Medical Establishments in Singapore, made it his duty to investigate into the causes of this. One was the "defective establishment", when salaries were paid in full only when vaccination was successful and perpetuated:

"This arrangement answered very well as long as vaccination was kept up, but when for some cause or other, to me unknown, the virus was allowed to become extinct, the assistants finding their salaries so precarious could no longer be induced to devote their time to the subject, and on its next introduction, no respectable native would accept the situation."

The other reason was:

"the want of some inducement by which, independent of the benefit derived from the operation, parents will be led to bring in their children for vaccination." (S.S.R., A. 50., 1828).

The Senior Surgeon then offered certain solutions. He recommended "that a Vaccine Allowance of \$25 per month should be granted to the Assistant Surgeon at Singapore for keeping vaccine lymph in constant active operation at that Settlement, and that he is to be responsible that it is so." He also recommended security and tenure for the medical subordinates. "... that \$16 be granted ... for the keeping of two persons in constant pay (of whom, one is to be a Chinese) to assist in disseminating more extensively the public advantages of vaccine." (S.S.R., A. 51., 1828).

Introduction of tenure, of course, created new problems. How was the Senior Surgeon to be sure

that the "officers on the permanent establishment" were doing their utmost. He had to rely on the code of honour of his subordinates:

"By this arrangement, it is to be clearly understood that the Surgeon in local charge is strictly bound in duty and conscience to afford his energetic exertions in extending the advantages of vaccine to all classes of the inhabitants." (S.S.R., A. 51., 1828).

As an inducement, he recommended that free rice be given to every child who was successfully vaccinated. "On vaccination, a ticket is to be given by the Surgeon, and a second ticket to be issued on finding that the vaccine has successfully affected the individual. The two tickets together to be presented at the office indicated by the Resident and the party thereon to receive gratuitously $1\frac{1}{2}$ measures of good rice."

He also recommended "that no child should be admitted to the Free or Native Schools without having undergone the operation."

He asked the Government to use its influence with "the Malay, Kling and Chinese Captains to ensure those individuals using their influence amongst their countrymen for the promotion of vaccine, and also to induce them to fix in their own residences as public vaccination stations for the Surgeon's attendance." The Surgeon's quarters was also to be designated a Public Vaccination Station, and "an hour fixed for one day in each week on which the Surgeon should afford punctual attendance at one of those stations for vaccination of children and the examination of those previously vaccinated." (S.S.R., A. 51., 1828). A Register of all those vaccinated was to be kept. "These Registers or a copy of them will be forwarded monthly to the Head Civil Authority of the Station and will be a record of the zeal and industry of the Superintendent and his assistants, and a check upon any abuse of the liberality of Government." (S.S.R., A. 50., 1828).

By 1829, the expenses of running the Straits Settlements were proving to be excessive, and there were moves to economise by abolishing some posts in the Government. In April of that year, Governor Fullerton recommended certain reductions in the Establishment in the interests of economy and efficiency. One recommendation was that the Vaccine Establishment be given up as it had failed and that there was no need to keep up the "useless expense". The Vaccine Department at Penang was abolished in May, and that of Singapore in June 1829. (S.S.R., A. 55., A. 64., 1829).

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Abbreviation used:

S.S.R. = Straits Settlements Records (1800-1872). Microfilm. National Library Holdings. Singapore.

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