

## Commentary: Dr Choksy's dilemma

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In the angry letter he wrote to the *Lancet* in July 1900,<sup>1</sup> Dr Choksy's irritation obscures the background of the study he describes. That, we thought, might be a good point to start. In the first months of the new century, what was happening in Dr Choksy's city?

The plague had devastated Bombay for nearly 3 years. The earnest Imperial narrative of this period details the muscular strategy to contain the epidemic.<sup>2,3</sup>

By July 1900, when Dr Choksy wrote his letter, Bombay was resigned to the plague. Nothing seemed to help. If the prophylactic inoculation (Waldemar Haffkine's vaccine) worked, it did not reflect in the death rates except in small interned communities. (Besides institutions like prisons, and the armed forces, there were very few of these.) The 'large' numbers inoculated made up less than one-tenth of the population.

In addition, this was a population constantly in flux. Large migrations to and from the city occurred during this period. Initially, people fled. Most returned because there was nowhere else to go. The Deccan was devastated by famine. Entire villages were wiped out. Those strong enough to walk, came to the city. Throughout the latter half of 1897, the city absorbed these living skeletons. Men, women and children, starving and emaciated, were set to work breaking stones and paving roads to earn a handful of rice—the infamous Temple Wage, approved in the Imperial narrative as Relief Works.

By 1900, policy was forced to change. Methods of detection and isolation were far less draconian than they had been in 1896–99. The political fallout of those early measures had been dire. The Arthur Road Hospital was mobbed at the start of the epidemic. The Plague Camps had been counterproductive. Public outrage at the intrusion on their lives can be read in the archived complaints of citizens. These angry citizens raised important questions—questions the policy-makers ought to have asked. What did hospitalization achieve? Did it reduce the mortality? Did it diminish human suffering? What care did the sick receive in hospital that made it worth their while to desert their homes and their loved ones in their final hours?

The Imperial narrative dodges these questions by blaming the escalating mortality on the apathy, lassitude and ignorance of the population. It is also silent about the fact that the plague-stricken population was concurrently afflicted with cholera, enteric fever, relapsing fever and—starvation.

These questions were answered by the people who engaged directly with the disease, the city's medical practitioners and researchers, including Dr Choksy and the scientists mentioned in his letter to the *Lancet*, Professors Lustig and Galeotti, Drs Polverini and Mayr. It is from their evidence, both written and recorded at the hearing of the Indian Plague Commission<sup>4</sup> that we glean the following facts.

- (a) The overall mortality from the plague in Bombay city:

86% (21 193 deaths from 24 752 cases)

At Arthur Road Hospital: 80%

(Modikhana and Maratha Hospitals both had nearly the same mortality as Arthur Road Hospital).

- (b) Hospitalization increased human suffering. The circumstances under which they were removed from their homes, the dread of dying among strangers without a sight of their loved ones, the unfamiliar food and the terror of being surrounded by scenes of pain and horror—none of this could have made it easier for them to endure the physical torments of the disease.
- (c) Hospital care consisted solely of 'General Measures', the catch-all term for masterly inactivity. 'Cardiac stimulants', judicious doses of

alcohol and vigorous nursing just about summed it up. Suppurating buboes could be drained, milder cases helped along, but the plague—as the population knew—had no treatment at all. Those who returned home alive were considered cured only by time and luck.

- (d) Those who stayed at home did just as well as those in hospital. This is not to say they did not receive medical care: their own doctors, whether trained in British or Indian systems of medicine, provided the same useless therapies—but in a less threatening setting.

This then was the backdrop to Dr Choksy's trial of Professor Lustig's curative serum.

Khan Bahadur Choksy was ideally situated to evaluate new therapies for the plague. Not only was his hospital the referral centre for the most disadvantaged, and therefore the most vulnerable section of the population, but more importantly, he had seen the plague in all its vicissitudes since its outbreak in September 1896. He had followed up more than 4000 cases of the plague. Along with Anton Ghon and his Austrian colleagues, he had conducted 50 autopsies. He kept meticulous clinical records, and, in the thick of events, managed somehow to project perspective. The irritation in the tone of his letter betrays the kind of man he was—not one to suffer fools gladly.

Early in 1897 Professor Lustig of the Institute of Pathology in Florence, prepared a curative serum against the plague bacillus from an immunized horse.<sup>4</sup> Professors Lustig and Galeotti arrived in Bombay in July that year and tested the serum on six cases of established plague under Dr Choksy's care at Arthur Road Hospital<sup>5,6</sup> and five of the patients recovered. Subsequently, 29 patients in Poona were injected with the serum, 21 of them recovered. With this encouraging beginning, between March and June 1898, 175 patients received the serum.

Before we consider the selection of patients, let's look at the clinical response to Lustig's serum. Fever charts, pulse and blood pressure recordings survive as documentation. More to the point are the clinician's observations, summarized by Dr Galeotti in his deposition on 1 December 1898 before the Indian Plague Commission.<sup>6</sup> It reports on the 175 cases treated with the serum:

- (i) within 4 hours of injecting the serum, the temperature falls, sometimes by as much as 5°F, the pulse rate decreases, and its volume improves;
- (ii) delirium subsides. Consciousness and orientation improve;
- (iii) the bubo becomes less painful, and in a few days, shrinks without suppurating.

Dr Galeotti also cited bacteriological changes. In three septicaemic cases, bacillaemia disappeared within 24 h of injecting Lustig's serum.

Dr Choksy, who made his deposition later the same month, substantiated Galeotti's findings, adding also that even when the final outcome was death, often from renal failure, the suffering of the patient was much reduced.

With such remarkable clinical improvement, naturally every patient was given the serum, initially. Dr Choksy makes a distinction in his letter about excluding the moribund and the ambulant/convalescent patients from the latter part of this study. With this factored in, the series showed a mortality of 53% as compared with the prevalent mortality in the city during this period of 94%. (This outbreak was the worst the city experienced.)

There were other experimental treatments competing with Lustig's serum, and Dr Choksy had tried them all.

Yersin's serum, which had made a fine showing in Oporto, did not work too well in Bombay. A small number of mild cases were chosen for a trial, and two of them died. A Russian serum, prepared along the lines of Yersin's was tried next, with poor results.

In 1898–99, the Indian Plague Commission opted for Roux's serum, and Dr A. Turkud tried it on 28 patients at Modikhana Hospital and 23 of them died.

Meanwhile, Dr Polverini, along with the Dr Alfons Mayr mentioned in Dr Choksy's letter, had begun making the serum in Bombay. It should not have been a difficult matter to produce serum on a large scale and make it routinely available. This did not happen.

The English Plague Commission visited and left unconvinced of the serum's efficacy.

In April 1899 Dr Choksy began the second trial. This was a much bigger trial, involving a parallel study in the Maratha Hospital. The details of this study are clearly set out in Dr Choksy's letter to the *Lancet*.<sup>1</sup>

Every alternate patient received the serum. At that time, there was enough clinical evidence to show it relieved human suffering even when it did not always save a life, and, there was no other treatment that had shown such an effect.

The alternate selection meant withholding a therapy that relieved, if not cured. The ethic of this lottery does not seem to have raised concern.

Very likely, the story never reached the public.

One could argue that clinical research had a different ethic before Nuremberg, but surely human values do not wait upon laws?

The frustration evident in Dr Choksy's letter was much deeper than peeve. With all its inherent cruelty, the second trial once more showed the efficacy of Lustig's serum.

There is a great deal one can say in hindsight about this scrupulous trial. A great deal *was* said, several years later, by Waldemar Haffkine<sup>7</sup> among others,<sup>8</sup> to challenge the credibility of Choksy's conclusions. In 1900, however, Lustig's serum, as prepared in

Bombay, seemed to promise hope in a completely desperate situation.

Between September 1896 and March 1907, 4, 767, 141 Indians died of the plague.<sup>9</sup>

In 1908, Choksy published the results of his serum therapy in 1081 patients.<sup>10</sup> The serum he used was the Roux–Yersin preparation. In the introductory paragraph he mentions that the original Yersin and Lustig serums were given up because 'the virulence of plague and the unfavourable conditions existent in India were not taken into account'. The unfavourable condition he was talking about was *starvation*.

In his first pamphlet on Lustig's serum, Dr Choksy wrote about his early experience in Arthur Road Hospital. He mentions that public reluctance to bring the sick to hospital was fuelled by strange fears. Queen Victoria's statue had recently been vandalized in outrage over the Famine. People feared that they would be maltreated in hospitals as punishment for this protest. It is easy to smile over such terrors at this remove of time. Doctors like Choksy understood them only too well.

Lustig's serum was given up also due to 'financial considerations'—Darbars and Jubilees had to be paid for. In 1923, Dr Choksy wrote a series of articles for the lay press<sup>11</sup>: these reveal what he really thought of the Government policies on the plague.

In the early years of the 20th century, British policies in India during the plague served as models. Isolation, internment and racial categorization were effective tools of political control. Acts of omission like the 'rational alternation' can only be viewed against the larger canvas of megadeath, *mahamaari*.

Meanwhile, the Bombay plague established the pattern of domination that would lead elsewhere to death camps, genocide and ethnic cleansing.

Had Dr Choksy lived another 40 years, he would have followed the Nuremberg hearings with a despairing sense of *déjà vu*.

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Papers relating to the Outbreak of Bubonic Plague in India, from September 1896 onwards, sourced at the Bombay Archives are as follows.

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Report of G. Polverini to the Municipal Commissioner of Bombay, letter dated 17 November 1899. Appendix in R. Nathan's *The Plague in India*.

Nova et Vetera: The Serum Treatment of Plague; *British Medical Journal*, 5 Jan 1907:29.

## Acknowledgements

Drs Ishrat S. Syed and Kalpana L. Swaminathan are Surgeons in Bombay who write together under the pseudonym Kalpish Ratna. Their book *Uncertain Life*

and *Sure Death*, an itinerant history of epidemic disease in Bombay, was published in December 2008 by the Maritime History Society of India. Their last book was the novel *The Quarantine Papers* (Harper Collins India; 404 pp.; January 2010).

**Conflict of interest:** None declared.

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