

# Pacific Island Societies Destabilised by Infectious Diseases

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## Abstract

Infectious diseases de-populated many isolated Pacific islands when they were first exposed to global pathogen circulation from the 18th century. In most cases it is difficult to reconstruct mortality risk factors as few literate observers were present when the first epidemics arrived with lethality dropping rapidly during subsequent epidemics. In at least two instances, measles in Fiji in 1875 and influenza in Samoa in 1918, the island leadership died at a much higher rate than the general population. Hereditary chieftains were especially exposed to lethal infectious disease risks due to increased exposure through travel and diplomatic contacts. Sudden loss of their leadership during an infectious disease epidemic destabilised small island societies, compounding their fatal impact. Decapitation of society by removal of its leadership is unlikely to reoccur in the modern era as it was caused by epidemiological factors that no longer exist.

**Key words:** Pacific Islands, mortality, epidemics, historical

*God alone will not send such an epidemic.*  
Samoa chief 1918

Infectious diseases depopulated and at times destroyed isolated Pacific island societies when they first encountered common infectious diseases such as measles and influenza during the 19th century.<sup>2</sup> Single devastating epidemics killed up to a majority of Pacific islanders and up to 90% of the population when repeated episodes progressively removed not only the young but also the adults over the first century following contact with the global pathogen pool. Reasons for the disastrous mortality have never been understood very well but the extreme lethality quickly moderated during subsequent outbreaks of the same pathogen. Small societies have little margin for large mortality events especially since much of the traditional knowledge of the local environment was contained within the memories of a small group of elders. Once cultural and historical information is lost in a pre-literate society, it can only be indirectly reconstructed if at all.

Loss of key leaders during an infectious disease epidemic produces enormous stresses on isolated societies. Although mortality was apparently spread throughout the population during most first contact epidemics, in a few cases the island's leadership died at rates greatly in excess of the general populace. The destabilisation caused by the sudden death of island leadership has had profound social and political implications that are seen even today on Fiji and Samoa. The two specific instances of such destabilisation as seen on Fiji in 1875 and Samoa in 1918 along with other historical losses of hereditary island leaders due to infectious diseases are reviewed in order to better understand what might happen during newly emerging infectious disease epidemics.

## Fiji 1875

Inter-tribal conflict led to many of the senior chiefs of Fiji signing an article of cession to the British Empire in 1874, thus becoming a British protectorate with a governor. (Figure 1). Part of the political process involved the visit of the most senior chief Cakobau to Sydney, Australia along with his sons and entourage at the end of 1874. In January 1875 the warship HMS Dido returned from Sydney carrying the chief's group and the first instalment of British advisors. Cakobau had become infected with measles in Australia and one of his sons became ill during the 19 day transit from Sydney to Fiji on HMS Dido, which was somewhat longer than the usual 14 day incubation period for measles.<sup>3</sup> No quarantine procedure had yet been established such that many Fijians welcomed Cakobau's group home by boarding the ship and then escorting the chief's party ashore. An unprecedented meeting of all of the high chiefs of Fiji (n=69) and their retinues consisting of hundreds of others was called to occur in late January in order to explain the cessation to Britain. The chiefs carried this political message back to all parts of the archipelago, unfortunately accompanied by people incubating the measles virus. From February to June 1875 measles swept all of Fiji killing an estimated one-fifth to one-fourth of the general population.<sup>3</sup> All or nearly all (records are uncertain) of the 69 chiefs died leaving a leadership vacuum

at a critical moment in Fijian history.<sup>4</sup> Subsequent failure of the Fijian population to recover its losses led to the importation of contract Indian labourers which set in motion the political / ethnic disputes still seen today.

No Fijians had previously been infected by measles yet the mortality in the chiefs greatly exceeded the norm. For comparison, the Fijian police (n=140) who accompanied Cakobau had a 6% mortality compared to about 20% in the general population. This outcome was very unlikely to be due to superior medical care in the pre-antibiotic era. The reason for the extreme mortality of the Fijian chiefs likely arose from their social position which included many followers in direct attendance. No one of rank especially those expecting to inherit a position of power would be seen anywhere other than close to the ailing chief. All the attendants and other followers would have made the sick-room very crowded. The original meeting of the chiefs likely produced several highly infectious persons resulting in particularly high levels of viral exposure which has been shown to be a mortality risk factor in Africa.<sup>5</sup> Exposure to a large number of individuals in a measles ward as opposed to being left in barracks was a definite mortality risk factor for US soldiers during the First World War.<sup>6</sup> Secondary bacterial pneumonia was a common event following the immunosuppression of measles infection.<sup>7</sup> Socially-driven epidemiological factors increasing exposure to various respiratory pathogens both viral and bacterial likely explains the extreme mortality among Fijian chiefs during the 1875 measles epidemic. Although obesity and associated diabetes would be a mortality risk factor in modern Fijians, review of historical photographs suggests that island leaders were not obese until mid-20th century.

## Samoa 1918

The origin of the 1918-19 influenza pandemic remains uncertain as it spread globally in a matter of months causing millions of deaths.<sup>8</sup> Pacific islands were among the last places that the pandemic touched due to their isolation with few ships available at the end of the First World War. One island steamer from New Zealand, the SS *Talune*, has the dubious distinction of having brought lethal influenza to Fiji, Samoa and Tonga in late 1918.<sup>2,3,9</sup> Influenza was not a quarantine-requiring disease and no special instructions had been received by the military governor of Samoa despite the pandemics known to have extraordinary lethality in Europe and New Zealand. Despite influenza having been on Samoa several times before 1918 with case fatality rates  $\leq$  5%, the 1918 influenza pandemic was particularly

lethal on Samoa killing an estimated 8000 persons or about a fifth of the population. Total deaths were comparable to that which occurred on New Zealand, three major islands with twenty-five times the population of Samoa. Mortality on Samoa was the opposite of what would have been normally expected as the strongest people died with 30% of the adult men, 22% of the adult women and 10% of the children dying during the pandemic.<sup>10</sup>

The distorted age mortality seen globally during the 1918-19 influenza pandemic with an excess of young adults in their late twenties is well described even if it remains unexplained. Yet the mortality on Samoa was not only skewed towards adult males but also particularly involved the island's leadership. Most of the adult male leaders in Samoa died during the 1918 epidemic.<sup>9</sup> The mortality rate varied from 47% of the head of family (*Matai*) to 80% of the Councillors (*Faipule*). Church leaders also died at extreme rates as 47% of London Missionary Society head pastors and 65% of Roman Catholic catechists did not survive the epidemic.<sup>9</sup> Genetic or medical differences cannot explain the extreme mortality of Samoan leaders in 1918.

Although Samoan society's ability to deliver even basic supplies such as food and water failed during the pandemic, the leaders would have surely been served first and the children last. The most likely explanation for the extreme leadership mortality was the same social necessity as on Fiji to be with a chief or leader when he was dying. The large retinues of chiefs and progressively less important leaders likely set up a graduated exposure to new bacterial agents when influenza had destroyed the leader's ability to resist secondary bacterial pneumonia. Such pneumonias were present in nearly all cases of First World War soldiers who were examined post-mortem during the 1918 influenza pandemic.<sup>7</sup> The well-meaning presence of many followers during a leader's illness was probably counter-productive and increased pneumonia rates and thus mortality.

## Death of Kings

Although infectious disease epidemics are the most dramatic means of destroying the leadership of a Pacific island, the travel and diplomatic duties of island leaders also increased their exposure to sporadic instances of infection. It was not appreciated how exquisitely sensitive Pacific islanders were to measles when King Kamehameha II and Queen Kamamalu of Hawai'i visited England in 1824.<sup>11</sup> Among the many places the visiting monarchs were taken by their hosts was the Royal Military Asylum which housed children of servicemen who had died in battle. Based on the incubation period it is likely that



*Figure 1. Fijian chiefs signing the deed of cession on 10 Oct 1874 with David Wilkinson as interpreter. It was a large meeting of chiefs in 1875 that caused mass mortality within the leadership as well as the rapid spread of measles to all parts of Fiji. From [https://nihrecord.nih.gov/newsletters/11\\_16\\_99/story01.htm](https://nihrecord.nih.gov/newsletters/11_16_99/story01.htm), accessed 27 Jan 16*

they were infected during their visit to the Asylum and both died within two weeks of illness, the king reportedly from a lung abscess. Other royal deaths included the young Tahitian king Pomare III (reigned 1824-27) who died at age six from dysentery. The Tongan royal line was threatened when King George Tupou II died at age 43 in 1918 necessitating the ascension of a female heir as the subsequently long-reigning Queen Salote. King George had evidently contracted tuberculosis from his second wife (died 1902); in the absence of any effective treatment the king died in 1918 from tuberculosis prior to the influenza pandemic. Although no instance of smallpox killing a specific Pacific island leader could be identified, the ability of smallpox to kill a large number of those infected such as in Chamorros on Guam or Aboriginal Australians certainly could have destabilised if not eliminated entire societies.<sup>2,3</sup>

### Destabilisation of Society:

Of the many disasters which could happen to an isolated island society, sudden loss of its leadership had the most profound effects. Such a loss could initiate an armed struggle for the succession with a resulting civil war. In pre-literate societies the death of leaders prior to their ability to pass on oral

traditions meant that much culturally significant information was irretrievably lost. Coupled with the loss of many ordinary members of society during an epidemic, leadership loss destabilised and demoralised island populations, creating fragile organisations incapable of resisting outside pressure for change. The colonial governments were very concerned about the loss of indigenous groups and their failure to recover following epidemics such as this deprived the plantation economy of its workers.<sup>4</sup> The necessity to import other island peoples such as Solomon Islanders through contract labour ships (black-birders) also resulted in mass mortality especially in the sugar fields of Fiji and Queensland.<sup>12</sup> Further alternatives such as hiring impoverished people from India and China resulted in immensely complex ethnic rivalries which cause political and social friction throughout the Pacific today.

Pacific island societies lost a majority of their populations and most of their leaders during their incorporation into the global pathogen pool during the 19th century.<sup>2</sup> Whatever the epidemiological factors driving extreme mortality during first contact infectious diseases in the Pacific, this situation no longer exists today due to globalisation. Mortality



during the 2009 influenza pandemic or recent measles outbreaks was no different than death rates elsewhere. Pacific nations have demonstrated their societies' eventual resilience despite their extreme vulnerability to infectious diseases during the colonial era. Island societies with small leadership groups remain vulnerable to extreme disruption if even a few of their acknowledged leaders are removed or incapacitated by modern infectious disease. Given the shift in the South Pacific away from infectious disease mortality to chronic conditions such as type 2 diabetes and coronary heart disease, current leadership disruptions will most likely occur as senior leaders are incapacitated, evacuated to Australia for medical care or die from such degenerative conditions.

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