

The Great Flu Pandemic of 1918

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One hundred years ago the First World War ground to an end. After five years of slaughter and the deaths of an estimated seventeen million people, the Armistice was to be signed at the 11th hour on the 11th day of the 11th month of 1918. South Africans of all races fought with the Allies, and more than ten thousand lost their lives (1). In those days young English women were told: most of you will never marry because all the men are dead (1); however, none imagined that another disaster was about to strike (2-4).

Among the three greatest pandemics in history are the Black Death (5), the Spanish Flu (3, 6, 7) and now HIV (8). The Black Death was bubonic plague caused by the bacterium *Yersinia pestis* which killed an estimated 50 million people or about half the population in Europe, over several decades in the 14th century (5). The Spanish Flu which was first reported in Spain (9), but did not start there, was caused by a virulent strain of the H5N1 virus and killed up to fifty million people, or 2% of the world's population, most of them in less than one month in 1918 (10). Now we are dealing with HIV which has killed an estimated thirty-five million people over thirty years and the pandemic continues (11).

The Spanish Flu struck in three short waves (10). The first wave resembled typical flu epidemics in which the sick and elderly were at the greatest risk, while younger, healthier people recovered. In civilian life, those that are very sick stay home while those that are mildly ill continue with their lives and spread the mild strain. When the second wave struck the virus had mutated to a deadlier form and soldiers with a mild strain stayed where they were while the severely ill were sent on crowded trains to crowded field hospitals, spreading the deadlier virus. The most vulnerable people were, like the soldiers in the trenches, young, otherwise healthy adults (12). The third wave was again a more typical and comparatively mild epidemic.

Perhaps the most remarkable aspects of the epidemic were the speed at which it spread and the rapidity with which it killed but the reasons for this are still debated. In India where seventeen million people may have died (13), mortality began in Mumbai (Bombay) early in October 1918. By the middle of October people were dying in the West and the South; by the middle of November mortality in the West and South of India had fallen and the epidemic had spread to the North and East. By the middle of December, it was almost entirely limited to the

North-East, and by the end of December, it was over. The median time to death was ten days (14) and some died within hours of showing symptoms.

Symptoms in 1918 were so unusual that influenza was initially misdiagnosed as dengue, cholera, or typhoid. Among the most striking complications were haemorrhage from mucous membranes, especially from the nose, stomach, and intestine, bleeding from the ears and haemorrhages in the skin. The enormous death toll was caused by the high infection rate of up to 50% and the high case-fatality rate of 2.5% as compared to less than 0.1% in most flu epidemics. The majority of deaths were from bacterial pneumonia, a secondary infection caused by influenza, but the virus also killed directly, causing massive haemorrhages and oedema in the lung (4). The severity of the symptoms suggests that it may have been caused by cytokine storms as the immune system fought to overcome the infection (12).

South Africa was not exempt from the Spanish Flu; and the epidemic there was extensively recorded, reported and analysed in the seminal work of Howard Phillips in his book and thesis *Black October* (15, 16). Phillips discussed in detail the course and impact of the epidemic on The Rand, Cape Town, Kimberly, Bloemfontein and the Transkei as well as the nature and attempted treatment of patients, popular and religious explanations of why it happened and the way in which it changed public health. One cannot begin to do justice to his extensive work and analysis, but some particular points and observations are worth noting (15, 16). The infections that started the second, deadly wave, arrived with two troop ships, the *Jaroslav* and the *Veronej*, which docked in Cape Town in September 1918. The epidemic then rose and fell with extraordinary speed peaking in mid-October falling rapidly and was over by the middle of November by which time up to half-a-million people had died. The worst affected area followed the main railway line from Cape Town to the Western Transvaal while the Ciskei and the Transkei were also severely affected. The death rate was highest in the Cape, where 3.3% of the population died, and lowest in Natal where 1.1% of the population died. About 0.8% of white people died but the mortality rate was three times higher among other race groups, and about 2.6% of black, Indian and coloured people died. Almost twice as many men as women died and about three-quarters of those that died were aged 15 to 45 years.

Epidemics have been with us for all of recorded history (17), and there will inevitably be more to come (18). We should, therefore, study the history of past epidemics and learn how to avoid, manage and control them. South Africa is still struggling to contain the epidemic of HIV and manage the epidemic of TB, now being primarily driven by HIV. Public health is everyone's health and South Africa needs to work hard to develop a robust and universal health system that will provide the foundation for social and economic development.

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