Brief comparison of the Current Coronavirus COVID-19 Pandemic (SARS CoV 2) and the Spanish Flu Epidemic

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Letter to Editor

Previously the Spanish flu pandemic spread in 1918/19 and was considered one of the greatest health tragedies in history [1]. The pathogen is reported as the Influenza A/H1N1, and the pandemic spread in at least 3 distinct waves over an interval of 9 months [2].

It infected about 500 million people, with 50 to 100 million people succumbing to the disease [1]. There was a very high mortality rate in Europe. Rapid diagnostic methods were not available during the Spanish influenza pandemic nor were there antiviral agents or vaccines [3].

According to reports, it appeared in April with cases of pulmonary congestion and bronchopneumonia [1]. From September to December 1918, the original necroscopic registers included 43 autopsy reports with the diagnosis of grippe (i.e., Spanish flu) occurring. They describe most of these deceased being young, just over half were soldiers, with all having the typical feature of pandemic flu, that of confluent haemorrhagic lung bronchopneumonia.

Another manuscript on the Spanish influenza era, reports on the assessed medical records and hospitalization registries of Japanese army hospitals [1918-1920] [3]. Clinical features and circumstances of the sudden increase of inpatients with influenza were noted. Patients reported symptoms related to respiratory diseases such as pneumonia, influenza and bronchitis. These included symptoms and signs such as; fever, headache, chills, cough, general malaise, appetite loss, joint and muscle pain, reddish pharynx, rales, vomiting, haemoptysis, diarrhoea and increased heart rate. The mortality rate was high (6%-8%) even in otherwise healthy male adults. As previously mentioned, no serologic or virologic diagnostic methods were present. In fact, as yet no discovery of the influenza virus had been made. In addition, no chest radiographs were done. The flu diagnosis (Japanese term is kanbo) was a clinically defined influenza.

In fact, before the Spanish flu, which was known as the Great Pandemic, the term influenza was not well known, and other descriptions such as epidemic catarrh, epidemic bronchitis, or 3-day fever were used [4]. Bacteriological analysis of the two outbreaks in UK and France detected a range of bacteria and gram-positive and gram-negative bacteria were recovered from sputum and lung samples during the main pandemic.

There are also many good books on the Spanish Flu and Ronald Atlas, former President of the American Society of Microbiology, when describing the book 'The Great Influenza [5], in the opening pages it states; 'Barry provides enormous insight into the very nature of science.... The Great Influenza is a must read for its unnerving relevance to today's scientific challenges of emerging and re-emerging infectious diseases ....' An article in the Journal of Clinical Investigation being a book review states that the book was "well-conceived, well researched, and extremely well written" and is suitable for not only physicians, scientists and medical students but historians as well [6]. It also covers the founding of the Johns Hopkins Medical School at the very end of the 19th century.

In this current pandemic of severe acute respiratory syndrome coronavirus 2 (SARSCoV2), also known as the coronavirus, being the virus that has caused the COVID-19 pandemic (coronavirus disease 2019), there are modern state of the art diagnostic tests. The Centres for Disease Control

and Prevention, detail the COVID-19 testing procedure [7]. They state that current infection is tested by a viral test of which there are two types: nucleic acid amplification tests (NAATs) and antigen tests. In contrast, a serology or antibody test is used to determine if someone has had a past infection but they are not used to diagnose a current infection.

The Doherty Institute in Australia on their website, detail the COVID-19 innovative testing program for SARS-CoV-2 [8]. These include Therapeutic Goods Administration approved point-of-care diagnostic kits, one-step polymerase chain reaction (PCR) with no extraction of RNA required, and a validated rapid molecular test called the N1-STOP-LAMP test, or STOP-LAMP. Taken via a nasal swab in 20 minutes it has 100 per cent accuracy in diagnosing COVID-19.

Previous authors around two decades ago have pointed out that in a future pandemic; there will be the influence of global population expansion and movement which can increase the spread of the virus [4]. Predictions in a worst-case scenario in terms of morbidity and mortality in a new pandemic could still approach those recorded in 1918 [4,9]. Although the authors did acknowledge both anti-neuraminidase drugs, and an increased capacity to produce influenza vaccine. However, this worst-case scenario of mortality rates as per the Spanish flu as the above authors suggested may happen in these current crises did not eventuate. In fact, it also should be noted that the basic reproductive rate [indicating transmissibility] of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is similar to, or higher than that of the pandemic influenza [ie. Spanish flu] [10].

The rapid advances in technology, communication, the Internet, medical and scientific research [including diagnosis and treatment], means that case numbers and deaths currently are also more precisely and accurately documented. There are wide-ranging estimates being 50 to 100 million people succumbing to the disease in 1918-19 [1,11] or in another manuscript it states that the influenza pandemic resulted in 40 million deaths [4]. Regardless of which estimate is correct, it is not reported down to the finite person but rather is a broad ranging estimate and differs depending upon the author. Historically in fact, publications correspond this to 3 to 5 percent of the world's population [1,5] which is quite a difference in range being a two-percentage point estimate difference. Another report in the Lancet, states that it was demographers and others with expertise in statistics who reported that the pandemic reduced the global human population by up to 5% [12].

In contrast, in the modern era, on 24 November 2021, the Johns Hopkins University of Medicine Coronavirus Resource Centre states that there have been 5,163,826 deaths from the disease [13]. Mortality in this current pandemic is strongly skewed towards people older than 70 years, dissimilar to the 1918 influenza pandemic where there was a higher fatality in younger persons [10,14]. The lack of diagnostic tests, poor database recording, and an absence of modern technology in historical times, highlights very well how this current pandemic has not only been able to be contained and curtailed in comparison to what occurred approximately a century ago, but documentation is much more accurate, detailed and precise globally in terms of ascertaining case numbers and mortality.

COVID-19 has a high infectivity rate and associated fatality [15]. Additional challenges as a result of novel therapeutic protocols result in associated morbidities and it is important to learn of these effects. In COVID-19 infected patients who are critically ill, steroids, a life-saving treatment may be utilised, but this may lead to mucormycosis that has a high fatality rate, 46% globally [15].

In modern times, in the era of the current COVID-19 [coronavirus] pandemic, there is a plethora and wealth of information on diagnostic modalities and testing methods [7,8], but there is also information on specifics such as masks [16], soap versus sanitiser for prevention [17], the prevalence of true asymptomatic COVID-19 cases [18] and many other topics. There is an avalanche of dedicated coronavirus scientific publications, websites, databases, libraries and prediction algorithms [19-21] available for researchers, the general public, policy makers and other interested persons that document diagnostics, prevention, policy, treatment and implications.

It is important when assessing the scientific publications [especially when considering treatment options], to be mindful of selecting those that are high quality, with robust and sound methodical design, with outcomes that are carefully determined and thoroughly assessed. It is known that many scientific studies [over 50%] are not based upon references to existing systematic reviews of scientific evidence nor do they take sufficient steps to reduce biases in the design/ methods [over 50%] [22]. The authors also state that in addition over 50% of studies are never published in full and over 50% of planned study outcomes are not reported. The losses at each of these stages, leads to a greater than 85% loss in total and this means that research investment dividend is lost. Also, these problems could have been corrected.

Whether it is a pandemic or other health disease high quality research allows for good decisions to be made. Research reports must be obtainable, understandable

and accurate. In summary, what has been generated from this pandemic in terms of scientific information will also help guide future pandemic planning preparedness. In comparison to the Spanish flu, in this COVID-19 pandemic, we have advanced greatly with diagnosis for case ascertainment and the correct classification of mortality attributable to the disease. Researchers in this COVID pandemic consider they dot their i's and cross their t's when it comes to statistics in comparison to the Spanish flu era. If we have another pandemic in 100 years time though, in 100 years medical research will have advanced so greatly such that scientists will then pick up on the uncrossed t's and undotted i's that currently exist. Only time will tell.

However, if you are worried about your health or pandemics in the future so that you don't overly worry, you could consider the words of Albert Einstein "I never worry about the future. It comes soon enough."

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