



**University of
Zurich**^{UZH}

**Zurich Open Repository and
Archive**

University of Zurich
University Library
Strickhofstrasse 39
CH-8057 Zurich
www.zora.uzh.ch

Year: 2011

The 'Russian' influenza in the UK: lessons learned, opportunities missed

Honigsbaum, M

Abstract: This paper describes British efforts to map the Russian influenza outbreaks of the early 1890s and describe the timing and course of the epidemic waves. Drawing on two surveys conducted by Britain's Local Government Board (LGB), the paper shows how, in a pre-virological era, the board was able to establish that influenza was an intensely infectious disease. Its key observation, however, was that Russian influenza had taken the form of three, and possibly four, distinct waves of infection, with the second wave in the spring of 1891 proving more lethal than the first wave, and the third wave in the winter of 1892 proving almost as lethal again. Most of this mortality was due to excess deaths from respiratory disease, particularly in the middle age ranges, but while these insights could and, arguably, should have aided the public health response, British health authorities preferred to advocate cautious preventive measures that did little to alleviate the pandemic's impact. The policy would prove especially costly in 1918-1919 when the LGB missed the opportunity to provide extra nursing cover for influenza convalescents following the initial summer wave of the 1918 Spanish influenza pandemic. Copyright © 2011 Elsevier Ltd. All rights reserved.

DOI: <https://doi.org/10.1016/j.vaccine.2011.03.063>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-57354>

Journal Article

Accepted Version

Originally published at:

Honigsbaum, M (2011). The 'Russian' influenza in the UK: lessons learned, opportunities missed. *Vaccine*, 29(Suppl.):B11-B15.

DOI: <https://doi.org/10.1016/j.vaccine.2011.03.063>

Mark Honigsbaum

Queen Mary, University of London

Abstract:

This paper describes British efforts to map the Russian influenza outbreaks of the early 1890s and describe the timing and course of the epidemic waves. Drawing on two surveys conducted by Britain's Local Government Board (LGB), the paper shows how, in a pre-virological era, the board was able to establish that influenza was an intensely infectious disease. Its key observation, however, was that Russian influenza had taken the form of three, and possibly four, distinct waves of infection, with the second wave in the spring of 1891 proving more lethal than the first wave, and the third wave in the winter of 1892 proving almost as lethal again. Most of this mortality was due to excess deaths from respiratory disease, particularly in the middle age ranges, but while these insights could and, arguably, should have aided the public health response, British health authorities preferred to advocate cautious preventive measures that did little to alleviate the pandemic's impact. The policy would prove especially costly in 1918-19 when the LGB missed the opportunity to provide extra nursing cover for influenza convalescents following the initial summer wave of the 1918 Spanish influenza pandemic.

The ‘Russian’ Influenza in the UK: lessons learned, opportunities missed.

On January 11, 1890, a letter appeared in the correspondence column of the *British Medical Journal* titled ‘The Influenza Epidemic: Requests for Information’. The epidemic in question was the ‘Russian’ influenza – so-called because the first mass outbreak had occurred in St Petersburg the previous autumn. The disease had already sickened the British Prime Minister, Lord Salisbury, and sparked mass absenteeism in the General Post Office’s Telegraphic Department, the center of communications of the British Empire. Now, as the influenza spread from London to Birmingham and Liverpool, threatening the heart of British manufacturing, the Medical Department of the Local Government Board (LGB) decided to invite readers of the *BMJ* to help it map the epidemic. The letter asked when readers first noticed cases of influenza ‘presenting distinctive characters’ in their district, whether they thought that the disease had been imported from ‘abroad...or in the case of institutions, from outside’, and whether they had been able to ascertain the incubation period [1].

Although the Medical Department had previously conducted investigations into typhoid, smallpox and diphtheria, these investigations had been localized and limited in scope. The LGB’s report on the Russian influenza, however, mobilized the entire public health system, taking advantage of London’s position at the centre of the telegraphic and railroad networks to ensure that the department’s epidemiological gaze moved with the epidemic [2]. It was the first time the LGB had attempted to track influenza in real time, and within a week, the LGB had circulated detailed questionnaires about the etiology of influenza, its route of transmission, and its incubation period to Medical Officers of Health (MOsH) in each of England & Wales’s 1,777 sanitary districts [3]. (Table 1)

On Epidemic
Influenza in
1889-90; by
Dr. Parsons.

CITE. VII.

Collective
inquiry through
Medical Officers
of Health.

VII.—SUMMARY OF INFORMATION DERIVED FROM
MEDICAL OFFICERS OF HEALTH AS TO THE
DISTRIBUTION OF THE INFLUENZA EPIDEMIC IN
ENGLAND AND WALES.

With a view to collecting information on a uniform plan as to the origin and mode of distribution of the Influenza epidemic in England and Wales, a circular form of queries, of which a copy is annexed, was drawn up by the Medical Officer of the Local Government Board, and sent to the Medical Officer of Health of every sanitary district in England and Wales. (There are 1,777 sanitary districts in England and Wales, viz., 41 metropolitan, 1,003 urban, 675 rural, and 58 port districts, and they are all supervised by Medical Officers of Health; in some instances several districts being combined for the appointment of a single Medical Officer of Health; in other instances one rural district having several Medical Officers of Health, each acting for a different division.)

Medical Department,
Local Government Board,

Whitehall, S.W., January 17th, 1890.

DEAR SIR,
THE Medical Department is endeavouring to gather information respecting the origin and mode of distribution of the Influenza prevailing in England and Wales, and I rely on your assisting me by your experience. I am desirous of collecting such information on a somewhat uniform plan, and would ask you to reply on the enclosed sheets so far as you may be able; filling up one sheet at once, and others at weekly intervals while the epidemic continues in England and Wales. Please post them to me (unpaid), addressed to the Medical Officer of the Board.

I am, dear Sir,

Yours faithfully,

GEORGE BUCHANAN.

The Medical Officer of Health.

Period ended _____ . Name of District _____ .

(Urban or
Rural?)

1. Has any "Influenza," particularly if characterized by much nervous depression, severe frontal headache, or various muscular pains, shown itself in your district?
2. The date of the first occurrence (as far as you know) of such an Influenza.
3. The date of commencement of any extensive prevalence of such Influenza.
4. Any opinion you have formed (or that you wish to modify) as to the mode of origin of introduction of the disease, and as to its method of spread.
5. Have you observed among domestic animals any unusual complaint; and in what animals, and with what symptoms?
6. Illustrations or observations as to the behaviour of any observed Influenza, especially as to the intervals of attack in members of households, its dissemination among particular communities, and its incidence on particular localities.

Signed _____

Table 1. Questionnaire circulated by George Buchanan, Medical Officer of Health of Local Government Board [4].

Supplemented by investigations by the board's own epidemiologists and bacteriologists, these questionnaires would form the backbone of one of the most comprehensive surveys ever conducted into an influenza pandemic [5]. Overseen by H. Franklin Parsons, the chief investigator of the LGB's Medical Department, the report, together with an equally

detailed survey of the 1891-92 pandemic waves, would have huge implications for the management of future influenza outbreaks [6].

Parsons' first and perhaps most significant finding was that influenza was almost certainly infectious and spread no faster than the most rapid form of human communication [7]. Second, Parsons demonstrated that while the onset of the first wave had been sudden, with deaths from influenza peaking on January 18, 1890, just three weeks into the six-week epidemic, thereafter mortality had rapidly declined. By contrast, the onset of the second wave, in May – June 1891, had been more gradual and protracted, with an eight-week average duration in London, but in the end had proved more lethal. This pattern of gradual onset coupled with mortality in excess of the first wave was also a feature of the third wave in January – February 1892 (in total, 624 deaths were ascribed to influenza in London in 1890, 2, 336 in 1891, and 2, 264 in 1892) [8]. Thirdly, the LGB's investigations showed that the pandemic had been particularly fatal to patients with underlying lung conditions, escalating the death rate from respiratory diseases such as pneumonia - a pattern that would be repeated in the 1899-1900 epidemic [9]. (Table 2.)

Annual death rate from influenza and pneumonia in England and Wales 1890-1915

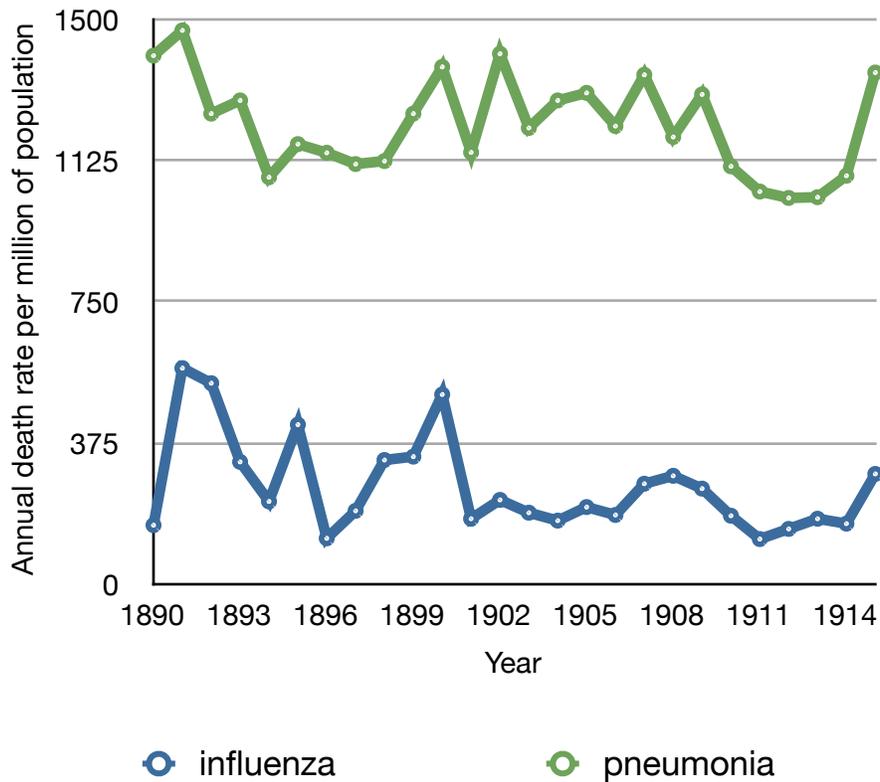


Table 2. Annual death rate from influenza and pneumonia in England and Wales, 1890-1915 [9].

The result was that while the official returns for England and Wales recorded 4,573 influenza deaths in 1890, 16,686 in 1891, and 15,737 in 1892, once excess deaths from respiratory diseases were included in the total, the Registrar General calculated the true death toll in 1890, 1891, and 1892 as, respectively, 27,074, 57,980, and 25,000 [10]. Taking into the account the fourth wave of influenza in 1893, the Registrar General calculated that the aggregate losses due to the Russian influenza pandemic in 1890-93 as ‘not fewer than 125,000 lives’ [11]. Finally, Parsons concluded that many patients exhibited mild symptoms such that rather than being too sick to go out they continued to be ‘capable of conveying infection’ [12]. The finding was to have important implications for the future management of influenza pandemics, particularly the question of isolating patients in mild or asymptomatic cases.

The LGB was not alone in documenting the impact of the Russian influenza pandemic in the United Kingdom. Unlike the previous 1847-48 pandemic, the Russian outbreak coincided with a ‘golden age’ for Victorian newspapers, meaning that it was one of the best-reported pandemics in history [13]. Taking advantage of London’s position at the center of the worldwide telegraphic network, Reuters correspondents aimed to file reports from affected European capitals within 24 hours of an outbreak’s occurrence, while papers such as *The Times* employed correspondents to compete with the Reuters dispatches [14]. The fact that the earliest casualties included aristocrats like Lord Salisbury was unsettling to Victorians convinced of the superiority of British sanitary reforms. Since the mid-1860s, such reforms had protected London from cholera outbreaks that had decimated other European cities, but as the Russian influenza spread from St Petersburg, a city sneeringly referred to by *The Times* as ‘the most insalubrious of European capitals’, to Paris with a rapidity that seemed to outstrip more prosaic contagions, the superiority of a country’s sanitary arrangements appeared to make little difference [15]. Despite appeals in the medical press for newspapers to keep the threat in perspective and not to foster ‘dread’ of the epidemic through ‘sensational telegrams’, the pandemic appears to have sparked hysteria in London, particularly among male patients [16]. At St Bartholomew’s Hospital in Smithfield and the Royal Free Hospital in the Grays Inn Road, for instance, Samuel West, a specialist in respiratory disease, described how he had been astonished to arrive at morning surgery to find more than 1,000 patients – the majority of them men – ‘clamouring for treatment’ [17].

Although influenza was not a notifiable disease in 1890, based on staff absentee levels at the Post Office (32%) and the Bank of England (20.8%), Parsons estimated that about a quarter of London’s population had been affected. This was low compared to St Petersburg where it was estimated half the population were affected, and Vienna where the figure was 30-40% [18]. London also suffered significantly lower mortality than other European capitals, with the death rate, expressed as fatalities per 1,000 of population, peaking at 33 per 1,000 during the first week of January 1890, compared to 62 per 1,000 in Paris [19]. Employees at public institutions and large private establishments were the

most heavily impacted, with the Telegraphic Department in St Martin's Le Grand suffering absentee rates as high as 38% [20]. Railway services were also disrupted, with three times as many engine drivers absent due to illness as in previous years [21].

In an era when epidemiological thinking was dominated by miasmatic theories, the rapid progression of the influenza across Europe suggested that the epidemic might be due to supra-terrestrial influences linked to meteorological factors or fluctuations in the upper atmosphere. However, such theories could not explain why isolated communities such as lighthouses, jails, and monasteries, which were presumably exposed to the same occult influences, escaped the epidemic or why the influenza appeared to attack cities and densely populated urban centers close to railways and roads before spreading to rural areas. As Parsons recognized, getting the answer right was crucial, as miasma and contagion theories presupposed very different preventive strategies.

In all, some 1,150 questionnaires were returned to the LGB. Parsons also conducted extensive inquiries at zoos and stables to establish whether the epidemic was related to outbreaks of 'pink-eye', a form of equine influenza that had been observed in western England in the early autumn of 1889 [22]. His reports were a model of case-tracking epidemiology, demonstrating that far from the epidemics having erupted simultaneously in several locations, as miasma theory predicted, each wave of the pandemic had been preceded by scattered cases that had increased incrementally over a number of weeks. The spread had followed a clear urban hierarchy, with London and other major urban centers generally being attacked first and smaller towns and rural areas following several days or even weeks later [23]. Male breadwinners and schoolchildren were usually the first to contract influenza, Parsons observed, while their wives only became infected after the disease had been introduced to the household [24]. Likewise, MOsH in counties south and north of London found that the first cases could be often be traced to businessmen who travelled regularly to and from the capital for work [25]. Analysis of institutional outbreaks suggested that crowded, confined spaces were particularly favourable to the spread of influenza. For instance, Parsons observed that the infection rates of telegraph operators, who worked side by side-by-side in long galleries,

had been 10-20 times higher than those of ancillary staff [26]. However, the best demonstration of influenza’s infectiousness came in the spring of 1891 when railway officials traveled from Sheffield to Westminster to give evidence before a parliamentary committee. Within days of their appearance, more than 70 MPs and Lords had contracted influenza, including the Liberal leader William Gladstone. Just days prior to the outbreak in Westminster, the Sheffield papers had noted a greater number of deaths due to influenza [27]. When Parsons asked Sheffield’s medical officer to send him the mortality returns, he found that a graph plotting the rise and fall in mortality closely resembled the January 1890 epidemic in London. In Sheffield, however, the mortality had been far more pronounced, peaking at 73.4 per 1,000 in the first week of May 1891 – the highest rate ever recorded by the borough [28]. (Table 2).

Second wave of ‘Russian’ Influenza in Sheffield, 1891

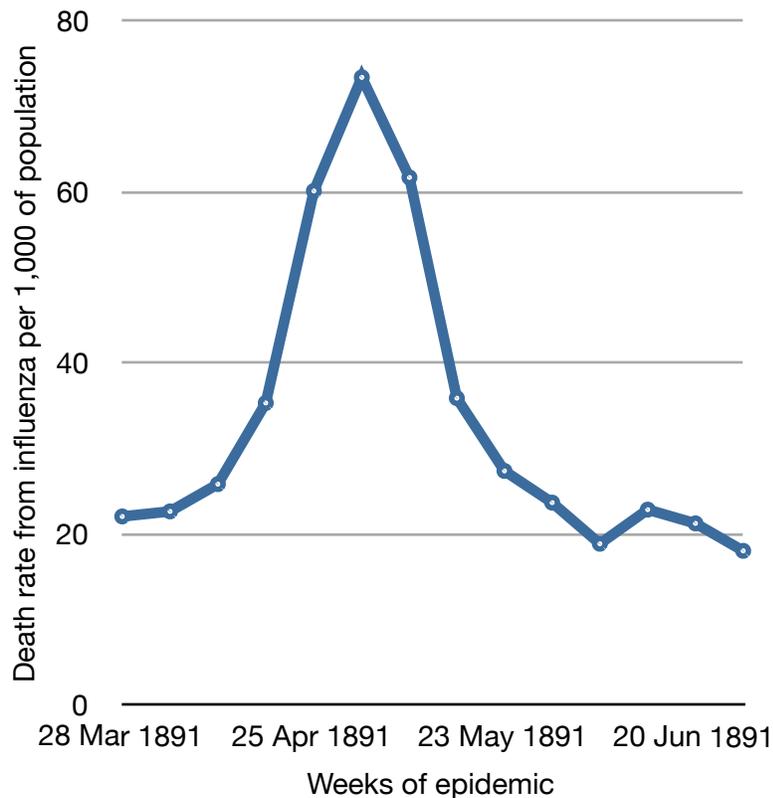


Table 3. Second wave of ‘Russian’ influenza in Sheffield, 1891 [29].

Due to the growing body of evidence of influenza's infectiousness, calls were soon being made for influenza to be designated a notifiable disease like cholera and smallpox. However, the LGB feared losing the good will of the medical profession by imposing yet another statutory duty on physicians. Moreover, Parsons' inquiries had established an incubation period of between 2-3 days, leaving the authorities with very little time to take action in the event of an epidemic being notified [30]. The key observation, however, was that many patients exhibited such mild symptoms that they never came to the attention of doctors. This may explain why R Thorne Thorne, the Assistant Medical Officer, waited almost six months after the publication of Parsons' report to issue specific guidance on influenza [31]. No mention was made of compulsory notification. Instead, the board emphasized hygiene measures such as the ventilation of public buildings and the disinfection of sick rooms. It also called for influenza patients to avoid public gatherings and, where possible, to isolate themselves at home. The key advice, however, was to seek plenty of bed rest and to keep warm. The document also acknowledged that the main danger was the risk of respiratory complications. These risks had been apparent as early as January 1890, when London registered 2,258 deaths above the seasonal average, the majority of the excess being due to an increase in deaths from bronchitis, pneumonia, and phthisis (pulmonary tuberculosis) [32]. The third pandemic wave illustrated these risks, with London recording 5,012 'excess' respiratory deaths between January and March 1892, nearly three times as many as from influenza alone [33]. Brighton also suffered unusually high mortality (60.9 per 1,000 in the week ending January 23, 1892), which the town's MOsH, Arthur Newsholme, blamed on the high number of 'chronic invalids, especially phthisical persons, and others with weak chests' who chose to winter in the seaside resort to restore their health [34]. As a result, Newsholme supported the segregation of influenza patients from the rest of the population, especially those already suffering from or at risk of developing other respiratory diseases. 'It is unsatisfactory that we are so comparatively helpless in the face of such an enemy', he complained. Influenza was 'intensely infectious' and as such

patients suffering from influenza should be isolated as with any other infectious disease [35]. However, it took the death of Queen Victoria's grandson, the Duke of Clarence, to convince the wider Victorian public of the importance of isolation efforts. Prince 'Eddy', as the Duke was popularly known, had contracted influenza early in the New Year during a shooting party, and on January 14, after a five-day battle with pneumonia, he was pronounced dead. He was just 28. The announcement sparked frenzied scenes in London, where large crowds had gathered to await news of the Duke's health, and was followed by several days of national mourning [36].

For Parsons, these 'low and insidious form[s] of pneumonia' were a key feature of the influenza pandemic. If pneumonia was merely a secondary complication of influenza, 'and perhaps avoidable', then it might be possible to guard against it by taking appropriate action. This notion supported the board's recommendation that influenza patients should avoid exposure to the cold and get plenty of bed rest to guard against the danger of relapse [37]. Parsons also noted a marked shift in the average structure of mortality. During years when seasonal influenza is dominant, infants and the elderly accounted for the largest proportion of deaths. But in 1890, he noted, death had been more numerous in intermediate age groups, with the 20-40 age range accounting for 25% of the mortality, and the 40-60 age range 36%. The result was a marked leftward shift in the mortality curve [38]. (Table 3). In the subsequent 1918-19 influenza pandemic, of course, medics noted how middle age ranges had been targeted, though this was shifted to the even younger 20-40 age group [39].

Proportionate mortality from influenza in London by age, 1876-89 versus first quarter 1890.

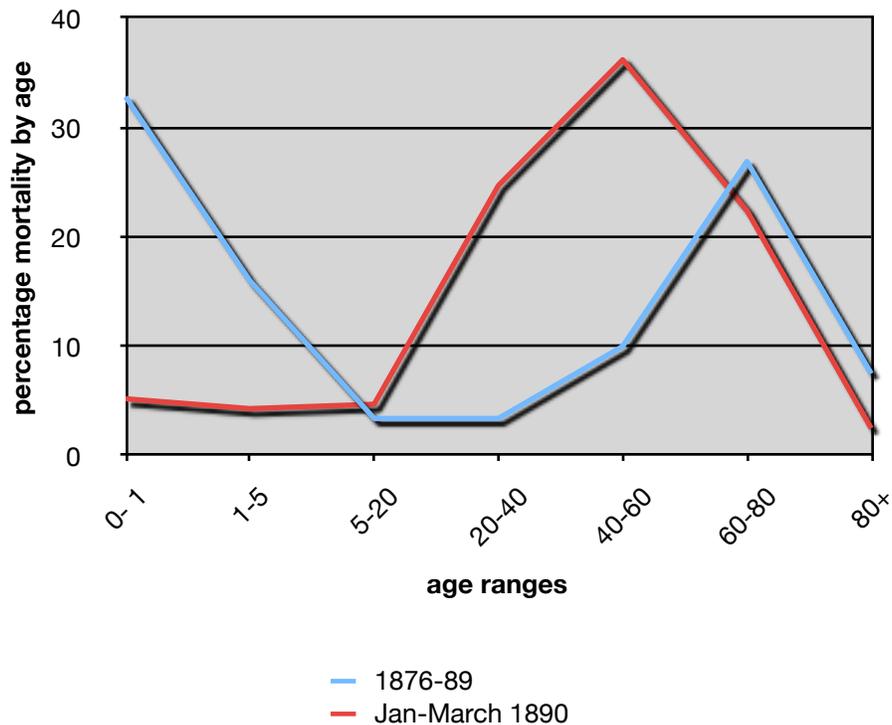


Table 4. Proportionate mortality from influenza in London by age, 1876-89 versus first quarter 1890 [38].

Perhaps the most valuable lessons came from Parsons’ description of the epidemic waves and his observations that in England and Wales it was the second and third waves that had proved the most deadly [40]. Although the first wave had coincided with the winter of 1890, the Registrar General noted that the annual influenza death rate had been just 157 per million. By contrast, the death rate in 1891 had been 574 per million, even though the epidemic that year had coincided with the spring, a relatively clement time of year when the incidence of respiratory disease and mortality due to bronchitis and pneumonia were usually low. While the third wave in January 1892 had coincided with the winter months, much like the first wave, the influenza death rate in 1892 had been 534 per million, almost as high as it was in 1891 [41]. These observations suggested that for all the morbidity associated with the initial wave of the pandemic, the later waves

were the ones that presented the greatest threat to survival, particularly in the case of patients with underlying health conditions. Such observations were not lost on students of historical epidemiology. In November 1918, for instance, Major Greenwood, an epidemiologist in the Ministry of Munitions, drew attention to the similarity between the quasi-symmetrical peak in mortality observed by Parsons in London in 1890 and the initial wave of the Spanish influenza in the summer of 1918. Arguing that there was an ‘essential identity’ between the two curves, Greenwood predicted that the summer 1918 wave most likely heralded a more severe secondary wave within twelve to fourteen months. The difference, Greenwood predicted, was that, unlike in 1891, the second wave would most likely coincide with the winter of 1919, suggesting that it would be advisable for the LGB to make provisions for increased nursing personnel and the removal of emergency cases to hospitals [42]. During this time, the secondary wave was already sweeping the British Isles, to be followed by a third and almost as deadly wave in March 1919. The Chief Medical Officer of the LGB, however, chose to ignore the evidence, arguing that the war took precedence and that the military authorities could hardly be expected to countenance the diversion of doctors and nurses from the military Front to care for influenza convalescents [43]. Ironically, the name of that officer was Arthur Newsholme, the very same official who in 1892, as the medical officer for Brighton, had called for the isolation of influenza patients due to the risk they posed to the elderly and infirm.

Conclusion

This paper has argued that the 1889-93 Russian influenza pandemic was the first epidemic in history to be tracked in real time. Using questionnaires and case reports, epidemiologists employed by Britain’s LGB mapped the spread of influenza and measured the frequency of attacks in an attempt to answer key questions about influenza’s etiology, its mode of transmission, and its interaction with respiratory illnesses. Through analysis of the raw mortality returns, the LGB’s investigators were

able to plot the behavior of the multiple waves of the epidemic and demonstrate how influenza had elevated the rate of mortality due to pneumonia and bronchitis. In particular, their investigations demonstrated that influenza was intensely infectious and that the secondary and tertiary waves were the most dangerous, regardless of the season. Unfortunately, due to the short incubation period of influenza and more pressing military priorities in 1918, these lessons were not applied during the Spanish influenza pandemic and thousands lost their lives due to avoidable causes.

References:

- [1] *BMJ* 11 January 1890, pp. 102-103.
- [2] Similar, collective-style investigations of cholera and plague followed in 1893 and 1898-1901. See Hardy A. On the Cusp: Epidemiology and Bacteriology at the Local Government Board, 1890-1905. *Medical History* 1998; 42: 328-346, p. 331.
- [3] Parsons HF. *Report on the Influenza Epidemic of 1889-90*. London: HMSO; 1891, pp. 1, 120.
- [4] Parsons 1891, p. 120.
- [5] Similar inquiries were conducted by the US, German, and Swiss medical authorities. Weekly Abstract of Sanitary Reports. Washington, D.C; 1888-1891; Friedrich PL. Die Influenza-Epidemie 1889-1890 im Deutschen Reiche. *Arbeiten aus dem Kaiserlichen Gesundheitsamte* 1894; 9:139-378; Schmid F. Die Influenza in der Schweiz in den Jahren 1889-1894. Bern: Schmid, Francke & C°; 1895.
- [6] Parsons HF. *Further Report and Papers on Epidemic Influenza 1889-92*. London: HMSO; 1893.
- [7] Parsons 1891, p.x.
- [8] Parsons 1893, pp. viii, 12-13.
- [9] 78th Annual Report of the Registrar General for England and Wales; 1915, p. 22.
- [10] 53rd Annual Report of the Registrar General for England & Wales; 1890, p. xiv.
- [11] 56th Annual Report of the Registrar General for England & Wales; 1893, p.xiv.
- [12] Parsons 1893, p. 45.
- [13] Patterson KD. *Pandemic influenza, 1700-1900 : A Study in Historical Epidemiology*. Totowa, N.J., Rowan and Littlefield; 1986, pp. 49-82; Brown L. *Victorian News and Newspapers*. Oxford: Clarendon Press,; 1985.
- [14] Honigsbaum M. The Great Dread: Cultural and Psychological Impacts and Responses to the “Russian” Influenza in the United Kingdom, 1889–1893. *Social History of Medicine* 2010 Aug; 23 (2): 299-319. pp. 302-303. Mussell J. Pandemic in print: the spread of influenza in the Fin de Siecle. *Endeavour* 2007 Mar; 31 (1): 12-17.
- [15] *The Times* 25 November 1889, p. 6.
- [16] *Lancet* 11 January 1890, p. 88.
- [17] West S. The Influenza Epidemic of 1890 as Experienced at St Bartholomew’s Hospital and the Royal Free Hospital. *St Bartholomew’s Hospital Reports* 1890; 26: 193-258, p. 227.
- [18] Parsons 1891, pp.109-110.
- [19] Parsons 1891, p. 115; Sisley R. *Epidemic Influenza: Notes on its Origin and Method of Spread*. London: Longmans Green; 1891, p. 52.
- [20] Parsons 1891, p. 180.
- [21] Parsons 1891, pp. 193-203.
- [22] Parsons 1891, p. 105.
- [23] Parsons 1891, pp. 71-72.

- [24] Parsons 1891, p. 87
- [25] Parsons 1891, p. 88.
- [26] Parsons 1891, p. 181.
- [27] *Yorkshire Telegraph* 6 May 1891, p.2.
- [28] Parsons 1893, p.28.
- [29] Littlejohn H. Medical Officer of Health Report. Sheffield; 1891, p. 16.
- [30] Parsons based his estimate on instances where the eruption of influenza in a district previously free of the disease followed the arrival of an infected individual. Parsons, p. 65.
- [31] *The Times* 25 January 1892, p. 4. Parsons 1893, pp. 82-84.
- [32] Parsons 1891, p. 114.
- [33] Parsons 1893, p. 15.
- [34] Parsons 1893, p. 29.
- [35] Newsholme A. Report of the Medical Officer of Health for Brighton; 1893, p 21.
- [36] *The Times* 15 January 1892, p. 9.
- [37] Parsons 1893, pp. 59-60.
- [38] Parsons 1891, pp. 6-7.
- [39] Taubenberger JK, Morens DM. 1918 Influenza: The Mother of all Pandemics. *Emerging Infectious Diseases*. 2006.; 12, 1: 15-22.
- [40] Parsons 1893, pp. viii, 12-13. The pattern in other countries was different. See [5].
- [41] 56th Annual Report of the Registrar General for England & Wales 1893, p.11.
- [42] Greenwood M. The Epidemiology of Influenza. *BMJ* 23 November 1918; 2, 3021: 563-566; Greenwood M. Discussion on Influenza. *Proc Royal Soc Med* 1919; 12 (Gen Rep): 21-24.
- [43] Newsholme A. Discussion on Influenza. *Proc Roy Soc Med* 1919; 12 (Gen Rep): 1-18.