

# Exploring Scotland's influenza pandemic of 1918–19: lest we forget

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**ABSTRACT** The 1918–1919 influenza pandemic resulted in more deaths than any other medical event in human history; the most recent scholarship puts the death toll worldwide at 100 million. Scotland suffered a proportionate loss of life but it was little reported at the time and has been little studied by social historians since. The Great War had been such a traumatic experience that the authorities, and the general public, could take no more tragic news and the result was an uncanny silence. There is little information on the way in which people were affected by the pandemic. Such information could now be valuable as we plan a response to a pandemic of avian flu. This article aims to initiate study of an important episode in healthcare in Scotland.

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## INTRODUCTION

The influenza pandemic of 1918–19 is one of the most catastrophic medical events in human history. Global mortality may have been as high as 100 million. Scotland had its full share of suffering but, strangely, the calamity had little effect on the public consciousness and the memory of what occurred rapidly faded. Equally strangely, the pandemic has been largely ignored by social historians. This article attempts to ignite interest in what was a cruel ending to the bloodshed of the Great War and an appalling setback to health in Scotland.

Although there were small influenza epidemics throughout the period of the Great War, the pandemic proper did not commence until May 1918 and lasted until April 1919. It came in three waves, each lasting a few weeks. Most deaths (64% in Britain) occurred during the second wave, lasting from September 1918 until January 1919, thus spanning the Armistice.

Influenza is generally thought of as an annoying phenomenon of winter; the patient feels dreadful for a day or two, but rapidly recovers. Only the elderly are vulnerable to complications. The influenza of the pandemic was significantly different. Previously healthy people became ill on the way to work and were dead by nightfall. Undertakers had difficulty dealing with bodies as

there were so many. In the words of a report from the RCPE:

Not only does this epidemic of influenza tower over all previously recorded epidemics of similar nature: it proved the most fatal epidemic disease of any form that has occurred in Scotland since death registration began.<sup>1</sup>

There is some evidence to suggest that the UK pandemic among civilians started in Glasgow, spread throughout Scotland, and then spread to England and Wales. As Glasgow was a major port, it is reasonable that it should be a point of entry. The precedence of Glasgow persisted even in the second wave; the mortality peak occurred in October for the Glasgow area, but not until November in Aberdeen, Dundee and Perth.

## INFLUENZA MORBIDITY AND MORTALITY

The numbers dead as a result of the pandemic are difficult to ascertain with certainty. It left millions dead in India and China where medical statistics were unreliable and, even in Europe, many influenza deaths were credited to bronchitis and pleurisy when, in all probability, these conditions were the result of influenza. Global mortality was computed by Jordan<sup>2</sup> in 1927 as 21.5 million, but this number has been increased by subsequent scholars. The true figure may never be known, but a very recent study<sup>3</sup>

puts it at 100 million. In some communities, the death toll was frighteningly high: In Western Samoa, 22% of the population was left dead before the pandemic abated.<sup>4</sup>

The number dying in Scotland of flu was originally given as 17,515 in just ten months, based on the figures given in the statistical returns, but this is certainly a substantial underestimate. The Registrar General of Scotland<sup>5</sup> reassessed the figure in a supplementary report and concluded that, during the pandemic, 22,000 deaths could be attributed to influenza and, if that figure is further adjusted in the same way as that for global mortality, then around 70,000 is not unreasonable. Many, of course, who contracted influenza recovered (nine out of ten) and so the number of Scots infected with flu was nearly one million. There must have been few families in the land who were not affected in some way by the pandemic. Although plagues of earlier times may have killed a higher proportion of the population, the actual numbers involved were smaller.

In spite of the severity and extent of the pandemic in Britain, the first major study of the pandemic by a medical historian did not appear until 2006,<sup>3</sup> almost eighty years after the event. Military historians have been similarly dismissive. In a recent book on Scotland and the Great War<sup>6</sup> many pages are given over to descriptions of the sufferings of Scottish soldiers during fighting but barely two to the consequences of the influenza pandemic, in spite of the similarity in the number of deaths. Also, novels written between the wars rarely mention the pandemic, except in passing, and yet the events and tragedies of the Great War were frequently chronicled. In that great saga of Scottish life, *A Scots Quair*,<sup>7</sup> pandemic influenza is not mentioned although the death of Christine Guthrie's husband during military service is a major event in the first part of the trilogy. John Buchan's heroes fought gallantly during the war and some fell, but few died of influenza. It is as if people did not want to recollect the events of 1918–19; they did not want to remember the deaths. This phenomenon has been described by Kolata<sup>8</sup> as the world's collective amnesia. The reasons for this collective amnesia are not easy to determine but, before discussing the matter further, we will briefly examine why the virus was so virulent and why it spread so quickly.

## THE INFLUENZA VIRUS

There are three strains of influenza virus that infect humans: A, B and C. Influenza B and C are uncommon and cause only minor infections. Influenza A causes a much more serious infection. The strains of influenza A are classified according to their different serotypes based on their matrix and nucleoprotein antigens. Rather unusually for a virus, that of influenza A is made up of eight different segments of a single-stranded RNA of negative polarity (vRNA). The separation of the

genome into these segments means that if there is more than one strain of virus present in a cell the vRNA segments can undergo mixing and reassortment to produce a new sequence of the gene. New strains may also arise by a process of genetic drift. If that new virus passes to another human, with no acquired immunity from previous attacks of influenza, its effects may be severe. It is almost certain that the virus of pandemic influenza arose in this way.

When an influenza virus takes hold in a new host it replicates and destroys cells. The host responds by activating the cells involved in initiating an immune response such as the production of cytokines, chemokines and interferons. In the case of a new strain the body will not recognise the virus and reacts by generating an exaggerated immune response, known as a cytokine storm. The cells damaged or destroyed stimulate an over-zealous inflammatory response and this can lead to necrosis, tissue destruction, vasodilation and oedema. Victims end up literally drowning in their own secretions, unable to breathe as their lungs are awash with inflammatory fluids. The over-reaction of a healthy immune system is one explanation of the observation that pandemic influenza most affected those in the prime of life. With age the immune system begins to wind down and produces fewer cytokines. In the very young, the immune system has not had time to develop fully and reach its optimal functional capability. The early symptoms of pandemic influenza are those of the regular variety but the patient may then go on to suffer from dyspnoea, cyanosis, delirium and rupture of mucous membranes that can cause bleeding from the nose and ears. The illness often leads to serious complications such as septic shock (from the cytokine storm), viral pneumonia and severe respiratory distress syndrome. It is the complications, or the exacerbation of existing weaknesses (such as asthma and cardiac dysfunction), that generally cause the fatalities of pandemic influenza.

Just as the Great War had done, the influenza pandemic removed from a whole generation some of its ablest people who had yet to realise their full potential. Those who suffered and survived, by and large, recovered their health with the exception of one small group. Thankfully, encephalitis is an uncommon condition although on the increase because of the AIDS epidemic. However in the 1920s, as Ravenholt and Foege<sup>9</sup> showed, the rare encephalitis lethargica developed in a number of people as a result of pandemic influenza. It is characterised by drowsiness and headache leading to coma. Death from this condition peaked in the 1920s (there were more than 1,000 deaths in Scotland), and then declined, but there were still cases alive in the 1950s. The long interval between the pandemic and the eventual death of the patient from encephalitis is a complicating factor in assessing influenza mortality.

The 1918–19 virus has now been recovered<sup>10</sup> and examined in detail; the structures of two vital components, haemagglutinin (H)<sup>11</sup> and neuraminidase (N)<sup>12</sup> are now known, and the virus is designated H1N1. These studies do not give any clue as to how it arose and all the evidence we have is circumstantial. Some influenza epidemics earlier than the 1918 pandemic have been traced back to Guangdong Province in China where people often live in close proximity to birds and pigs.<sup>13</sup> Pigs are susceptible to both avian and human forms of influenza. Therefore, if a pig becomes infected with a human and avian strain of influenza at the same time, the two strains can mix, leading to the creation of a novel strain that can be deadly if it infects humans. This is one possible source of the pandemic virus. Today we would expect the novel strain to travel rapidly to Europe via air travellers, but that would not have happened in 1918. However, because of the shortage of labourers for factories and manual work in war-torn Europe at least 135,000 Chinese labourers were recruited and brought to France.<sup>14</sup> They dug many of the Great War trenches and could easily have been the carriers of the deadly H1N1 influenza virus that soon became the scourge of Europe and the rest of the world. Undoubtedly its spread throughout Europe was facilitated by the large number of troop movements involved in demobilisation following the cessation of hostilities.

Although this view of the origin of the 1918–19 pandemic is plausible there is evidence against it. Influenza appeared in the US before it had been reported in Europe. An outbreak occurred in Camp Funston in Kansas<sup>15</sup> and was quickly followed by outbreaks on the East Coast.<sup>16</sup> Many of the early cases of influenza in Europe appeared to stem from the arrival of US troops, with instances in Brest, Bordeaux and Chaumont. Thus it is possible that the pandemic originated in the US, although obvious conditions facilitating antigenic shift did not exist there. We may never know for certain how the pandemic virus arose, but present-day virologists are watching the situation in the Far East closely as a possible source of a new pandemic virus.

## REACTIONS TO THE PANDEMIC

The reaction of public figures, newspapers and the medical profession to the pandemic was a curious silence. Coining the term Spanish flu shows this. It did not originate in Spain, but as Spain was not involved in the Great War, information about the spread of pandemic influenza was freely reported in the Spanish press while elsewhere in Europe this information was suppressed. Possibly there was a tacit agreement between governments and the press to keep from the public news of yet more fatalities. It could take no more bad news. In copies of the *The Scotsman* newspaper for 1918–19 all the major events of those years (Allied advances, the German surrender, the Peace Treaty) are given their expected

prominence. But news items about the influenza pandemic are not. For example, in an issue<sup>17</sup> of March 1919, when the pandemic was at one of its highs, deaths from influenza were reported along with the normal weekly returns for births and marriages in Scotland in a small item at the bottom of page 7. Even a ninefold increase in deaths from bronchitis, pneumonia and pleurisy over the same week in 1918, surely not unconnected with the influenza pandemic, was reported without comment. Far more space in that issue was given to an Edinburgh department store's new spring millinery.

In an issue of September 1919, when the pandemic was essentially over, there was a detailed summary of deaths from influenza and related conditions, city by city, in Scotland.<sup>18</sup> It makes bland reading and there is little comment. Today's newspapers would demand that someone should resign. The column about influenza appears on a back page sandwiched between the motoring news ('a two seater sports car for 100 guineas') and the prospects for the race meeting at Pontefract. One column heading is 'Scarcity of whisky'. The death of a soldier, even an non-heroic death in a trench, was seen as a sacrifice made in defence of King, country and Christian values. It had an element of nobility about it. But what could be said of a young man or woman killed by an invisible virus? Such a death made poor newspaper copy. The nation was weary of fatalities and possibly newspaper editors were sensitive to this. Presumably everyone hoped the pandemic would disappear as mysteriously as it appeared and life could return to some sort of normality. The hedonism of the twenties gives some hint of what the public were looking for.

## MEDICAL CARE ON THE HOME FRONT

The impact of the pandemic on those at home was exacerbated by the poor wartime diet and scarce medical resources. The pandemic came at a time when most doctors were enlisted in military service. As a result, many areas were left without proper medical care or were left in a situation where one doctor had thousands of patients assigned to him. In part of Fife, there were 5,731 people to one doctor,<sup>19</sup> and in one area of Glasgow, normally looked after by 17 GPs, ten were on military duty and three were ill. This meant there were only four doctors for a population of 55,000 people.<sup>20</sup> Letters from the RCPE archives pertaining to an earlier influenza epidemic in 1915 illustrate the problems experienced in remoter parts of the country. The letters are from a resident in correspondence with Dr Norman Walker (a dermatologist at Edinburgh Royal Infirmary) who was, at that time, chairman of the Medical Emergency Committee in Scotland. A letter from Golspie, north of Dornoch, describes the desperate measures taken by one doctor to get appropriate care for military recruits stationed nearby:

Dr Gertrude Maclaren has been visiting sick men under very difficult circumstances. Influenza has broken out, the men have temperatures and sore throats. The sick men are lying in rooms with several other men, clothes and food lying about. She got permission to take them into hospital but there was no room for more. Yesterday morning she got a cottage and had men taken there and was treating them.<sup>21</sup>

The letter goes on to plead for the release of some doctors from military service so they could help with the surge in demand. Replies state that the doctors cannot leave their posts because of the demands of their current jobs. One mentions the advent of flu:

as there is a great deal of sickness now in the division here amongst officers and men, a sort of epidemic of 'flu' which has suddenly sprung up, I feel that if you press for my release at this moment it would give rise to a good deal of feeling amongst my colleagues and would look as if I wanted away because the work was heavy.<sup>22</sup>

The strain of the increased workload amongst doctors working at home took its toll. Many elderly doctors were brought out of retirement to help with GP services during the war and the stress of the flu pandemic was just too much:

In one district of Glasgow in the course of one week two elderly practitioners died on their rounds, one seated at the bedside of a patient, the other in the street.<sup>23</sup>

It is interesting to note that physicians at that time felt that flu could be treated with more than bedrest and plenty of fluid. A preparation containing internal carbolic acid was recommended in a letter to *The Scotsman* of February 1919 from Sir Fredrick Milner,<sup>24</sup> but the treatment was quickly rejected by the President of the Pharmaceutical Society of Great Britain North British Branch as a grave danger. Others recommended nasal washes and inhalations, but it is doubted if any of these cures had much effect on the progress of the pandemic.

*The Scots Magazine* was not produced in the early part of the twentieth century, and therefore cannot be consulted to gauge public reaction to the pandemic. It reappeared in 1924 as a largely a literary journal but did contain articles concerning social life in Scotland. There is nothing serious concerning the impact of the flu pandemic on Scottish life in the early issues. However, there is a mention of it in an article on beadles and kirkyard humour. A fictional beadle, Mr Twiddle, says of the flu deaths in October 1918:

Never a day idle. It's well to be busy ... keeps you from pining.<sup>25</sup>

Jocular remarks on a subject so tragic would today be deemed inappropriate.

## THE PANDEMIC IN EAST AFRICA

The stark tragedy of the 1918–19 pandemic has been brilliantly captured in a recent book by Edward Paice<sup>26</sup> chronicling a part of the Great War that is little known. In parallel with the war in Europe there was a war between British and German colonists in East Africa. It was very different from the war in Europe but just as bloody and brutal. Paice writes:

The worst calamity of all was saved for last. For the surviving troops and carriers on both sides, and the civilian populations prostrated by four years of fighting in East Africa, October 1918 – 'Black October' – brought an even greater disaster than total war. The records of the military and civilian authorities say remarkably little about the advent of the 'Spanish' influenza epidemic, or the 'disease of the wind' as it was referred to in Abyssinia. It was almost as if its effects were beyond their comprehension ...<sup>27</sup>

The most poignant commentary comes from an ordinary soldier who survived the conflict and witnessed the advent of influenza in the camp:

native and Indian fundi made coffins by lamplight and wondered if they themselves would occupy them ... rumours averred that this was THE END: that a God weary of war had determined to wipe humanity off the world by means of a plague more fatal than man's destructiveness .... Out in the bush even the baboons were dying in thousands.<sup>28</sup>

Perhaps the idea that of the pandemic as retribution for the folly of the Great War occurred to others and was so frightening that there was another reason for pushing the whole episode into the limbo of 'the world's collective amnesia'. However, there is now a need to remember as, with the prospect of another flu pandemic in the near future, there may be valuable lessons to be learned from what happened in 1918–19.

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