Influenza in 1918: Recollections of the Epidemic in Philadelphia

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When the great influenza epidemic struck Philadelphia in 1918, the author was just starting his third year at the University of Pennsylvania School of Medicine. After a single lecture on influenza, classes for the third and fourth year students were suspended while he and his mates manned an emergency hospital, in which they worked under little or no medical supervision and in the presence of an alarming patient mortality. This essay describes what happened in the hospital, and in the city as a whole, during the pandemic. Certain features of the clinical course of most patients permit the hope that modern therapy will prevent a repetition of the horrendous mortality.

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The summer of 1918 fell between the second and third years of my course at the University of Pennsylvania School of Medicine. The First World War was raging. I and all my class, except for a few Quaker conscientious objectors, had enlisted in the army or navy medical corps. But we had not yet been called up, so I spent the early summer in research at the Marine Biological Laboratory at Woods Hole, Massachusetts. Late in August I enjoyed a brief walking trip through the White Mountains with my father; on this trip I saw a news report that there was an epidemic of influenza in Spain.

I returned to Philadelphia to find the medical community both alert and excited. In midsummer the British consul had been informed that a British freighter was approaching Philadelphia with its crew seriously ill. The consul arranged with the University Hospital for their care, and a ward was cleared to receive them. To this ward were brought some 25 Indian seamen—Lascars—as soon as the vessel docked. They were very ill; infectious disease precautions were started at once. The experienced members of the staff agreed that the seamen had severe pneumonia of a type with which they were unfamiliar. About 25% of the Lascars died, but no similar cases appeared for some weeks, so the alarm quieted down.

Medical school opened as usual in mid-September. At the first of the regular Friday medical conferences the Professor of Medicine, Dr. Stengel (1) abandoned the usual schedule to lecture on influenza. (As the fifth President of the American College of Physicians, Alfred Stengel, MD [1868–1939] "brought about its complete reorganization and made it the outstanding organization of internists in America" [1].) From experience with the previous epidemic of 1888, he described the three main forms of the disease, those in which pulmonary, gastrointestinal, or nervous symptoms predominated. His suggestions for treatment were negative; he believed that the use of coal-tar derivatives such as phenacetin and acetanilid was contraindicated; he had no confidence in any of the remedies that had been proposed. For me and my classmates, knowledge of the disease we were to face so soon was limited to the contents of that one lecture. On the following Monday morning the dean announced that an epidemic was judged to be developing and that, with so many medical practitioners away in the army, our services were needed in caring for the sick. So, for the third and fourth year classes, the medical school closed.

During the previous year, 1917, a smaller medical school in Philadelphia, the Medico-Chiurgical College, had merged with the University of Pennsylvania. The hospital of this small school was scheduled to be completely demolished to make way for a new boulevard, and about one half of the building had already been knocked down. The part still standing was converted into an emergency hospital. Workmen employed by the city erected temporary wooden partitions that closed the spaces previously opened by the demolition. A boiler was placed in the street to supply heat, and water and electrical connections were restored. By such means about five floors were made ready for occupancy, each containing about 25 beds. The erection of these beds, which had been dismantled and stored in the vicinity, was the first task of the students assigned to the emergency hospital; it was completed in 3 days.

When the patients began to arrive, fourth-year students were assigned the job of interns; I and the other third-year students were to act as nurses. One "regular" trained nurse was available for help and consultation during the day and another during the night. All the medical personnel were issued gowns and instructed on infectious disease precautions.

I soon found myself "head nurse" on the top floor for the shift starting at 4 p.m. and ending at midnight. There were no provisions for the staff to sleep at the hospital, so, after my stint was over, I motored 21 miles to my home in Chestnut Hill, taking with me my friend and classmate Joe Stokes, who lived so far away that it would have been difficult for him to commute from his home. (Years later,

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Joseph Stokes Jr., MD [1896–1972], was Chairman, Department of Pediatrics, School of Medicine, University of Pennsylvania.)

Soon the beds were full, but nobody on my floor was very ill. The patients had fever but little else. Many seemed to have sought admission chiefly because everybody in the family was sick and no one was left at home who could take care of them.

Unhappily the clinical features of many soon changed drastically. As their lungs filled with rales the patients became short of breath and increasingly cyanotic. After gasping for several hours they became delirious and incontinent, and many died struggling to clear their airways of a blood-tinged froth that sometimes gushed from their nose and mouth. It was a dreadful business.

Thinking of my function as that of a nurse, I was prepared to carry out the orders given me. But for most patients there were no orders, and many died without having been seen by any medical attendant but me.

The doctors who put in an occasional appearance were drawn chiefly from among specialists long retired. They did their best. I recall a laryngologist who seeing herpes labialis on a gasping cyanotic patient was much interested in it and prescribed application of guaiac. Another old physician showed me how to do "cupping," and I became expert in lighting a wisp of cotton in a tumbler and applying its rim to the skin without burning the patient. Another ordered digitalis for a dying patient in dosage many times that which I had been taught was maximal; it was not given.

One doctor bawled me out for not keeping the windows open, a standard practice in the treatment of pneumonia at the time; I was undoubtedly remiss and deserved the reprimand. But not long afterward there was shouting from the street, and we discovered that Mike the piano mover was poised on the window ledge ready to jump. Gathering the medical cohorts we converged on him, diverted his attention, rushed him, seized his arms and legs, carried him triumphantly back to bed, and strapped him in. But a little later there was another commotion on the ward; Mike, delirious, had turned the bed over on top of himself and was moving it up the ward on his back. He lasted only a few hours after this.

Then there was the Jewish family whose 18-year-old daughter was desperately ill. She was flushed with fever, and to my eye she was very beautiful. Father, mother, brothers, and sisters had gathered around, and they would not leave her. After suffering for a few days, it was she who left them.

I had two therapeutic ideas, one culled from my pharmacology course, that I tried out in the absence of other orders. When the pulmonary froth endangered life I gave atropine; when the patient was moribund and the pulse weak I injected camphor in oil. I was soon convinced that atropine was worthless, but, despite modern pharmacologic teaching, I am still not so sure about the ineffectiveness of the camphor. On some occasions the pulse picked up after such an injection, but I was too busy and too fatigued to get real evidence. And the patients soon died nevertheless. We had some tanks of oxygen but no effective way of administering it. (John Scott Haldane [1860–1936] had already initiated oxygen therapy in Great Britain [2].) Therefore our attempts at therapy were exercises in futility, but perhaps our efforts served to keep me and everyone else too busy to notice how useless they were.

Thus my patients who often entered the ward with what appeared to be a minor illness became in a few days delirious and incontinent, gasping for breath and deeply cyanotic. After a day or two of intense struggle, they died. When I returned to duty at 4 p.m. I found few whom I had seen before. This happened night after night. I think it likely that those charged with admissions, in the laudable aim of separating patients who might recover from those obviously destined to die, were concentrating the latter in my ward on the top floor. The deaths in the hospital as a whole exceeded 25% per night during the peak of the epidemic. To make room for others the bodies were being tossed from the cellar into trucks, which when filled carted them away.

When our burdens were at their worst, we began to get help from unexpected sources. A nun stopped me in the hall, said she had been given my name and that she and some other sisters were eager to help. Of these, three wore the black habits of the ordinary Sisters of Charity. Three others in white habits belonged to a cloistered order and, I was informed, had been given special permission by the bishop to work in the hospital for the duration of the emergency. A Catholic priest arrived to give extreme unction to the dying; there were so many of these he had time for little else. Two Protestant clergymen arrived together and reported to me; I suggested that they take over the service of transporting the dead from the ward to the improvised morgue in the basement; this service was badly needed as the dead were accumulating. Other women turned up to help, most of them associated with churches. A debutante was one of my most effective workers; I never knew how or why she turned up to work for me. Not all those who volunteered qualified as successes. I remember one of the "white" nuns trembling like a leaf and answering not at all when I asked her to do something; I wondered how long it had been since she had seen or spoken to a man, and then I recalled that both she and I were masked to the eyes. Another church worker succumbed to uncontrollable weeping and had to be sent home.

While this was going on in my ward, the life of the city had almost stopped. Public assembly was forbidden, so there were no plays, movies, concerts, or church services. Schools were closed. Some stores and businesses stayed open, some did not. All train schedules were reduced to those of Sunday, and these could not always be kept. Joe Stokes and I often counted the cars we passed while motoring the 12 miles between Chestnut Hill and the emer-

gency hospital in center city; on one of our midnight trips we passed no cars at all.

A widow of great wealth living with her servants in a large house in the suburbs was taken ill and died without being able to secure the services of either doctor or nurse. The medical students not assigned to the emergency hospital, using cars bearing medical insignia, would motor into the city's slums and stop to be immediately surrounded by a crowd imploring them to see friends or relative sick nearby. There was a frightful mortality among pregnant young women.

The reinforcements to our staff got things going better on the ward. Soon all patients were fed promptly, the incontinent were cleaned up without too much delay, the moribund were screened from general view, and the dead were removed promptly. After about 2 weeks the deaths on the top floor began to diminish, and then they diminished rapidly. While chronic pulmonary disease such as empyema and bronchiectasis because a problem for some of those who survived the acute attack, after 3 weeks the worst was clearly over.

A mild febrile disease, identified as part of the epidemic only by the fact that there was no other explanation for it, appeared in the population with decreasing frequency for the next few weeks. I came down with this myself and was sick for a few days only. So, as mysteriously as it had come, the killer departed.

After about 5 weeks medical classes resumed, and our lives slowly returned to normal.

Lessons for the Future?

As I look back on those unforgettable medical experiences, I can hardly believe that they took place nearly 60 years ago and that I am one of the few remaining American physicians who served during this great tragedy. Recent alarm about the possibility of another epidemic has prompted me to record my experiences in the last one, in the hope that medical attendants will be better prepared for what they might have to face than were we. Our experience in Philadelphia was not unique, and the main features of the clinical picture in 1918 deserve emphasis.

The dual character of the illness seemed obvious. The initial features were those of a febrile disease of only moderate severity; after a week or more most patients recovered uneventfully. But a distressing number, after several days of the same mild illness, suddenly developed pulmonary complications of devastating severity. At its maximum the cyanosis reached an intensity that I have never seen since. Indeed the rumor got about that the "black death" had returned, and I have no doubt that the cyanosis accompanying the medieval pneumonic plagues was very similar in its physiologic origin to that which I saw in my patients. At the height of the epidemic about one fifth of the total patient population of the emergency hospital died *each night*. Seeing one case after another go to pieces after admission to our hospital made us wonder whether there was a reservoir of infection in the hospital itself that was responsible for the heavy mortality. The fact that the medical attendants who worked there were so largely spared makes this hypothesis most unlikely; none of my classmates died, and very few became ill. Perhaps the masks, gowns, and handwashing did more to protect us than we had a right to expect. Certainly, with death all around us, we had every encouragement to be as careful as we could, but we were so busy and so tired that we forgot about precautions, and patient after patient coughed into our faces as we tended to their needs.

There is good reason to believe that a future epidemic could be handled much more effectively than was the last. The possibilities of prevention inherent in the new vaccines I am incompetent to judge. While certainly not proved, the hypothesis that the initial mild illness was of viral origin and the pulmonary complications of bacterial origin fits the facts as we saw them in 1918. If the antibiotics available today will prevent or cure the complicating pneumonia, as they do bacterial pneumonias of so many other types, there should be little or no mortality in a future epidemic of influenza.

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