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Paper

Frank's Legacy from a European Perspective.

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I am delighted to have the opportunity tonight to pay homage to the legacy of Frank Pantridge. I have to admit that I do not think he liked me very much at the beginning but I was not alone in this regard. But I do believe that we finished up as friends because I very much admired what he had achieved against all the odds and, in later years, I think he thought that I was OK. Before I discuss his remarkable contribution, I would like to describe the cardiological scene at the time he played his unique role.

Today, when coronary disease dominates the work of cardiologists, it is difficult to appreciate that in the 1950s, myocardial infarction was not seen to be a part of their remit. When I was training with Paul Wood at the National Heart Hospital in London in 1957 we scarcely ever saw patients with coronary disease, nor do I remember much discussion of its diagnosis and treatment. This is not at all surprising when the diagnosis of angina depended essentially on the history and its treatment was to administer nitroglycerine tablets. This was a richly rewarding condition for general physicians in private practice. Heart attacks were treated by what has been called benign neglect. The pain was relieved by morphine, and the patient was then kept strictly in bed for up to 6 weeks.

One evening in 1957, I was attending the annual dinner for the alumni of Middlesex Hospital when I found myself sitting next to the then Professor of Medicine. When I told him that I was a Registrar at the National Heart Hospital, he said "You're not planning to be a cardiologist are you?" I confessed that I did have that in mind. He replied: "I wouldn't do that if I were you. We've operated on all our mitrals" I am afraid that I did not take his advice.

I do not think many physicians then realised the seriousness of myocardial infarction. A colleague recently told me that when a nurse woke her up and told her that a patient had come in with a coronary during the night, she would sign a prescription for morphine and turn over in bed.

Just before I went to Australia in 1961, a survey was done of the medical staff of Sydney Hospital, asking them what they thought was the fatality of myocardial infarction in the hospital. The answers could be strongly correlated with the age of the doctor. The young doctors in the accident and emergency department thought it was 50%, the registrars thought (correctly) it was 30% and the senior physician could not remember any patient of his who had died.

The real breakthrough in managing heart attacks came with the development of closed chest cardiac resuscitation by Kouwenhoven and his colleagues at Johns Hopkins Hospital. It soon became obvious that those in the early stages of a myocardial infarction needed immediate care by those equipped and trained to undertake cardiopulmonary resuscitation (CPR) and defibrillation.

It is difficult now to imagine the controversy that the introduction of coronary care created. My first paper describing my experiences in 1963 was rejected by the BMJ on the grounds that it was irresponsible to suggest that all myocardial infarctions should be admitted to special units. Two notable figures in British medicine were vehemently opposed to coronary care. One was Geoffrey Rose, the leading British epidemiologist of the day and the other was Archie Cochrane, now even more famous posthumously as the arch guru of the randomised clinical trial. Rose complained that the introduction of coronary care had had no overall impact on the number of deaths in the community. He did not waver in his opposition even when it was pointed out that epidemiologists would not be able to detect it even if CCUs (Coronary Care Units) saved 10,000 lives a year. Cochrane put his faith in two extremely small trials that were hopelessly under powered. But these individuals had a strong voice in the Department of Health which discouraged developments in this area.

So this was the china shop into which a bull called Frank Pantridge charged. Based on the findings of Bainton and Peterson in Seattle and on a survey by the University Department of Social Medicine in Belfast, he became very aware of the high mortality of myocardial infarction before patients reached hospital. I have to say that those of us whose attention was focussed on the in-hospital care of myocardial infarction patients were aware of these out of hospital deaths but thought that nothing much could be done about it. Frank thought otherwise.

One must recognise that circumstances in Belfast at the time were in some ways propitious. The Professor of Medicine, Graham Bull, wanted to promote out of hospital care of heart failure patients and the success of John Geddes in resuscitating a patient outside hospital with the help of Pantridge certainly acted as a trigger. But as Pasteur said, 'chance favours the prepared mind' and Frank Pantridge had such a mind.

In September 1967, we held the first international meeting on coronary care in Edinburgh. This was attended by about 30 leading figures in the field. Three individuals stood out. These were Bernard Lown of Boston, Evgeny Chazov of Moscow and Frank Pantridge. Lown and Chazov went on to win the Nobel Peace Prize together but I don't think a Peace Prize would have been one of Frank's ambitions. Frank Pantridge told us of his first 20 months' experience with the mobile coronary care unit (MCCU). He had published his first paper on the subject the previous month. There was great interest in

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what he had to say. He opened our minds for the first time to the possibility that we could do something about those who were dying in the very early hours after onset of a myocardial infarction. We had thought that these deaths were very sudden and had not appreciated how many occurred during the often prolonged period between the onset and arrival in hospital. He described the creation of his unit and how he and his colleagues had developed a so-called portable defibrillator, albeit weighing 70Kg. He emphasised the importance of the autonomic disturbances that are frequent in the early hours of a heart attack. He firmly believed that the correction of these imbalances was at least as important as defibrillation in saving lives and he asserted that if one did this, the resulting infarction would be smaller than it otherwise would have been. I do not know whether he was the originator of the concept of infarct size limitation, as he believed himself to be, but it was an enormously important concept which was taken up enthusiastically in the succeeding years.

Evgeny Chazov described the mobile cardiac units they had in the Soviet Union. He also told us about how fibrinolytic drugs were life-saving and, I quote, "this therapy leads to the rapid control of pain, less cardiac failure, less rise in enzymes and rapid signs of ECG healing". Bernard Lown told us that we must identify warning arrhythmias and that if we treated these with lidocaine, ventricular fibrillation would not occur.

The reaction of the audience to these three speakers was interesting. Pantridge was challenged on several grounds. He had said that a quarter of all patients picked up by ambulances died in the ambulance. Several of those present, including myself, questioned this figure. A more widespread criticism related to what was considered to be the uneconomic use of scarce medical resources. My colleague Bobby Marquis quoted the famous remark of a French General about the disastrous Charge of the Light Brigade in the Crimea said 'C'est magnifique but ce n'est pas la guerre'. Frank wrote in his autobiography that he was hurt by this comment. Chazov's contribution was met with scepticism. I suspect that this related to the fact that he was the Soviet Minister of Health, a member of the Politburo, and Brezhnev's personal physician.

There is no doubt that Lown had the greatest impact on the meeting. He was and is a most charismatic person with a wonderful way with words. It was helped by the fact that he was American at a time that it was thought that anything that an American said must be true. At all events, lidocaine must have become the most widely used drug in the world.

Not long after this meeting, Frank and I were asked to have a discussion on the BBC about mobile coronary care. Unfortunately, as is often the case, the BBC wanted to polarise the discussion and so did Frank. Indeed, he completely ignored me throughout the programme. I gave a qualified approval to his work but this did not mollify him.

I had the good fortune to visit Lown, Chazov and Pantridge within the next three years and was able to form my own opinion about what they had said. It proved extremely educational. My first visit was to Lown and I attended his Rounds in the CCU at the Peter Bent Brigham Hospital in Boston. He was again making the point that if you identified warning arrhythmias, and you treated them with lidocaine, ventricular fibrillation did not occur. During the rounds, he was called away. I remarked to the Head Nurse that I was very impressed that they did not see ventricular fibrillation any more whilst we continued to see it in spite of using lidocaine in our unit. She asked if I knew that patients destined for the Unit were kept in the emergency room until the enzymes were positive and that they had had several episodes of ventricular fibrillation recently down there. I wondered what Frank Pantridge would have said if he had heard this.

In February 1970, Frank and I travelled to Moscow together to attend a small conference on Mobile Coronary Care under the auspices of WHO Europe and chaired by Evgeny Chazov. On the plane, I told him that we were about to follow his example but with a different system. We had undertaken a survey in Edinburgh to find out the potential of such a service and to determine how often patients died on their way to hospital. Deaths in ambulances proved to be rare, but we recognised that with an efficient organisation covering the whole city, we should be able to save a significant number of lives, as he had done. With this, he mellowed and could talk about the kinds of problems that he had encountered.

At the Moscow meeting, everyone was keen to learn more of Frank's increasing experience. But there was a problem in that he spoke staccato in a strong Ulster accent with which few of those present were familiar. A woman interrupted him, saying 'Please slow down as I think you are saying something important and I want to understand'. However, even when he did, the audience still had difficulty in understanding what he said and I was asked to translate. Frank's especial message on this occasion was the necessity of medical staffing of the MCCU. He felt that, while paramedics might be capable of CPR and, even, defibrillation, they were not trained to correct the autonomic disturbances of early infarction. Opinion was divided on this issue, those who already had doctor-manned ambulances, like the Soviets, shared his view and the WHO report that emerged from the meeting stated unequivocally that mobile coronary care should be in the hands of doctors.

Representatives from other countries then recounted their experiences. Perhaps the most memorable was an intervention by a Dutch participant. He described the difficulties of getting ambulances down the narrow main streets of some Dutch cities and on some occasions they had to "circumcise the whole town in order to reach the patient". At this point, an Israeli physician jumped up and said that they had not had this problem in Jerusalem.

While we were in Moscow, we visited the ambulance base together. They had four designated cardiac ambulances but as Frank found out, none of them carried a defibrillator. He was not impressed.

After the Moscow meeting, I had the opportunity to spend three weeks in the Soviet Union to see how patients with heart disease were cared for outside hospital. I particularly wanted to go out in an ambulance to gain experience of this at first hand. In Moscow, Leningrad and Kiev, I was not allowed to do so. I do not know why. However, I was able to talk to the staff, saw the ambulance equipment and listened in to emergency calls. But when I went to Tbilisi in Georgia, the atmosphere was far more relaxed and my host, Prof Kipshidze, soon asked if I would like to go out on an emergency call. I eagerly accepted and went in the ambulance with the driver, a woman

doctor and a 'bare-foot' doctor. Kipshidze followed with three staff members and another car followed him, but its function was not revealed. It was probably the KGB.

I was asked to interview and then examine the patient. He seemed to have atrial fibrillation, so I asked for an ECG. While we were waiting for this to be done, Kipshidze and I were directed to the sitting room and plied with an orange and a glass of Cognac. After the second cognac, I enquired about the ECG and was told 'it was being developed'-they were using an old photographic ECG machine. Eventually after the third cognac, I was handed a long wet piece of paper with the tracing wandering all over the place, but there was just enough to confirm my diagnosis. Pantridge's reservations about the Soviet system appeared to be well founded.

In fact, I do not know whether any of those present at the Moscow meeting were aware of the successful introduction of paramedic-staffed mobile care in Dublin which had started there in 1967 - the year of Pantridge's original paper. Even when Gearty presented a paper on the subject to the British Cardiac Society in 1971 and published a paper on the subject in the same year, this lead was taken up by only a few places, Notable amongst these was Chamberlain's organisation in Brighton which became operational in 1971. In the same year in Edinburgh, we started a programme in which the doctor on duty, driving a minivan equipped with a defibrillator, met up with a normal ambulance. About the same time or within the next three or four years many different countries in Europe took up the concept, particularly the Netherlands and Sweden. Those countries whose emergency ambulances were already doctor-manned, such as France and Germany, naturally thought that this was the way to go and few followed the trend to paramedic pre-hospital care for myocardial infarction, unlike what happened in the United States.

My next meeting with Frank was in Portugal. I remember little of this meeting but he was friendly. Indeed after we had had an outstanding dinner hosted by the Professor of Medicine in Lisbon, who plied us with the very best vintage port, Frank asked me and others back to his hotel room for a glass of malt whisky. Although some of the others failed to get up the next morning, I just managed to do so but I had learned a valuable lesson - never mix vintage port with malt whisky. Frank was completely unaffected by this toxic mixture.

A year or two later, I was flattered to be asked by the Solicitor-General of Northern Ireland to act as an expert witness on a medico-legal case in Londonderry and I think Frank had been responsible for the invitation. Apparently, a suspected terrorist had been taken to hospital with a head injury from a blow delivered by a policeman. He had died in hospital three days later from a coronary. The family were suing the Government because they thought that the blow had been responsible for his death from a heart attack.

Shortly before I went there, I was told that the case had been transferred to Belfast because of a bomb in the court in Londonderry. When I arrived at the Law Courts, I was annoyed to find that the case had been settled out of court. So I rang up Frank and he told me to come to the hospital. As before, I was immensely impressed by the organisation, and the enthusiasm and knowledge of the staff running the unit. He then said that he would take me to the airport but he would like to show me his Georgian house on the outskirts of Belfast first.

There was a soldier with a machine gun at the gate of the hospital. He failed to wave Frank through immediately, so Frank drove out rapidly, saying as he did so 'Stupid Bugger'. This made me rather uncomfortable, but in the car he told me I did not need to worry about the IRA or the soldiers.

When he arrived at his house, he told me about his marvellous housekeeper and how she had foiled four masked gunmen who had come to kidnap him. He then said that, since that time, he had kept a gun under his car seat. I did not find this reassuring. We were stopped by soldiers on the way to the airport but, fortunately, they did not look under the car seat and we arrived at the airport safely.

In later years, particularly after I had served on a Committee that recommended the widespread introduction of defibrillators in ambulances, he became very friendly. This lead to him embroiling me in a nasty legal case in which he was being sued for $8 million dollars by an American company because he had denigrated a product of theirs. I was never quite sure of the merits of the case, but I gave him what moral support I could.

He retired shortly afterwards and so we did not have any more opportunities to meet. But I retained a great affection and respect for him. The portrait reminds of my good fortune in being associated with a truly remarkable man. It is not often that one meets someone who really changes the world in which we live and work, but he was undoubtedly such a person.

