The donation that you make during this year’s “Heart Month” will be used for research and development in the prevention and treatment of heart disease. One of the world’s greatest contributors to that goal died at the end of last year. You may not have heard of Frank Pantridge but you are aware of his work every day for he was ‘The Father of Pre-hospital Cardiac Care’ and ergo: The Paramedics. He also designed the first Automatic External Defibrillator (AED) and forty years later, we are finally taking his advice and putting it into hockey arenas, gyms, public safety vehicles, schools, factories, malls and even some homes.

Professor James Francis Pantridge, or Frankie P., as he was very affectionately known in Northern Ireland died six weeks ago on Boxing Day in the same village where he was born in 1916: Hillsborough in County Down. He did not receive the knighthood he unquestionably deserved-as his obituaries noted he was far better acknowledged in the rest of the world than in the United Kingdom. It is said that a pioneer can often be recognized by the arrows in his back but Frankie also had a personality of which the Irish News observed, when reviewing his autobiography, “An Unquiet Life”, “…doesn’t suffer fools gladly and by his own account he has met a considerable number”, A story about him, possibly apochryphal, relates to him playing the famous Royal County Down golf course at Newcastle and finding his ball in a gorse bush, taking out his lighter and burning down the bush to play his ball!!

But in the early 1960’s as the wave of Coronary Thromboses, (Heart Attacks), reached Tsunami proportions in the Western World he was the first Cardiologist to see the significance of the majority of deaths, (Cardiac Arrest), occurring within the first hour of symptoms of the attack-before the patient had reached one of the newly established Coronary Care Units. Now that ‘heart attacks’ are such a common feature of our lives it is hard to believe that Coronary Artery occlusion leading to Coronary Heart Disease had been relatively uncommon in younger age groups before the Second World War. Indeed the name ‘Coronary Thrombosis’ describing the medical condition was only coined in 1912 by a Chicago physician named James Herrick. But the adopting of cigarette smoking especially by men after the first world war, motorised transportation and the availability of mass produced, adulterated food leading to gradual arterial hardening from the teenage years on, had resulted by the 1960’s, in an epidemic of coronary related deaths in men under 70 years. (It would be 15 years before similar epidemic affected younger women).

It had been established in the 1950’s that the deaths were due to an irregularity of the hearts electrical circuitry called Ventricular Fibrillation which could be reversed by an electrical counter shock of 7000 volts applied in 5/1000s of a second directly to the chest wall. Rather than expecting Family Doctors, relatives and friends to get the victim to the hospital in that first hour Frank Pantridge designed a hospital mains defibrillator to operate from two 12 volt car batteries through a static inverter converting the battery DC to the 230AC required to defibrillate. The apparatus weighed in at 70 kilos but could be manhandled from an ambulance into a patient’s home.
This, first Cardiac Ambulance anywhere in the world, operated out of the Royal Victoria Hospital on the Springfield Road in Belfast and was staffed by a team of a junior hospital doctor, coronary care unit nurse, (medical student-optinal and including this writer on a number of occasions), and ambulance attendants. The team was on-call at the hospital rather like Fighter Pilots in the Second World War waiting to be ‘Scrambled’. With the team went all the medications and airways and intravenous lines and all the paramedicaphenalia that is now standard issue on every medical TV show. The team was dispatched by loudspeaker within the hospital in response to a 999 telephone call to the hospital switchboard from a General Practitioner at the patient’s home. In those days GPs routinely did house calls visits in response to emergency calls to their offices. The 999 emergency number for Fire, Police, Ambulance dispatch had been in place in the UK from after the war.

In line with your own donation this ‘Heart Month’ the unit was financed by a grant from The British Heart Foundation. The paper showing the results of the project was published by Frank Pantridge and his registrar John Geddes, (later appointed Professor of Medicine at the University of Manitoba), in 1967 in the Lancet, a prestigious British medical magazine. This article which is now a citation classic and is always the first reference quoted in any study of Pre-hospital Cardiac Care was not at all well received in the United Kingdom. Despite the fact that it showed overwhelming proof that none of the victims treated at home died in transit whereas 27% of those not treated died in the ambulance. The response in North America was quite the reverse and Time Magazine ran an article suggesting that the equipment should be made available to President Johnson at the White House. Ironically it was used on Johnson five years later when he had a Coronary Thrombosis during a visit to Virginia. Mobile Pre-hospital Coronary Care ambulances were operational earlier but for the lack of a 911 emergency response system to facilitate dispatch of the vehicles. In contrast it was not until 1990, twenty-four years after the pioneer work of Frank Pantridge, John Geddes and their Royal Victoria Hospital Belfast team that the UK National Health Service agreed to equip all frontline ambulances with a defibrillator. In the press release announcing the name of Pantridge was notable by its absence.

The incompetence that went along with that tardy UK response would not have been new to Frank Pantridge. He had enlisted at the start of the war and was posted to Singapore as Medical Officer to the Gordon Highlanders. He was later very critical of the British Government’s poor defence, and subsequent abandonment of the troops in the Malaysia peninsula; during which action he received an immediate award of The Military Cross, one of the few citations given in that campaign. But one is allowed to be critical after being incarcerated in Changi jail, forced onto the construction of the Burma-Siam railway, (made famous by the description of collaboration in the movie “Bridge over the River Kwai”- which Pantridge maintained never happened), watched your colleagues die of cholera, dysentery and torture, and finally be left to die yourself in the Tanbaya death camp. But Frankie did not die although he contracted cardiac beriberi which left him for the rest of his life with a blood pressure problem that led to a quadruple coronary artery bypass in his 70s.
It also left him with a cynical outlook on the competence of many individuals in positions of authority when he returned after the war to initiate the Cardiology Unit at the RVH and develop “The Pantridge Plan”. His continuing research on the importance of early Advanced Cardiac Life Support during a ‘Heart Attack’ proved that damage to the heart is proportionally smaller if the time period before defibrillation is short. In the 1980’s he also showed that delivering a counter shock of 400 joules – which was the ACLS standard at the time– might not be necessary and one could achieve successful and less traumatic defibrillation with smaller countershocks beginning at 200 joules.

In the late 1960’s The American Heart Foundation promoted an adaptation of Cardiopulmonary Resuscitation, (‘the kiss of life’), to a standard technique that could be certified. Prior to that it had been done in a number of different ways around the world. While agreeing with the use of CPR to maintain the heart’s oxygenation prior to ACLS Frank Pantridge felt that anyone who could be trained in it could also be trained in defibrillation. Using a miniature capacitor which had been designed for NASA he developed a 3.2 kilo unit which could be used by non-medical personnel and which defibrillated only if ventricular fibrillation were present – thus avoiding the possibility of citizens electrocuting sleeping drunks, (or drunks electrocuting sleeping citizens). Thus was born the AED unit which you see used successfully in many locations in Ontario today.

More recently the OPALS (Ontario Pre-hospital Advanced Life Support) study showed that ACLS alone did not improve the rate of survival but CPR response by citizens followed by rapid defibrillation gave the best chance of survival. This is in line with the Ministry of Health awarding those first four sites in Ontario: Niagara Peninsula, Oshawa, Hamilton and Toronto. Dr. Denis Psutka, the Assistant Minister in charge of the project insisted on 15 conditions of eligibility including a large base of Citizen CPR to complement the ACLS training of ambulance personnel in 1979 leading to a curriculum programme a year later at Niagara College. Heart Niagara at present initiates CPR training programmes in elementary schools and believes that this should be a standard across Ontario.

Our gratitude for the life and work of Frank Pantridge should include consideration of his vision in recommending that AEDs be placed in every high risk location; aeroplanes, ferries, YMCAs, ski hills, factories and including the homes of high risk individuals. And also a structured training programme for all our citizens in CPR – starting from the early school age years. That might make some amen’s for what we are not doing about children’s smoking habits, about removing physical activity from the classroom and about doing little to discourage eating disorders leading to obesity in childhood. As the waves of ‘Cardiac Arrest’ and ‘Heart Attack’ in the hardened arteries of generations to come will only continue to surge we will need every piece of, “The Pantridge Plan” that can be made available.