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RESEARCH ARTICLE

A Philatelic Depiction of Cardiopulmonary Resuscitation

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ABSTRACT

The word "philately" is the English transliteration of the French "philatélie", coined by Georges Herpin in 1864 from the Greek root word phil(o)-, meaning "an attraction or affinity for something", and ateleia, meaning "exempt from duties and taxes", Thematic or topical philately is a branch of stamp collecting that favours a theme over the generic. It requires an in-depth knowledge of the core nature of the collection that includes mint and cancelled/postmarked stamps, first day covers, maximum cards, miniature sheets, cancellations and Cinderella labels. Philatelic material can form a useful means of dissipating knowledge to the lay public. Cardiopulmonary resuscitation (CPR) is a vital, lifesaving skill that every citizen must learn so as to be able to revive victims of sudden cardiac arrest (SCA) outside hospital location. This due to the fact that delays of minutes will make a difference between life, vegetative state and death. This unique collection explores the issue of philatelic material the world over and specifically related to CPR.
Keywords: Cardiopulmonary Resuscitation (CPR), philately, postage stamps, first day covers

Introduction

Human memory is extremely sensitive to the symbolic modality of presentation of event information. Picture superiority effect refers to images being more likely to be viewed and remembered than are words, seen or heard, especially in students with low prior knowledge. Social media users show an increasing interest in the visual over textual aspects and contents of social media posts. A drawing depicts at one glance what might be spread over ten pages in a book. ^(1,2)

Peyton's 'four-steps' educational theory consist of the steps 'demonstration' (skill is demonstrated), 'deconstruction' (skill is shown and explained step by step), 'comprehension' (learner gives instructions to instructor to perform the skill), and 'practice' (learners practice individually and receive feedback). ⁽³⁾

Philatelic collections can be used in the teaching of specific subject matters. Stamps provide little colourful windows to visual learners of a wider world. Stamps are a versatile teaching tool packed

with information and ability to teach varied subjects in an engaging way. ^(4,5)

Resuscitation or reanimation is a vital lifesaving skill intended for every citizen above 12 years of age, if maximum lives of sudden cardiac arrest victims are to be saved. This thematic collection on resuscitation, offers vivid imagery and detailed explanations for every philatelic material included, all from my personal collection. ^(6,7)

Topical Postage Stamps on Cardiopulmonary Resuscitation

On the 100th Anniversary of St John's ambulance on 22nd May 2008, POS Malaysia and Bank Negara Malaysia issued a special commemorative cover with a set of three multicoloured stamps on first aid. The stamp with a face value of 1 Malaysian Ringgit depicts emergency medical technicians administering CPR to an accident victim in cardiac arrest. (Fig 1) The first day cover and all three stamps depict the centenary logo. The cancellation portrays the official emblem of the Malaysian St John's Ambulance.



Fig 1: Malaysian stamp depicting CPR by EMT



Fig 2: British Virgin Islands stamps on CPR

The British Virgin Islands (BVI) located in the Caribbean, comprises of the main islands of Tortola, Virgin Gorda, Anegada and Jost Van Dyke, along with more than 50 other smaller islands and cays, 16 of which are uninhabited.

On 26th Sep 1988, as a commemoration of the 125th anniversary of the International Red Cross Society, the island nation issued two sets of stamps. The first to highlight precautions for swimmers and

water athletes and the second on first aid measures for drowning victims. (Fig 2) The latter set of four stamps, all of 50 cent face value, depict various aspects of CPR like checking response by tapping the victim's shoulders, head tilt chin lift manoeuvre to ensure a patent air passage, technique of mouth-to-mouth expired air ventilation to ensure oxygenation, and external chest compressions to maintain circulation and restart the heart. (8,9)



Fig 3: French Red Cross FDC and stamps on life saving actions

On 05th Nov 2010, France issued a first day cover and a block of stamps on the occasion of the 150th anniversary of the French Red Cross. This was themed on life saving gestures (actions) in medical emergencies like choking and sudden cardiac arrest. (Fig 3) The lot was designed by Aurelie Baras with a face value of 0.58 euros. The first stamp portrays calling for help and alerting the emergency medical response system to fetch an AED to the location of the event. The second stamp depicts positioning of the unconscious victim in the recovery position and assessing condition with respect to response, breathing and pulse. The third

stamp depicts a victim of choking clutching his throat in a classical manner, with the rescuer grabbing the victim from behind and administering upper abdominal thrusts to expel the foreign body lodged in the lower airway. (10,11) The fourth stamp depicts a rescuer administering high quality external chest compressions to a victim of sudden cardiac arrest.

The Republic of China commemorated the 80th anniversary of the Red Cross in 1984, with a postage stamp depicting various nursing activities including a two rescuer CPR in a victim of drowning in cardiac arrest. (Fig 4)



Fig 4: Two rescuer CPR for a victim of drowning

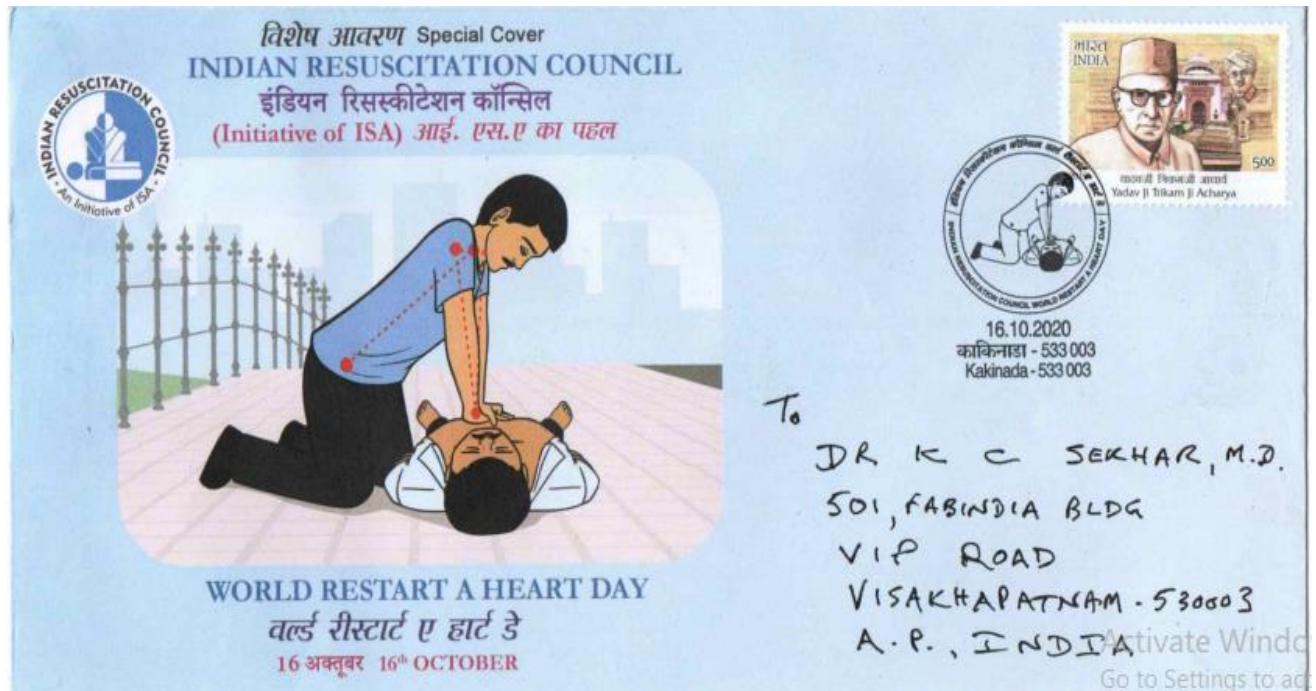


Fig 5: IRC special cover on COLS

Compression Only Life Support (Cols)

The Indian Society of Anaesthesiologists established the Indian Resuscitation Council (IRC) in 2017. The very next year, the International Liaison Committee on Resuscitation (ILCOR) launched the first global initiative on cardiac arrest with the slogan of “All citizens of the world can save a life”. Since then, each 16th of October (celebrated as World Anaesthesia Day) is now also designated as the annual World Restart A Heart (WRAH) day. The aim being to raise public awareness on achieving competency in cardiopulmonary resuscitation (CPR). On 16th Oct 2020, a special first day cover was

issued at the IRC Headquarters at Kakinada, Andhra Pradesh, depicting the logo of the Indian Resuscitation Council and the image of a provider administering chest compression only life support (COLS) to a victim of sudden cardiac arrest. (Fig 5) High quality chest compressions alone is as effective as conventional CPR in SCA. The cover image highlights the correct stance of the rescuer/provider applying a downward force with the full torso weight, cued by red lines emphasizing rocking motion from the hips, elbows kept straight, with both hands locked and pressing on the lower mid sternum of the victim. The cancellation also depicts an identical image in black and white. ⁽¹²⁾



Fig 6: Chest Compressions in sudden cardiac arrest

The Duke of Edinburgh Award Service conducts a two day comprehensive first aid course and awards a Level 3 (Qualsafe) Outdoor First Aid Certificate, fully compliant with The Health and Safety (First-Aid) Regulations 1981, valid for three years. ⁽¹³⁾ A maximum card (postage stamp with matching image on the cover and postmark related to the image) was issued in 1981 on the 25th anniversary of the organization. Designed by Philip Sharland,

the maxicard displays the logo of the organization together with an image of a young lady kneeling beside a victim of sudden cardiac arrest and administering high quality chest compressions. The victim's face is upturned to ensure airway patency. The mint stamp with a face value of 22 pence carries a replica of that depicted on the cover. (Fig 6)



Fig 7: Belgian “3 Minutes For Life” First Day cover on chest compressions in SCA

A nationwide citizen CPR campaign was organised in Oct 1986 by the Belgian Heart Association, the Belgian Red Cross and the Belgian Society for Intensive Care. The slogan was "3 minutes for a life". The objective of the program was to instruct at least 100000 adult citizens over a 2 year period, in the correct technique of adult CPR. ⁽¹⁴⁾ The Belgium postal department and the Red Cross issued a special post card with a simple and striking schematic depiction of a rescuer performing chest compressions on a victim of sudden cardiac arrest, emphasising that the drill must commence within 3 minutes of an event for better neurological outcome. The stamp postmark/cancellation has the same logo with date of issue. (Fig 7)

quality chest compressions for a victim of sudden cardiac arrest during an athletic event. (Fig 8)

The above commemorative Stamp was issued on the occasion of the “Centenary of Hong Kong St. John Ambulance Brigade” on 14th April 2016. Designed by Ms. Tsoi Ka-ching, the stamp shows a brigade emergency medical technician, administering high



Fig 8: EMT administering chest compressions in SCA

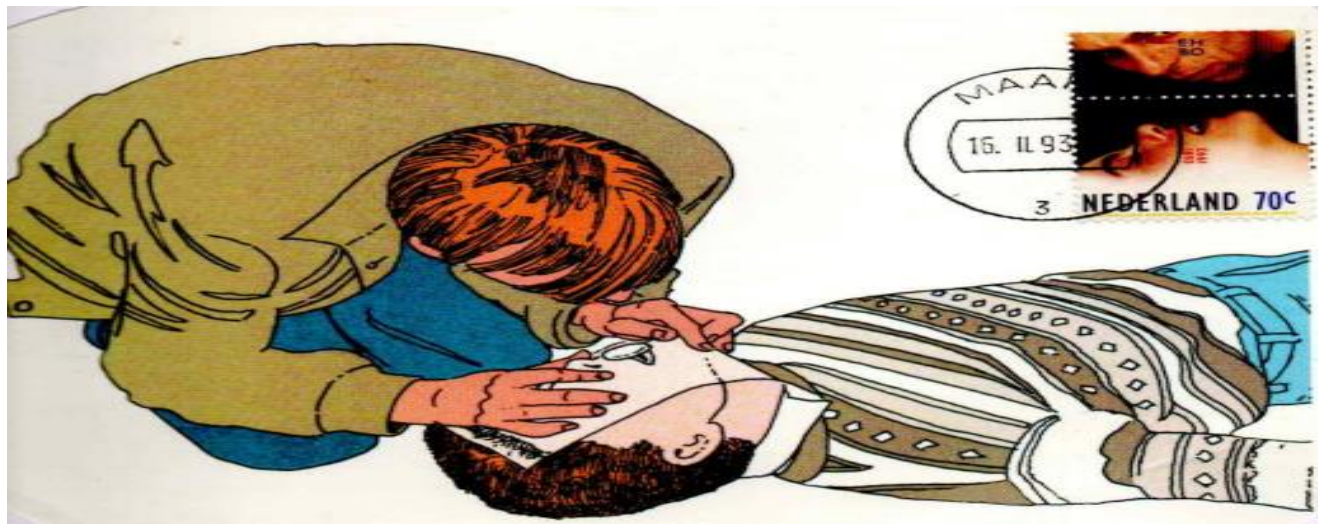


Fig 9: Netherlands First Day Cover on Rescue breathing

Rescue Breathing

Dutch hospitals follow the European Resuscitation Council guidelines under the supervision of the Dutch Association of Resuscitation Team Coordinators (NVCR). Rapid Response Teams are tasked with preventing or responding to serious adverse events. In 1993, a special First Day Cover was released depicting a rescuer maintaining chin lift in a victim of sudden cardiac arrest, administering expired air ventilation using a pharyngeal airway with a barrier material to prevent contamination. (Fig 9) The technique was pioneered in 1956 by Dr Peter

Safar (1924-2003) after observing that expired air containing 16% oxygen was more than adequate to meet the body's requirement of oxygen and correct the severe hypoxia following sudden cardiac arrest. (15) Two breaths, each over 1 second duration, must produce a visible chest rise in the victim and followed by 30 chest compressions to restart the heart.

The 1993 Netherlands postage stamp issued on healthcare by Frans Osterhof, depicts a rescuer assessing an unconscious victim for respiration prior to administering mouth to mouth respiration.



Fig 10: Gilbert (Kingsmill) and Ellice Islands FDC on rescue breathing

Situated in the western Pacific Ocean, the Gilbert and Ellice island nations were a part of the British Empire from 1892 to 1976, a protectorate from 1892 to 12 January 1916. In October 1975, these islands were divided into two separate colonies, and soon gained independence. Subsequently, the

Ellice Islands became Tuvalu in 1978, and the Gilbert Islands became part of Kiribati in 1979. In 2014 the government bought 20 square km of land on the Fijian island of Vanua Levu that could serve as a new homeland of climate change submerged islands.

On the occasion of the 100th anniversary of the British Red Cross on 09th Mar 1970, the island nation issued a first day cover and three multi-coloured commemorative postage stamps of face value 10, 15 and 35 cents. Designed by L Arbell, the set depicts a rescuer performing a head tilt chin lift manoeuvre and providing rescue breaths for a victim of sudden cardiac arrest. (Fig 10)

On 07th May 1966. Finland released a multicoloured postage stamp designed by Olavi Vepsalainen. With a face value of 0.15 + 0.03 Finnish markka, the stamp depicts a rescuer administering mouth to mouth respiration to a victim of cardiac arrest close to a safe location next to the highway. ⁽¹⁶⁾ The rescuer/provider is seen maintaining a chin lift with one hand and pinching the victim's nostrils with the other, while forcefully breathing into the victim's mouth to observe chest rise. (Fig 11)



Fig 11: Finland stamp on rescue breathing



Fig 12: A special Macedonian cover on infant CPR

The Republic of North Macedonia, is a landlocked country in Southeast Europe. It shares land borders with Kosovo to the northwest, Serbia to the north, Bulgaria to the east, Greece to the south, and Albania to the west.

This 2017 Macedonian souvenir card depicts a nurse administering mouth to mouth and nose respiration to an infant together with head tilt using one hand, and chest compressions with the other. (Fig 12)

Skills Lab CPR Training

Mandatory simulation and artificial intelligence based training is essential to improve resuscitation skills. The ILCOR, Indian Resuscitation Council Federation, American Heart Association and European Resuscitation Councils all have published guidelines on resuscitation training. The optimal duration of instructor/provider led BCLS and AED training, spaced booster sessions and/updates to prevent skills decay and debriefing sessions after real resuscitation events have to be adhered to. ⁽¹⁷⁾



Fig 13,14: Isle of Man special cover and stamp on CPR training

The Isle of Man is a self-governing British Crown Dependency in the Irish Sea between Great Britain and Ireland. On 16th Oct 1989, the island nation issued a set of five stamps to commemorate the 125th Anniversary of the International Red Cross and Red Crescent. Designed by Anthony D

Theobald, the multicoloured stamp with a face value of 14 p depicts three Red Cross cadets learning the correct technique of external chest compressions on a mannikin.(Fig 13, 14) The same stamp commemorates the Centenary of Nobles Hospital located in Isle of Man.



Fig 15: CPR training for nurses

On 09th May 1988, Tuvalu issued a stamp commemorating the 125th anniversary of the International Red Cross Society. Designed by Michael Pollard, the stamp with a face value of 60 Tuvaluan cents, depicts nurses practicing high quality chest compressions on a manikin in the skills lab. (Fig 15)

Nevis in the Caribbean Sea, forms part of the inner arc of the Leeward Islands chain of the West Indies. Nevis and the neighbouring island of

Saint Kitts constitute the Federation of Saint Kitts and Nevis, a singular nation state.

The island nation issued a multi-coloured stamp designed by Leslie Curtis with a face value of 40 East Caribbean cents on 20th June 1988 to commemorate the 125th anniversary of the International Red Cross. (Fig 16) The stamp depicts a first aid instructor palpate the carotid artery using 3 fingers in an unconscious patient.

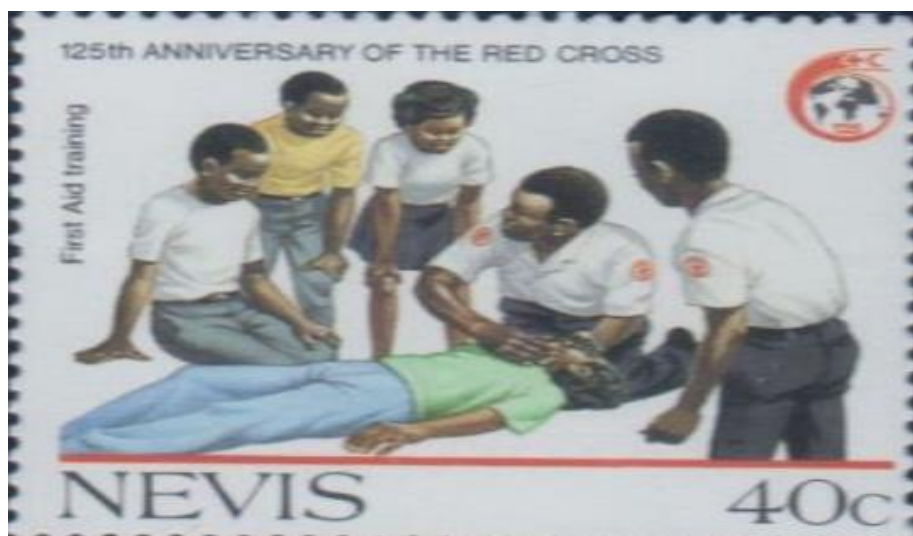


Fig 16: Airway management training in a unconscious patient



Fig 17: Training in chest compressions in skills lab

Fiji issued a stamp on 25th Nov 2011, designed by Sharon Light, with a face value of 40 Fijian cents, commemorating the St John's Ambulance services as part of the International Year of Volunteers. (Fig 17) The stamp depicts a certified trainer instructing a volunteer on the correct technique of chest compressions to revive a victim of sudden cardiac arrest.

First Aid in Choking

Choking or foreign body airway obstruction occurs when an object partially or completely obstructs the passage of air exchange between the upper

airway and the trachea. Choking is the fourth leading cause of unintentional death, the leading cause of infantile death, and the fourth leading cause of death among preschool children. Infants (children less than 1 year) with foreign body aspiration should be treated with alternating five back blows followed by five chest thrusts. Conscious adults are given abdominal thrusts (the Heimlich manoeuvre) with a clenched fist placed at the level of the umbilicus and an upward thrust delivered in an upward and backward direction. Unconscious pulseless individuals are given CPR, with attempt to remove any obvious visualized foreign body, before administering rescue breaths. ⁽¹⁸⁾



Fig 18, 19, 20: A Ugandan FDC with two French stamps portraying Heimlich manoeuvre for complete choking

Uganda issued a block of four stamps on 19th Oct 1990 on the theme of health and safety, at the behest of the World Health Organization. The stamp with a face value of 90 Ugandan shilling, depicts Mickey Mouse saving Donald Duck from choking by applying an upper abdominal thrust (Heimlich manoeuvre) and succeeding in expelling a foreign body lodged in Donald's lower airway. (Fig 18,19)

In the set of stamps from France shown earlier as Fig 3, a still-conscious victim of complete choking is shown clutching at his neck in a classical sign of inability to breathe or speak. A rescuer is seen applying upper abdominal thrusts from behind, in one of the recommended five attempts, to relieve the obstruction (Fig 20)

External Cardiac Defibrillation

With the availability of public access automated external defibrillators (AEDs), early defibrillation for shockable rhythms, {ventricular fibrillation(VF)/ pulseless ventricular tachycardia (pVT)} soon after initiation of high quality CPR has yielded high rates of success. . These devices are compact and user-friendly. Once powered on, they have voice and visual prompts guiding the user to attach the earmarked adhesive electrode pads to the bare chest of a victim of SCA and automatically get a prompt to shock the victim if diagnosed as having VF and pVT. (With a sensitivity of >95% and a specificity of 95%). It then delivers an AI derived biphasic shock, either automatically or by instructing the rescuer to press a discharge button. ⁽¹⁹⁾

On 03rd June 2015, a large training session for 60 volunteers was conducted in the use of automated external defibrillators, at the Piazza San Carlo in Turin, Italy. The special cover issued to commemorate the event, depicts a victim of sudden cardiac arrest lying supine on the floor, with correctly placed self adhesive electrode pads over his bare chest and a rescuer announcing “All Clear” caution before pressing the ‘shock’ button on the AED to administer the shock. (Fig 22) The round cancellation translates as “Project Vita Ragazzi” promoting heart and resuscitation health awareness and education. ⁽²⁰⁾ An AED delivered DC shock within 1 minute of sudden cardiac arrest can save 87% of victims. This has become a reality because of drone GPS enabled deliveries



Fig 21: External cardiac defibrillation for a victim of sudden cardiac arrest with an automated external defibrillator (AED)



Fig 22. Defibrillation by ICU Nursing staff

In 1968, on the 20th anniversary of the World Health Organization, the postal department of Somalia issued a set of commemorative stamps. The stamp with a face value of 1.80 Somali shilling, depicts an intensive care nurse applying paddles on the bare chest of a victim of sudden cardiac arrest, preparatory to administering a DC shock. (Fig 22)

Emergency Cardiac Pacing

All cardiac pacemakers have a pulse generator that generates the electrical current required for stimulation of heart and one or two electrodes (also

referred to as leads), which are responsible for transmitting the electrical activity generated by the pulse generator to the heart surface. Placement of a temporary transvenous pacemaker is a lifesaving procedure initiated in the setting of unstable brady- or tachyarrhythmias. Temporary transvenous pacing (TVP) through surface pads or by a central venous access to pass an electrode into the right ventricle. Permanent pacemakers are placed under the skin of the chest wall with epicardial leads or leadless, single chamber, dual chamber or biventricular types.



Fig 23. Transvenous pacing lead in right ventricle
On 18 Feb 2020, Australia issued a series of stamps on life-changing medical innovations that have benefited from Australian capability. One stamp with a face value of 1.10 Australian dollar, designed by Nigel Buchanan, depicts a transvenous emergency pacemaker inserted from the right femoral vein into the right ventricle. (Fig 23)
Invented by Sydney-based physician

anesthesiologist Dr Mark Lidwill MD (1878–1968) with physicist Edgar H. Booth (1893–1963) in 1926, the device underwent successful clinical trials in 1929. The inventors did not patent the invention, however. American Dr Albert Hyman built and patented his cardiac pacemaker in New York in 1932.⁽²¹⁾



Fig 24: Implanted permanent pacemaker device, and a captured ECG trace restoring good health

The VIIIth World Symposium on pacemakers was held from 01 to 05 May 1983 at Vienna. The postal department of Austria released a first day cover to commemorate the conference, depicting a chest X ray in which an implanted pacemaker and its leadwire can be viewed. (22) The special stamp issued shows the captured pacing impulse trace over a schematic heart image, restoring the patient with cardiac dysrhythmias to good health and an active life. (Fig 24)

On 17th Aug 2011, the Canada post released a series of stamps on Canadian innovations designed by Danielle Trottier. It included a stamp with a face value of 59 Canadian cents, depicting a cardiac monitor with an incorporated pacing cable invented by a Canadian electrical engineer John Hopps while studying the effects of hypothermia in 1950. (Fig 25)



Fig 25: A First-generation cardiac pacemaker



Fig 26: The implantable converter defibrillator device

Implantable Converter Defibrillators (ICD)

These devices are management standard for use in primary prevention (the prevention of a first life-threatening event) and secondary prevention (prevention of a recurrence of a potentially fatal arrhythmia or cardiac arrest) in patients with coronary heart disease. It has a pulse generator and one or more leads for pacing, and defibrillation electrodes that can perform anti-tachycardia pacing and deliver low energy direct-current shocks.

The government of Israel issued a special postal cover and set of stamps on 02nd April 2013, commemorating Israeli achievements in cardiology. The stamp with a five new shekel face value depicts an implantable cardioverter defibrillator (ICD), a

small battery-powered device placed under the skin over the patient's chest with leads for sensing and pacing. (Fig 26) The device continuously checks the heartbeat and delivers electric shocks, and pacing, if needed, to restore a regular heart rhythm. (23)

Conclusion

Philately forms an important and powerful media through which one can create public awareness on varied subjects. Since sudden cardiac arrest is a public health issue, release of special covers and stamps create a significant impact in educating the masses on various aspects of life saving. Money realised through sales of these materials can also fund skills labs, workshops and AEDs to help save lives through prompt CPR by lay public and first responders.

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