

## **OPEN-CHEST CARDIAC MASSAGE**

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Open-chest cardiac massage is an emergency procedure for managing a heart that is not beating or beating ineffectively (cardiac arrest). It is done in conjunction with the administration of drugs directly into the heart or vein and the use of direct electrical defibrillation. It is applied in chest surgery, chest injuries or in chest rigidity that precludes adequate external massage.

The first successful open-chest cardiac massage in 1901, performed by Kristian Igelsrud after anesthesia-induced arrest. Thereafter, in the first half of the 20th century, sudden cardiac death was only survivable in an operating room or urgent hospital setting, where direct cardiac massage was possible. This led to the rediscovery of external cardiac massage, today known as chest compression, which was reintroduced to patient care in 1958 by William Kouwenhoven.

The heart is compressed with one or both hands (preferably both) at a rate of 60 to 70 times a minute. Lungs are easily inflatable through a tube (endotracheal tube) inserted before the surgery or in the emergency department. Several individuals are needed to perform compressions in rotation to prevent hand fatigue. At the same time, drugs are administered directly into the heart or intravenously. One or more attempts are made to defibrillate the heart with sterile paddles applied directly to the heart. The amount of electrical energy delivered via the paddles is much less than the amount delivered when the paddles are placed on the chest wall to deliver the electrical shock. If the cardiac arrest occurs in the recovery room or later in the surgical ward, the chest is reopened through the original incision. If the arrest occurs in the emergency department, the incision is made between ribs five and six on the side of the chest and the ribs are spread apart.

Open-chest cardiac massage though has low complications but it is an effective method of resuscitation especially in cases when the chest has to be opened. The procedure may also be used in an individual with gunshot or stab wound to the chest (penetrating trauma) whose heart stops beating in the emergency department. It is also effective in this 20<sup>th</sup> century but in more advanced form, the use of defibrillator.

Conclusively, open-chest cardiac massage is an accurate means of cardiac pulmonary resuscitation in cases where closed cannot be used. It is preferred over closed for its advantages especially during fracture of the ribs. Compression becomes difficult, therefore, open cardiac massage is effective.