**Aggressive, early defibrillation compared to traditional Advanced Cardiac Life Support (ACLS) in post-operative cardiothoracic surgery patients**

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**Introduction**

According to American Heart Association (AHA) ACLS recommendations, no clear guidelines exist for resuscitation of post-operative cardiothoracic surgery patients. Use of European Resuscitation Council (ERC) guidelines can provide better structure for CPR in these patients while reducing patient mortality.

**PICO Question**

**Population:** Post-operative cardiothoracic surgery patients requiring sternotomy

**Intervention:** Aggressive, early defibrillation

**Comparison:** Traditional ACLS

**Outcome:** Survival rates

**Question:** In post-operative cardiothoracic surgery patients requiring sternotomy, does aggressive, early defibrillation compared to traditional Advanced Cardiac Life Support guidelines increase chances of survival for patients in the Intensive Care Unit?

**Methods**

**Databases:** CINAHL, EbscoHost, PubMed

**Keywords:** European Resuscitation Council, cardiac surgery, CPR, ACLS, cardiac arrest

**Inclusion Criteria:** Articles within 10 years, groundbreaking articles, inpatient arrests, adult cardiac surgery patients.

The initial search yielded 302 articles and 8 articles were included for this project.

**Results**

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<tr>
<th>Level of Evidence</th>
<th>Number of Articles</th>
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| Level I           | 2                  | • If defibrillator readily available, administer 3 stacked shocks within 2 minutes(3)
|                   |                    | • Changes to existing protocols should be discussed as a unit and training administered to minimize risk of harm(2)
|                   |                    | • If cardiac arrest occurs within 24 hours of surgery, survival to discharge is 54-79% with prompt treatment(2)
|                   |                    | • Need for more than 3 defibrillation attempts should trigger need for resternotomy(2)
|                   |                    | • Resternotomy should be standard practice during cardiac arrest for 10 days following surgery(2) |
| Level IV          | 1                  | • ≤ 5 minutes of chest compressions resulted in 70 - 79% survival to discharge and 55% survival rate at 4 years post-arrest(5) |
| Level V           | 2                  | • If defibrillator not readily available, pacing is recommended for patients in asystole or bradycardic PE/A during CPR phase(4)
|                   |                    | • Evidence to change current ACLS guidelines regarding chest compressions is not strong enough(4) |
|                   |                    | • For VF, shock x3. Likelihood of 4th shock succeeding < 10%, move to chest compressions and prepare to open chest if resuscitation unsuccessful(6) |
| Level VI          | 3                  | • Chest re-exploration in the ICU can be safe if standardized protocols are in place(7)
|                   |                    | • Patients who arrest within 24 hours of surgery are likely to benefit from chest reopening...CPB beneficial during re-exploration process(5) |
|                   |                    | • Chest reopening within 10 minutes of arrest increases survival(5) |
|                   |                    | • Patients who received CPR after circulatory arrest had better outcomes with re-thoracotomy and CPB used liberally(5) |

**References**


**Conclusions**

A thorough review of literature concludes that rapid defibrillation within two minutes of arrest should precede chest compressions when cardiac arrest occurs in post-operative cardiothoracic surgery patients. This practice allows for a high success rate of restoring a normal, organized rhythm. Furthermore, resternotomy is recommended, if three attempts at defibrillation are unsuccessful, in order to further decrease the likelihood of chest trauma. While there is no clear evidence that AHA ACLS is harmful, higher survival rates to discharge and decreased chest trauma serve as reasons to implement early defibrillation efforts in this patient population.

**Discussion**

Staff in the HVICCU currently state they are uncomfortable when coding a post-operative cardiothoracic surgery patient. As a result, we will be implementing European Resuscitation Council Guidelines for cardiac arrest in post-operative cardiothoracic surgery patients. Following implementation, we intend to monitor compliance to ERC guidelines and track patient outcomes to add to the scientific body of knowledge.