Delayed or Intermittent CPR in Primary severe Hypothermia

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Commentary and concepts

Delayed and intermittent CPR for severe accidental hypothermia

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Dr John Ellerton, MR England and Wales and ICAR Medcom on behalf of the authors
• Current hypothermia guidelines recommend that CPR is started as soon as Cardiac Arrest is diagnosed and continued until the patient is rewarming\(^1,2\)

• However, good quality continuous CPR during transport may not be possible\(^3\)

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Possible solutions?

Mechanical Chest Compression devices

Logistic and Environmental issues

Intermittent CPR?

Evidence from surgery under Deep Hypothermia Cardiac Arrest

Animal studies and Case reports
Evidence from animal studies and surgery

• Brain function can recover completely if the brain has been cooled to \( \sim 18^\circ C \) before Cardiac Arrest

• Surgeons use this when they need to operate on the heart when no blood flow is possible. \(^1\)\(^,\)\(^2\) “Give the brain a drink”

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Case reports - delayed CPR

- 42 yr old severe hypothermia. Apparently dead. Flown hospital where, 70 min after rescue, CPR was started. The patient was rewarmed and made a full recovery.

(Old report)

Case report - Intermittent CPR

- A 29 yr old skier (avalanche). Severe hypothermia. Rescue-related Cardiac Arrest. CPR stopped for 15 min flight. Rewarmed and made a full recovery.

- 57 yr old lost during a snowstorm. Rescue-related Cardiac Arrest. 1 min CPR then 1 min evacuation for 25 min. Rewarmed; mild disability.

Proposed guidelines for hypothermic CA

• Make a careful accurate diagnosis with ECG and core temperature measurement.

• Start immediate, continuous CPR if safe to do so.

• Minimize interruptions and apply mechanical chest compression device as soon as possible.

Proposed guidelines for hypothermic CA

• CPR can be delayed by up to 10 min to allow rescuers to move the casualty to a safer location

• Only if continuous CPR is impossible consider performing intermittent CPR

Proposed guidelines for hypothermic CA

- **20-28°C** or unknown: perform at least 5 min CPR and then evacuate for ≤5 min without CPR
- **<20°C**: perform at least 5 min CPR : ≤10 min without CPR
- Resume continuous CPR as soon as feasible
Summary

• Intermittent CPR should be regarded as a hypothesis (to be tested)

• Times suggested are based on a very few cases

• These guidelines are for **PRIMARY accidental hypothermia**
Workshop Stage 1

Thanks to Mike, Karen, Johannes, Greg, and Les

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Learning points

• The quality of CPR should be ‘200%’ - regular training is essential
• Crew Resource Management is essential
• Intermittent CPR is only for PRIMARY accidental hypothermia where continuous CPR is impossible
Thank you for your attention