

Why Norwegian 2005 Guidelines differs slightly from the ERC Guidelines

The national Norwegian algorithm for Adult Advanced Life Support differs slightly from the standard ERC guidelines. In accordance with the agreement between the Norwegian Resuscitation Council and ERC, such deviations should be explained. The Norwegian Resuscitation Council have thoroughly discussed the arguments for these small, but to our opinion important and well founded deviations. The board has addressed leading resuscitation experts of all five universities in Norway before taking final decisions. Through an open and dedicated process the board managed to achieve a national consensus for the new Norwegian Adult Advanced Life support algorithm. The reasons for the deviations from the ERC guidelines are presented by Kjetil Sunde, chairman of the ALS Working Group in the Norwegian Resuscitation Council.

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Guidelines in Cardiopulmonary Resuscitation (CPR) are based on a reasonable, clinical relevant, practical and pedagogic interpretation of all available scientific data. As the quality of CPR and vital perfusion is more reduced than expected (1), the 2005 ERC Guidelines have resulted in dramatic changes in the universal algorithm with focus on quality of chest compressions and a reasonable combination of defibrillation and CPR (2).

In general, the Norwegian Resuscitation Council (NRC) supports and follows the ERC guidelines, but we do recommend two changes:

1. *ERC recommends two minutes of CPR* between defibrillation attempts (in VF/VT) and pulse/monitor checks (PEA/asystoli), while ***NRC recommends three minutes***
2. *ERC recommends epinephrine administration immediately before the third shock*, while ***NRC recommends epinephrine (when an iv line exists) after monitor ± pulse check one minute after defibrillation, thus approximately two minutes before a possible shock***

No human data exist defining the optimal time interval for CPR between defibrillation attempts. However, both experimental (3,4) and clinical data (5,6) suggests that a few minutes of CPR is necessary to increase myocardial perfusion and resuscitability. In one clinical study the myocardium seemed to improve most in the third minute of a three-minute chest compression cycle (6), thus a three-minute interval seems appropriate.

Giving one mg epinephrine iv. immediately before a defibrillation attempt, as ERC recommends (2), can have a potentially very negative effect on an already very strained heart if the defibrillation attempt is successful and results in a perfusing rhythm. In addition, competing efforts like iv administration in the same period as attempting defibrillation can take focus away from defibrillation and is likely to increase the deleterious pre-shock hands-

off-interval (7,8). As described above, the Norwegian recommendation should give a reasonable and practical timing for drug administration two minutes before any defibrillation attempt. It will generate a short (5-10 sec) interruption in CPR for pulse and rhythm assessment one minute after defibrillation (could be avoided if capnography is used to assess circulation), but this seems appropriate as the post-shock rhythm at this time is established (9,10) and should be investigated before further recommended treatment. This short interruption followed by two minutes of good quality chest compressions probably causes less harm than an increased hands-off interval immediately before a defibrillation attempt.

NRC recommends that three minutes of good quality CPR can be considered before the first defibrillation attempt in cardiac arrests not witnessed by health personnel and response times > 5 min (5).

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