

Helautomatiske eksterne defibrillatorer (hjertestartere) i Norge

En vanlig halvautomatisk defibrillator (hjertestarter) vil, etter at apparatet er slått på og koplet til pasienten, analysere hjerterytmen, lade opp og anbefale sjokk. Men brukeren må fortsatt aktivt trykke på sjokk-knappen for at sjokket skal avgis. Dette skal sikre at sjokk ikke gis til pasienter som er våkne (f.eks. pasienter med VT og frekvens > 180) og dessuten at bruker av apparatet kan sørge for at ingen er i fysisk kontakt med pasienten eller potensielt strømførende omgivelser nær pasienten når sjokket avgis.

En helautomatisk defibrillator (hjertestarter) vil, både analysere, lade opp og avgi sjokk uten at bruker trenger foreta seg noe etter at apparatet er slått på og koplet til pasienten.

På bakgrunn av gjeldende ERC-guidelines og meningsutveksling gjengitt nedenfor (stert lesningen nedenfra og opp), slår NRR fast at det foreløpig ikke er nok informasjon til verken å anbefale eller fraråde bruken av helautomatiske defibrillatorer i helsevesenet. Bruk av helautomatisk defibrillator utenfor helsevesenet bør inntil videre utstå til studier og/eller autoritative betenkninger om sikkerhet ved slik bruk foreligger. Helautomatiske defibrillatorer kan kanskje føre til at sjokk av gis raskere, men vil samtidig kunne innebære en større risiko for at for at personer med VT med frekvens > 180 og fortatt tilstrekkelig cerebral sirkulasjon til at de er våkne, kan risikere å motta sjokk.

Omtale i gjeldende ERC- guidelines

Resuscitation (2005) 67 S1, s19. European Resuscitation Council Guidelines for Resuscitation 2005 Section 2. Adult basic life support and use of automated external defibrillators.

Anthony J. Handley, Rudolph Koster, Koen Monsieurs, Gavin D. Perkins, Sian Davies, Leo Bossaert

Fully-automatic AEDs

Having detected a shockable rhythm, a fully automatic AED will deliver a shock without further input from the rescuer. One manikin study showed that untrained nursing students committed fewer safety errors using a fully-automatic AED rather than a semi-automatic AED. (102) There are no human data to determine whether these findings can be applied to clinical use.

102. Monsieurs KG, Vogels C, Bossaert LL, Meert P, Calle PA. A study comparing the usability of fully automatic versus semi-automatic defibrillation by untrained nursing students. Resuscitation 2005;64:41–7.



automatic
defibrillation.pdf

27.08.2005

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Member of the ERC BLS/AED Working Group

Koen's reply is excellent! Clearly, the fully automatic AEDs are still 'on trial'. Many of us feel that there is far too little information (let alone evidence) on which to make an informed judgement. I can see their advantages and disadvantages, and have already suggested to Koen that there might be a way to explore further the question of their safety (which is what we are all concerned about) in the hands of laypeople. You have stimulated some interesting discussion and thought!

22.08.2005

**Odd Frode Aasen,
Førstehjelpsrådets legerepresentant I NRR**

Interessant nok har Haukeland US kjøpt inn Lifepak CR Plus heilautomatisk defibrillator. Like før sommerferien vart det gjennomført opplæringskurs for legar på med.avd, hjarteav. og lungeavd, der underteikna vart utpeikt som frivillig instruktør;) Første inntrykk er at dette virkar interessant og kan sannsynlegvis redusere tid frå stans til første sjokk. Praktisk erfaring frå bruk i reelle situasjonar vil vise om dette stemmer. Snakk også med Austlid på anestesi (har ikkje gjort det sjølv p.t.) - då han er ein av dei som har tilrådd innkjøp av dette utstyret. Kan gjerne ta kontakt på vegne av NRR, dersom ønskjeleg.

20.08.2005

**Koen Monsieur
Chairman of the ERC BLS/AED Working Group**

This is a very interesting topic but unfortunately the answers are not easy. Cardiac Science is not the only manufacturer of fully automatic AEDs (FAEDs) on the market. To my knowledge there is one other: Medtronic, with the Lifepak CR Plus. However, it is true that Cardiac Science is promoting their fully automatic AED heavily (and with success). When Cardiac Science promotes their FAED, they invariably involve their CCU defibrillator into their story, but that is a totally different issue. Their CCU defibrillator claims to reduce time to defibrillation because it is attached to high risk patients and does not need a health care provider to deliver the shock. In order to be successful, every high risk patient needs to be connected to the defibrillator (just in case). It is not proven that this strategy, although an interesting concept, saves lives compared to the use of manual defibrillators in the CCU. The true part of the story is that the FAED (as well as the semi-automatic AEDs) shares the rhythm recognition system from the CCU defibrillator. The unique feature of this rhythm recognition system is that it can also detect and shock small complex tachycardia, but to date I fail to understand the clinical significance of this in the setting of resuscitation.

You might know that I recently conducted a small scale usability study with the Medtronic LP CR Plus, comparing the ease of use between the fully automatic and the semi automatic version of this device in untrained nursing students. The results of this study were that the FAED version users made significantly less errors against safety. There is a logical explanation for this: users of a semi-automatic device are asked to press the shock button regularly. Whilst they are touching the device to deliver the shock, they forget to look and check for safety. On the contrary, users of a fully automatic device rapidly understand (even without explanation or any training) that there are two conditions: either the device is "doing its job" and they need to stand back, or the device "is not active" and they are allowed to touch the victim (and deliver CPR if needed). Therefore there is some reason to believe that untrained users may have benefit using a FAED. Moreover, it is known that rescuers in some cases fail to deliver the shock because of sudden fear to do harm or because they simply do not find the shock button. These issues do not occur with FAEDs. There are several unanswered questions:

- I have studied this in nursing students which is not a general population. Some of the errors against safety and compliance with the protocol may not occur with other types of AEDs, they may be related to specific voice prompts or device design
- it not yet clear if users of a FAED will ensure safety when a bystander accidentally touches the victim during shock delivery. However, this is also an unsolved issue for semi-automatic AEDs operated by laypeople.
- training of rescuers using FAEDs might be easier because it all comes down to understanding the two situations as I explained earlier.

Highly trained and experienced rescuers might not need a fully automatic AED, but I would not be surprised if also in this user group FAEDs might have clear benefits, because of their simplicity of operation.

Regarding your specific questions:

- are FAEDs safe to use? For the victim: yes. For the users: it is not shown that they are less safe than SAEDs, the only paper I am aware of the one I wrote and that indicates better safety (in the absence of bystanders).
- Should you recommend it for use in a prehospital setting? there is no evidence for or against their use, I would be careful to advise against them because they might be potentially equally safe and effective than FAEDs in the hands of lay rescuers.
- Standard AED algorithms can be applied
- A special training course is not required; in fact training should be easier and rather focussing on the two conditions, plus safety.

I have always disagreed with the Guidelines 2000 statement about reserving FAEDs for "special situations". I was not involved in that guidelines process; maybe the authors had the CCU defibrillator in mind. There was no evidence for that statement.

There is strong disagreement between manufacturers regarding the benefit of FAED; some just do not believe it is the right way to go (e.g. Laerdal). In the absence of strong evidence, only the future can tell who is right.

ERC has not special recommendation regarding FAEDs and it would be difficult because of the lack of evidence. Until now we have only informally discussed this.

19.08.2005

Kristian Lexow

On behalf of the Norwegian Resuscitation Council

To ERC secretariat, Leo Bossaert, Ruud Koster (ERC BLS/AED Working group)

CC: Stig Holmberg, Tony Handley, Jerry Nolan, Eldar Søreide, Charles Deakin, Petter Andreas Steen, Koen Monsieus, Freddy Lippert

The Norwegian Resuscitation Council have received a question about our position on fully automated AEDs ("PowerHeart") now appearing on the Norwegian market. The national distributor claims that this device is approved by the FDA in USA and that it comprises 45% of the market from "Cardiac Science". We are also told that the device use the so called "RHYTHM X analysesoftware" originally developed for fully automated defibrillators for critically ill patients in ICUs. They also tell us that the voice prompt will "count down" for shock as a warning.

We have no experience whit these devices and the literature seems scarce. We are now challenged by potential buyers/users (and probably soon by national health authorities) for giving national advices:

- are the devices safe to use - for both the user and for the patient? - for trained health personnel? - for lay rescuers?
- Should they be recommended for use in a prehospital setting?
- Are there specially developed algorithms for their use, or can standard AED algorithms be applied?
- Do they need special training courses?

The 2000 Guidelines book gives little support, as the only statement I can find here is the following statement: "Fully automated external defibrillators do not require pressing the SHOCK button, and they are available only for special situations".

Do ERC have any recommendations or information?

Is this a discussion for the Forum on the ERC Web cite? - if so: Feel free to put it there!

I hope for a rapid response from ERC or any of you, if possible. If this has not been an issue in ERC until now, please let me know this as well.

Maybe we have to put it on the agenda in the BLS/AED WG - and also the Executive Committee soon?

