

Graduation Opportunity

Background.

When a patient is in cardiac arrest basic life support should be started immediately. The goal of basic life support is to keep the brain alive by thoracic compressions that cause bloodflow, and ad oxygen to the blood by external insufflations. Thoracic compression should be started immediately. You put both your hands on the middle of the chest and you impress the chest for 5-6 cm. This compression squeezes out the blood in the chest. As there are valves in the system the blood will only go one direction. When you release the pressure on the chest, the chest will recoil to its normal model and size . This generates a negative pressure inside the chest, which will suction new blood in the chest. The next compression will squeeze this new blood out. The generated flow is just a fraction of what a normal heart will pump out, but it really delays braindeath efficiently , though not 100% This buys hospital staff time to find out why this patient arrested and find a solution for that. Every ml of blood pumped by these compressions therefore matter.

Compressions should be given continuously at a rate of 100-120/ minute. Even short pauses in these compressions will stop the flow generated by the compressions. It is therefore paramount that the compressions should be uninterrupted and of good quality

After 30 compressions the lungs should be inflated with oxygen. This is achieved by blowing air in the patients lung , by means of mouth-to-mouth, or in a hospital, often a bag-valve device. This pause is a necessity: pumping blood without oxygen will still cause braindeath. Last year the mattresses in the Erasmus MC on the normal ward have been replaced by a softer mattress to prevent decubitus. This could have a consequence for the efficiency of the thoracic compressions: You may compress the mattress instead of the thorax. The quality of compressions is at stake.

To prevent this, a stiff backboard will be placed under the back of the patient. This placement takes time. During this positioning of the backboard compressions cannot be given, while we know that this is a very important part of the basic life support. Placing the backboard can be physically (too) heavy for the members of the resuscitation team. Furthermore intravenous lines and tubes may be torn out as we do this placement in a hurry.

Your challenge.

As a student on this graduation opportunity you will help us

1. To Figure out: what is the loss in efficiency in compressions due to the new mattress; Is a backboard needed in our specific situation?
2. To explore if there are alternatives for the backboard which are faster to apply and with a lower risk for complications (e.g. dislocations of lines, tubes etc)

You will collaborate closely with staff anesthesiologists and have easy access to simulation material.

Company

The Erasmus MC is one of the largest medical hospitals of the Netherlands. In the anesthesiology department we try to optimize the results of a cardiac pulmonary resuscitation by teaching, training and providing enough and good materials

Interested?

Contact us!

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