

THE GENERAL GOOD PRACTICE OF THE INSTITUTIONAL PROCESS OF RESUSCITATION

The following textual description is intended to facilitate the interpretation of the related flow chart, process table and table of the potential failure modes, and thus to assist any healthcare provider in reviewing, designing the resuscitation process or identifying areas to develop and gathering factors for improvement. Although the complexity of the institutional process and solutions to be followed is highest in large inpatient care institutions with a broad profile, the description has been written in such a way that the process can be understood and adapted by all healthcare institutions, regardless of their nature and size.

1 DETECTING AND APPROACHING A PERSON IN NEED OF HELP

One of the main conditions for successful resuscitation is to be able to start as soon as possible. This is largely determined by when we realise that someone is unwell and needs help. In healthcare institutions, the vast majority of cases involve patients, many of whom are continuously monitored by various monitoring devices, so that respiratory and/or circulatory arrest can be easily detected. In these cases in particular, but also for patients who are not continuously monitored, the main aim is to detect and treat deterioration in the so-called periarrest states, preventing the need for resuscitation if possible. However, this requires doctors and nurses to have the knowledge and practice of recognising periarrest conditions, which is why this is increasingly being included in resuscitation training courses. In cases where there are no continuous monitoring devices to indicate the patient's condition, early detection can be facilitated by the correct organisation of patient monitoring. On the one hand, this is achieved by repeating the tests prescribed in the patient's care and treatment plan at appropriate intervals and regularly evaluating the results, and on the other hand, it is also greatly influenced by the way a ward operates, including the regularity of rounds and visits by nurses, which, through personal observation and encounters, provide an opportunity for the early detection and rapid identification of any emergency conditions.

While the most obvious scenario in healthcare institutions is indeed that inpatients will experience conditions leading to resuscitation, we must also be prepared for a similar situation involving an outpatient, a relative, a staff member or any other person present on the premises of the institution when designing the process. This also raises the issue that an event leading to resuscitation may occur not only in places closely related to patient care, but in all rooms and departments of the healthcare institution, including the park, corridors, canteen, toilets, car park, storage areas, etc. It is therefore worth considering how to establish regular surveillance in less frequented places or periods of the healthcare institution to detect unwanted events.

This also brings up another factor to consider. Just as it is not certain that the person in need of help is a patient in our institution, it is by no means certain that the person in need is first detected by a health worker. We therefore need to consider how we can support situations where the first responder is a fellow patient, a non-medical staff member, a relative or even an outsourced service provider working on our premises (e.g. cleaner, security guard, etc.). A simple and practical way to do this is to post the cardiopulmonary resuscitation (CPR) call number in a prominent place in all departments (not just patient care) of the institution. When patients are admitted or relatives are visiting, they can be made aware of what to do if they notice that their roommate is unwell and this can also be included in the policy.

It is recommended to extend our CPR training to non-medical staff working in our institution and to staff not directly contracted to the institution – with differentiated content, of course. The training should, however, include the steps to be taken when a person in need of help is detected, adapted to the specificities of the institution. However, as resuscitations are not a frequent daily or weekly occurrence in most departments, even in a large hospital, most staff even in the patient care units have no practical experience of this from a live case, and therefore find such situations a major stress. In such situations, only those who are well conditioned to know and practice what to do after detection can take immediate and correct action. Therefore, the transfer and practice of this knowledge should not be neglected in the training of health workers.

Among the post-detection tasks, the assessment of the scene becomes particularly important in cases where the person in need is not found in or between the usual patient care areas. A department under renovation, a technical area, or even a simply external location may present a hazard that requires due care by the first responder. Some of these can be averted by the first responder, while in some cases professional help (technical staff, fire brigade, etc.) may be required. A rapid and definitive resolution of the latter cases can only be achieved if the detector is aware of the institution's alert chain for similar incidents, the person or unit to be notified and the means of notification.

2 STARTING CPR AND ALERTING THE TEAM

If the person in need of help can be approached safely, the first step is to assess their reactivity. Partly independently of the result, the next step is to shout for further help, as the first responder cannot definitely solve such cases on his/her own, even if he/she is facing the situation as a medical professional. The more serious the situation, the more important it is that the shout for help is made as soon as possible, with sufficient volume and a clear and firm indication of the urgency and location. This is the only way to avoid that the shout is not heard or is heard too late, and to ensure that anyone who hears it can run to the right place to help immediately. For those who hear the cry, phrases such as "There's a problem" or "Help is needed" do not necessarily mean that they should interrupt their current workflow and rush to help the other person.

Until the arrival of the assistant, the first responder will perform the assessment of the basic vital signs after positioning the patient appropriately. If the patient is breathing and has circulation, stabilisation of the patient's condition will continue after notification of the specialist staff. In this case, resuscitation is not necessary. Even in this case, however, it is still possible that professional assistance will be provided by the resuscitation team or the so-called Medical Emergency Team (MET team) if the patient is in a periarrest state and the institutional system is set up in such a way that the resuscitation or MET team is also responsible for these cases.

If the patient is not breathing or has no circulation, the next steps at this point in the process are largely determined by whether the patient is still being cared for by the first responder alone or if someone else has arrived to help. If the first responder is alone and the patient in need of help is a child, the next correct step is to perform "one-minute resuscitation". By this we mean that resuscitation involving positive airway pressure ventilation and chest compressions in the correct proportions is carried out on the child for one minute. In children only after this step, but in adults without this step, the first responder can leave the patient in order to alert the resuscitation team.

Generally speaking, especially if the first responder is not a health professional and cannot be expected to recognise periarrest conditions, when choosing the recipient of the alert, when in doubt, assume the more serious case and call for help accordingly. However, we should also bear in mind that if the person or team in charge of resuscitation is alerted too often because we want to "make sure", it is possible that in the case of multiple alerts, the professionals may not reach the really relevant cases in

time. The ability to correctly and professionally assess the patient's responsiveness and basic vital signs thus becomes particularly important in the healthcare institution.

The smooth and unhindered alerting of the team is based on a number of organisational considerations. It is hard to imagine how much time can be lost at this short and tiny point in the process if it is poorly or incompletely planned. First of all careful choice of the contact mode of the team or staff responsible for resuscitation is recommended. Using a contact number that may be used for other communications in the course of day-to-day work carries the risk that the call may not be answered because there is no one at the facility (e.g. when trying the ICU number) or because the line is busy. It is therefore recommended to maintain a dedicated line or number for resuscitation (and/or periarrest conditions). In order to prevent the recipient from using the device for other purposes, the unidirectional use of a telephone line is also a safety factor. In this case, the number can only be used to receive calls, not to make them. In most cases, this is done by a mobile device or pager. Whichever it is, another important aspect is to ensure that this device is always with or on the person who needs to be alerted in these emergencies. If a fixed device is used (e.g. a landline in the resuscitation team room), the person to be alerted should be in constant proximity to the device, if a portable device is used, its regular handover should be embedded in the daily workflow. In addition, it is necessary to establish who, when and how he is responsible for ensuring that the equipment is operational and how to ensure that, where relevant, the equipment is always charged, in sound mode and with adequate coverage. Of course, in cases where the entity to be notified is external to our institution (e.g. the ambulance service), the organisation of the receiver part will not be relevant for us. This is most likely to be the case in independent outpatient care unit, or in healthcare facilities providing chronic care or nursing care where a permanent, continuous medical presence (or knowledge of advanced life support resuscitation) is not assured. But even in these cases, it is of paramount importance that the call number to be notified is prominently displayed in all units of the institution, as only then can it be ensured that the person who detects the emergency, whoever it may be, can call the person concerned without wasting time. Another key issue is the location of the nearest alerting device (usually a telephone) and whether the detector knows about it or has access to it. If such a device is only found in a closed room, it will lead to a consequent delay in the alarm. Therefore, it is advisable to choose an alarm solution that can be dialled and accessed from internal telephones used in the institution.

Last but not least, as with the shout for help, the content of the alarm message and the way in which it is delivered is crucial. Uncertainty and hesitation due to inexperience and stress can lead to incomplete and inaccurate handover of the necessary information, as well as to considerable delays, which can be remedied by practical training during CPR courses. The alarm message must be handed over in a concise, effective manner, including all the necessary information, in a clear and comprehensible way, with particular attention to the exact location. In some cases, the alarm is automated and works by pressing a button that triggers the alert and its location to be sent to the pager of the person to be alerted or a robot can provide the relevant information in response to the alert.

After the alarm, the first responder returns to the patient until the arrival of the resuscitation specialists and in case of children, continues with the specific CPR, while in case of adults, starts the specific CPR, according to the Basic Life Support (BLS) algorithm. In the event that other assistance arrives in the meantime, the alert steps and the start of the specific CPR can be performed simultaneously and in parallel by the two separate actors. It is easy to see that the timeliness of the process is much better with an assisting person, since the time required for the alarm itself can be saved until the actual resuscitation is started. It is an unfortunate fact, however, that even in the case of health workers, there is a failure to start the actual resuscitation. This is mainly due to uncertainty, impracticality and fear of the situation, which makes the first responder prefer to decide to wait for professional help. It is therefore important that even lay people understand that these are the cases

where there is nothing worse than inaction, because we are certainly not doing worse than leaving the patient untouched. This should therefore be emphasised in training courses, alongside the acquisition of basic CPR techniques and skills.

3 THE ARRIVAL OF THE RESUSCITATION TEAM AND THE BAG ON THE SITE

In a good case, events then continue on several parallel threads. On one hand, the resuscitation team must assemble and arrive on the site in response to the alarm. The team can be assembled in several ways. In large hospitals, there is usually a team of 2-3 people declared for this task (resuscitation and possibly periarrest conditions), usually organised from either the Intensive Care, Emergency or Cardiology departments, rotating daily or on a shift basis. The members may include at least a doctor, a specialist assistant or a nurse with advanced resuscitation skills. In order to be able to rush to the site of resuscitation immediately on being alerted, team members must not perform any work that they cannot interrupt at that moment. Ideally, these team members should be in the same room so that they are alerted simultaneously. However, if they are in different rooms or departments, it is also necessary to establish how the alerted team member will notify the other team members in the most efficient way. Unfortunately, given the human resource conditions in the country, maintaining and operating all of this during night shifts or on-call time is problematic for most hospitals. In the case of smaller hospitals and outpatient care units, a designated person in charge is often notified when a resuscitation is needed, and the resuscitation team is assembled on the spot, led by the person who was alerted, completed with one or two other staff members currently present in the unit. Naturally, in these cases, other units (e.g. ambulance services) that can provide further professional care for the patient are also alerted and, on arrival, take over and continue the resuscitation that has been started. When setting up the teams, care must therefore be taken not only to ensure professional knowledge and experience, but also to ensure that, in the event of a resuscitation event, the continuity of patient care is not interrupted either in the mother departments of the team members or in the department where the resuscitation is carried out.

The other essential task is to organise that devices, materials and medicines needed for resuscitation are available at the resuscitation site. This can be provided in the form of a preassembled resuscitation bag, tray or trolley. The latter two allow service to nearby locations, for transport to remote locations a bag may be a more appropriate choice. The diversity of the target group should be taken into account when compiling the contents, as children of different ages, and even adults, need different sizes of each item, and it should be borne in mind that it is not only patients who may be unwell in certain parts of the institution. It is a common mistake, especially where resuscitation is not a frequent event, to forget to check the contents regularly, thus failing to ensure that the expiry date of the medicines, the usability of the materials, the functionality and sterility of the equipment are appropriate. In order to avoid this, it is recommended that a person responsible for the control is designated, the content, timing and regularity of the control is determined. The way in which the resuscitation bag, tray or trolley is carried to the resuscitation site may vary from one institution to another. It may be carried by the resuscitation team or it may come from within or near the department. In either case, the important thing is that both the staff at the resuscitation site and the people alerted to the resuscitation are aware of whose responsibility it is to deliver the equipment, materials and medicines to the patient. If the team carries the bag, it should be placed in a location where it can be picked up by the team members immediately on alert. If it is delivered to the site by the staff of the given department, they need to know where to find the nearest equipment and how to get to it by the shortest way. Keeping resuscitation equipment locked away with a key (e.g. in the main nurse's room) is very risky, as getting a key in an emergency can stretch the time needed to provide assistance unnecessarily. Of course, it is worth considering and regularly checking the condition of the bag, tray or trolley containing the equipment, i.e. whether it is torn or damaged, and whether it is suitable for transport, taking into account the possible length of the transport path and the infrastructure (e.g. for

transport up stairs, again the bag shape is optimal). Whichever option is used, it should be made clear in training sessions what the set-up is in your own institution, how the equipment is stored, where it is located, and who is responsible for transporting the bag, tray or trolley to the patient and for regular inspection and maintenance.

Whether it's getting the team or the equipment to the site, you need to have the right knowledge on the local area to get to the location in the shortest and quickest way possible. Some hospitals, especially in pavilion buildings, are faced with the problem that professionally selected team members are simply unable to get to certain parts of the hospital within the required timeframe simply because of physical distance or accessibility. In such cases, it may be necessary to have several teams operating simultaneously within a hospital, designed to take account of accessibility and physical location. In this case, even greater emphasis is placed on knowing and making staff aware of the relevant emergency call numbers and equipment locations for the respective units.

4 ACTIVITY OF THE RESUSCITATION TEAM

Once the team and the equipment have arrived at the patient, the team takes over the CPR process from the first responders. This step in the process requires real teamwork. Optimally, the resuscitation team is a team of close-knit staff with up-to-date and secure theoretical knowledge and skills in resuscitation gained by appropriate live practice and/or regular training. However, if the team is assembled on an ad hoc basis, rarely faced with such cases, even with full knowledge of the theory, we should expect that the smooth teamwork and communication between members will not be perfect. This can be helped by designing in-house training sessions in such a way that the participants are mixed (doctors and nurses together) and by supporting them with simulation exercises. In the case of a health institution setting up an individual resuscitation/MET team, the training of the team members will certainly be different from that of the rest of the institution, it will be more frequent and of higher professional content and practice. In many cases, the team members themselves are also the CPR trainers of the institution, and their own training is partly maintained through external training (train-the-trainer courses).

During resuscitation, the return of spontaneous circulation is checked several times at regular intervals. If, in the opinion of the resuscitation supervisor, resuscitation has been in progress for so long or so many rounds have been performed that resuscitation is no longer of real help and spontaneous circulation has not returned, resuscitation is stopped and the care of the deceased is started according to the institutional procedure. However, in the event of successful resuscitation, post-resuscitation care is initiated after the return of spontaneous circulation in order to compensate for the negative consequences of the patient's pre-existing condition, which affect several organ systems, and to minimise the number and extent of possible complications. The importance of starting post-resuscitation care as early as possible to prevent complications is similar to the importance of starting basic resuscitation as soon as possible to keep the patient alive. Assessing the patient's condition during care will help to decide where the patient should be transported for further care if necessary, and will also clarify the question of transportability itself. The return of spontaneous circulation may not necessarily put the patient in a condition that allows the patient to be transported. In many cases, even within an institution, but even more so if the patient is transported by ambulance to another institution, the patient must be brought to a relatively stable state. All of this involves a wealth of professional knowledge and processes, which can be provided by the differentiated, high-level skills of team members.

In the case of transport, whether within the institution or to another institution, it will need to be organised. This includes providing the transport team – if they are not part of the resuscitation team

– and the team admitting the patient with the necessary information as soon as possible in order to prepare for the admission in a timely manner.

When the patient's condition allows it, and in the case of unsuccessful resuscitation, after the patient has stopped, documentation of the CPR can begin. It is also important to clarify who is responsible for documentation, what their tasks are, and which documents will be the ones in which the entries should be included. In some institution, a separate resuscitation protocol is available, which, if rationally designed, will facilitate the recording of information and, if properly structured, will also help to ensure that important information is included in full. Whether or not a specific form is used for this purpose, it will be the task of both the resuscitators and the staff of the department concerned. The resulting documentation may also form the basis for, or form part of, the next patient handover process. With an experienced resuscitation team and adequate human resources, the documentation of the resuscitation itself will be carried out at the same time as the resuscitation, indicating, among other things, the drugs used, the interventions and, of course, the timeliness of the process and its components.

As the resuscitation team or the alerted person must then be available for other possible cases, they must always refer the patient to an additional care provider. This may be a member of the intensive/sub-intensive care unit of the institution, but may also be the ambulance service staff who perform the transport – it depends on the decision taken in advance regarding the place of further care. In the case of a resuscitation performed by a pre-alerted ambulance unit, they will transfer the patient to the staff of the admitting institution. In all cases, the recommendations for patient handover should be considered, i.e. aim to provide all information relevant to the person responsible for the patient's care in a clear, concise, complete and structured way. In the event of unsuccessful resuscitation, the handover process associated with the care of the deceased should be initiated.

5 POST-RESUSCITATION ACTIVITIES

But the resuscitation activities do not end when the patient is transferred for further care. In order to make future resuscitations smoother and more successful, it is recommended to hold a short, substantive case discussion after handover in the presence of all those involved in the resuscitation. This therefore goes beyond the team members' own discussion, which focuses on the team's joint cooperation and taking stock of their activities, and opens up space to explore and discuss what happened before the team arrived. The aim of the case discussions is to identify any weaknesses in the case, the underlying causes and what can be done to address them more accurately, quickly or effectively in future cases. The discussion is never a search for personal responsibility and blame, but rather a process-oriented review of the incident and the formulation of systematic or management-level actions, such as clarifying roles and responsibilities in the process, modifying training and its systems, changing the way alarms are raised or the availability of the necessary devices. It is advisable to hold the debriefing immediately after the resuscitation, so that the events can be easily reconstructed by those involved and the details are not forgotten.

In some cases, even for a skilled resuscitation team, the failure of a resuscitation can be more than usually traumatic for the team members or the actors involved. This usually occurs in cases where the lost patient is a child, a co-worker, or a person whose circulatory collapse has occurred in an unexpected and unexplained way, and the resuscitation remains unsuccessful in a similarly inexplicable way, or in cases where the failure could probably have been avoided and there is an obvious reason for this (e.g. late detection, lack of due care, etc.). It is in these cases that team care becomes relevant, providing professional support and empowerment to enable team members to process the event in a healthy way. The process of care can last from one session to weeks. If the team members suffer such a trauma, they may be unable to continue their activities for a shorter or longer

period of time. This may only be for the remainder of a shift or day, but for some colleagues it may also be for days or even weeks. In these cases, it is the responsibility of the institution to organise, alongside team care, the replacement of the staff member for the relevant part of their duties. The institutional process of resuscitation can then be considered as completed.