Options for Operational Tactics used in Offshore Rescue

Written by Dr. Rüdiger Franz, Medical Director of Northern Helicopter GmbH and
of the Offshore Rescue Department of Johanniter-Unfall-Hilfe e.V.
09.10.2023

Operational tactics for emergencies in the offshore industry are determined by the medical requirements of individual disease or injuries. These are in turn determined by the particular location of the offshore structures.

The medical guidelines for medical care[1] should always be used as a basis for orientation. These provide scientific evidence of which diagnostic and therapeutic measures should be taken within which timeframe for individual medical conditions or diagnostic categories in order to achieve the best possible outcome for the patient. In this context, critical, life-threatening injuries and illnesses always involve care pathways with a multitude of procedures that must be interrelated. Monocentric considerations - for example, focusing only on "time to hospital" or "time until group of people X on site" - do not reflect the complexity of the care required.

Frequently, in the case of the critical illnesses and injuries - after mandatory interventions, which sometimes have to be carried out within minutes - there is a required definitive (causal) therapy, which currently can only be carried out in special clinics.

As a simplified example, a stroke can be mentioned here. Unlike a heart attack, for which the final diagnosis and therapy[2] is already possible in the offshore projects under certain circumstances, a stroke still requires a diagnosis by computer tomography prior to therapy in order to be able to carry out the correct therapy.

Holistic and integrated rescue concepts attempt to make good use of the extended prehospital time in the offshore industry, employing many diagnostic as well as therapeutic procedures that tend to be relegated to the clinic in land-based rescue services. At present,

[1] https://register.awmf.org/de/start
[2] medication to dissolve the clot that is weakening the coronary artery

however, full medical care - as in a specialized land-based clinic - cannot be provided by offshore rescue units.

With this in mind, it is important to take all procedures suitable to effectively reduce the overall rescue time operationally without compromising the safety of patients and rescuers.

The following principles are likely to have a positive impact on medical care and overall rescue time:

1 Bring Medical Expertise to the Patient

In addition to - and usually before - *Extended First Aid*, in wind turbines and other offshore structures, *primary technical rescue* from predicaments by direct work colleagues is required. This means moving an injured person - who has fallen down in their PPE - to the next safe level, where the F*irst Aid* can then begin. It is not uncommon for training or exercises with dummies to include subsequent *secondary technical rescue* using the same technical aids. In this case, medical aspects are disregarded. In the simplest case, for example, a patient with a fracture of the ankle is only in extreme pain. Then the patient will simply not tolerate further transport in a stretcher and will resist further transport "with his remaining hands and feet". If the *patient* is more seriously injured - for example, unconscious after a severe impact with the cranium - it is very unlikely that he would survive further transport in the supine position without a secured respiratory tract.

From this it follows that a start of secondary technical rescue should begin as early as possible. BUT: In many cases, only prior medical evaluation of the patient can assess the advantages and disadvantages of continued rope-assisted transport. If no emergency paramedic is available in the project in a prompt manner, this evaluation can also be done via telemedicine with audio-visual transmission. With the right equipment, *sufficient* pain therapy would also be possible.

In this context, it is important to understand that the focus on "quick rescue" is not at the expense of a higher risk of death or significant suffering for the patient.

As a side note, it should be pointed out again that patients with potentially threatened respiratory tracts should be permanently observed and accompanied by a healthcare professional, even after pharmacological intervention. It must be ensured, for example, that direct intervention is possible in the event of respiratory tract obstruction in the absence of consciousness or vomiting.

2 Avoid Unnecessary Ways

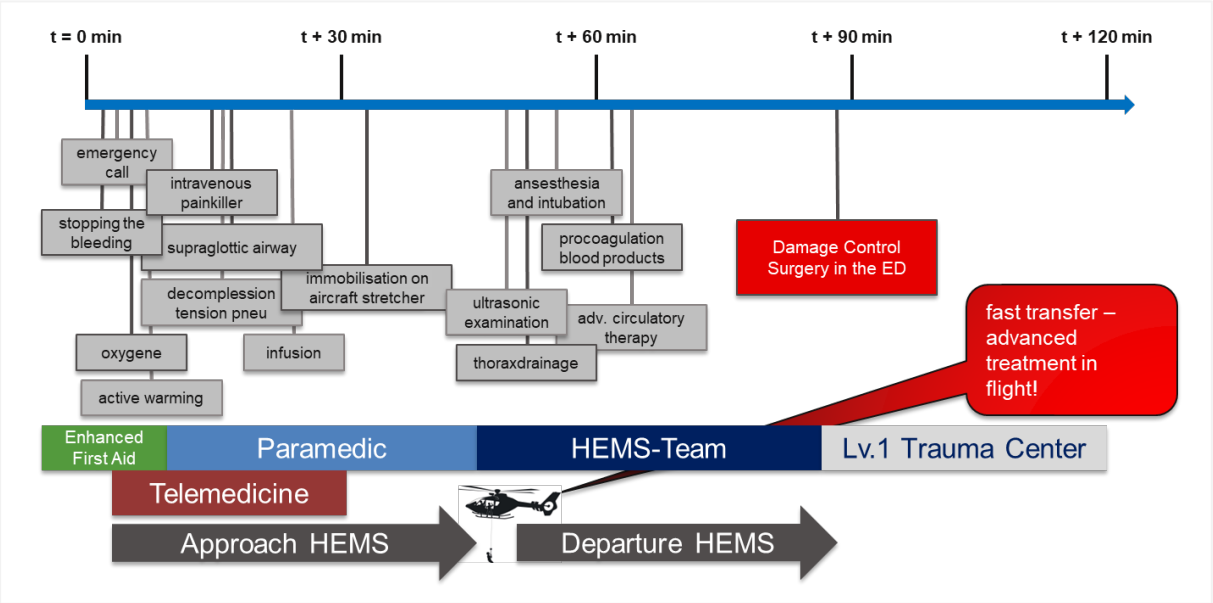
Normally, when rescue helicopters are deployed on vessels with helidecks or living and working platforms, the transfer of patients takes place in an on-board hospital or comparable facilities. In the case of patients for whom the time factor of evacuation and transfer to a specialized hospital plays a relevant role, this must be avoided. This is because the medical crew of the rescue helicopter does not have to go to the on-board hospital (sometimes many decks below or on the other side of the platform) after landing, only to take the same route back with the patient.

In selected cases, it may make more sense for the transfer to take place directly after landing near the helideck. The condition here is that the treatment on site has been completed to such an extent that any further care by the medical crew of the rescue helicopter can take place in the flight. The coordinative control by the rescue control center offshore in close communication with the emergency paramedic on site and the helicopter crew is of particular importance here in order to properly select the (few) operations of this kind. Examples could be injuries with acute intracranial pressure or with bleeding into non-compressible body cavities.

3 Avoid Unnecessary Relocations

There are not always stretchers or other rescue carriers available on all wind turbines or other structures yet, which are suitable for both technical rescue (with sufficient patient fixation even during vertical transfer) and further patient transport in and to the rescue helicopter by winch. However, any repositioning is not only time consuming, but also potentially associated with discomfort in trauma patients due to pain or further damage. Therefore, it is recommended that projects have multi-function stretchers. These are both winch-capable and aviation-approved, and also allow for safe and patient-friendly fixation during technical rescue. Since there is not just one product on the market, it is important to take special care when selecting suitable products.

Taking into regard the issues above, an interlocked rescue chain may look like this, for example:



The procedures listed and the times at which they are carried out are only to be understood as examples. However, the aim is to show that during the entire prehospital period, not only "patient transport" but also permanent staggered medical "patient care" must take place.

4 Take the Direct Route to and from the Operating Site

Technical rescue of patients in wind turbines is in most cases easier and faster downwards than upwards, using the force of gravity. This is especially true for situations where a patient is below the nacelle.

Regardless, quite a few of the operations on wind turbines are at or below the transition piece level.

In both cases, it therefore makes a lot of sense to incorporate the rescue route via the *Heaving-in Line (Hi-Line) procedure* into the operational tactics.

Unless an SOV (Service Operation Vessel) is docked directly at the facility in the first case, a transfer of the patient to a vessel can be avoided. This would generate waiting time with an SOV. With a CTV (Crew Transfer Vessel), craning the patient onto this vessel can be avoided.

If the medical crew of the rescue helicopter is also brought to the scene via an Hi-Line procedure, it is generally recommended that the personnel working on site have at least

theoretical instruction in the procedure. For this purpose, training materials[3] are available or can be provided by NHC Northern Helicopter in the form of pocket cards.

Using the Hi-Line procedure in the rescue from the transition piece, the total rescue time can be significantly reduced and - especially in comparison to a transfer via CTV and subsequent travel in a pertinent wave - also made safer.

The Hi-Line procedure to and from the transition piece is an officially approved standard procedure for the contracted HEMS service providers of air rescue for offshore wind. This has also been used successfully in real operations on several occasions. It should be selected in any case of corresponding situations in order to effectively shorten the total rescue time and thus to enable a care as close as possible to the specifications of the medical guidelines.

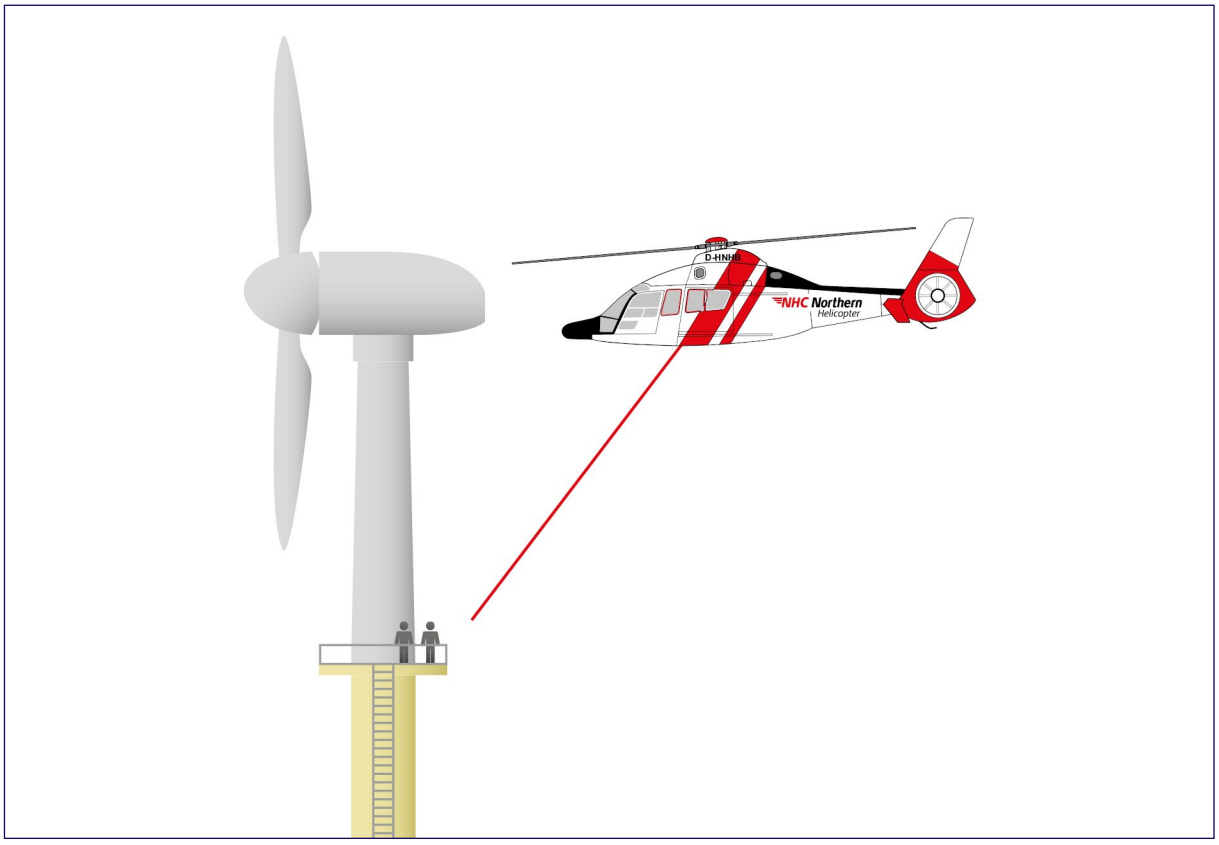


Illustration for the Hi-Line procedure, pocket card of NHC Northern Helicopter

[3] https://www.youtube.com/watch?v=WanyuP2xYkUsatztaktik