Dealing with a recovered MOB

In response to an email, Gilbert Park describes some potential scenarios and procedures once a man overboard has been recovered from the water

email received: 1 May 2014 16:35 United Kingdom Time

Subject: Cold Shock
Date: 1 May 2014 16:35 United Kingdom Time
From: Willem Bijl, Essex

Dear PBO

Although very informative, the article 'Surviving immersion' (PBO 571 March 2014 p35), mainly tells us the physiology of how we will drown! Gilbert Park, consultant anaesthetist, tells us all the details, but I can see that he has gathered his information mainly from his clinical experience. If we are to survive what should we do?

What comes to my mind is the yearly pictures of quite large numbers of people on new years day who go for a 'dip' in the sea. Don't they all get a 'cold shock'? Why don't they all drown?

I feel the important answer is: training. I must concede that I am not one who would join them. However as I am a keen sailor I constantly face the water where I could fall in during the better months of the year. Training in a swimming pool does not help at temperatures of 23° or more. So how can we be prepared for a fall into the cold?

I think the answer is to use our daily (hopefully) shower as a training opportunity. During the first 4 months of the year, at the end of my shower, I gradually turn the temperature down. No problem until it is about room temperature, then a little further until I say: enough. By the 1st of May I can stand the cold water and can turn the temperature down quickly. I am sure I am better prepared to withstand the first real 'cold shock'.

Dr. Willem Bijl, Essex

Dear Dr. Bijl

You are absolutely right: training is part of the answer. Cold showers have indeed been shown to reduce the impact of cold shock. However, preparedness of mind is also relevant. To take your example, the swimmers on New Years Day know they are going into the cold water, unlike the sailor who trips and falls.

Preparation will not eliminate cold shock – when I go diving, for the first two minutes or so underwater I still breathe quickly. Nevertheless, cold showers help and I hope you continue with your shower regimen until the seawater temperature is well above the 'at risk' temperature (15°C) and also gets your crew to indulge in cold showers (I don't think mine will even consider it).

If the worst does happen, however, it's essential to know how you will deal with it. Forewarned is forearmed: a good idea would be to sit in the cockpit of your boat and discuss with your crew the problems you would face if one of your number should fall overboard. Write down an action plan specific for your boat and crew that will work even in the worst weather conditions you might encounter.

Having devised your plan you

Helping a casualty aboard, or better still recovering them in a horizontal position and laying them down, can be tricky in good weather – and very difficult if it's rough

should rehearse it, preferably using something more than a bucket and fender: a person in the water may well weigh 120kg or more. Remember, if you sail with different crews you need to tell each one what the action plan is. It's also worth bearing in mind that it is just as likely to be the skipper who goes overboard!

Recovering an MOB

The first thing you should do in any MOB situation is to get help. If the water temperature is low or the sea is rough you will almost certainly need it, and as the person in the water is in grave and imminent danger (see 'Surviving immersion', PBO March 2014) you should send a Mayday. Not only will this alert the rescue services, it will also alert boats near you who may be able to assist. The Mayday can always be cancelled, and sending one is a better course of action than calling for help too late.

If the casualty is at risk of drowning because they are unconscious or semiconscious, or because there are large waves submerging them and/or they have no sprayhood, then the priority is to remove them from the water and prevent further injury. If they are not at imminent risk of drowning a slightly slower recovery may be better, keeping them horizontal.

Almost a fifth of survivors collapse after getting back on the boat: this is probably because of changes in the heart and blood vessels. Some survivors even collapse during the actual process of climbing up the ladder or when being hauled up, during the period when they change from being horizontal in the water to being upright with the attendant physical effort. Helping them aboard, or better still recovering them in a horizontal position and laying them down, provides a means of countering this. Although staying in contact with the water risks the loss of body heat 20 times faster than being surrounded by air, a rushed recovery in moving the casualty to a vertical position may risk a state of collapse.

Almost a fifth of survivors collapse after getting back on the boat

There are many methods to retrieve an MOB, and which one suits you best will vary according to your boat's freeboard and availability or otherwise of a boarding ladder, and also on the number and strength of the crew. It may be that recovery only as far as the dinghy is possible, but this is better than leaving the casualty in the sea. Several commercial products are available to help – see PBO October 2013 for a test of MOB recovery equipment.

During the recovery it is important that no other members of the crew are injured either by lifting excessive loads or by falling in themselves. Lifting a casualty will place backs, shoulders and arms at risk. Safety lines and lifejackets must be worn by the crew.

Dealing with the casualty

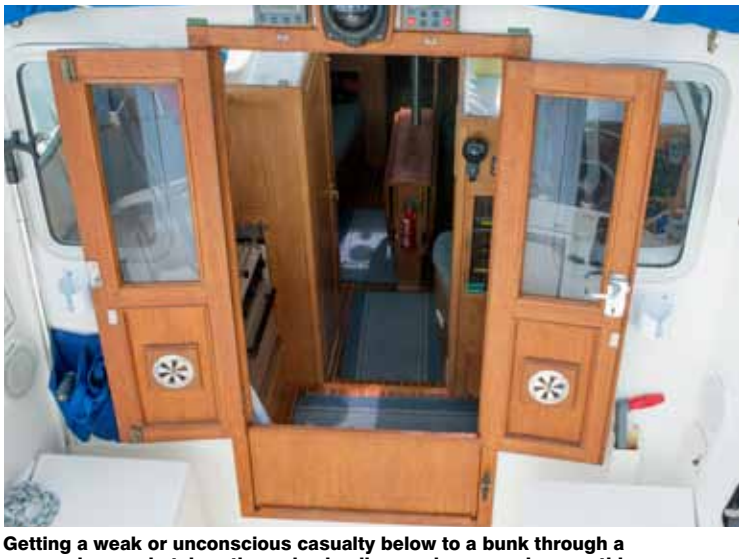
Once the casualty is on board they must be protected from further hypothermia: if they are conscious and able to move with assistance, get them below. Once below, put them into a bunk with another person next to them – sharing of body heat is the best way of warming a casualty (buddy rewarming). Hot drinks may also be useful in this regard. Only remove wet clothing once they are sheltered, with the rewarming process already under way and if they are not feeling unwell. Clothing next to the skin will be warm, and removal in cold conditions can risk additional exposure and cooling.

In addition to the risk of hypothermia, there may be injuries involved that will require appropriate treatment, including basic life support. Casualties may have broken one or more limbs and possibly sustained an internal injury if they have fallen or swung or been bashed against the hull. Standard first aid measures may need to be applied including splinting of injuries, etc. It is not possible to cover all aspects of first aid in one article: books which should be read and kept on board include the latest edition of the *First Aid Manual* (Dorling Kindersley) and *First Aid at Sea* (Adlard Coles Nautical).

In any crew at least two members should be trained in first aid so that there is always one left on board: suitable courses are run by the RYA, British Red Cross, St John Ambulance and St Andrew's First Aid. It is probably better not to include the skipper in this count (although they may still have the training) as once the casualty is back on board the skipper needs to take charge of the boat and plan the rescue. Another crew member may be delegated responsibility for communicating the casualty's condition to the rescue services and skipper, leaving another to treat the casualty.

When dealing with conscious casualties, a point worthy of note is that hypothermia also produces an increase in urine production. Use of the heads may be a problem because of the need for the casualty to move into an upright position – deploying an empty plastic bottle is a better solution.

If the casualty is unconscious, the situation becomes more difficult and the risk increases significantly. They may be unconscious because of hypothermia or trauma: with a head injury the two may occur together, delaying recovery from the water.



Getting a weak or unconscious casualty below to a bunk through a companionway hatch or through wheelhouse doors, such as on this Scanyacht 290, is extremely difficult

Small cell bubble wrap and an orange-coloured double survival bag – both are cheap to buy and easy to stow on board

Once recovered, assume that the casualty is cold and possibly hypothermic and act accordingly. Keep them horizontal and carry out any movements with extreme care to avoid dangerous changes in their probably already low blood pressure.

An unconscious person on a pitching boat will probably require at least six people to move them safely, so if you have a large boat with sliding patio doors and a sizeable crew then carrying the casualty into a heated cabin may be possible. On most boats, especially sailing boats which tend to have narrow, steep companionways, it may be best not to move the casualty from the cockpit if they are unconscious. The decision will very much depend on how soon rescue is expected – if help is on its way it may be more traumatic to have to move the casualty twice.

Keeping a casualty warm in the cockpit is a problem, as whatever method is used will need to reduce heat loss and prevent cold water getting onto them. There are specific casualty bags available, but these are expensive and bulky and can be difficult to use unless you are experienced with them. Blankets, duvets and the like will get wet and rapidly become useless, while foil blankets are of very limited value as they rely on preserving reflected heat: MOB casualties have a conductive heat loss.

A polythene sheet or exposure bag (a large polythene bag, usually bright orange, costing £2-3 and available from camping shops) is effective and allows a second person into the bag next to the casualty. Another alternative, used by the Norwegian rescue services, is bubble wrap. On a leisure boat the large, thick rolls would be difficult to store, but thinner bubble wrap is available that will store easily: I bought 3m of small bubble wrap for 80p per metre from a garden shop. It has the advantage of being waterproof, and the little air pockets will insulate the casualty very well. You can also see the casualty inside if there is an injury.

Here's a casualty wrapped in bubble wrap in the cockpit. Notice the head has been properly covered too, the bubble wrap held in place with a sail tie. You can see through bubble wrap to check the casualty's body for any obvious injuries

Remember to cover the head as more than 50% of body heat can be lost from this area, but don't forget to leave a gap for them to breathe through. Bubble wrap is easily torn into smaller parts and can be secured to the person with a bungee, rope or tape.

Don't remove clothing, with the exception of bulky items such as the

How to make observations

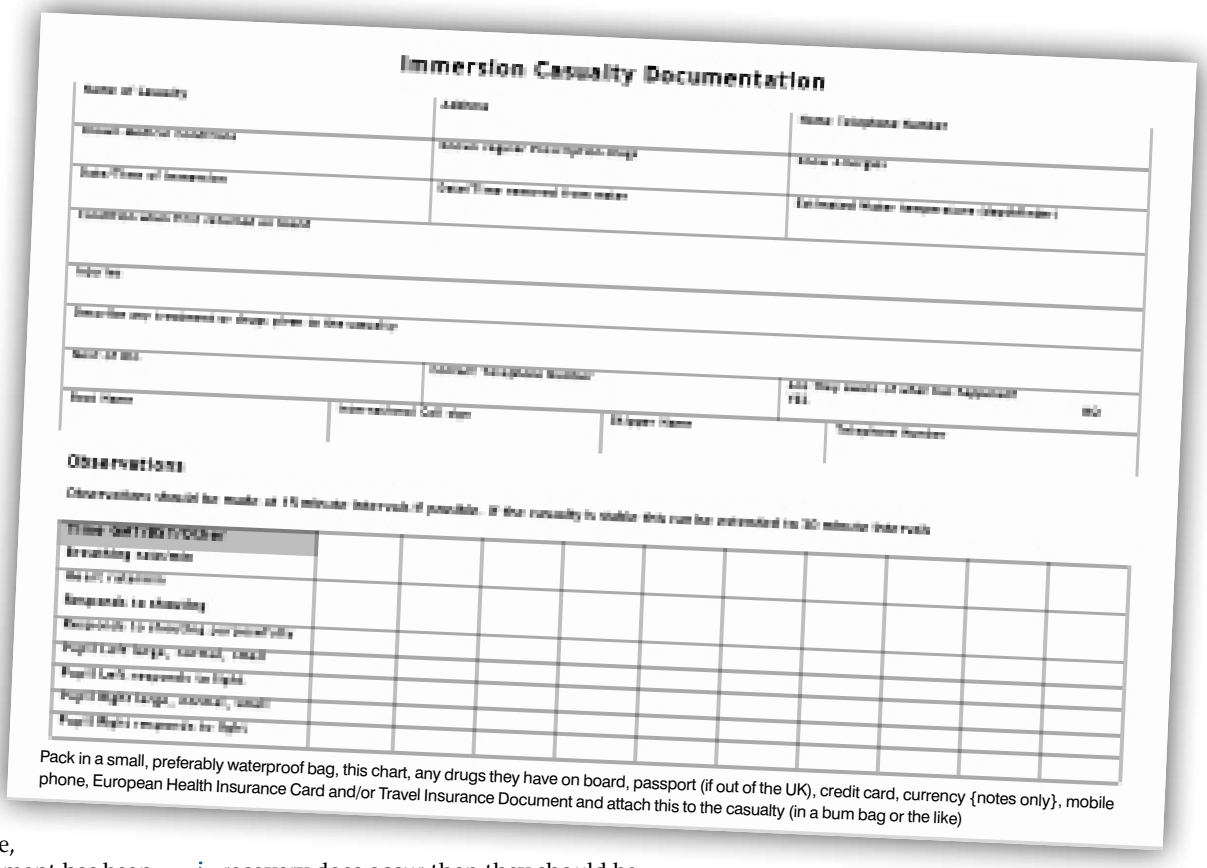
Where a time to take a particular reading is suggested, time it using a watch – do not guess. In stressful situations your guesses will not be long enough. One minute is surprisingly long in such conditions: try watching your watch and timing 30 seconds.

Ideally, if the sea is smooth and the weather is warm, take all readings over one minute. However, if the sea is rough then count for 30 seconds and double it: if it is very rough and/or cold, count for 15 seconds and multiply by 4. The longer the time period you count for, the more accurate you will be. If it means unwrapping the casualty, go for the shorter period so they don't get cold.

OBSERVATION	HOW TO MAKE IT	CAUTIONS
Respiratory rate	Look for chest movements or put your ear next to the mouth.	Make sure the airway is clear before and during this observation if the casualty is unconscious.
Pulse rate	Feel at the wrist for at least one minute. Once you have established a pulse is present, count the number of beats.	The pulse may feel weak and feeble so you need to spend time establishing its presence or absence. Do not feel for the carotid pulse in the neck – doing so may slow or stop the heart. It is not advisable to undress the casualty to feel for the pulse in the groin as they will get cold.
Conscious level	Shout at the casualty – do they respond? If so, do they respond appropriately or not?	Shaking the casualty or inflicting pain to see if they respond is not recommended.
Pupils	Look at the pupils in the eyes. Are they normal-sized, large or pinpoint? If they are normal, shine a torch at them: do they become smaller?	The two sides may respond differently. If it is bright and sunny the pupils should be small and not react.

lifejacket and perhaps, when they have some protection from the elements, the outer layer of cold, wet clothing. Stripping a casualty in a cockpit with water running over them and a wind blowing will result in substantial additional cooling.

Rubbing the skin as a method of rewarming is not recommended as this may cause blood to be diverted to the wrong parts of the body. Likewise, alcohol should not be given to the casualty as it can cause blood to be diverted to the skin. Nor should the crew consume alcohol: they will have to help the rescuers, bring the boat back and possibly drive to the hospital.


Immersion Casualty Documentation

Observations

Pack in a small, preferably waterproof bag, this chart, any drugs they have on board, passport (if out of the UK), credit card, currency {notes only}, mobile phone, European Health Insurance Card and/or Travel Insurance Document and attach this to the casualty (in a bum bag or the like)

Ongoing care

Once the casualty is secure, immediate lifesaving treatment has been given and an examination performed to exclude injuries it is time to start measuring and recording vital signs. The frequency will vary on the severity of the casualty: the more ill they are, the more recordings are needed. It is important to write these down. There is an observation sheet in some almanacs for this purpose, or you can use the one (above right) as a guide. It should be given to the rescue services as it may subsequently prove invaluable to doctors in understanding what has happened. Any drugs the casualty may have been taking should also be given to the rescue services and written on the observation chart.

Breathing difficulties

Breathing may become difficult if the casualty has inhaled water into their lungs. If they are conscious, sitting them up, loosening any tight clothing and if possible minimising any movement of the boat is about the most that can be done. If recovery does occur then they should be carefully watched for 24-48 hours in case breathing difficulty reappears.

If the casualty is unconscious and breathing, and physical injury is a possibility, protect the neck from being damaged with a collar. This can simply be made out of a folded newspaper or even a chart secured with a piece of cord. Put the casualty into the recovery position to prevent vomit entering the lungs and keep the airway clear.

If they are unconscious and not breathing, the airway needs to be cleared. If this doesn't restore breathing you need to breathe for them (rescue breathing). The same applies if breathing stops in a hypothermic casualty: it is important to start basic life support and continue administering it.

If it appears that the heart has stopped, opinions differ on what course of action to pursue. Some authorities say that chest compressions shouldn't be initiated because the heart may be beating very slowly and with a low blood pressure: inexperienced first-aiders may miss the signs of a heartbeat and chest compression may irritate a slowly beating heart, resulting in cardiac arrest.

My advice is that it all depends on how long rescue to a medical facility will take: if it is nearby then wait, but if it is a long way off then there may be little to lose by starting chest compressions. It is important to note that the cold protects the body and the brain from damage for a long time, and full recovery can be possible from prolonged hypothermia and even cardiac arrest.


You can make a neck collar using any stiff paper like a map or a chart and a piece of cord. If you do use one of these, ensure that the airway remains clear

In conclusion

Finally, when the casualty has gone to hospital and the boat is safely back in port it is important to remember the effect the whole experience may have had on the crew. If the casualty has suffered only minor hypothermia and/or injury and is getting out of hospital in a day or two, a debriefing session may be all that is needed. During this, it is as important to focus on the aspects of the plan that worked efficiently as it is to highlight any problem areas, so as to ensure useful learning. If, unfortunately, the casualty is more seriously ill or dies, the whole crew may need some form of professional counselling and support. In this event, being reminded of the planning and rehearsal stages (as outlined at the beginning of this article) may provide comfort that all that could have been done was done.

ABOUT THE AUTHOR

Gilbert Park, a consultant in anaesthesia and intensive care at Addenbrooke's Hospital in Cambridge, has been sailing for more than 40 years. He now owns a Seaward 25 motor cruiser and enjoys the tinkering and maintenance that goes with owning any sort of boat.