

# "DOCTOR AT SEA" a monthly Column in The Islander Magazine

## Hypothermia

Hypothermia is a major problem in more northerly (or very southerly) latitudes and the rescue services off Alaska and Canada have been developing equipment and techniques to increase the survival rates over many years to the extent that survival after rescue is now regarded as the norm for previously healthy persons.

The Mediterranean climate is thought by many to be about the best there is with hot summers and mild winters and more or less enough rain most years so why do we need to think about getting cold and developing hypothermia? Well imagine someone going up on deck on a clear evening to fend off sea-sickness and then falling asleep, perhaps helped by a few drinks, and wearing thin clothes as the night temperature drops – add a brief shower and a fresh breeze and the wind chill could make a risky situation more precarious. Happily this is an uncommon scenario in a more southerly climate but the risks escalate dramatically in the water given that heat loss is thirty times more rapid in water compared with air. Most people develop a dangerous degree of hypothermia after several hours of immersion in water at 15-20 deg C.

I can remember a few years ago being warned not to fall into icy waters in southern Chile when the survival time was within ten minutes. We ventured out in our small lifeboat to view a calving glacier releasing great cliffs of ice into the water beside us and I can also remember being vastly outnumbered by excited Chileans who insisted on standing up to enjoy their whisky on ancient glacial ice as I hugged the hull of our little boat whilst still enjoying the refreshment. Our boat was designed for excitable passengers and we came home warm and dry but when the worst happens and we are plunged into icy waters then our bodies react rapidly. Initially we suffer cold shock that produces rapid breathing and potential water inhalation, the limbs become more rigid and swimming is much less efficient and drowning is a distinct possibility. The associated panic combined with violent shivering and the increasing desperation can produce a self-defeating over-exertion when the best response is to curl up into a ball, with the help of a life jacket to aid buoyancy, and conserve central heat.

You may remember Leonardo de Caprio in "Titanic" hanging onto wreckage but shivering and teeth chattering and movements becoming less purposeful whilst speech and mental processes became blunted. Kate Winslett had the advantage of being above the chilly waters and suffered "mere" wind chill as opposed to the much increased thermal drain of immersion in icy water.

Continuing exposure to cold water leads to a reduction in circulating blood volume by fluid (urinary) loss to preserve a central circulation to vital organs such as brain, heart, lungs and kidneys. This has huge implications for the rescue. If the circulation is concentrated on the core and then the periphery is opened up early, for whatever reason, then the core comes off badly. Hypothermia is an emergency but, paradoxically, the key word to an effective rescue is to handle the casualty *slowly*.

True hypothermia is defined as a core temperature of less than 35 deg C as measured by a rectal thermometer. In less severe situations it may be enough to wrap in a dry blanket or a space blanket or, if facilities are available, to strip off and get in a bath at about 40 deg C and reinforce treatment with a hot drink to reinforce core reheating. Sudden movement may cause the cooled heart to slip into defibrillation which is an uncoordinated and entirely inefficient random heart action producing no output and leading to inevitable death unless the rescuers start cardio-pulmonary resuscitation (CPR) and defibrillation. Lifting up the casualty in a vertical position can cause the temporarily reduced blood volume to pool in the lower part of the body and kill the casualty – so it is critical to move casualties slowly in a cradle position or in a horizontal position. Rubbing the extremities to improve the circulation can increase flow to the periphery prematurely as can overheating from the peripheral surroundings and all these actions, whilst seeming to be appropriate instinctively, can be damaging to the survival prospects.

Experience in the more icy waters around Great Britain or off Canada or Alaska has made rescuers more positive about the prospects after rescue. Recovery is assumed until there are no vital signs of life (breathing, pulse) *after* careful rewarming. In the early stages no pulse may be detectable and breathing may be very shallow but CPR is not indicated, only gentle rewarming, and with the minimum of manhandling to avoid disturbing the heart rhythm. There is increasing experience, in polar regions, with warmed humidified oxygen/air and possibly supplemented by warm intravenous fluids - this may well be of use in prolonged Mediterranean immersion situations in the future but is not used commonly at present,

*Dr Ken Prudhoe, MCA Approved Doctor, can be contacted at Club de Mar Medical Centre, Palma de Mallorca. Tel: (+ 34) 639 949 125.*