

# First Aid for Diving Emergencies - Does the Diagnosis Matter?

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Diving emergencies develop out of the blue according to Murphy's Law - when least expected and at the worst possible moment. They are invariably the result of a chain reaction of circumstance that breaks through the loose-knit but nevertheless effective safeguards built into scuba diving, and are rarely caused by any one factor alone.

This is a harrowing moment for a group of divers faced with sudden chaos and a motley of non-specific symptoms and signs in the victim (Table 1).

The circumstances may provide sufficient clues to what is happening (eg. oxygen toxicity is hardly likely in someone in difficulties on the surface prior to an air dive, but near drowning is a strong bet).

**Table 1**

The possible presence or absence of 15 symptoms & signs in 8 potentially serious diving-related conditions. Note that there is not a single condition/presentation combination that is diagnostic. (DCI-Decompression Illness)

Common signs/symptoms	DCI	Pneumo-thorax	Ear baro-trauma	Marine Sting	Near Drowning	Hypo-thermia	Myocard-Infarct	Trauma
Pain Limb	+	-	-	+	-	+	+	+
Pain Chest	+	+	-	+	+	-	+	+
Headache	+	+	+	+	+	+	+	+
Fatigue	+	+	+	+	+	+	+	+
Shivers	+	+	+	+	+	+/-	+	+
Nausea & Vomiting	+	+	+	+	+	+	+	+
Short of Breath	+	+	-	+	+	+	+	+
Cyanosis	+	+	-	+	+	+	+	+
Tinnitus	+	-	+	-	-	-	-	+
Motor Loss	+	-	-	+	-	-	+	+
Sensory Loss	+	-	-	+	-	-	+	+
Convulse	+	+	-	+	+	-	+	+
Loss of Consc.	+	+	+	+	+	+	+	+
Signs of shock	+	+	-	+	+	+	+	+
Cardio-Respir. Arrest	+	+	-	+	+	+	+	+

The author's contention is that precise disease diagnosis is largely irrelevant to the institution of appropriate First Aid.

Thus, the approach to First Aid teaching must either be based on an in-depth study of each medical condition, or be a pragmatic one that presents a sequence of simple decisions and actions - a treatment algorithm - that provides immediate care for all potentially life-threatening conditions, whilst medical aid is sought.

This approach is clearly illustrated in the modern teaching of Basic Life Support. What must also be emphasised is that the actions of those at the accident scene largely determine the outcome for the injured diver.

This is not to say that the triad of Resuscitation, Disease Diagnosis and Treatment do not go hand-in-hand in dealing with medical emergencies. The author simply contends that it is unproductive to teach this process to most amateur sport divers. Indeed evidence from case referrals to the Christchurch hyperbaric unit suggests that the wet-suited mini-doctor sometimes does his fellow diving victim a disservice. The old adage that a little knowledge is a dangerous thing should not be forgotten!

What replaces disease-orientated diagnosis in the immediate First Aid management of diving accidents is condition recognition. That is, the establishment of priorities in immediate care. For instance, there is little point treating shock only with intravenous fluids if the real cause of the shock is severe hypoxia from upper airway obstruction due to head trauma from an outboard prop blade, and not the haemorrhage from the scalp wound!

Therefore, the question is rhetorical. Of course diagnosis is important, but first identify and prioritise immediately life-threatening problems like the airway obstruction example above, rather than disease processes.

Thus principals 1-6 in Table 2 do not require disease recognition, and it is only for 8, often combined with 7, that this becomes necessary.

An algorithm used by the author for many years for teaching diving accident management is shown in Figure 1.

**Table 2**

**TEN COMMANDMENTS of FIRST AID for DIVERS**

- 1 **Do NOT** place yourself in **DANGER**, and **KEEP CALM**
- 2 **BASIC LIFE SUPPORT** - Airway, Breathing, Circulation
- 3 **POSTURE** - recovery position/control bleeding/immobilisation
- 4 **OXYGEN** - in every case
- 5 **REST & PROTECT** (from the elements, further injury, spread of toxins, etc)
- 6 **OBSERVE & RECORD** the diver repeatedly & without bias (Describe only what you hear and see + ABC review)
- 7 **CONSULT** - Emergency Services/ Medical Advice (eg. DES/DAN)
- 8 **SPECIFIC CARE** - Fluids / Marine Stings & Bites /Advanced Life Support / Disease Diagnosis
- 9 **EVACUATE** - Hospital / Hyperbaric Centre, etc
- 10 **SECURE EQUIPMENT & DOCUMENT ACCIDENT** fully

**Figure 1. FIRST AID ALGORITHM**

This decision flow chart has been used in several versions by the author since 1978 for teaching diving first aid management. It was first published in the South Pacific Underwater Medicine Society Journal 1981; 11 (Suppl): 63-67.

