

public, I do not see it as the doctor's duty to play policeman where an individual should be taking personal responsibility.

I see the diving doctor as being in a unique position to give the people who consult him for an opinion as to their particular risk status.

Rather than saying that the candidate may or may not go diving it seems more sensible to me to let the people concerned make responsible, informed decisions. Given an appropriate medical opinion, a reputable dive school will not take responsibility for an unnecessarily high risk. The diver training organizations will not support a school which takes unnecessary risks, and finally, the insurance companies will not support a training organization which takes unnecessary risks. Money is always a good persuader.

If a medical is to be performed it should be taken seriously. I frequently see patients for diving related illness who comment on how long they had to wait while I was doing another medical (usually about thirty minutes). When I tell them that this is fairly average for recreational divers they respond with "Gee Doc, mine only took two minutes". Not surprisingly they are not returning to the same doctor to have their problems attended to. My favourite illustration of this situation was a professional musician with severe bilateral middle ear barotrauma who noticed during her three minute medical that her pulse and blood pressure had been recorded without having been taken. Her tympanic membranes had not been inspected and I would have been more than happy to support her in any legal action had she wanted to take any. I believe it is most important to keep an accurate record of the history and examination for the purpose of comparison if the diver has problems later.

The problem with a discourse such as this is that it is preaching to the converted. The message needs to be delivered to the consumers, the 400,000 recreational divers who visit the GBR every year. Unfortunately there will always be consumers who want to "save a buck" where possible, and operators who want to "make a buck" no matter what the risk. Unfortunately some people hold the view that anyone who can pay \$350.00 for the dive course is medically fit to dive.

Very rarely do I see diving morbidity which is due solely to a medical problem to start with. The diver who perforates an eardrum while diving with a cold and the diver who gets decompression sickness after five dives in one day demonstrate the two major causes of morbidity. Neither is medical. They are greed and stupidity.

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## CORAL CUTS AND ABRASIONS

Vic Callanan

Many corals have a sharp edged hard exoskeleton which often cuts or abrades human skin, sometimes after surprisingly little force. Early treatment is often ignored as the injury is deceptively mild, but significant morbidity may result from even slight coral contacts.

### The injury

The abrasion or laceration often looks clean initially, however there are many possible contaminants occur including slime and mud, nematocysts, coral polyps, pieces of hard coral and salt-water bacteria.

An early tissue reaction with itching and stinging is often seen within a few hours. This is usually mild and is probably due to inflammation from nematocysts and other contaminating toxins e.g. slime. If no infection occurs and no foreign bodies remain embedded the swelling, tenderness and erythema settle in 3 to 7 days.

If untreated the wound may progress to a significant injury. Continued exposure to the marine environment favours progress of the lesion due to skin maceration and further contamination. Two complications, alone or in combination, often occur, sometimes despite adequate early treatment. Firstly, infection by either skin organisms or marine bacteria and secondly, foreign body reactions from implanted coral fragments.

The lesion becomes very swollen and tender and may show ulcers with a sloughing base. These are often very slow to heal and become chronically infected. Regional lymphadenopathy is usually present. These lesions eventually heal with scarring and may be subject to recurrent breakdown if foreign material remains in the wound.

### First aid

Correct early treatment is important for even apparently mild injuries.

- 1 Stop all bleeding, usually by direct pressure.
- 2 Remove all coral fragments. Wash and scrub the wound with clean warm water. Do not use sea water as this may introduce more contamination. Use a soft brush e.g. toothbrush. If this is not possible because of the extent of the injury or because the victim is a child then seek early medical advice as local anaesthesia may be necessary.

- 3 Apply an antiseptic. This is not a substitute for thorough cleaning of the wound.
- 4 Cover the wound with a dressing and bandage.
- 5 Inspect the wound daily and seek medical attention if swelling and tenderness increase or persist.

### Medical management

Patients may present despite good first aid management.

- 1 In deep or badly infected wounds radiological examination to exclude a foreign body is indicated.
- 2 If obviously infected or if cellulitis or lymphangitis are present culture the wound. Inform the laboratory that marine contamination occurred as routine culture media may not grow the marine organisms which are likely pathogens.
- 3 Clean and debride the wound. Local anaesthesia is often necessary. General anaesthesia may be needed for extensive or deep wounds or children. A scrub with an antiseptic e.g. Betadine may need to be followed by sharp debridement of dead tissue or slough. All foreign bodies must be removed. The wound should not be sutured.
- 4 Apply a no-stick dressing and bandage.
- 5 Ensure tetanus prophylaxis is adequate.
- 6 Administer antibiotics if infection is present. Some marine bacteria may be present. Doxycycline is the antibiotic of choice as it is active against marine vibrios and most skin organisms.

### Research needs

Large prospective studies are needed to define the incidence of infection and the organisms responsible so that better antibiotic choices can be made.

### Further reading

Edmonds C, Lowry C and Pennefather J. *Diving and subaquatic medicine* - 3rd Edition. Oxford: Butterworth-Heinemann, 1992.

Williamson J. *The marine stinger book* - 3rd Edition. Brisbane: Queensland State Centre, Surf Livesaving Association of Australia, 1985.

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## MANAGEMENT OF DIVING RELATED ILLNESSES IN TOWNSVILLE

Tom Fallowfield

### Introduction

In addition to its main work of elective hyperbaric oxygen therapy, the compression chamber in Townsville General Hospital (TGH) is the treatment facility for all reported cases of decompression illness, previously known as decompression sickness and arterial gas embolism, arising from diving on the Great Barrier Reef. It also deals with divers from Papua New Guinea, and the islands of the South West Pacific out as far as Fiji and Nauru. So far, all the cases referred have come into the above categories and it must be presumed that other manifestations of barotrauma are dealt with locally.

### Presentation

Case management must start on first contact with the patient by the diving doctor. The doctor may then be aboard a diving boat, at any airfield in the collection area, in the Accident and Emergency Department (A&E) or talking to a patient on the telephone at some remote location. Patients arrive at or are retrieved to TGH by the various routes shown in Table 1. About half reach the hospital "under their own steam".

TABLE 1

### LOCATIONS OF RETRIEVAL OR ATTENDANCE FOR 235 DIVERS TREATED BY TGH BETWEEN 18.11.77 AND 30.4.91

Airlie Beach	19	Hayman Is.	1
Bamaga	1	Hervey Bay	1
Brisbane	6	Ingham	2
Buderim	1	Innisfail	1
Cairns	67	Lady Elliott Is.	1
Cape York	7	Maroochydore	2
Cooktown	1	Maryborough	1
Cow Bay	1	Mossman	3
Christmas Is.	1	Nauru	1
Darwin	2	PNG	14
Fiji	3	Rockhampton	3
Flinders Cay	1	Solomon Is.	3
Gladstone	1	Thursday Is.	3
Gympie	1	Townsville	91
Hamilton Is.	2	Unrecorded	4