

# The world as it is

## Ethical dilemmas and diving medicine: asthma and recreational diving ñ a hypothetical case report

Michael H Bennett and Stephen Grant

### Key words

Asthma, diving medical, recreational diving, ethics, legal and insurance

### Abstract

(Bennett MH, Grant S. Ethical dilemmas and diving medicine: asthma and recreational diving - a hypothetical case report. *SPUMS J* 2003; 33: 140-145) A hypothetical case report is presented involving two diving medical practitioners, two dive training candidates and an unusual chain of events. This explores a number of ethical problems that might arise for doctors who perform diving medical examinations. Any resemblance of actual persons to characters depicted in this account is entirely coincidental.

### Introduction

An hypothetical case report is presented concerning two diving medical practitioners, two dive training candidates and an unusual chain of events. This scenario was originally developed for live presentation at the 2001 SPUMS meeting in Madang, Papua New Guinea, in order to illustrate and explore a number of ethical problems that might arise for those of us who perform diving medical examinations. It is entirely a work of fiction, and any resemblance of actual persons to characters depicted is entirely coincidental.

This report is presented as a series of situations with questions that might be worth considering at each step. I suggest you pause at each set of questions and consider what your course of action might be in the same situation. There are no correct answers, but a summary of suggestions from the floor during the original presentation is given at the end of the presentation of events. Many thanks to all those who contributed, particularly our panel members Guy Williams, Robyn Walker, Drew Richardson, Barbara Trytko, Simon Mitchell and Hamish Turnbull.

### Part 1: The initial consultations

Dr W is a general practitioner and a member of SPUMS with a long-standing interest in diving medicine. He is an active scuba diver himself, and works diligently to remain well informed of the medical aspects of this activity. In February 2001, he was consulted by a 30-year-old male (SB) who wished to undertake recreational scuba diving. Dr W asked him to complete the SPUMS diving medical questionnaire prior to formal interview and examination.

On presenting his form, Dr W noted that SB had given a positive response to the question concerning asthma. Further questioning revealed that SB had been diagnosed

asthmatic at the age of seven, following a visit to his local hospital emergency department. He frequently used bronchodilators when younger, particularly in association with upper respiratory tract infections and exercise. His episodes of wheezing had gradually subsided and he had required no specific treatment since he was 16. He specifically denied any wheezing, nocturnal coughing or other symptoms since that time and had frequently exercised strenuously with no sign of bronchospasm.

Physical examination was unremarkable. Ventilatory function tests (VFTs) performed in the surgery were: forced vital capacity (FVC) 4.15 l (101% normal), forced expiratory volume in 1 second (FEV<sub>1</sub>) 3.70 l (103% normal), FEV<sub>1</sub>/FVC 89%, peak expiratory flow (PEF) 480 l.min<sup>-1</sup> (99% normal) and forced expiratory flow between 25% and 75% of FVC (FEF<sub>25-75</sub>) 95% of predicted.

Meanwhile, across the road Dr B, a general practitioner with similar interests and abilities, is also seeing a recreational diving candidate. In this case the candidate is a 32-year-old female (UB) who has similarly indicated a history of asthma on her questionnaire. She is otherwise well, participates in active sports almost daily, and a month before this consultation she had successfully completed the Sydney half-marathon run.

In this case, further questioning revealed a history of bronchospasm since childhood with frequent use of beta-agonist inhalers. UB reported with some enthusiasm, however, that all has been pretty well since starting on regular steroid inhalers some four years previously following a brief admission to an intensive care unit for control of bronchospasm (formal mechanical ventilation not required). Since that time, she has used Ventolin only occasionally, perhaps once every six weeks or so. She does not become wheezy with exercise, but may do so when it is cold.

Physical examination revealed no specific abnormality, in particular no signs of bronchospasm. VFTs could not be performed as Dr B's vitalograph was undergoing its regular six-monthly service. The machine would, however, be available again in an hour or so.

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**QUESTIONS:**

1. *What further investigations (if any) would you like to perform for each of these candidates?*
  2. *What specialist referral would you make, (if any) for these candidates?*
  3. *What would be your advice to these two candidates?*
  4. *What is the medicolegal position regarding these medicals?*
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Dr B decided that UB was unfit for recreational diving given her clinical history and was not willing to sign the diving medical certificate as requested by the training agency. UB was very unhappy with this decision given her general level of fitness and stormed out of the office. She refused to pay for the consultation.

As she left the office, UB noticed the surgery across the road and, armed with her new knowledge of diving medicine, decided to seek a further consultation. She saw Dr W, but this time failed to reveal her history of asthma. Her examination proceeded smoothly and she was certified to undertake scuba training.

**Part 2: Getting away from it all**

Three months later the two good friends, Drs B and W, arrived on board the *Black Pig* for their live-aboard diving holiday around the islands of Papua New Guinea. They were greeted by their host, Captain Pugwash, their divemaster, Charlie Hook, and introduced to their fellow-divers for the week. Somewhat to their dismay, they found both SB and UB on board and ready for the tropical diving honeymoon they had planned now both were fully certified 'open water' divers. Dr W was somewhat embarrassed to be living and diving with two of his patients for the week, while Dr B was quite distressed to see UB on board. He saw a dilemma and retreated to the cabin he shared with Dr W to think the situation over.

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**QUESTIONS:**

5. *Should Dr B discuss the situation with Dr W?*
  6. *Should Dr B discuss the situation with UB?*
  7. *Should Dr B discuss the situation with the crew?*
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Dr B first decided to discuss the situation with his colleague and friend, Dr W. Dr W shared his concern, particularly given that UB would appear to have deliberately concealed

from him important information that would bear directly on her fitness to dive. They decide that Dr B should approach UB and articulate their concerns and advice.

UB appeared unabashed by the dilemmas that so disturbed Dr B. Specifically, when asked about her responses to questions about her asthma, she replied that she was confused by the first questionnaire and more appropriate with her responses on the second. In any case, she pointed out that she understood her disease better than Drs B or W, and had done 10 dives since her dive medical without problems. She had been able to swim to the boat without getting breathless, had not had any wheeze at all and ensured this by always taking Ventolin before a dive. This holiday was so important to her and her husband that she could not see why Dr B would want to spoil everything for them now. She specifically instructed Dr B not to tell her partner or any of the crew about her condition.

In fact, SB and UB were travelling with two friends on this diving holiday of a lifetime, one of whom was James Suckit, a solicitor from the Sydney firm Suckit and See. UB decided she should confide in James and seek some advice from him concerning her legal situation should Dr B inform the divemaster of the situation. She told James that she had been advised by Dr B that she was not fit for diving, but had disagreed with this assessment and sought an opinion with Dr W. Dr W had cleared her to dive, but she was concerned that Dr B may tell the divemaster that she should not be diving.

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**QUESTIONS:**

8. *What further action should Dr B take, if any?*
  9. *What would be reasonable advice from Mr Suckit?*
  10. *Does the candidate signature on the diving medical form allow a practitioner to divulge information to others?*
  11. *Would you dive as a buddy with UB?*
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**Part 3: The first dive**

The first planned dive was a descent onto a wall. Maximum depth was to be about 30 metres, with the bottom at about 60 metres. There was a 3 knot current running along the reef, so the dive planned was a drift, and the visibility was unfortunately quite poor, 4 to 5 m, following a recent storm.

SB and UB had done 10 ocean dives since qualifying as open water divers, and were very keen to get in the water. James and his partner were supposedly much more experienced, and claimed to have done a Nitrox course, but James had left both his C-card and nitrox card at home. They requested nitrox for their dive as it "would allow them to go deeper with safety". James seemed surprisingly unfamiliar with his equipment given these claims and

required a lot of assistance from his buddy and legal partner, Jane See, before he was ready for the water. He requested two weight belts to carry his 'usual' complement of lead shot, and was clearly very negatively buoyant as he prepared for entry.

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#### QUESTIONS:

12. *Should the divemaster allow SB and UB to make the dive?*
13. *Should the divemaster allow James and Jane make the dive?*
14. *What is the advantage of nitrox mixtures?*
15. *What would you do in this situation if you were Dr B?*

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Unfortunately, there was a bit of trouble on the first dive. James was pretty clumsy in the water and, as he flailed about at 15 metres, he kicked UB's regulator out of her mouth. UB, not particularly experienced or comfortable in the water, had trouble replacing it, inhaled a little water and made a rapid swimming ascent to the surface. She felt anxious and a little wheezy at the surface but regained the boat and made for her cabin. One of the crew, concerned at her early appearance, followed her to the cabin where he saw her using a Ventolin inhaler. Now very concerned for her safety, he found a quiet moment to report what he had seen to the divemaster, Charlie Hook, when he returned to the boat. UB, however, seemed to recover well and was bright and cheerful that evening as they contemplated better diving the next day.

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#### QUESTIONS:

16. *Should the divemaster confront UB?*
17. *Should the divemaster involve the doctors on board?*
18. *If so, with or without the knowledge of UB?*

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#### Part 4. The last dive

The second day passed uneventfully with three pleasant, relatively shallow dives in clear, calm conditions. Charlie had been reassured by UB that she was fine and not an asthmatic, rather she was an occasional Ventolin user. He had agreed to her request not to involve the doctors.

On the third day, the party planned a 40-metre dive in the morning to the wreck of a B-52 bomber and with considerable anticipation they made their preparations. Unfortunately, their dive did not proceed smoothly. At 20 metres on the ascent, James ran out of air and attempted to wrench Jane's regulator from her mouth. She went on to her octopus, but within a few breaths, she too was out of air and they both made a grab for UB's octopus. There is some confusion over what happened next, but there was

widespread panic in the water and SB was rendered unconscious from a blow from James' flailing fist. He was recovered at 30 metres by Charlie and brought to the surface, where he regained consciousness. Meanwhile, Jane and James safely reached the surface using the two doctors' octopus supplies.

UB was clearly distressed by witnessing what she assumed to be the demise of her newly acquired husband and it seems she made a panic ascent to the surface. She was found unconscious at the surface and did not respond to vigorous resuscitation by the crew and physicians present. She was pronounced dead by Dr B 45 minutes after being located on the surface.

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#### QUESTIONS:

19. *What is the most likely reason for UB's death?*
20. *Specifically, is asthma likely, or relatively unlikely, to have contributed to her death?*
21. *If there is any blame to be apportioned for her death, where do you think that blame lies?*

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#### Part 5: Summary of responses from the floor of the meeting

1. Most physicians felt that SB was certifiable as fit for dive training, although there was some discussion as to whether he deserved a provocation test with hypertonic saline and/or a chest X-ray. The 14-year symptom-free period and normal spirometry (particularly FEF<sub>25-75</sub>) were accepted by many to be sufficient evidence to certify without further testing. The great majority agreed that UB was unfit to undertake dive training, and that a provocation test would not alter this decision one way or the other.

2. Probably no specialist referral was required for SB. UB could be referred if she desired and was not convinced that her condition was not compatible with scuba diving. Sophisticated testing would be very likely to confirm a risk of bronchospasm and therefore a significant risk of harm associated with diving.

3. Most agreed they would advise SB to beware of diving with any signs of wheeze and to seek medical advice if he had any return of asthma symptoms. All agreed UB should be counselled fully on the nature of the potential problems she faced and given a clear explication of the risks involved with her scuba diving. She should probably be given the opportunity for an informed second or specialist opinion should she desire further advice.

4. A medical certification for fitness to undertake training for scuba is not a legal requirement in Australian states other than Queensland, or in the USA or New Zealand. All the usual obligations will apply once an evaluation has been

undertaken, however. In general, reputable instruction agencies in Australia will not accept for training any candidate who has not been 'passed' by a medical practitioner as fit. There is a considerable grey area in relation to the increasingly common practice of advising in writing of specific risks for an individual candidate, as opposed to a black and white yes/no fitness declaration.

5. Such a discussion is very likely to constitute a breach of confidentiality if Dr B has been given no specific consent for it. It is not clear how this position changes if he is made aware that his friend Dr W has also seen UB. Nevertheless, a majority of the participants did not feel it was unethical or unwise for Dr B to discuss the consultation he had undertaken with his colleague Dr W. It should be noted that the candidate signs a statement that allows the physician to "supply information in regard to my medical fitness to dive to the diving instructor". As the instructor is not aboard, this would not seem to bear on the situation.

6. The consensus was that it would be appropriate for Dr B to approach UB for a private discussion of the situation. There were widely different opinions on the most appropriate things to say, however! Some felt it was appropriate only to re-emphasise the potential dangers of diving with asthma, while others were more assertive. Some suggested the doctor should make it clear that he was not prepared to dive with UB, and that he intended to make it known to the crew and other divers that he would not do so – but without specifying to them why he had made this decision. Nobody was prepared to divulge the medical details to the others on board.

7. See above. Some physicians felt they had a duty to the crew and divers to make them aware that a potential buddy might be more of a liability than an asset; however, no-one clearly asserted that they would inform third parties without the consent of UB herself.

8 and 9. The group did not feel the response of UB would alter their decisions as described above in (6).

10. The consent to divulge details to others is limited as discussed in (5) above. Certainly, clear instructions not to divulge this information to others, as in this case, compelled Dr B not to do so. Some noted that there would be a point at which not to do so would constitute danger to others and may equally compel Dr B to reveal the medical information. All agreed this was not a pleasant prospect.

11. All participants agreed they would not dive as the designated buddy to UB under these circumstances, and that to do so may constitute, at least in part, an endorsement of her fitness dive under these circumstances.

12. Most participants did not feel the dive as planned was suitable for these two relatively inexperienced divers. It was noted that a competent and professional divemaster would

have already assessed the abilities of the divers on his boat and planned a dive more appropriate to those abilities. This is a most inappropriate first dive for a group unfamiliar to the divemaster and each other. It was suggested that in any marginal situation the divemaster would plan to accompany the novices on their first dive to further assess their abilities in the water. Gentle persuasion and suggestion was likely to achieve acceptable results in most situations, rather than a more aggressive and censoring approach.

13. All agreed that the attitude of this couple would set off alarm bells for the divemaster. In particular, the statement concerning nitrox would be worrying in the extreme and demonstrated a basic misunderstanding of the nature and purpose of this mix. The statements in (12) above are equally valid for this couple.

14. Nitrox mixtures are probably more usefully known as 'oxygen enriched air' for the purposes of scuba diving. They contain more oxygen than air and, consequently, for any given depth they provide a lower nitrogen load and consequent risk of decompression illness. This property has allowed the development of tables permitting increasingly longer bottom times for mixtures with an increasing proportion of oxygen. The critical corollary, however, is that with increasing oxygen proportions in the mix, the maximum safe depth at which the mixture can be breathed is reduced due to the risk of oxygen toxicity. Breathing nitrox 40 (40% oxygen, 60% nitrogen), for example, would result in a  $PO_2$  of 1.6 Ata (162 kPa) at 30 m depth, and 1.4 Ata (141 kPa) at only 25 m. Nitrox breathing does not extend the safe depth capability compared with air.

15. See (12) and (13) above for discussion of some of the issues raised.

16. This is very difficult for the divemaster, who must act with tact and discretion to achieve the best outcome for all. The divemaster cannot be expected to assess the medical condition of UB and must act on her assurances that she does not have a medical contra-indication to diving. While he may have suspicions, the group felt he was not in a position to prevent UB from further diving unless he had confidence in his diagnosis.

17 and 18. The group felt that there was no contract for confidentiality between UB and the divemaster in this regard and that the divemaster could discuss his concerns with the doctors if he wished. The doctors would be expected to state their prior involvement with the subject but could not discuss her case specifically. They could respond in a general way concerning their opinion on diving and Ventolin use. Many considered the divemaster should inform UB of his intention to consult the doctors.

19. Most likely to be either pulmonary barotrauma and cerebral arterial gas embolism (CAGE) secondary to a panic ascent while breath-holding, or panic and subsequent

drowning.

20. It is not clear from the information given whether asthma would have contributed to this fatality. It is certainly possible for an individual with normal lungs to suffer barotrauma and CAGE in this situation. Aspiration followed by bronchospasm during the rapid ascent might contribute to barotrauma occurring, but it should be stressed that there is no evidence that such events are more or less likely in asthmatics than others. We simply do not have the data and work at present from biological plausibility.

21. This question was not addressed during the discussion at the ASM. In the author's (MB) opinion in this situation, UB is principally responsible for the circumstances that led to her scuba diving when the incident occurred. James Suckitt and Jane See could be viewed as partially responsible for her death by causing her to panic and make her uncontrolled ascent. The responsibility of the divemaster is to the safe conduct of the dive and some might question the wisdom of the planned dive in the circumstances described. It should be noted, however, that the divemaster in this situation is not performing as an instructor and does not have that relationship with the divers on this boat.

#### **Part 6: Legal commentary on issues raised by the hypothetical case report (the 'Pugwash' scenario)**

- The Pugwash scenario describes a complicated sequence of events in which certain medical practitioners (also scuba divers) are asked to certify patients as fit to undertake scuba diving.
- SB is certified by Dr W as being fit for recreational scuba diving. The medical basis on which that certification is given is not a matter for legal opinion.
- UB is refused certification by Dr B, but subsequently, armed with the information gleaned from the first examination, she obtains certification from Dr W.

*What is the medico-legal position regarding SB's treatment by Dr W, and UB's treatment by Dr B?*

- SB's consultation is unremarkable, from a legal perspective. Whether or not SB was fit for diving is a medical question to be determined on relevant medical evidence.
- Similarly, the consultation between Dr B and UB is a medical matter.
- Nonetheless, the High Court in Australia has held that medical opinion is not determinative of the scope of a doctor's duty of care. A court will make its own decision, informed by relevant medical expert evidence, if necessary, as to what is the standard of care owed by a medical practitioner.
- Later Drs B and W meet SB and UB on board ship while on a diving holiday. This presents Dr B with a dilemma.

*Should Dr B discuss the situation with Dr W?*

- Dr B's consultation and the information provided to him during the course of that consultation are confidential to UB under doctor/patient privilege. It is not appropriate for Dr B to discuss UB's consultation with him with anybody else without the consent of his patient. The test for determining whether privilege has been waived is whether the patient's action is inconsistent with the maintenance of the privilege.
- It should be noted that there is some scope to argue that the doctor/patient privilege can be partially waived if disclosure would substantially benefit a general duty to society. A frequently used example is where a medical practitioner becomes aware of the patient committing a serious offence.
- Notwithstanding the fact that there is no duty on medical practitioners to disclose privileged information, case law suggests that a medical practitioner is prohibited from providing false or misleading information. In light of this, if Dr B is asked whether UB had seen him in relation to obtaining a diving medical certificate, he should ensure that whilst not disclosing specifics of the examination, he does not provide information contrary to his diagnosis of UB.

*Should Dr B discuss the situation with UB?*

- Dr B should discuss the issue with UB. While Dr B may have discharged his obligations as a consulting doctor to UB in the refusal of certification, that may not be the end of his obligation. The trend in liability law (including the law relating to medical practitioners and their duties) is towards the imposition of positive obligations on persons with responsibilities to their clients. If Dr B fails to act, UB may at a later time assert that he had breached his duty to her.
- A medical practitioner's duty extends not only to "the examination and diagnosis" of the patient, but also includes the "treatment of the patient and the provision of information in an appropriate case". Whilst it is arguable that Dr B's duty would extend to the given circumstances (he had already provided UB with a diagnosis), it would be unwise for Dr B not to speak to UB. At the very least, such discourse may be seen as a way for Dr B to confirm that UB understood his diagnosis and its implications.

*Should Dr B discuss the situation with the crew?*

- Dr B's obligation of confidentiality to UB prevents him from discussing the matter with the crew.
- Dr B discusses the matter with UB and she indicates that she will not refrain from diving. Dr B, bound by his duty of confidentiality, cannot take the matter further.
- UB seeks advice from James Suckitt, a solicitor. Reasonable advice from Mr Suckitt would be that she

should refrain from diving and that she places herself and other people at risk by undertaking diving when she has not been certified fit to dive after full disclosure of her medical condition.

*Does the candidate's signature on the diving medical form allow a practitioner to divulge information to others?*

- A practitioner may only divulge information to others to the extent permitted by the form.

*Michael Bennett, FANZCA, DipDHM, is Medical Director of the Department of Diving and Hyperbaric Medicine, The Prince of Wales Hospital, Randwick, NSW 2031, Australia*

**Phone:** +61-(0)2-9382-3880

**Fax:** +61-(0)2-9382-3882

**E-mail:** <m.bennett@unsw.edu.au>

*Stephen Grant is a Senior Associate at Herbert Geer & Rundle, Melbourne, Victoria, Australia*

**E-mail:** <sgrant@hgr.com.au>

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