



Diving into the Heart of Trouble: Cardiac Health of UK Sport Divers

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INTRODUCTION:

Divers can be reluctant to acknowledge health problems, and therefore the United Kingdom (UK) self-declaration and medical statement sport diving forms may not always be a reliable indicator of health.

UK sport divers are required by their club/school to self-declare the state of their health and return the completed form to their club/school. Answering “yes” to any of the health questions should, in theory, require a diver to undergo a diving medical, but it is not regulated.

This potentially encourages a degree of denial in those with health conditions/problems, particularly amongst the older or very entrenched divers, who may see their health status as a threat to their continued ability to dive.

Additionally the treatment of diving related illnesses under the UK National Health Service (NHS) is free at the point of care; and this may contribute in part to the lack of rigorous health surveillance and/or accurate self-declaration by UK divers.

Since 2009 British diving incident data shows those in the over 50 year age group are increasingly represented in the annual mortality data.

Two (2007, 2010) unrelated, separate studies of United Kingdom (UK) sport divers regarding drug and alcohol usage showed 9% and 10% of the participants were taking cardiac medications for primary or secondary disease prevention.

The aim of this study was to gain an insight into the general cardiac health of UK sport divers, and to gather information that divers may not normally feel able to disclose through fear of being prevented from diving.

METHODS:

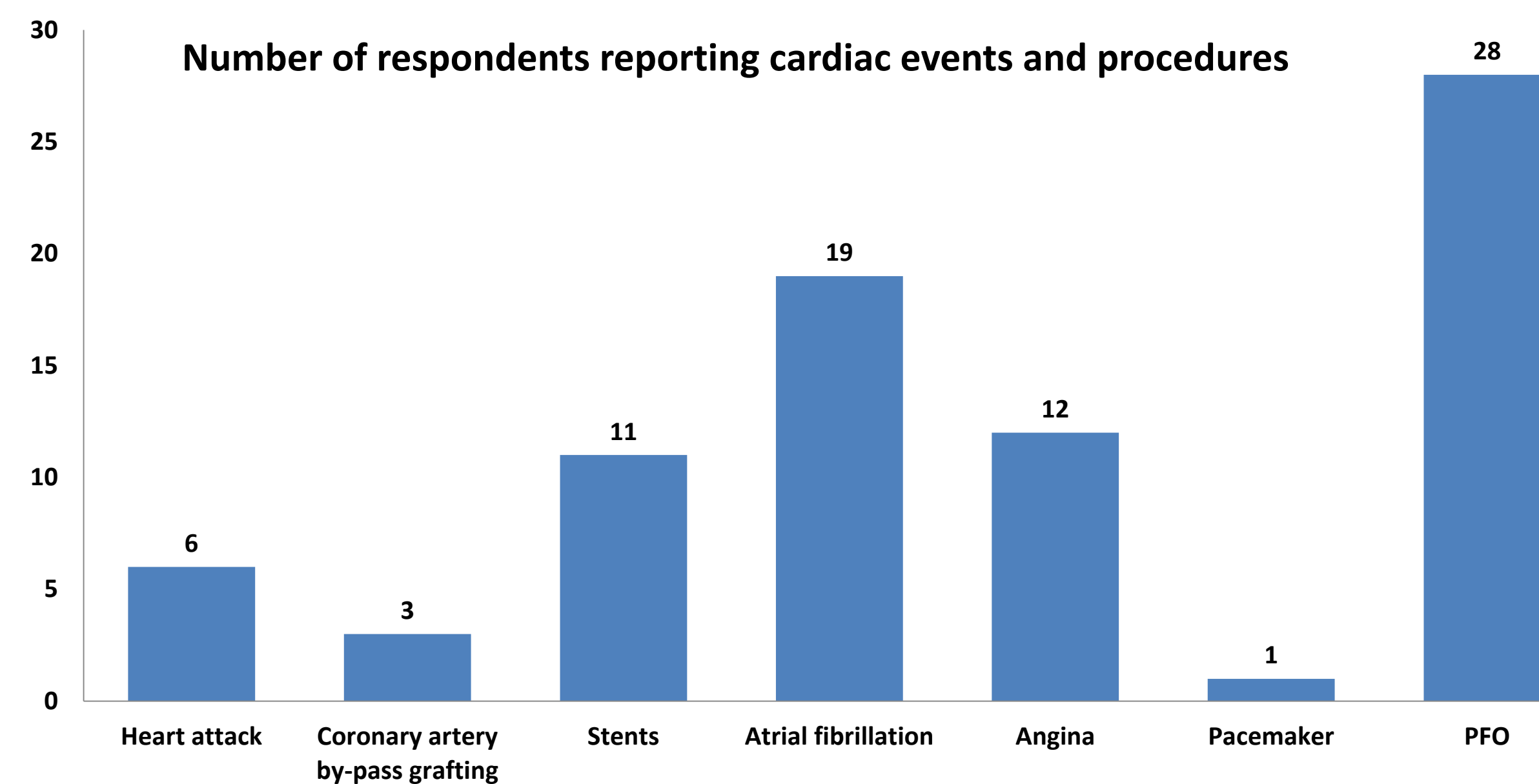
- Questionnaire-based online survey
- Publicised through diving exhibitions, social media and DDRC Healthcare website
- Anonymous

Measures included:

- Diver and diving demographics
 - Gender; age; training affiliation
 - Years diving; dives in the last 12 months
 - Dives since learning to dive; maximum depth dived
 - Self diagnosed DCI; treated DCI
- Physician prescribed medications
 - Cardiac medications; diagnosed hypertension
 - Other medications; other health issues
- Cardiac events and procedures
- Year of last diving medical
- Patent foramen ovale (PFO) prevalence and closure
- Smoking and alcohol habits, exercise, and BMI data were also gathered.

RESULTS: Cardiac Events and Interventions

- 672 records were suitable for analysis (76% male, 24% female), age range 12 to 78 (mean 44).
- 22% reported a family history of cardiac problems



Coronary Artery By-pass Grafting

- Case 1 – Male (age 55); technical diver, diving since 2000; 120 dives in the last 12 months**
- Quintuple heart bypass
 - Sought fit-to-dive advice from an “outside area”

- Case 2 – Male (age 68); technical diver; >1000 dives over 23 years; 20 dives in the last 12 months**
- Stated “suffers/d from cold induced angina diving in very cold conditions.”
 - His cardiologist saw no problem with him diving after a quadruple heart bypass.

- Case 3 - Male (age 70); c. 1200 dives over 49 years; 0 dives in last 12 months**
- Dived regularly to 30 and 60 meters on air unaware of heart condition
 - Became “acutely short of breath” towing diver against the tide
 - Cleared to dive by his cardio consultant following triple heart bypass in 2011

Atrial Fibrillation

- 19 respondents (age range 26 - 66)
- Diving experience ranged 2 to 44 years
 - A total of 43 to 4500 dives logged
 - 3 were technical divers
 - 2 respondents had no diving medical
 - 3 respondents had no medical for > 10 years
 - 7 recorded suffering from hypertension
 - 2 respondents with AF and high BP either did not have a medical or it was >10 yrs. old

Patent Foramen Ovale (PFO)

- 28 respondents (age range 32 - 63)
- 20 opted to have a closure
 - 16 had no problems post closure, and returned to diving
 - 8 were technical divers

Angina

- 12 respondents (age range of 39 - 70)
- 10 respondents logged between 2 to 100 dives in the last 12 months
 - 5 were technical divers
 - One active diver also reported type 2 diabetes with no diving medical for >10 years
 - 2 respondents had not dived in the last 12 months

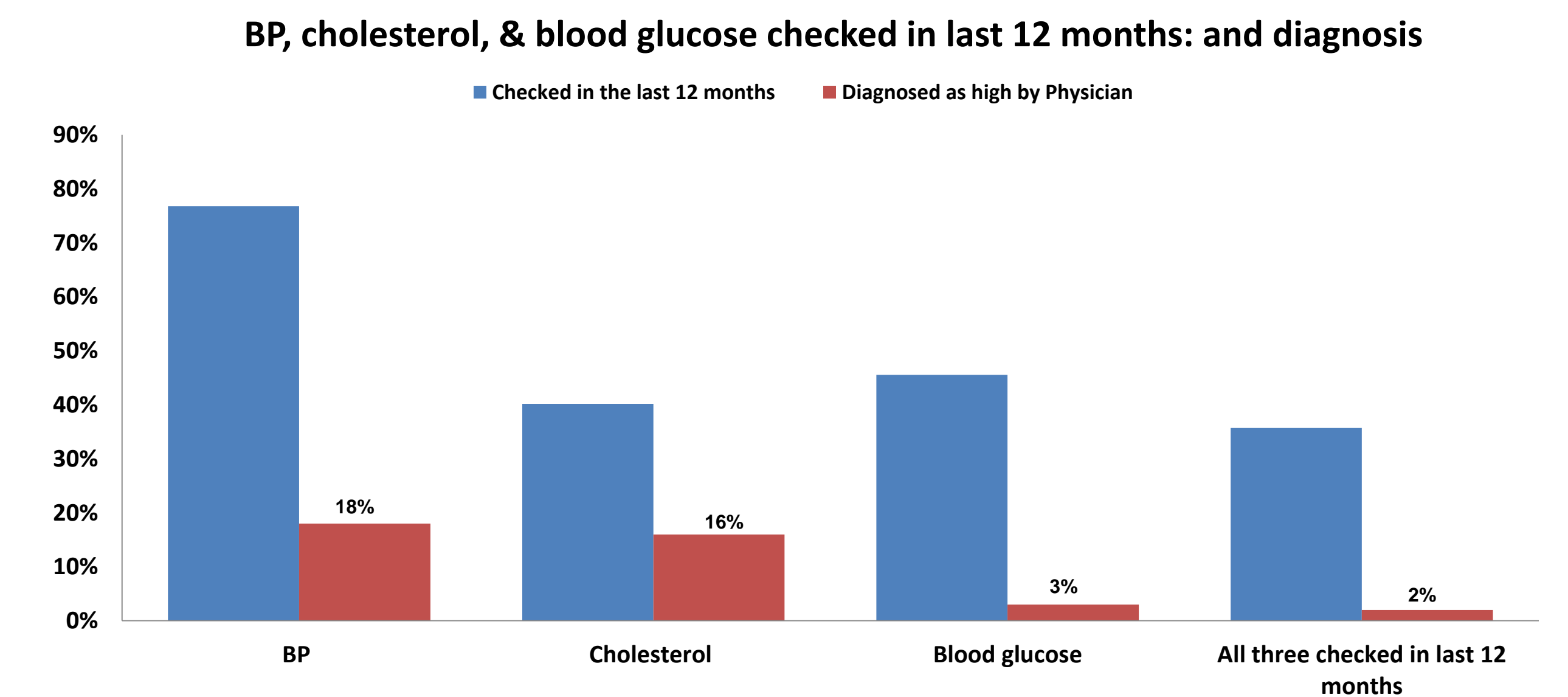
Pacemaker

- 1 male age 54
- Previously diagnosed with AF hence pacemaker
 - Active diver with 22 years experience
 - Averaging approximately 29 dives a year
 - 35 dives in the last 12 months

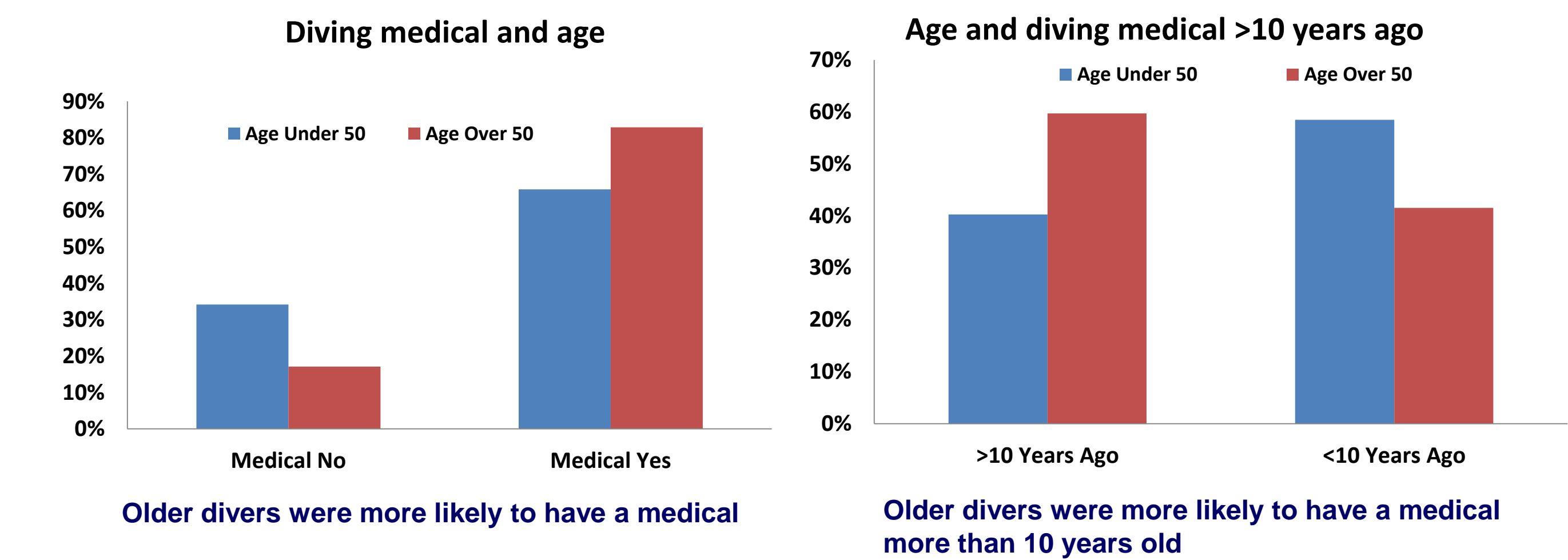
Q. Was specialist advice sought from a diving physician for all or any of the above?

RESULTS: General Health

Health Checks



Diving medicals



CONCLUSION:

The data in this study group raised specific issues:

- As divers continue through their diving career, some inevitably develop health problems and continue to dive
- Not all divers sought advice from a diving physician when appropriate to their health status
- Considerable numbers of divers have cardiac issues, but do not undergo a diving medical
- Some divers were diving with a state of cardiac health that may put themselves and/or other divers at risk
- The majority of divers who had a PFO with closure did so in order to return to diving
- Is self-declaration “fit for purpose” for “fit to dive”?

The authors acknowledge possible bias that may be associated with an anonymous survey due to the inability to follow up. However, anonymous methodology has two benefits. It enables the respondent to participate in the study, clear in the knowledge that they will not be challenged in any way should they have something to hide; and at the same time it also enables the researcher to gather data that would normally remain unreported.