Supplementary Information for Guidelines on Medical Fitness for Offshore Work

Supplement

May 2024

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Abbreviations	Definitions
ACR	Albumin:creatinine ratio
BAUS	British Association of Urological Surgeons
BNF	British National Formulary
BOSIET	Basic Offshore Safety Induction and Emergency Training
BP	Blood Pressure
BSAC	British Sub-Aqua Club
CAA	Civil Aviation Authority
CA-EBS	Compressed-Air Emergency Breathing Apparatus
CAPP	Canadian Association of Petroleum Producers
CKD	Chronic Kidney Disease
CO	Carbon Monoxide
CPAP	Continuous Positive Airways Pressure
ECG	ElectroCardioGram
ERT	Emergency Response Team
FOET	Further Offshore Emergency Training
GP	General Practitioner
HSE	Health and Safety Executive
HUEBA	Helicopter Underwater Emergency Breathing Apparatus
HUET	Helicopter Underwater Escape Trainer
NHS	National Health Service
NICE	National Institute for Clinical Excellence
NPV	Negative Predictive Value
NSC	National Screening Committee
NUI	Normally-Unmanned Installation
OH	Occupational Health
OIM	Offshore Installation Manager
OMA	Operator Medical Advisor
PPV	Positive Predictive Value
PSTASS	Passenger Short-Term Air Supply System
RCGP	Royal College of General Practitioners

Abbreviations	Definitions
SWET	Shallow Water Escape Trainer
UK	United Kingdom

1 Introduction

This Supplement to the OEUK guidelines on Medical Fitness for Offshore Work is intended for use by examining physicians undertaking assessment of fitness for work on UK offshore energy installations.

The Supplement provides additional information which will be of assistance to examining doctors in understanding and applying the Guidelines, and it may also aid the understanding of other parties (offshore workers, employers, and others) with an interest in the Guidelines.

Important principles

The principles underlying the guidelines are:

- That they are intended for use on the offshore continental shelf of the UK (the 'UK Sector North Sea').
- It is individual doctors, not the clinic, OH service or facility that they may work at, who are appointed to the list.
- All examining doctors will follow the same guideline, in the same way.
- That the guidelines will avoid arbitrary non-risk-based rules.
- That examinees are members of the public who deserve 'proper medicine' i.e. consistent with accepted good medical practice and national clinical guidelines.
- That examinees will not be subjected to tests incompatible with national clinical guideline.
- The guidelines and this supplement come into effect on 1st May 2024.

2 Supplementary information

2.1 Different circumstances of workers (guideline paragraph 2.5)

Examining doctors will find it of practical assistance in understanding the routes of communications between operators, vendors/contractors, employed and self-employed workers, employers and employment agencies if they bear in mind the different circumstances of offshore workers. It is a common misunderstanding that all offshore workers on an installation are employed by the installation operator or duty holder, or even that all offshore workers are employed by a single entity across the industry. This is not so, and workers will be in one of the following groups:

i) Operator-employed core crew
ii) Operator-employed irregular/occasional/infrequent offshore visitors
iii) Non-operator-employed core crew
iv) Non-operator-employed non-core-crew, but regularly/frequently working offshore ('ad-hoc')
v) Non- operator-employed occasional/infrequent offshore visitors
vi) Not yet employed but seeking work offshore

Note that all groups may include workers who will deploy to 'normally unmanned installations' (NUIs).

i) Operator-employed core crew will likely include personnel such as OIMs, offshore supervisors (production, mechanical, electrical etc.), and perhaps (but uncommonly) the installation medic. These personnel will work a regular (2:2, 2:3, 3:3 etc.) rota on the same installation for years at a time, and hence will be well-known to each other and the installation medic. Where the operator has a directly employed company medical advisor (OMA), they may well have met him/her in person and will, where necessary, have straightforward communications via company email and telephone systems with the OMA.
In some circumstances the OMA may undertake some or all of this group's offshore medicals directly themselves, and where the operator has an operator-specific medical assessment, questions arising from the results of this are likely to be dealt with directly between OMA and employee. Where the operator retains an 'outsourced' medical advisor however, this is increasingly less likely the fewer hours per week the OMA is retained for, and for some operators, employees in this group may have no direct contact with the OMA at all, because medical assessments are delegated to other examining doctors.

ii) Operator-employed irregular/occasional/infrequent offshore workers will typically include personnel who are office-based who do not work a regular (2:2 etc.) rota offshore, but whose role may require them to make visits of varying duration (from a 'day-trip' to several days at least) and varying frequency (from once per year or less, to once or twice per month), at varying intervals (for example a series of visits over a short period and then none for a long time, to regularly-spaced inspections).

A wide variety of office-based personnel will be found in this group, ranging from onshore technical support functions to managerial and executive officer roles. This group is likely to have the same relationship and access to the OMA as their fellow employees among the offshore core crew.

iii) Non-operator-employed core crew offshore workers are personnel who may have very similar offshore rotas and working longevity on the same installation (and therefore are similarly well-known to each other and the installation medic) as 'group i' workers, but who are employed by one of a number of vendor or contractor companies, and not the operator. An example are workers in the catering crew, who will be employed by whichever catering company (vendor/contractor) is awarded the contract to provide catering services. Contracts may be awarded to a different contractor at renewal, and if so, workers in this group may either remain on the same installation in the same job (but now working for a new employer) or they may relocate to a different installation where the employer has a contract to provide service to that operator. Technical roles such as production technician, electrical technician, or mechanical technician may also be in 'group iii' with the potential for change of working circumstances as contracts change.

While some workers employed by large contractor/vendors may have access to a medical advisor (or if not, at least an employer occupational health department), this is only likely for the largest employers, and for small-to-medium sized contractors, the examining doctor for the employee's offshore medical will typically be the only industry doctor providing advice on fitness for work. This group of workers, will however, become similarly well-known to the installation medic as their operator-employed core crew colleagues.

iv) This group of workers comprise a significant portion of the total offshore workforce and are frequently described as working offshore in an 'ad-hoc' manner. Like 'group iii', they are employed by a range of contractor/vendor employing companies, some of them large multinational businesses in their own right, some very small specialist companies with only a few employees, and all sizes in between. Workers typically have roles in drilling, well services, offshore construction, and installation/maintenance/repair of a wide range of specialist equipment offshore.

These workers typically go to a given offshore installation as part of an ongoing 'project': in some cases that project will be a very brief and simple one, and in others it will be a months-long major activity. For quick and simple projects an offshore trip will be a one-off visit to the installation for a few days only, while for major long-term project the worker's offshore trips may amount to a regular rota for a period of time (similar to 'group ii' workers).

Workers in this group are similar to those in 'group iii' in that while some of those employed by large contractor/vendors may have access to a medical advisor (or if not, at least an employer occupational health department), this is only likely for the largest employers, and for small-to-medium sized contractors, the examining doctor for the employee's offshore medical will typically be the only industry doctor providing advice on fitness for work. They are unlike the 'group iii' workers in that because their trips to the installation are for a limited time only, they do not become as well-known to the installation medic.

v) Workers in 'group v' are similar to those in 'group ii' in terms of the types of work done and the frequency and duration of offshore visits, but they are like 'group iv' workers in terms of their lack of access to any form of medical advice other than the examining doctor, and the installation medic's lack of familiarity with any medical issues they may have.

vi) Finally, persons who are not yet employed but are seeking work offshore have no existing industry 'reference point'. In some circumstances they may apply for work with an employer which will arrange a medical assessment, survival course, etc. for them, but it is very common for workers seeking employment to be expected to provide at the very least a medical certificate and survival certificate along with their application. Examining doctors will of course not have any previous industry medical information to aid assessment and will be reliant on the examinee-provided information at the medical.

2.2 Objective of the medical assessment (guideline paragraph 2.8)

2.2.1 Survival training course

One objective of the medical is to confirm that the examinee is able to take part in survival training. Section 5 of the guidelines deals with assessing 'fitness to train' i.e. to undertake the shallow-water in-water exercises familiarising offshore workers with the compressed-air emergency breathing apparatus (CA-EBS) used on helicopters in the UK sector North Sea, but examining doctors should be aware that the survival training course involves more than this.

For workers who have not done a course previously, or whose certificate has expired, the initial course (BOSIET – Basic Offshore Safety Induction and Emergency Training) is four days long. It includes 'pool exercises' including boarding and using a liferaft, use of lifejackets, correct entry into the sea, and the HUET (Helicopter Underwater Escape Trainer), as well as the in-water CA-EBS exercises. Other days involve firefighting exercises (use of extinguishers, and breathing apparatus in a smoke-filled environment), basic first aid, and some classroom presentations on safe systems of work ('permit to work').

For workers renewing their survival certificate, the refresher course (FOET – Further Offshore Emergency Training) is one day long. It includes a shorter sequence of pool exercises and HUET, the in-water CA-EBS exercises, and a revision of first aid and firefighting.

Workers are required to undertake a survival training course every four years, whether they are confident swimmers or not.

2.2.2 UK national screening programmes

In the UK, there are national screening programs for occult pathology in the 'clinically apparently well' general population. Apparently well adults are eligible for breast cancer, cervical cancer, bowel cancer and aortic aneurysm screening, and newborn children are screened for a number of metabolic conditions, for example.

The UK National Screening Committee (https://www.gov.uk/government/organisations/uk-national-screening-committee) publishes population screening recommendations and the evidence review for its recommendations. Examining doctors (and others) interested in medical screening will find the committee's recommendations, and its published evidence reviews for those decisions, of great relevance. It is common in occupational health practice to contemplate undertaking a wide variety of clinical, blood, imaging and other tests normally used in clinical diagnostic practice, as a means of

'occupational health screening'. Examining doctors and others considering doing so should carefully read the NSC evidence summaries for the clinical condition they contemplate 'screening' for, in particular to understand the technical aspects of using diagnostic tests in 'screening' circumstances, and the resulting limitations in interpretation of results.

2.3 Medical History (guideline paragraph 2.9.3)

2.3.1 Information on history and findings at previous OEUK medical

Examining doctors are guided to offer examinees a copy of the records from their medical, and to encourage them to accept. In some locations outwith the UK, it may be common practice for non-medically-qualified employer representatives to request or receive a medical record, including medical history and test results. In the UK, this is absolutely not the case, and indeed is counter to normal medical standards of confidentiality, and data protection legislation.

When offering medical records of OEUK medicals to examinees, examining doctors should make it clear that the purpose of the offer is to make it possible for examinees to provide information from the records to a future different examining doctor, in the anticipation this may avoid needless repetition of some elements, but that a) examinees are not obliged to accept the offer and b) they do not need to tell employers that they have a copy of their record, and that they are entitled to decline any employer request to provide the record.

2.3.2 Additional information from treating clinicians (including GP confirmation of history)

In the UK, most of the population are registered with a GP/primary care physician, who will have a historical medical record for each patient. In practice, if an examinee has or has had any significant medical condition or event, information is likely (although not assured) to be within the GP clinical record.

In principle, the potential for inaccurate history inherent in occupational health assessments mentioned at paragraph 2.8 of the guidelines might be mitigated at OEUK medical assessments by corroboration of the examinee's history by the GP. However, in the consultation process of revision of the guidelines, operator medical advisors have made clear their view that GP confirmation of examinee's medical history is ***not*** required as a matter of routine, and have expressed acceptance of the possibility of inaccurate history from examinees.

Nevertheless, where the examinee-provided medical history seems inconsistent or clinically implausible examining doctors should consider seeking confirmation/correction of this. One means of doing so could be to provide the GP with a summary of the examinee-provided history and request comment on any omissions/inaccuracies.

2.3.3 Retention of records

There is no simple answer to the question of how long the records of an OEUK medical should be retained. On one hand, the UK General Data Protection Regulation principle to be followed is 'no longer than necessary'. On the other, one UK defence society suggests '6 years from last entry'.

Scottish Government guidance is most specific for NHS staff OH records: '6 years from leaving employment'.

The examining doctor is unlikely to know when an examinee leaves employment. However, given a maximum 2-yearly periodicity, it may be reasonable to assume that if there has been no further contact from the examinee or their employer at [examination date plus 2 years], the examinee has left employment, and start the '6 years count'.

Examining doctors should note that the audiograms (and associated questionnaires) constitute health surveillance under UK legislation, and as such should be retained for 40 years.

2.4 Urinalysis (guideline paragraph 2.9.8)

2.4.1 Proteinuria

The following will be of additional assistance to examining doctors selecting examinees for urinalysis for proteinuria, and in interpreting and acting on the result.

Bullet point c) of the OEUK guideline comments that (based on paragraph 1.1.14 of NICE guideline NG203 [1]) urinalysis for proteinuria is appropriate in 'examinees where there is a strong suspicion of CKD'. Paragraph 1.1.21 of the NG203 can be interpreted as suggesting that persons with the following conditions are at risk of developing CKD:

- diabetes
- hypertension
- previous acute kidney injury
- cardiovascular disease (ischaemic heart disease, chronic heart failure, peripheral vascular disease or cerebral vascular disease)
- structural renal tract disease
- recurrent renal calculi or prostatic hypertrophy
- multisystem diseases with potential kidney involvement (e.g. systemic lupus erythematosus)
- gout
- family history of end-stage kidney disease (GFR category G5) or hereditary kidney disease – for example, autosomal dominant polycystic kidney disease.
- incidental detection of haematuria or proteinuria*

*but it does ***not*** recommend testing for proteinuria or haematuria in persons other than those with diabetes, eGFR less than 60ml/min/1.73m2, or with a strong suspicion of CKD, i.e. NG203 does not recommend universal urinalysis to detect 'incidental proteinuria' or 'incidental haematuria'.

It is likely that workers with any of the conditions listed will have had the appropriate test undertaken as part of their clinical care. It is also probable that examining doctors will think it appropriate to obtain a treating clinician's report for workers with many of the conditions listed above. If so, the presence of

[1] Chronic kidney disease; assessment and management. NICE NG203, August 2021: https://www.nice.org.uk/guidance/ng203/chapter/Recommendations#investigations-for-chronic-kidney-disease

proteinuria/reduced renal function may be specifically enquired about in a report request, as an alternative to testing at the OEUK medical.

Note that the references to commercially-available reagent strips capable of expressing an ACR result are provided for example only, ***not*** as a requirement or recommendation - other brands of reagent strips may be available.

Graziani et al[2] report that compared to laboratory analysis of urine (the 'gold standard') for proteinuria, reagent test strips expressing an ACR ratio have sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of 91%, 92%, 71% and 98% in diabetic patients, and sensitivity, specificity, PPV and NPV of 90%, 91%, 53% and 99% in the non-diabetic apparently well general population. They did not provide any comparison for reagent strips incapable of expressing an ACR.

For interpretation and action on results, the advice at point 1.1.13 of NG 203 implies that a laboratory-confirmed ACR of >3 mg/mmol is clinically significant. An initial dipstick ACR result on a random urine specimen (for example, at an OEUK medical) of 3 to 70 mg/mmol should be checked on a subsequent early morning sample (point 1.1.12), but an initial result of >70 mg/mmol does not require repeat testing of an early morning specimen.

Summary:

Initial result	Interpretation	Action
Dipstick 3 – 70 mg/mmol	Possibly clinically significant	Confirm on repeat early morning specimen
Dipstick > 70 mg/mmol	Clinically significant	
Laboratory confirmed 3 mg/mmol or >	Clinically significant	

If the presence of clinically significant proteinuria has been established, examining doctors should follow whatever guidance is provided at the relevant section for each condition regarding the implications of this.

2.4.2 Haematuria

NG12 deals with urinalysis for haematuria in the context of cancer; NG203 deals with urinalysis for haematuria in the context of chronic renal disease.

In selecting examinees for haematuria urinalysis, the persons 'examinees with a strong suspicion of CKD' will be the same as those described in the discussion on proteinuria above.

[2] Graziani S et al. Diagnostic accuracy of a reagent strip for assessing urinary albumin excretion in the general population Nephrology Dialysis Transplantation, Volume 24, Issue 5, May 2009, Pages 1490–1494, https://doi.org/10.1093/ndt/gfn639 See: https://academic.oup.com/ndt/article/24/5/1490/1881837?login=false

The BAUS summary of urological recommendations of NG12 is available at a link on its webpage[3] and may be viewed directly (via this link[4]). Note that the positive predictive value (PPV) of asymptomatic haematuria (for renal tract cancer) is 1.6% for persons aged 60 or more, and 0.79% for persons aged 40 to 59. No PPV for asymptomatic haematuria (for renal tract cancer) in persons aged less than 40 is stated, but given the comment that the PPV of any haematuria increases with age, it seems reasonable to conclude that the PPV for asymptomatic haematuria (for renal tract cancer) in persons aged less than 40 will be less than 0.79%.

Examining doctors should note carefully the recommendation[5] that all those over 40 with asymptomatic haematuria should be referred to a urologist for investigation. They should also note the recommendation that persons less than 40 should also be referred to a urologist if BP or ACR exceed certain thresholds. In all examinees with significant haematuria, examining doctors will be able to provide treating clinicians with directly relevant information (i.e. BP and ACR, if proteinuria has been tested for appropriately) from the OEUK medical as part of communications regarding further investigation.

Experienced examining doctors will have encountered examinees with persisting 'investigation negative' asymptomatic haematuria. The recommendation that such examinees should be followed up annually should be noted, and if this is not being done by treating clinicians, examining doctors should engage the treating clinician in discussion on the reason for this.

2.5 Functional assessment (guideline paragraph 2.9.9.1)

The functional assessment for examinees with doubtful capacity to undertake necessary action in an offshore alarm situation is a 6-minute walking test.

The examinee should be encouraged to undertake a suitable physical reconditioning programme[6] beforehand until confident of their ability to complete the required distance (the test should not be undertaken until the examinee provides confirmation that they have completed any necessary physical reconditioning).

The examinee should undertake a self-paced, continuous walk of the greatest distance possible within a timed single continuous six-minute period. A means of accurately determining distance covered will be required.

Although the standardised protocol originally described[7] for the test involves a 100 feet (30.5 metres) indoor 'hallway', in the interests of pragmatism the test may be undertaken on an outdoor level course of known distance (in a temperate climate in suitable weather conditions), in an indoor corridor of any known length judged suitable, or on a treadmill capable of displaying distance completed. If a treadmill

[3] BAUS webpage link here: https://www.baus.org.uk/professionals/baus_business/publications/17/haematuria_guidelines

[4] See: https://www.baus.org.uk/_userfiles/pages/files/Publications/BAUS%20Cancer%20Guidelines%20Summary.pdf

[5] See page 2 of https://www.gp-update.co.uk/SM4/Mutable/Uploads/pdf_file/Haematuria-and-urology-red-flags-GEMS_1.pdf

[6] NHS. Couch to 5k: https://www.nhs.uk/live-well/exercise/get-running-with-couch-to-5k/

[7] Enright, P et al. Reference Equations for the Six-Minute Walk in Healthy Adults. American Journal of Respiratory and Critical Care Medicine. Volume 158, No.5, 1997. https://www.atsjournals.org/doi/10.1164/ajrccm.158.5.9710086

is used it should be 'free-running' i.e. it should ***not*** determine the examinee's walking pace. The standard phrases 'you're doing well' and/or 'keep up the good work' may be used to encourage examinees. Although subjects were permitted to stop and rest during the test in the standard protocol, because workers will not have opportunity to easily stop and rest during an installation emergency, those who require to stop (or slow to a pace which in the examining doctor's opinion is nearly stopped) during the test should ***not*** be considered to have passed the test.

If the degree of physical exertion involved in a 6-minute walk test is considered medically contraindicated for the examinee, he/she will be unfit for offshore work because the physical exertion required during platform emergency procedures would also be contraindicated.

2.6 Other screening tests (guideline paragraph 2.9.10)

UK examining doctors should be aware of the RCGP (Royal College of General Practitioners) statement on non-NHS screening tests (https://www.rcgp.org.uk/representing-you/policy-areas/screening), and they should note the sentence in the 'template letter' provided by the RCGP to GPs replying to requests to follow up test results that the testing entity 'offer follow up of the results that does not put pressure on NHS general practice workload and use limited NHS resource'. This implies that the examinee themselves, or the entity mandating that they have the test, pays for non-NHS arrangements for investigation to the point of confirmed or excluded diagnosis.

2.7 If a standard certificate is not issued (guideline paragraph 2.12.2)

There may be some circumstances, particularly for examinees new to the industry and seeking employment, in which the examinee could be fit for issue of a standard certificate (2.14.4) if confirmation of group 2 job classification were available, but classification is not possible because of lack of an employer. Although appropriate completion of Part 1 of the Location-Specific Certificate (2.14.5) would enable application for operator approval for mobilisation, and could be presented to a potential employer, the potential employer may remain uncertain of the examinee's potential fitness status.

In this situation examining doctors may issue examinees, with their consent, a letter for potential employers, clarifying the situation by stating that the examinee is thought suitable to be granted operator mobilisation approval if this is sought, and/or that the examinee would be issued a standard certificate if an employer confirmed group 2 job classification. A potential employer may then consider whether offer of employment conditional on satisfactory completion of operator approval, or on re-assessment of the examinee following provision of job classification to the examining doctor, is possible.

2.8 Contacting the operator medical advisor (guideline paragraph 2.12.2.1)

It is not appropriate to openly publish the names and contact details of operator medical advisors; the doctor acting as medical advisor to an operator can and does change, without OEUK or examining doctors knowing so; and it is not practicable for OEUK or examining doctors to know who the medical advisor to operators is at any given time.

To ensure adequate communication between examining doctor and operator medical advisor in cases where operator-specific approval for mobilisation is necessary, the process is as follows:

- Examining doctor completes Part 1 of the 2.14.5 certificate
- Examining doctor gives certificate to examinee and/or their employer, as is normal practice
- Examinee (self or via employer) gives certificate to logistics/personnel department of operator(s) of installation(s) intended to mobilise to, as is normal practice
- Operator logistics/personnel department passes certificate to operator medical advisor (OMA)
- OMA contacts examining doctor (whose contact details are on the certificate) to indicate 'ready to receive information', and provides details of preferred means of communication (email, letter, telephone)
- Examining doctor provides clinical information to OMA
- OMA decides if approval granted or not.
- If approval granted, OMA completes Part 2 of 2.14.5 certificate
- OMA returns completed certificate to operator logistics/personnel department, or to examining doctor, or to examinee, as preferred.

By this means, OMA and examining doctor communication is achieved without either having to know who the other is, and by usual route familiar to operators, vendors/contractors and offshore workers.

If the operator does not have a company medical advisor, operator-specific approval for mobilisation will not be possible (unless operator medical policy enables this by other means).

2.8.1 Comment for operator medical advisors

For examinees unfit for standard certification, but for whom the examining doctor considers the examinee meets the guideline criteria for potential case-by-case operator approval for mobilisation, the examining doctor will complete Part 1 of a 2.14.5 certificate. The process thereafter is as follows:

- Examining doctor gives completed Part 1 of the 2.14.5 certificate to examinee and/or their employer, as is normal industry practice
- Examinee (self or via employer) gives certificate to logistics/personnel department of operator(s) of installation(s) intended to mobilise to, as is normal industry practice
- Operator logistics/personnel department passes certificate to operator medical advisor (OMA)
    - ❖ This is the point at which the OMA will first become aware of an examinee applying for approval for mobilisation – contact will be from the operator's own logistics/personnel department (with whom the OMA is in regular contact, as a matter of course)
- OMA contacts examining doctor to indicate 'ready to receive information', and provides details of preferred means of communication
    - ❖ The OMA should have no difficulty in identifying the examining doctor, whose name, PIN, practice postal address, email address and telephone number should be on the certificate. OMAs are likely to find it helpful to prepare a standard email/letter/text of conversation to send to examining doctors, setting out the OMA's preferred means for provision of clinical information regarding the examinee, and any specific operator-required process for communication.
    - ❖ The Part 1-completed 2.14.5 certificate will indicate to the OMA that the examinee has been offered a copy of their medical documentation. In some circumstances (e.g. core crew

contractor already known to the OMA from past contact), and at the OMA's own discretion, the OMA may contact the examinee directly and discuss whether the examinee is able to directly share relevant information from the OEUK medical with the OMA.

- Examining doctor provides clinical information to OMA by mutually agreed means
- OMA determines if examinee suitable for mobilisation to operator installation(s), and if so, under what conditions.
- If appropriate, OMA completes Part 2 of 2.14.5 certificate
- OMA returns completed certificate to operator logistics/personnel department, and/or to examining doctor, and/or to examinee, as preferred.

By this means, OMA and examining doctor communication is achieved without either having to know who the other is, and by usual industry practice familiar to operators, vendors/contractors and offshore workers.

If the operator does not have a company medical advisor, operator-specific approval for mobilisation will not be possible (unless operator medical policy enables this by other means).

2.9 Preparing for the OEUK Medical – advice for examinees and employers

2.9.1 Advice for examinees

You will likely find the process of completing your OEUK medical simpler if you prepare for it by:

- Taking a copy of your most recent previous OEUK medical certificate with you
- Taking a copy of your most recent previous 'fit to train' certificate with you, and being aware of the date of your next FOET
- You should have been offered a copy of the medical documentation at your OEUK medical(s) from at least 1st May 2024 onwards. If you accepted this offer and are willing to share information with the doctor undertaking your next medical, take a copy of the documentation with you.

If you have high blood pressure:

Ask your GP or treating doctor for a list of your BP readings in the past two years, what your GP's 'treatment target' for your blood pressure is, and what medications (name and dose) you are prescribed (and if this has changed in the past two years).

If you have diabetes:

Ask your GP or treating doctor for a list of your HbA1c, blood pressure, and weight in the past 2 years, what your GP's 'treatment target' for your HbA1c, blood pressure and weight are, and what medications (name and dose) you are prescribed (and if this has changed in the past two years).

If you have had a heart attack in the past:

Ask your GP or treating doctor for a list of your blood pressure, blood lipids (this means your 'cholesterol' levels – there will be several different ones) and weight in the past 2 years, what your GP's 'treatment

target' for your blood pressure, lipids, and weight are, and what medications (name and dose) you are prescribed (and if this has changed in the past two years).

If you are in the obese weight category:

Ask your GP or any other clinical facility that has measured your weight for a list of your weight measurements in the past two years.

Doing these things may avoid the need for the doctor to seek reports or information from your previous OEUK examining doctor, GP, or treating doctor, and will enable the examining doctor to show you how your results have changed since your last medical.

Note that you are not obliged to obtain any of this information, or to provide it to the OEUK doctor. Not having the information or not providing it will not affect the ultimate outcome of your medical, but it will slow down the decision if the OEUK doctor needs to obtain the information by writing to your GP.

2.9.2 Advice for employers

Employers booking OEUK medicals should be aware that examining doctors will not automatically be aware of any sickness absence, medevac, missed trip history or similar. The causes of these may be relevant to the medical assessment. If the employer has any information of this nature, or has any other concern about an employee's potential fitness for work offshore, they should make this known to the examining doctor when booking the employee's medical. It would of course be reasonable practice to make the employee aware that this information has been provided to the examining doctor.

Employers should also be as clear as possible about which elements of the OEUK medical are NOT required for the employee concerned – employees who are not crane operators, catering crew, or members of the ERT will not require these elements of the medical. The 'fit to train' assessment is now included in the OEUK medical by default, but employees will not require this at every medical – the survival course takes place every four years and the medical typically every two years. Depending on the date booked for the medical and the likely date of the next FOET, a fit-to-train element may clearly be unnecessary.

Note that the cost of OEUK medicals, and how that cost is set (including whether any element is 'all inclusive' or charged separately, is determined by market forces and/or employer/examining doctor contract agreements and not by OEUK. Being clear about what elements of the medical are or are not required may have financial implications important to employers.

2.10 Primary prevention of cardiovascular disease (guideline paragraph 3.1.1)

Information on the gender and age distribution of the UK sector workforce are published annually in the OEUK Workforce Insight report. At the time of issue the most recent report is available here: https://oeuk.org.uk/product/oeuk-workforce-insight-2023/ Reports have consistently noted the workforce to be 96% male and of average age in the early to mid-40s.

2.11 Ischaemic Heart Disease (guideline paragraph 3.1.3)

2.11.1 Use of expired carbon monoxide measurement

Examining doctors considering measurement of expired carbon monoxide in breath as a means of monitoring reduction in smoking may find the following information helpful:

Near-patient devices for measurement of expired carbon monoxide are available. An internet search engine enquiry using the term 'exhaled carbon monoxide test device' will return a number of links to devices which can be used to display exhaled CO as either % or in parts per million.

For interpretation, the NICE Clinical Knowledge Summary 'Scenario: Management of carbon monoxide poisoning' (last revised June 2023) (see here: https://cks.nice.org.uk/topics/carbon-monoxide-poisoning/management/management/) states that normal carboxyhaemoglobin levels are:

- Less than 1–3% for non-smokers.
- Up to 5% in women who are pregnant, or people with anaemia.
- Up to 10% in smokers, and up to 13% in heavy smokers.

Similarly, in information to the general public regarding exhaled carbon monoxide testing, the charity 'Asthma and Lung UK' states:

- 1-4 ppm: 'you have recently been exposed to a low level of carbon monoxide. It's normal to have a small amount of CO in your breath, even if you're not a smoker'.
- 5-9 ppm: 'you have recently been exposed to a mild level of carbon monoxide. This may mean that you're a smoker, or you've been exposed to second-hand smoke'.
- 10 ppm and over: 'you have recently been exposed to a high level of carbon monoxide. This is common in smokers'.

(see here: https://www.asthmaandlung.org.uk/symptoms-tests-treatments/tests/exhaled-carbon-monoxide):

From the foregoing, a result of 1-4ppm or less than 3% may be considered to denote non-smoking status.

2.11.2 If unfit for standard certification

The operator medical advisors who have indicated they may be willing to approve mobilisation for 'high risk' examinees are:

- Dr Carmen de Andres
- Dr Finlay Dick
- Dr Stuart Scott

Prior to approval they are likely to consider each case individually, and to require an exercise ECG with negative result, and any other test (for example, echocardiogram) they may specify. Therefore, examinees found unfit for standard certification may apply to these operator medical advisors (and these OMAs only) for direct approval for mobilisation.

Examining doctors should complete the 2.14.5 'Location-Specific Certificate of Medical Fitness to work Offshore', but they should amend the wording to read:

They might meet the criteria for potential operator approval by Drs Carmen de Andres, Finlay Dick and Stuart Scott for offshore mobilisation, and

I have obtained the examinee's consent to share their medical information with an operator medical advisor who requests it.

The examinee or their employer should be provided with the amended wording 2.14.5 certificate and instructed to supply it to an operator ***only once they have confirmed with the operator that the operator's medical advisor is one of these named doctors***. Application to any other operator medical advisor will ***not*** be accepted and will waste the time and effort of all involved. The examinee/employer should submit the form to the operator ***prior*** to an exercise ECG or other test being undertaken, to ensure that the examinee's individual risk profile is compatible with the OMA's requirements, and to ensure that the precise requirements for what tests are required, and what will constitute a negative or otherwise satisfactory test are clearly understood prior to incurring the significant financial cost of tests.

2.12 Pacemakers (guideline paragraph 3.1.5)

In regard to the possibility of pacemakers being adversely affected by electromagnetic fields, a drillfloor workplace visit by an OEUK examining doctor identified electromagnetic field strengths of 4 gauss at 0.5cm from a large electrical generator (dropping to zero gauss at 2cm), and 20 gauss at stands of drill pipe (dropping to 5 gauss at 1.5m and zero at 2m)[8]. These figures compared favourably with the manufacturer's assurance in that case that the pacemaker would not be affected by field strengths of up to 10 gauss (1000 microTesla).

Although inhibition of pacemakers has been reported from MRI scan, lithotripsy, diathermy, radiofrequency ablation, and more relevantly in non-medical settings from airport security scanners and

[8] Kong, S (OGUK/2008/1239). Cardiac Pacemakers at Work. Presentation to OGUK Examining Doctor Conference March 2012

arc welding[9], interference was not reported for circumstances other than exposure within 6 feet (2m) of a large electromagnet in two studies considered for that case[10] [11].

It therefore seems probable that in practice, significant interference with pacemaker function is unlikely unless examinees will be very close (approximately 1m or less) to major electromagnetic sources.

2.13 Cerebrovascular disorders (guideline paragraph 3.1.9)

For comment on use of expired carbon monoxide monitoring, see paragraph 1.9 above.

2.14 Respiratory conditions considerations in assessing fitness to participate in shallow-water CA-EBS training (guideline paragraph 3.6.4)

2.14.1 Asthma

Several 'asthma control questionnaires' exist, all intended to indicate whether a patient's asthma control can be regarded as satisfactory or not. Examples include, but are not limited to, the 'Asthma Control Questionnaire' (http://www.qoltech.co.uk/acq.html) and the 'Asthma Control Test' (https://www.asthmacontroltest.com/en-gb/welcome/), which are mentioned at point 1.13.2 of NICE NG80[12].

Examining doctors may identify and select an appropriate questionnaire of their choice (note that some may require a user registration fee or involve other commercial aspects which should be taken into account in the choice), and become familiar with the scoring system and 'cut-off' for satisfactory control. In the case of the Asthma Control Test, a score or 20 *or more* may be taken as sufficiently satisfactory control for participation in in-shallow-water EBS exercises, while for the Asthma Control Questionnaire, a score of 0.75 *or less* (the scoring systems operate in 'opposite directions') may be taken as sufficiently satisfactory control for participation in shallow-water EBS exercises.

2.15 Obesity (guideline paragraph 3.8)

UK government figures indicate that in as recently as 2019, the majority (62.3%) of adults in England were overweight or obese[13], and it was found as long ago as 1986 that offshore workers have a greater

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9 Yerra L et al. Effects of Electromagnetic Interference on Implanted Cardiac Devices and Their Management. Cardiology in Review 2007;15: 304-309

10 Gurevitz O et al. Patients with an ICD can safely resume work in industrial facilities following simple screening for electromagnetic interference. PACE. 2003;26:1675-1678 https://onlinelibrary.wiley.com/doi/10.1046/j.1460-9592.2003.t01-1-00251.x

11 Souques M et al. Implantable cardioverter defibrillator and 50-Jz electric and magnetic fields exposure in the workplace. Int Arch Occup Environ Health.2011;84:1-6 https://www.bbemg.uliege.be/files/pacemaker_Souques_2011.pdf

12 NICE NG80. Asthma: diagnosis, monitoring and chronic asthma management. 29 November 2017 https://www.nice.org.uk/guidance/ng80

13 Overweight Adults. Gov.uk September 2019. https://www.ethnicity-facts-figures.service.gov.uk/health/diet-and-exercise/overweight-adults/latest

prevalence of overweight than their onshore peers[14]. In a small review of OEUK medicals[15], 77% of examinees had gained weight (from 1 to 8kg) between consecutive medicals, while 11% had lost weight (from 1 to 4kg) and the weight of 11% had remained unchanged.

Although weight loss of approximately 5% has clinical benefits and is publicly recommended by NICE[16], achieving sustained weight loss of this magnitude is difficult[17], and the overall prognosis for weight loss in obesity is poor[18] - weight lost is often regained, and no more than 1 in 5 obese people are likely to lose 5% of body weight within one year (this applies to both genders and all BMIs from 30 to 45 or greater).

Confirmation that lost weight is often regained is at figure 1 below [19]. The significance of this is that all weight-loss interventions (apart from 'advice alone') result in short-term (3 to 6 months) weight loss, but that all interventions show at least some trend towards weight regain by 12 months of follow-up. In some cases (e.g. 'exercise alone') virtually all weight lost is regained. Despite the extent of weight regain for 'very low intensity diet', its apparent very clear short-term advantage over other interventions is effectively lost by 24 months of follow-up. These observations are consistent with 'real life' reports from workers and others attempting to lose weight. Organisations considering the purchase of some form of employee weight-loss support should consider requesting evidence of effectiveness from the intended provider, comprising 'intention-to-treat' analysis with a minimum 2-year follow-up period. Organisations may wish to seek advice on interpretation of any evidence from a source independent from the intended support provider.

Confirmation of the poor prognosis for weight loss can be seen in Fildes, A et al[20] - data extracts from these are provided in tables 1 and 2 below. Similar results were found in the massive (over 13 million subjects) later study of Kompaniyets et al[21] – data extracts are provided in tables 3 and 4 below. From these it is clear that the probability of regaining 'normal weight' is very low (less than 1% at most) at all BMIs. The probability of losing 5% (a clinically significant proportion) of initial body weight is much better, although still no greater than 1 in 5 at best. The practical implication is that close attention to weight

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14 Light, I M and Gibson, M. Percentage body fat and prevalence of obesity in a UK offshore population. British Journal of Nutrition (1986), **56**, 97-104

15 Furnace, G. Review of 56 OEUK medicals January to March 2021. Unpublished data.

16 NICE CG189. Obesity: identification, assessment and management. 8 September 2022. https://www.nice.org.uk/guidance/cg189/ifp/chapter/How-much-weight-should-you-lose

17 Franz, M et al. Weight-loss Outcomes: a Systemic Review and Meta-Analysis of Weight-Loss Clinical Trials with a minimum 1-year Follow-up. J Am Diet Assoc. 2007; 107:1755-1767

18 Fildes, A et al. Probability of an Obese Person attaining Normal Body Weight: Cohort Study Using Electronic Health Records. Am J Public Health. 2015;105:e54-e59 doi:10.2105/AJPH.2015.302773 https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2015.302773

19 Franz, M et al. Weight-loss Outcomes: a Systemic Review and Meta-Analysis of Weight-Loss Clinical Trials with a minimum 1-year Follow-up. J Am Diet Assoc. 2007; 107:1755-1767

20 Fildes, A et al. Probability of an Obese Person attaining Normal Body Weight: Cohort Study Using Electronic Health Records. Am J Public Health. 2015;105:e54-e59 doi:10.2105/AJPH.2015.302773 https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2015.302773

21 Kompaniyets, L et al. Probability of 5% or Greater Weight Loss or BMI Reduction to Healthy Weight Among Adults With Overweight or Obesity. JAMA Netw Open. 2023;6(8):e2327358. doi:10.1001/jamanetworkopen.2023.27358 https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2807963

control for those in the 'overweight' category is likely better than waiting until progression to the obese category. The advice at paragraph 3.8.1. of the guidelines follows that principle.

Figure 1: Average weight loss of subjects (n=26,455) completing various weight management interventions; review of 80 studies, with minimum 1-year follow-up. (from data presented in Franz et al).

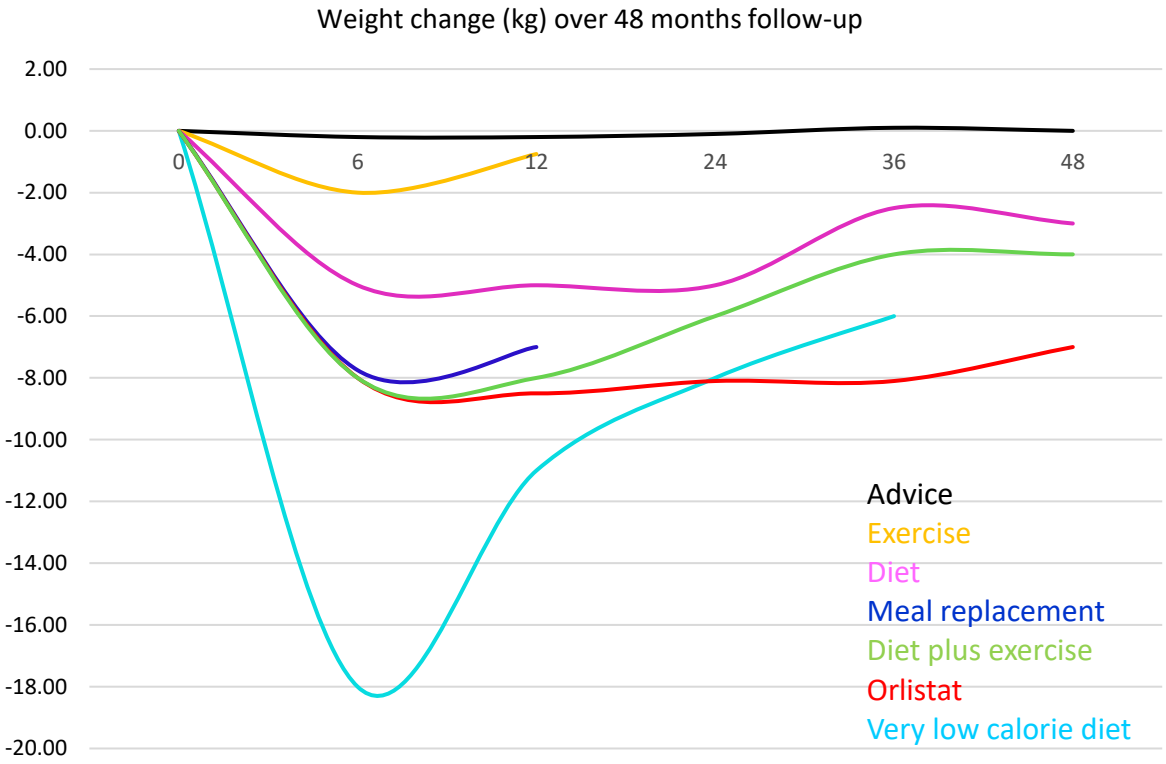


Table 1: Probability of weight loss (from paper of Fildes et al), males

Initial BMI (males)	Annual probability of attaining normal BMI	Initial BMI (males)	Annual probability of attaining 5% weight loss
30-34.9	1 in 210	30-34.9	1 in 12
35-39.9	1 in 701	35-39.9	1 in 9
40-44.9	1 in 1290	40-44.9	1 in 8
45 or >	1 in 362	45 or >	1 in 5

Table 2: Probability of weight loss (from paper of Fildes et al), females

Initial BMI (females)	Annual probability of attaining normal BMI	Initial BMI (females)	Annual probability of attaining 5% weight loss
30-34.9	1 in 124	30-34.9	1 in 10
35-39.9	1 in 430	35-39.9	1 in 9
40-44.9	1 in 677	40-44.9	1 in 7
45 or >	1 in 608	45 or >	1 in 6

Table 3: Probability of weight loss (from paper of Kompaniyets et al), males

Initial BMI (males)	Annual probability of attaining normal BMI	Initial BMI (males)	Annual probability of attaining 5% weight loss
25-29.9	1 in 23	25-29.9	1 in 14
30-34.9	1 in 236	30-34.9	1 in 11
35-39.9	1 in 759	35-39.9	1 in 9
40-44.9	1 in 1635	40-44.9	1 in 8
45 or >	1 in 2870	45 or >	1 in 6

Table 4: Probability of weight loss (from paper of Kompaniyets et al), females

Initial BMI (females)	Annual probability of attaining normal BMI	Initial BMI (females)	Annual probability of attaining 5% weight loss
25-29.9	1 in 16	25-29.9	1 in 11
30-34.9	1 in 119	30-34.9	1 in 10
35-39.9	1 in 359	35-39.9	1 in 9
40-44.9	1 in 601	40-44.9	1 in 8
45 or >	1 in 1201	45 or >	1 in 6

Given these figures, the objective at the OEUK medical is not to achieve weight loss in obese examinees – this is not a reasonable expectation because there is no effective intervention that can be provided by examining doctors. Rather, the objective at the medical is to monitor for the onset and occurrence of complications of obesity (e.g. hypertension, diabetes), refer for clinical management if and when these are found, and then monitor examinees with complications to encourage optimum clinical management. It is an inherent clinical objective in optimum clinical management of conditions such as hypertension and diabetes to reduce the occurrence of cardiovascular events.

In examinees with class 3 obesity, an additional objective at the OEUK medical is to actively discourage weight gain – a reducing weight is clinically welcome (because it has clinical benefits), but a static weight can be accepted as avoiding an adverse trend.

2.16 Medications (guideline paragraph 3.21)

A list of the medications carrying a 2, 3 or 19 caution label, or with a 'skilled task warning', can be found at the Supplement Appendix at paragraph 1.20 below.

2.17 Work on normally-unmanned installations (NUIs) (guideline paragraph 4.4)

Users intending to apply these guidelines to non-oil-and-gas installations are likely to find that unless the facility to which they are to be applied shares the features of having a sickbay and medic on board at all times, it will be appropriate to consider them the equivalent of oil and gas 'normally-unmanned installations'. Note that paragraph 4.4 assumes for NUIs that although normally unmanned, helicopters are able to remove ill or injured workers from them.

2.18 Fitness to Train (guideline section 5)

Examining doctors unfamiliar with diving medicine and/or the circumstances leading to the introduction of the compressed-air emergency breathing apparatus (CA-EBS) used in the UK sector North Sea, and the 'shallow-water' training exercises on survival courses with the CA-EBS, may find this additional information helpful.

2.18.1 Background:

Following a helicopter crash off Sumburgh in August of 2013 in which four passengers died (two from drowning, one from cardiac arrest, and one from an incapacitating head injury[22]) the CAA directed the UK oil and gas industry to introduce a more easily deployed emergency breathing system, and the 'PSTASS' (Passenger Short-Term Air Supply System) compressed-air emergency breathing apparatus (CA-EBS) was introduced to service for passengers on offshore helicopter flights in the UK sector of the North Sea in 2015. Following trials in November 2015 and December 2016, the HSE concluded the risks of introducing PSTASS equipment into survival training courses could be sufficiently mitigated, and in-water training exercises using PSTASS commenced at survival training centres in March 2018.

2.18.2 Risks of helicopter incidents:

CAP1145[23], the CAA report following the August 2013 crash, lists 24 helicopter incidents between 1992 and 2012, 7 (28%) of which involved fatalities. Many incidents were 'other' in nature (for example, lightning strike, landing gear problems) but three were ditchings (a controlled landing on water) and five were uncontrolled impacts with the sea (a crash). The overall rate of helicopter incidents was 1 in 588,235 flying hours (1 in 1.25 million flights) for a controlled ditching into the sea, and 1 in 357,142 flight hours (1 in 714,285 flights) for uncontrolled impact with the sea.

2.18.3 The PSTASS system:

Figure 2: PSTASS system

The PSTASS system consists of a small, compressed air cylinder integrated into the passenger lifejacket, providing sufficient air for up to one minute, connected to a conventional demand valve and mouthpiece. The system is easily and rapidly deployable and being 'always on', has no need for operation of on/off switches for successful use.

[22] AAIB report available here: https://www.gov.uk/aaib-reports/aircraft-accident-report-aar-1-2016-g-wnsb-23-august-2013

[23] Available here: https://www.caa.co.uk/our-work/publications/documents/content/cap1145/

2.18.4 The general hazard of breathing compressed air underwater:

The general hazards of breathing compressed gasses and/or air in water are well understood from both commercial and recreational diving experience. The principal hazard to be considered for the helicopter scenario is overpressure damage ('barotrauma') occurring in gas-filled spaces in the body. The principal effects which could immediately cause harm are pneumothorax and/or arterial gas embolism, which arise as a consequence of the relationship between gas volume and pressure changes with depth.

2.18.5 Risk of barotrauma in commercial and recreational diving:

The 2003 British Thoracic Society guidelines on medical fitness to dive[24] provide some figures on incident rates in Royal Navy submarine escape training, military diving, commercial diver training, and recreational diving. From these figures, the overall risk of barotrauma can be calculated to range from 1 in 76,968 (pneumomediastinum in military divers) through 1 in 200,527 (pneumothorax in military divers) to 1 in 491,000 (gas embolism in recreational divers). It is considered that for a trainee in normal health, the risk of barotrauma from in-water PSTASS training exercises (where the pressure and volume changes are substantially less – see below) should not exceed these figures.

2.18.6 The nature of in-water PSTASS exercises:

Survival training pool exercises involve a series of six exercises with the PSTASS unit, beginning with facial immersion in the water, then minimal submersion of the head underwater, followed by a shallow underwater swim/pull along a bar on the side wall of the pool. Each exercise lasts at most 30 seconds, during which five or six breaths are taken from the EBS. The specific exercises are:

a) deploy EBS above water, place face in water while floating on surface, breathe from EBS

b) place face in water on surface, deploy EBS underwater and breathe from EBS

c) place face in water on surface, deploy EBS underwater (with non-dominant hand) and breathe from EBS

d) deploy EBS above water, then descend to maximum 70 cm depth, breathe from EBS

e) descend to maximum 70 cm depth, then deploy EBS underwater and breathe from EBS

f) deploy EBS, swim/pull 'hand-over-hand' along a bar at maximum depth 70cm while breathing from EBS

The purpose of exercises a), b) and c) [figures 3&4] is to gain the trainee's confidence that the system will provide air without inhalation of water; the purpose of exercises d) and e) is to gain the trainee's confidence that the system can be deployed and used with the head and mouth submerged (figure 5), and the purpose of exercise f) (figure 6) is to gain the trainee's confidence that the system can be successfully used while moving through the water (as it would be in the cabin of an inverted ditched or crashed helicopter).

[24] Available here: https://thorax.bmj.com/content/thoraxjnl/58/1/3.full.pdf .

Figure 3: Breathing at surface

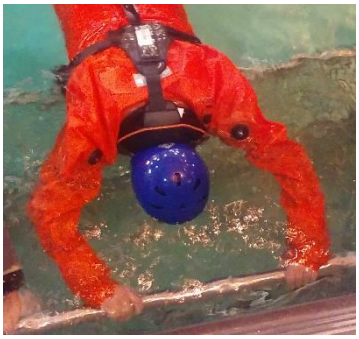


Figure 4: Deploy EBS at surface: note much of thorax is out of the water, and demand valve is at ~15 to 20cm depth

Figure 5: Breathe from EBS at ~50cms: head and thorax completely immersed

Figure 6: Hand-over-hand pull along bar: bar at 70cm; buoyancy of body means thorax and head are shallower – back of head is 'breaking surface', and depth of thorax/demand valve is shallower than 70cm.

In diving terms, the survival training exercises are closest in nature to the early stages (pool training exercises) of recreational scuba diving training but do not reach the same depth. In addition, survival training using PSTASS differs from scuba diving in that offshore workers do not progress to open-water diving in the cold or dark (survival training pools are warm [29 degrees C] and well-lit); there is no requirement in survival training to undertake marked physical exertion (there is no need to swim against a tidal current, wear weights or large tanks, or pull a heavy 'umbilical'), and there is no need for the worker to rescue a 'buddy' or self-rescue (at least one safety diver in the pool at all times). The exercises do not require more than minimal in-water physical effort and while it is known that immersion in water may cause an increase in cardiopulmonary system workload, for the vast majority of participants this should not result in significantly increased respiratory effort.

2.18.7 Risk of barotrauma in PSTASS in-water exercises:

The risk of barotrauma in the PSTASS exercises described is considered to be 'very low', and very much lower than in submarine escape training, military diving, commercial diver training, and recreational diving, for which there is some quantitative data. The potential pressure/volume relationships are much less extreme than in recreational or commercial diving, and the circumstances of the exercises are much less prone to panic-inducing incidents. Risk mitigating measures during survival training PSTASS exercises include a) strict control of depth, b) progressive exercises to gain confidence and reduce scope for anxiety, and c) individual instructor/trainee direct supervision during exercises to ensure no breath-holding on ascent. BSAC (the British Sub-Aqua Club) reports training many thousands of recreational divers without a single known occurrence of barotrauma in pool training exercises from 2001 to 2018, and experience from Canada had been event-free by 2018 (see below).

2.18.8 PSTASS training experience in Canada

In-water HUEBA (Helicopter Underwater Emergency Breathing Apparatus, the same type of system as the UK PSTASS equipment) exercises were introduced into survival training in Canada in 2009. CAPP (the Canadian Oil & Gas UK equivalent) reported that by 2018, at least 10,000 Canadian offshore workers had undertaken shallow water exercises similar to those which undertaken in the UK, and in addition have also undertaken SWET (Shallow Water Escape Trainer) chair training (which is ***not*** undertaken in the UK), without any reported adverse medical events. It is understood that the HUEBA was introduced to HUET training exercises in Canada in June 2016, again without reported problems to the UK start of shallow-water training.

2.18.9 Medical assessment considerations for PTSASS/EBS:

The assessment of recreational divers in the UK provides a useful reference point. In the UK, an offshore worker who wishes to take up recreational sports diving (which could ultimately include open water diving to the depth limit of air diving at 50metres) may do so by completing a self-declaration form in which they confirm that they do not have any of a number of relevant medical conditions. Note that no specific medical examination or test is required. Those unable to make a declaration of absence of such medical conditions are required to contact a medical referee for further discussion and assessment, which may or may not involve specific medical examination or test(s). The UKDMC (UK Sports Diving

Medical Committee) provides the rationale that it considers this a safe and appropriate system of medical assessment for a leisure activity.

The Health and Safety Executive (HSE) considers use of compressed air breathing equipment in survival training in principle to be 'diving at work'. This would legally require survival course trainees to undergo a full commercial diver medical examination by an HSE Approved Medical Examiner of Divers. However, having observed the December 2016 pool trials of the specific five exercises described above, the HSE subsequently exempted trainees from this requirement provided that they a) possess an in-date offshore medical and that b) they also follow a similar system of self-declaration of absence of relevant medical conditions. This is consistent with practice in Canada, where CAPP medical assessment for in-water HUEBA training (including HUEBA in HUET) is for the inclusion of a number of questions within the CAPP medical (OEUK medical equivalent) to elicit a history of clinical pathology relevant to increased risk of barotrauma, with further assessment (involving specialist input in some cases) of those with a history of such pathology.

The format of the OEUK ‘fit to train’ assessment allows for documented discussion with the potential trainee of the nature of the hazard of breathing compressed air underwater, the risk of doing so applicable to the PSTASS exercises, the risk mitigation measures in training, provision of specific instruction to those 'fit to train' with medical conditions (e.g. asthma), and the trainee's understanding and acceptance of that advice. Industry personnel found medically 'not fit to train' are excused in-water training and complete their survival training by 'dry-training for EBS'.

2.18.10 Further explanation – some gas laws physics:

Remember:

a) Boyle's Law: Pressure x volume = constant 'k' (assuming constant temperature)
b) Pressure changes by 1 atmosphere (='bar') for every 10 metre change in depth
c) normal atmospheric pressure at the earth's surface is 1 atmosphere, not 'zero'

2.18.11 Physics of pressure and volume changes in a notional recreational (sports) diving problem scenario:

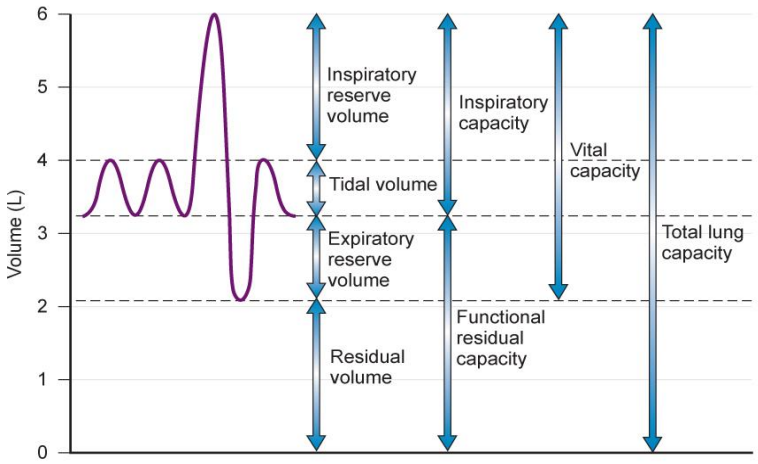
Divers typically suffer barotrauma in ‘problem situations’ resulting in acute anxiety and rapid ascent to the surface while breath-holding. Consider a recreational scuba diver who dives to 30 metres below the surface: since pressure increases by 1 atmosphere for every 10 metres depth, at this depth the surrounding pressure is 4 atmospheres. Boyle’s Law of gases (Pressure x Volume = constant 'k', assuming constant temperature) means that if the diver takes a breath (tidal volume) of 700mls, 'k' will be = 700 (V) x 4 (P) = 2800. In a rapid ascent while breath-holding and with the glottis closed, as the diver ascends to 20 metres, 'k' remains at 2800, pressure reduces to 3 atmospheres, and the volume of that tidal volume breath would increase (if able to freely expand) to 2800 / 3 = 933mls. At 10 metres pressure has reduced further to 2 atmospheres, and with 'k' still at 2800, volume would increase to 2800 / 2 = 1400mls. As the diver reaches the surface, where pressure is 1 atmosphere, volume would reach 2800mls. These changes can be summarised in the following table:

Table 5: Boyle's Law at various depths

Depth	Original inspired volume	Absolute Pressure (atmospheres)	'k'	New volume at depth	
Surface	700 mls	1	2800	2800 mls	
10 m	700 mls	2	2800	1400 mls	
20 m	700 mls	3	2800	933 mls	
30 m	700 mls	4	2800	n/a	

While the actual physiological situation is clearly more complex (the discussion above ignores the volumes of air within residual volume and expiratory reserve volume, for example), figure 7 illustrating typical lung volumes during the respiratory cycle clearly shows the nature of the hazard – in the situation described above, the diver's original tidal breath volume alone (ignoring residual and expiratory reserve volumes) of 700mls inhaled at 30m depth could increase to 2800mls at the surface. The 'extra' 2100mls increase on the original 700mls is alone a volume which is greater than the maximum further physiological expansion of his thorax, the inspiratory reserve volume (of approx. 2000mls). Provided the diver breathes normally during ascent, the 'extra' 2100mls volume is eliminated through respiration, but in breath-holding with a closed glottis and no route for the excess volume to pass to the surrounding environment via the mouth, gas expansion causes a corresponding 'overpressure' which may cause the 'extra' gas volume to rupture through the lung parenchyma to the pleural cavity (a pneumothorax), mediastinum, and/or enter the vascular system and be transported round the circulation as an arterial gas embolism (AGE), with potentially fatal effect.

Figure 7: Typical lung volumes in respiratory cycle



2.18.12 Physics of pressure and volume changes in PSTASS exercises:

The same pressure/volume calculations as were considered earlier for open-water scuba diving may be performed for the PSTASS exercises. PSTASS training will take place at a maximum depth of 70 cm, at which the ambient pressure is 1.07 atmospheres (10m = 2 atm, 5m = 1.50 atm, 1m [100cm] = 1.10 atm, and 70 cm = 1.07 atm). Note that for most of the exercises the depth will be substantially shallower, as listed below in table 4.

A tidal volume breath of 700mls taken at a depth of 70cm (=pressure 1.07 atmospheres) gives 'k' = 700 x 1.07 = 749, and in the worst-case scenario of a breath-hold and surface with closed glottis, this volume of air would tend to expand to 749 / 1 = 749mls at the surface. For a typical individual the 'extra' 49mls created by expansion due to ascent with closed glottis is a volume which appears to suggest low risk of barotrauma.

Table 6: Pressure and volume changes in PSTASS exercises

Depth	Original inspired volume	Pressure (atmospheres)	'k'	New volume at depth	
Surface	700 mls	1	749	749 mls	
70 cm	700 mls	1.07	749	n/a	

If the additional volumes of the physiological residual volume (from fig 7, around 2000mls) and expiratory reserve volume (from fig 7, around 1300mls) are also included in the calculation, the results in Table 5 are obtained:

Table 7: Calculation of additional volumes of physiological residual volume and expiratory reserve volume

Depth	Original inspired volume (VT plus RV plus ERV)	Pressure (atmospheres)	'k'	New volume at depth	
Surface	4000 mls	1	4280	4280 mls	
70 cm	700+2000+1300 = 4000 mls	1.07	4280	n/a	

Again, the 'extra' 280mls potentially created by expansion due to reduced pressure is a volume which appears to suggest low risk of barotrauma.

In practice, the actual depth of the regulator, and hence inspired air pressure and potential for volume expansion, will be less. Expected values for depth and inspired air pressure for exercises a) to e) are:

a) depth 15-20 cm, pressure 1.015 to 1.02 atmospheres
b) depth 15-20 cm, pressure 1.015 to 1.02 atmospheres
c) depth 30-40 cm, pressure 1.03 to 1.04 atmospheres
d) depth 30-40 cm, pressure 1.03 to 1.04 atmospheres

e) depth 15-40 cm, pressure 1.015 to 1.04 atmospheres

For additional context, the deliberate respiratory tract 'overpressure' applied therapeutically by CPAP devices in treatment of sleep apnoea is typically 4-16 cm of water, but can be 25-30 cm of water.

3 Appendix – medication list

The following is the list of medications (not including those stated in the guidelines to be excluded) with either a relevant caution label or skilled task warning, as at the British National Formulary (BNF) number 78 (September 2019 to March 2020). Table 8 gives these by BNF chapter and section, and table 9 (page 43) lists them alphabetically by generic name.

Examining doctors should be aware that medication status may have changed, and/or additional medications with a relevant caution label or skilled task warning added, since 2020. A current formulary should be consulted if uncertain.

Table 8: Medications, listed by BNF chapter and section

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
1	4.2		Y	misoprostol
2	4.1	3	Y	clonidine
2	4.1	3	Y	methyldopa
2	4.1	3		monoxidine
3	1		Y	ipratropium
3	2		Y	acrivistine
3	2		Y	bilastine
3	2		Y	cetirizine
3	2		Y	desloratidine
3	2		Y	fexofenadine
3	2		Y	levocetirizine
3	2		Y	mizolastine
3	2	2	Y	alimemazine
3	2	2	Y	chlorphenamine
3	2	2	Y	clemastine
3	2	2	Y	cyproheptadine
3	2	2	Y	hydroxyzine
3	2	2	Y	ketotifen

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
3	2	2	Y	promethazine
4	1	3		galantamine
4	2	2	Y	brivaracetam
4	2	3		carbamazepine
4	2		Y	eslicarbazepine
4	2	3		gabapentin
4	2	3		oxcarbazepine
4	2	3	Y	perampanel
4	2	3		pregabalin
4	2		Y	rufinamide
4	2		Y	tiagabine
4	2	3		topiramate
4	2	3		vigabatrin
4	2	3		zonisamide
4	2	2		phenobarbital
4	2	2		primidone
4	2	2		clobazam
4	2	2		clonazepam
4	2.1	2	Y	lorazepam
4	2.1	2	Y	midazolam
4	3.1		Y	buspirone
4	3.1		Y	benzodiazepines (class)
4	3.1	2		alprazolam
4	3.1	2		chlordiazepoxide
4	3.1	2		diazepam
4	3.1	2		oxazepam

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	3.1	2	Y	meprobamate
4	3.2	3		atomoxetine
4	3.2		Y	methylphenidate
4	3.2		Y	dexamfetamine
4	3.2	3	Y	lisdexamfetamine
4	3.2	2	Y	guanfacine
4	3.3	2		asenapine
4	3.3		Y	lithium
4	3.4	3		isocarboxazid
4	3.4	3		phenelzine
4	3.4	3		tranylcypromine
4	3.4		Y	reboxetine
4	3.4		Y	SSRI (class)
4	3.4		Y	citalopram
4	3.4		Y	escitalopram
4	3.4		Y	fluoxetine
4	3.4		Y	fluvoxamine
4	3.4		Y	paroxetine
4	3.4		Y	sertraline
4	3.4	2		duloxetine
4	3.4	3	Y	venlafaxine
4	3.4	2	Y	trazodone
4	3.4	2	Y	mianserin
4	3.4	2		mirtazepine
4	3.4	2	Y	amitriptyline
4	3.4	2	Y	clomipramine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	3.4	2	Y	dosulepin
4	3.4	2	Y	doxepin
4	3.4	2	Y	imipramine
4	3.4	2	Y	lofepramine
4	3.4	2	Y	nortriptyline
4	3.4	2	Y	trimipramine
4	3.4		Y	tryptophan
4	3.4		Y	vortioxetine
4	3.5	2		benperidol
4	3.6		Y	antipsychotics (class)
4	3.6	2		chlorpromazine
4	3.6	2		flupentixol
4	3.6	2		haloperidol
4	3.6	2		pericyazine
4	3.6	2		pimozide
4	3.6	2		prochlorperazine
4	3.6	2		sulpiride
4	3.6	2		trifluoperazine
4	3.6	2		zuclopenthixol
4	3.6	2		amisulpiride
4	3.6	2		aripiprazole
4	3.6	2		clozapine
4	3.6	2		lurasidone
4	3.6	2		olanzapine
4	3.6	2		paliperidone
4	3.6	2		quetiapine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	3.6	2		risperidone
4	4.1	2		promazine
4	4.1	3		piracetam
4	4.1	2		tetrabenazine
4	4.2		Y	orphenadrine
4	4.2		Y	procyclidine
4	4.2		Y	trihexyphenidyl
4	4.2		Y	co-beneldopa
4	4.2		Y	co-careldopa
4	4.2		Y	levodopa/carbidopa/entacapone
4	4.2		Y	amantadine
4	4.2		Y	apomorphine
4	4.2		Y	bromocriptine
4	4.2		Y	cabergoline
4	4.2		Y	pergolide
4	4.2		Y	pramipexole
4	4.2		Y	ropinirole
4	4.2		Y	rotigotine
4	4.2		Y	selegiline
4	5	2	Y	cyclizine
4	5	2	Y	doxylamine/pyridoxine
4	5	2	Y	nabilone
4	5	3		rolapitant
4	5		Y	palonosetron
4	5	2	Y	cinnarizine
4	5	2		cinnarizine/dimenhydrinate

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	5	2	Y	promethazine
4	5	2	Y	hyoscine
4	5	2		levomepromazine
4	6	2		nefopam
4	6		Y	opiods (class)
4	6	2		buprenorphine
4	6	2		co-codamol all except 8/500
4	6	2		codeine
4	6	2		dihydrocodeine
4	6	2		dihydrocodeine/paracetamol
4	6	2		fentanyl
4	6	2		hydromorphone
4	6	2		meptazinol
4	6	2		morphine
4	6	2		oxycodone
4	6	2		oxycodone/naloxone
4	6	2		pentazocine
4	6	2		pethidine
4	6	3		sufentanil
4	6	2		tapentadol
4	6	2		tramadol
4	6	2		tramadol/dexketoprofen
4	6	2		tramadol/paracetamol
4	6.1	2		pizotifen
4	6.1a	2		paracetamol/buclizine/codeine
4	6.1a	2		egotamine/cyclizine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	6.1a	3		almotriptan
4	6.1a	3		eletriptan
4	6.1a	3		frovatriptan
4	6.1a	3	Y	naratriptan
4	6.1a	3	Y	rizatriptan
4	6.1a	3	Y	sumatriptan
4	7.1	19		flurazepam
4	7.1	19		loprazolam
4	7.1	19		lormetazepram
4	7.1	19		nitrazepam
4	7.1	19	Y	temazepam
4	7.1	19	Y	choral hydrate
4	7.1	19	Y	chlomethiazole
4	7.1	2		melatonin
4	7.1	19	Y	zolpidem
4	7.1	19	Y	zopiclone
4	7.2	19	Y	sodium oxybate
4	8.1	2		disulfiram
4	8.2	3	Y	varenicline
4	8.3	2		methadone
4	8.3	2		buprenorphine/naloxone
5	2.5	2		cycloserine
5	3	3	Y	isavuconazole
5	3	3	Y	posaconazole
5	5.2		Y	artemether/lumefantrine
5	5		Y	mefloquine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
5	6.2b	3		elbasir/grazoprevir
5	6.4		Y	dolutegavir/rilpivirine
5	6.4	3	Y	doravirine
5	6.4	3		rilpirivine
5	6.4		Y	elvitegravir/cobicistat/ emtricitabine/tenofovir
5	6.4	3	Y	emtricitabine/rilpivirine/tenofovir
5	6.4		Y	emtricitabine/tenofovir
5	6.4	3	Y	lamivudine/tenofovir/doravirine
5	6.4		Y	darunavir/cobicistat/ emtricitabine/tenofovir
6	2.1	2	Y	ketoconazole
6	2.1		Y	metyrapone
6	3.1		Y	nateglinide
6	3.1		Y	repaglinide
6	3.1		Y	sulphonyureas (class)
6	8.1	3		conjugated oestrogens/bazedoxifene
7	1.1		Y	antimuscarinics (class)
7	1.1	3		darifenacin
7	1.1	3		festerodine
7	1.1	3		flavoxate
7	1.1	3		oxybutynin
7	1.1	3		propiverine
7	1.1	3		solifenacin
7	1.1	3		tolterodine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
7	1.2		Y	alfuzosin
7	1.2		Y	doxazosin
7	1.2	2	Y	indoramin
7	1.2		Y	tamsulosin
7	1.2		Y	tamsulosin/dutasteride
7	1.2	3		tamsulosin/solifenacin
7	1.2		Y	terazosin
7	4.2	2		dapoxetine
8 (immune system)	1		Y	tacrolimus
8 (immune system)	1		Y	canakinumab
8 (malignancy)	1		Y	blinatumomab
8 (malignancy)	1		Y	dinutuximab
8 (malignancy)	1		Y	gemtuzumab
8 (malignancy)	1		Y	inotuzumab
8 (malignancy)	1		Y	olaratumab
8 (malignancy)	3		Y	cladribine
8 (malignancy)	3		Y	nelarabine
8 (malignancy)	3		Y	irinotecan
8 (malignancy)	3		Y	panobinostat
8 (malignancy)	3		Y	pegaspargase
8 (malignancy)	4.1		Y	anastrozole
8 (malignancy)	5		Y	talimogene
8 (malignancy)	5	3		pomalidomide
8 (malignancy)	5	2		thalidomide
8 (malignancy)	7	3		abemaciclib
8 (malignancy)	7		Y	alectinib

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
8 (malignancy)	7	3		binimetinib
8 (malignancy)	7		Y	brigatinib
8 (malignancy)	7		Y	cabozantinib
8 (malignancy)	7		Y	ceritinib
8 (malignancy)	7		Y	cobimetinib
8 (malignancy)	7		Y	crizotinib
8 (malignancy)	7	3	Y	dabrafenib
8 (malignancy)	7	3	Y	encorafenib
8 (malignancy)	7		Y	lenvatinib
8 (malignancy)	7	3		ponatinib
8 (malignancy)	7	3		ribociclib
8 (malignancy)	7	3	Y	trametinib
8 (malignancy)	7		Y	niraparib
8 (malignancy)	7		Y	olaparib
8 (malignancy)	7		Y	rucaparib
9 (nutrition)	2.12		Y	glycerol phenylbutyrate
10	3		Y	riluzole
10	3.2	3		amifampridine
10	3.3		Y	mexiletine
10	3.5		Y	cannabis extract
10	3.5	2	Y	baclofen
10	3.5	2	Y	methocarbamol
10	3.5	2	Y	tizanidine
10	4		Y	indometacin
11	5	3		acetazolamide
11	5	3		brinzolamide/brimonidine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
11	5		Y	pilocarpine
11	5		Y	tafluprost/timolol
11	5		Y	apraclonidine
11	5		Y	brimonidine
12 (oropharynx)	1		Y	pilocarpine
13	5	2		doxepin
13	6.2		Y	brimonidine

Table 9: Medications, listed alphabetically

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
8 (malignancy)	7	3		abemaciclib
11	5	3		acetazolamide
3	2		Y	acrivistine
8 (malignancy)	7		Y	alectinib
7	1.2		Y	alfuzosin
3	2	2	Y	alimemazine
4	6.1a	3		almotriptan
4	3.1	2		alprazolam
4	4.2		Y	amantadine
10	3.2	3		amifampridine
4	3.6	2		amisulpiride
4	3.4	2	Y	amitriptyline

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
8 (malignancy)	4.1		Y	anastrozole
7	1.1		Y	antimuscarinics (class)
4	3.6		Y	antipsychotics (class)
4	4.2		Y	apomorphine
11	5		Y	apraclonidine
4	3.6	2		aripiprazole
5	5.2		Y	artemether/lumefantrine
4	3.3	2		asenapine
4	3.2	3		atomoxetine
10	3.5	2	Y	baclofen
4	3.5	2		benperidol
4	3.1		Y	benzodiazepines (class)
3	2		Y	bilastine
8 (malignancy)	7	3		binimetinib
8 (malignancy)	1		Y	blinatumomab
8 (malignancy)	7		Y	brigatinib
11	5		Y	brimonidine
13	6.2		Y	brimonidine
11	5	3		brinzolamide/brimonidine
4	2	2	Y	brivaracetam
4	4.2		Y	bromocriptine
4	6	2		buprenorphine
4	8.3	2		buprenorphine/naloxone
4	3.1		Y	buspirone
4	4.2		Y	cabergoline
8 (malignancy)	7		Y	cabozantinib

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
8 (immune system)	1		Y	canakinumab
10	3.5		Y	cannabis extract
4	2	3		carbamazepine
8 (malignancy)	7		Y	ceritinib
3	2		Y	cetirizine
4	7.1	19	Y	chlomethiazole
4	3.1	2		chlordiazepoxide
3	2	2	Y	chlorphenamine
4	3.6	2		chlorpromazine
4	7.1	19	Y	choral hydrate
4	5	2	Y	cinnarizine
4	5	2		cinnarizine/dimenhydrinate
4	3.4		Y	citalopram
8 (malignancy)	3		Y	cladribine
3	2	2	Y	clemastine
4	2	2		clobazam
4	3.4	2	Y	clomipramine
4	2	2		clonazepam
2	4.1	3	Y	clonidine
4	3.6	2		clozapine
4	4.2		Y	co-beneldopa
8 (malignancy)	7		Y	cobimetinib
4	4.2		Y	co-careldopa
4	6	2		co-codamol all except 8/500
4	6	2		codeine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
6	8.1	3		conjugated oestrogens/bazedoxifene
8 (malignancy)	7		Y	crizotinib
4	5	2	Y	cyclizine
5	2.5	2		cycloserine
3	2	2	Y	cyproheptadine
8 (malignancy)	7	3	Y	dabrafenib
7	4.2	2		dapoxetine
7	1.1	3		darifenacin
5	6.4		Y	darunavir/cobicistat/ emtricitabine/tenofovir
3	2		Y	desloratidine
4	3.2		Y	dexamfetamine
4	3.1	2		diazepam
4	6	2		dihydrocodeine
4	6	2		dihydrocodeine/paracetamol
8 (malignancy)	1		Y	dinutuximab
4	8.1	2		disulfiram
5	6.4		Y	dolutegavir/rilpivirine
5	6.4	3	Y	doravirine
4	3.4	2	Y	dosulepin
7	1.2		Y	doxazosin
4	3.4	2	Y	doxepin
13	5	2		doxepin
4	5	2	Y	doxylamine/pyridoxine
4	3.4	2		duloxetine

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	6.1a	2		egotamine/cyclizine
5	6.2b	3		elbasir/grazoprevir
4	6.1a	3		eletriptan
5	6.4		Y	elvitegravir/cobicistat/ emtricitabine/tenofovir
5	6.4	3	Y	emtricitabine/rilpivirine/tenofovir
5	6.4		Y	emtricitabine/tenofovir
8 (malignancy)	7	3	Y	encorafenib
4	3.4		Y	escitalopram
4	2		Y	eslicarbazepine
4	6	2		fentanyl
7	1.1	3		festerodine
3	2		Y	fexofenadine
7	1.1	3		flavoxate
4	3.4		Y	fluoxetine
4	3.6	2		flupentixol
4	7.1	19		flurazepam
4	3.4		Y	fluvoxamine
4	6.1a	3		frovatriptan
4	2	3		gabapentin
4	1	3		galantamine
8 (malignancy)	1		Y	gemtuzumab
9 (nutrition)	2.12		Y	glycerol phenylbutyrate
4	3.2	2	Y	guanfacine
4	3.6	2		haloperidol
4	6	2		hydromorphone

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
3	2	2	Y	hydroxyzine
4	5	2	Y	hyoscine
4	3.4	2	Y	imipramine
10	4		Y	indometacin
7	1.2	2	Y	indoramin
8 (malignancy)	1		Y	inotuzumab
3	1		Y	ipratropium
8 (malignancy)	3		Y	irinotecan
5	3	3	Y	isavuconazole
4	3.4	3		isocarboxazid
6	2.1	2	Y	ketoconazole
3	2	2	Y	ketotifen
5	6.4	3	Y	lamivudine/tenofovir/doravirine
8 (malignancy)	7		Y	lenvatinib
3	2		Y	levocetirizine
4	4.2		Y	levodopa/carbidopa/entacapone
4	5	2		levomepromazine
4	3.2	3	Y	lisdexamfetamine
4	3.3		Y	lithium
4	3.4	2	Y	lofepramine
4	7.1	19		loprazolam
4	2.1	2	Y	lorazepam
4	7.1	19		lormetazepram
4	3.6	2		lurasidone
5	5		Y	mefloquine
4	7.1	2		melatonin

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	3.1	2	Y	meprobamate
4	6	2		meptazinol
4	8.3	2		methadone
10	3.5	2	Y	methocarbamol
2	4.1	3	Y	methyldopa
4	3.2		Y	methylphenidate
6	2.1		Y	metyrapone
10	3.3		Y	mexiletine
4	3.4	2	Y	mianserin
4	2.1	2	Y	midazolam
4	3.4	2		mirtazepine
1	4.2		Y	misoprostol
3	2		Y	mizolastine
2	4.1	3		monoxidine
4	6	2		morphine
4	5	2	Y	nabilone
4	6.1a	3	Y	naratriptan
6	3.1		Y	nateglinide
4	6	2		nefopam
8 (malignancy)	3		Y	nelarabine
8 (malignancy)	7		Y	niraparib
4	7.1	19		nitrazepam
4	3.4	2	Y	nortriptyline
4	3.6	2		olanzapine
8 (malignancy)	7		Y	olaparib
8 (malignancy)	1		Y	olaratumab

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	6		Y	opiods (class)
4	4.2		Y	orphenadrine
4	3.1	2		oxazepam
4	2	3		oxcarbazepine
7	1.1	3		oxybutynin
4	6	2		oxycodone
4	6	2		oxycodone/naloxone
4	3.6	2		paliperidone
4	5		Y	palonosetron
8 (malignancy)	3		Y	panobinostat
4	6.1a	2		paracetamol/buclizine/codeine
4	3.4		Y	paroxetine
8 (malignancy)	3		Y	pegaspargase
4	6	2		pentazocine
4	2	3	Y	perampanel
4	4.2		Y	pergolide
4	3.6	2		pericyazine
4	6	2		pethidine
4	3.4	3		phenelzine
4	2	2		phenobarbital
11	5		Y	pilocarpine
12 (oropharynx)	1		Y	pilocarpine
4	3.6	2		pimozide
4	4.1	3		piracetam
4	6.1	2		pizotifen
8 (malignancy)	5	3		pomalidomide

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
8 (malignancy)	7	3		ponatinib
5	3	3	Y	posaconazole
4	4.2		Y	pramipexole
4	2	3		pregabalin
4	2	2		primidone
4	3.6	2		prochlorperazine
4	4.2		Y	procyclidine
4	4.1	2		promazine
3	2	2	Y	promethazine
4	5	2	Y	promethazine
7	1.1	3		propiverine
4	3.6	2		quetiapine
4	3.4		Y	reboxetine
6	3.1		Y	repaglinide
8 (malignancy)	7	3		ribociclib
5	6.4	3		rilpirivine
10	3		Y	riluzole
4	3.6	2		risperidone
4	6.1a	3	Y	rizatriptan
4	5	3		rolapitant
4	4.2		Y	ropinirole
4	4.2		Y	rotigotine
8 (malignancy)	7		Y	rucaparib
4	2		Y	rufinamide
4	4.2		Y	selegiline
4	3.4		Y	sertraline

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	7.2	19	Y	sodium oxybate
7	1.1	3		solifenacin
4	3.4		Y	SSRI (class)
4	6	3		sufentanil
6	3.1		Y	sulphonyureas (class)
4	3.6	2		sulpiride
4	6.1a	3	Y	sumatriptan
8 (immune system)	1		Y	tacrolimus
11	5		Y	tafluprost/timolol
8 (malignancy)	5		Y	talimogene
7	1.2		Y	tamsulosin
7	1.2		Y	tamsulosin/dutasteride
7	1.2	3		tamsulosin/solifenacin
4	6	2		tapentadol
4	7.1	19	Y	temazepam
7	1.2		Y	terazosin
4	4.1	2		tetrabenazine
8 (malignancy)	5	2		thalidomide
4	2		Y	tiagabine
10	3.5	2	Y	tizanidine
7	1.1	3		tolterodine
4	2	3		topiramate
4	6	2		tramadol
4	6	2		tramadol/dexketoprofen
4	6	2		tramadol/paracetamol
8 (malignancy)	7	3	Y	trametinib

BNF Chapter	BNF section	Caution label	Skilled task warning (Y = yes)	Drug
4	3.4	3		tranylcypromine
4	3.4	2	Y	trazodone
4	3.6	2		trifluoperazine
4	4.2		Y	trihexyphenidyl
4	3.4	2	Y	trimipramine
4	3.4		Y	tryptophan
4	8.2	3	Y	varenicline
4	3.4	3	Y	venlafaxine
4	2	3		vigabatrin
4	3.4		Y	vortioxetine
4	7.1	19	Y	zolpidem
4	2	3		zonisamide
4	7.1	19	Y	zopiclone
4	3.6	2		zuclopenthixol

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