

El Research report

## Offshore workers medical consultation study

# RESEARCH REPORT: OFFSHORE WORKERS MEDICAL CONSULTATION STUDY

1st edition

August 2016

Published by

**ENERGY INSTITUTE, LONDON**

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Registered charity number 1097899

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The EI gratefully acknowledges the financial contributions towards the scientific and technical programme from the following companies

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ISBN 978 0 85293 935 2

Published by the Energy Institute

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## ACKNOWLEDGEMENTS

The Energy Institute (EI) would like to acknowledge the significant work and effort undertaken by the project team and authors Dr Mike Doig and Graham Horgan from the department Biomathematics and Statistics Scotland at the Rowett Institute of Nutrition and Health, University of Aberdeen.

The EI acknowledges Capita and Abermed/ISOS for the provision of their databases and would like to thank Dr Allan Prentice (Iqarus) and Dr Joan Patterson (Amec Foster Wheeler) for their contribution.

The EI wishes to record its appreciation of the valuable contributions of the committees' membership, including representatives from the following companies/organisations:

- BP
- Capita
- Centrica
- Chevron
- ConocoPhillips
- ExxonMobil
- International SOS
- Maersk Oil
- Oil & Gas UK
- RS Occupational Health
- Saudi Aramco
- Shell
- Talisman Energy
- University of Portsmouth

This report was commissioned by the EI's Health Technical Committee. The EI would also like to acknowledge the contributions of members of the Health Technical Committee in steering this project to completion.

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# 1 INTRODUCTION

Offshore oil and gas production is a safety critical, global industry found in all the oceans of the world. The UK ranks in the top 20 of producers and produced around 2.35 million barrels of oil equivalent in 2010. In the UK, this represents employment for 330 000 people, with 56 982 working offshore, of which 24 889 are in the Northern sector covered by this study (Central North Sea, Northern North Sea, and West of Shetland) ([www.oilandgasuk.co.uk](http://www.oilandgasuk.co.uk)<sup>1</sup>).

The offshore workplace is a remote and challenging location where the workers remain for, usually, a minimum of two weeks, working 12 hours shifts, and living in shared and sometimes cramped living conditions. Transport is normally by helicopter, the schedule of which can be very limited. This in turn is weather dependent, resulting in periods when the installations may be cut off for significant lengths of time in stormy or fog-bound conditions.

The workforce performs a wide and diverse range of functions in maintaining the offshore installation and supporting production of the oil and gas. This involves complex heavy engineering, equipment maintenance and repair that involves both manual handling and technical expertise, as well as specialised functions such as control room operators, chemists, geologists and specifically pertinent to this study – the offshore medic.

The oil industry has a formal and regulated system of medical care to provide first-aid, basic primary care, occupational health and emergency medical support to the offshore workforce. These are set out in the *Offshore installations and pipeline works (first aid) regulations 1989*<sup>(2)</sup> that defines the responsibilities of the dedicated on-site medical assistant (the offshore medic), and the required support by a dedicated shore-based registered medical practitioner who is required to be available to give 24 hour advice on more complicated or serious medical issues.

Although the workers are all subject to regular medical screening, of which there are both internal company standards, and external guidance, including those of the EI<sup>(3)(4)</sup> and Oil and Gas UK<sup>(5)</sup> – the prevalence of non-life-threatening medical conditions in the population as a whole results in many pre-existing and developing conditions presenting to the offshore medic. The medic usually has a primary qualification as a nurse or military paramedic before completing additional, formal offshore medic training relating to their role offshore. This includes the access to, and use of, the supporting medical services onshore and the ‘topside medical service’ which includes 24-hour access to a registered medical practitioner. This service to the UK offshore oil industry is provided through contracted occupational health providers (OHPs). Contact takes place when the offshore medic feels that the case has not responded to initial treatment, is more complex, needs expertise beyond their own training, or that the condition is likely to result in the employee being evacuated from the offshore installation on medical grounds. The medic would also contact the ‘topside service’ to report any serious injury or death, and any transfer for specialist evaluation or hospital admission would be arranged by the consulting physician.

As with any medical encounter, all contacts are formally logged and contain a wealth of details for each consultation – including diagnosis, age, sex, occupation, length of time offshore, advice given, fitness outcome, and referral pathway.

The OHPs taking part in this study are both based in Aberdeen hence the vast majority of consultations refer to the UK Continental Shelf as described above. There is, however, a very small number of calls from other vessels and international locations for which advice was given and is included in these statistics.

The OHPs estimate that between them they cover over 90 % of the offshore installations in the Northern North Sea sector with very few other agencies providing physician support to the offshore population.

Six months blocks of data from the two primary OHPs – Abermed and Capita were used consecutively to create the datasheet covering the whole year 2012. Capita data cover the period January to June 2012, and Abermed data July to December 2012. Dates were not recorded in the data sets to maintain anonymity of the individuals and hence we cannot determine seasonal influence on the various analyses performed.

Ethical approval was not required as all patient data was fully anonymised as it was transferred to the database, and potential identifying features including name, date of consultation and location were not collected. As a result, the individual cases remain unidentifiable throughout, the analysis.

## **1.1 BACKGROUND**

This study was initiated because, as far as the authors are aware, this dataset has not been looked at since 1985<sup>(6)</sup>. Whilst offshore medical evacuations have been the subject of research<sup>(7)</sup>, medical emergency response<sup>(8)</sup>, and separately offshore consultations to the medic<sup>(9)</sup>, this unique database of consultations that the medics feel should be referred to for further advice has been largely ignored.

The results of previous studies have provided a lot of important information. Phillips (1987) originally looked at this group who, at the time, were using radio to make contact with the onshore doctor in 1985. His brief report found that out of 743 cases, 71 % were subsequently evacuated onshore and at that time the vast majority of cases were injuries (48 %), followed by musculoskeletal (9,1%), respiratory system (8,9%), ill-defined conditions (6,1%), and diseases of the digestive system (5,6%).<sup>(6)</sup>

There are other early studies based on analyses of sick-bay consultations and medical evacuation records. The Statfjord study by Hellesoy (1985)<sup>(10)</sup> looked at sick-bay visits among Norwegian offshore workers. Illness accounted for 47 % of visits and injury 16 %, with personal and work-related issues accounting for 15 %. Drillers and caterers had the highest frequency of injuries in the occupational groups. At that time, musculoskeletal disorders were the most frequent reason for consultation (25 %), with infection (18 %), alimentary illness (10 %), and respiratory disease (7 %) next.<sup>(10)</sup>

Anderson and Cox (1987) also looked at sick-bay consultations and reported eye problems to be 10 – 15 %, skin accounted for 10 %, trauma was 5 – 10 %, and musculoskeletal diagnoses were 5 – 10 %.<sup>(11)</sup>

Medical evacuation, which is also related to offshore consultations as a potential, and indeed unwanted outcome, has also been looked at. Norman, Ballantine, Brebner, et al. (1988) found at that time injuries totalled 43 % of evacuations, but also found that the most frequent underlying illness diagnoses associated with medical evacuation were 'disorders of the digestive system' at 30 %. This category included dental problems which was a large proportion: 112 out of 239 (48 %) of the total. Musculoskeletal accounted for 20 % – of which 81 out of 156 (51 %) were acute back disorders, and 15% of the cases studied at that time were respiratory – with half recorded as influenza.

Although fractures, dislocations and sprains accounted for 44 % of the evacuations relating to injury, eye injuries were significant at 10 %. The mean age of those evacuated for injury was 28,3 years, and that for illness: 34,4 years.



During the period of the study conducted between 1976 – 1984 it was also noted that the proportion of medevacs due to injury decreased from 60 % to 50 %<sup>(7)</sup>.

In 1999, the HSE, reporting on 3 979 evacuations from 1987 to 1992, found that 92 % used routine helicopter flights and 8 % required dedicated transport.

They found that the highest proportion of illnesses requiring evacuation were reported on the first day offshore and the highest rate of evacuation for injury was on the fourth and fifth days offshore. They noted that the high proportion of dental problems seen in the study had already led to the introduction of a dental certificate at that time. Illness constituted 55% of the cases, and injury 45 %, with dental cases peaking at 11 % in 1992. 25 % of the evacuations were recorded as digestive, with 65 % of these being dental cases. This was followed by musculoskeletal at 17,5 %, with 56 % of these being dorsopathies (10 % of total illness). Respiratory constituted 7,4 % followed by nervous at 4,4 %.<sup>(12)</sup>

In 2000, Parkes et al. found that respiratory and musculoskeletal diagnoses were the most frequently recorded in offshore medic consultations. Illness formed 78 % of consultations whilst accidents represented 15,3 %. Diagnostic categories were limited, however, with initially 15 identified for data collection. Of the 15, only four were used for statistical analysis: musculoskeletal, gastric, respiratory, and skin/wound plus other (including dental) for anything else. Reviewing the original statistics, however, shows that the highest encounters were for respiratory – 28,2 %, musculoskeletal – 23,3 %, skin – 15 %, digestive – 6 %, ophthalmic – 5,6 %, and dental 4,8 %.<sup>(13)</sup>

Parkes (2000) also noted that age groups, job types, job levels, and shiftwork patterns had an effect on consultation patterns for both accidents and illness. Occupational association was limited in this study as jobs were classified in only eight basic job types (maintenance, technical, catering, production, management, administration/other, construction, and drilling).

Despite this, Parkes (2000) found that job type was a strongly predictive factor with construction highest for accidents, and musculoskeletal problems associated with administrative jobs.

In their study looking at medical evacuations by helicopter from oil rigs from the Gulf Coast of the USA from 2008 to 2012, Thibodaux et al. (2012) found the following prevalence of cases: chest pain was the most frequent cause of medevac with 104 out of 397 (34 %); abdominal pain was next with 33 out of 397 cases (8,3 %); syncope followed at 25 (6,3 %), then dysrhythmia 19 (4,8 %), neurologic 16 (4,0 %), infection 13 (3,3 %), seizure 12 (3,0 %), respiratory 10 (2,5 %), and cardiac arrest 9 (2,2 %).

They list ‘occupational reasons’ to include extremity injury with 22 cases (5,5 %), multiple trauma numbered 15 (3,8 %), back injury totalled 13 (3,3 %) and head injury accounted for 13 (3,3 %) cases. Interestingly they do not list nor refer to dental problems as a reason for medical evacuation but it should be remembered that much of the routine offshore personnel transport is by boat in the Gulf of Mexico. Looking at age range of those medevaced they found that younger workers required more flights for occupational injuries than the older groups, whereas medical conditions were the most frequent in the older age ranges.<sup>(14)</sup>

A study specifically on dental problems was published in 1996 by B Duffy in which he looked at the high number of dental evacuations being experienced by one offshore operator – Shell Expro. For the years 1988 – 1994, he found that dentivacs comprised between 7,5 % and 14,6 % of total medical evacuations and that the majority were due to common dental pathology and thus preventable. He commented that the results of the study showed that the offshore workforce had a considerable amount of untreated dental disease and that the dental certificate guidelines had been applied inconsistently across industry. He recommended the uniform application of certification and promotion of dental health across the industry.<sup>(15)</sup>

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