

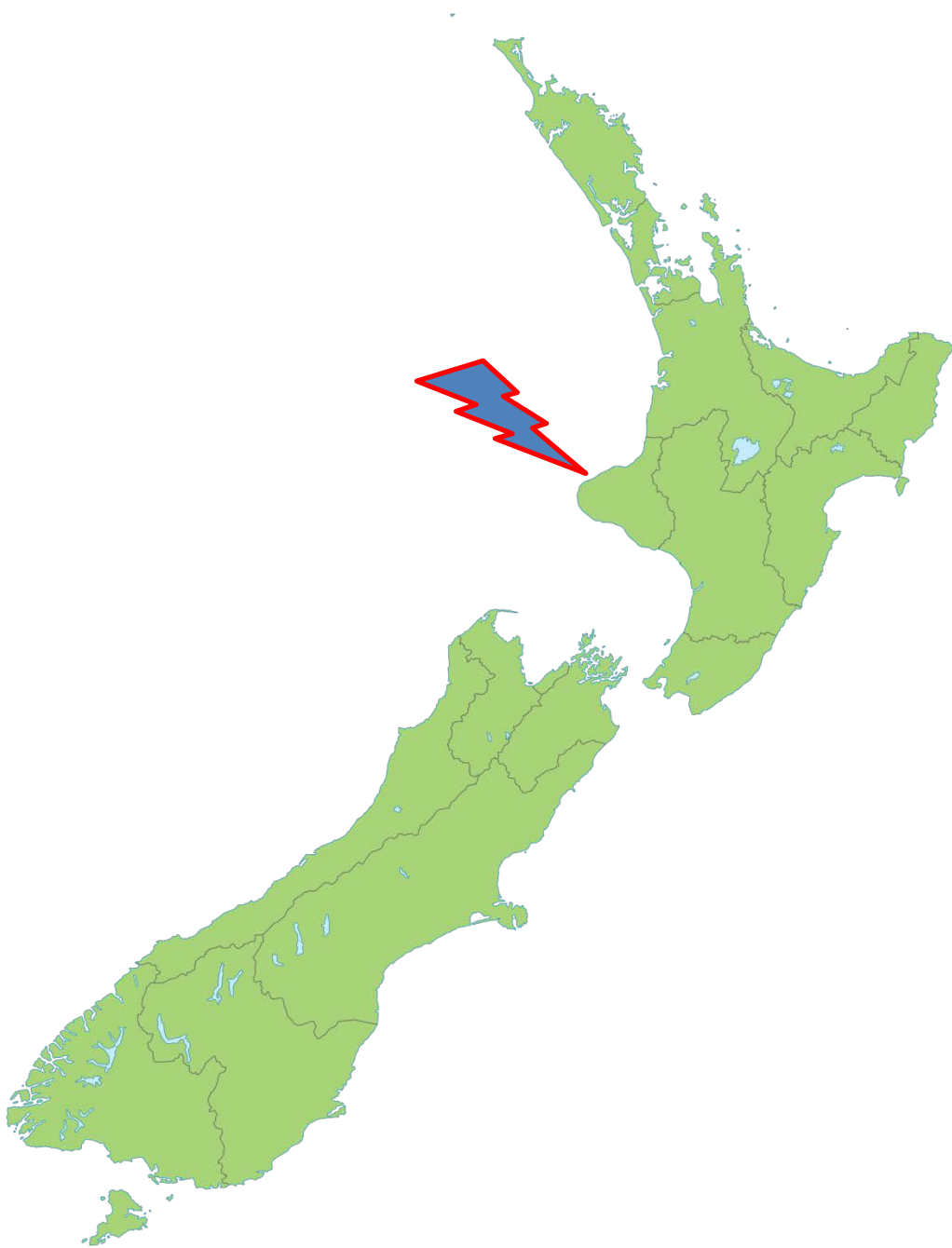
Spirometry Assessment in Offshore Oil workers

Dr Andrew McNeill

Background

Local data/research





Limited published medical literature related to off-shore oil workers (especially related to spirometry and medical surveillance)









-  High-pressure gas pipeline
-  Liquid products pipeline
-  Gas field
-  Oil field







Research question

Is lung function testing (always) required in offshore oil exploration workers fitness for work assessment?

...In other words...

Is omission of spirometry in workers, without certain respiratory risk factors, allowing people to work offshore - who might otherwise be found unfit, if spirometry was done?

Research question background

In New Zealand the United Kingdom Offshore Oil & Gas Industry Association (OGUK) provides the predominant medical assessment standard for off-shore oil rig workers.

The OGUK medical guideline states respiratory conditions causing significant disability or recurring illness should be assessed using standard spirometry measurements:

Individuals with a forced expiratory volume in 1 sec (FEV1) greater than 60% and a forced vital capacity (FVC) greater than 75% of predicted values are likely to have sufficient pulmonary reserve to meet the requirements of offshore travel and work.

Study objective

Study examines spirometry assessments performed in a single investigator centre in New Zealand with a view to confirming:

not performing spirometry on individuals

with no known respiratory symptoms or risk factors (smoking or disease)

is not allowing possibly respiratory impaired workers access to off-shore working environments.

Comparison of lung function in different (respiratory) risk groups of offshore oil exploration workers.

P

Inclusion: participants are workers having presented to Dr McNeill's occupational practice for "Fitness to Work" (FFW) assessments that include spirometry (lung function testing)

Exclusions: participants having previously been assessed for respiratory related conditions or FFW other than OGUK FFW assessment

E

Participants with history of smoking and/or respiratory disease

C

Participants withOUT history of smoking and/or respiratory disease

O

Restriction on OGUK FFW certificate (respiratory related)

T →

No time value (cross sectional study)

Methods

Spirometry assessment data was exported from the Investigators MIR WinspiroPRO database. Records from 2008 to Nov 2015. The GLI 2012 predicted normal values dataset was used.

Excluded records: persons presenting for symptom or disease assessment
persons presenting for Fitness to Work (FFW) assessment other than OGUK FFW assessment were excluded.

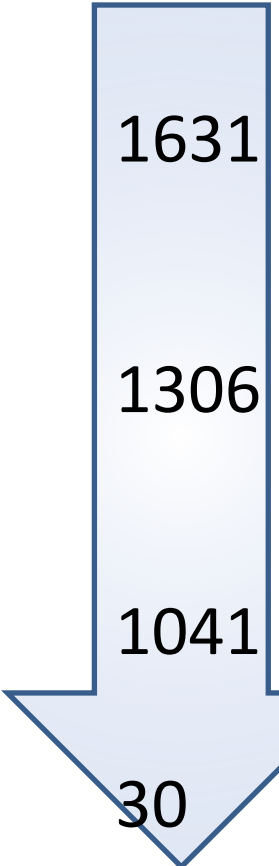
The database was filtered to include only those with reproducible Forced Expiratory Volume in 1 sec (FEV1) and/or Forced Vital Capacity (FVC) values.

Records limited to $FEV1 \leq 60\%$ and/or $FVC \leq 75\%$ (of predicted values).

Records were inspected to exclude participants who had previous or subsequent spirometry visits within normal values. The method of data extraction necessitated this step.

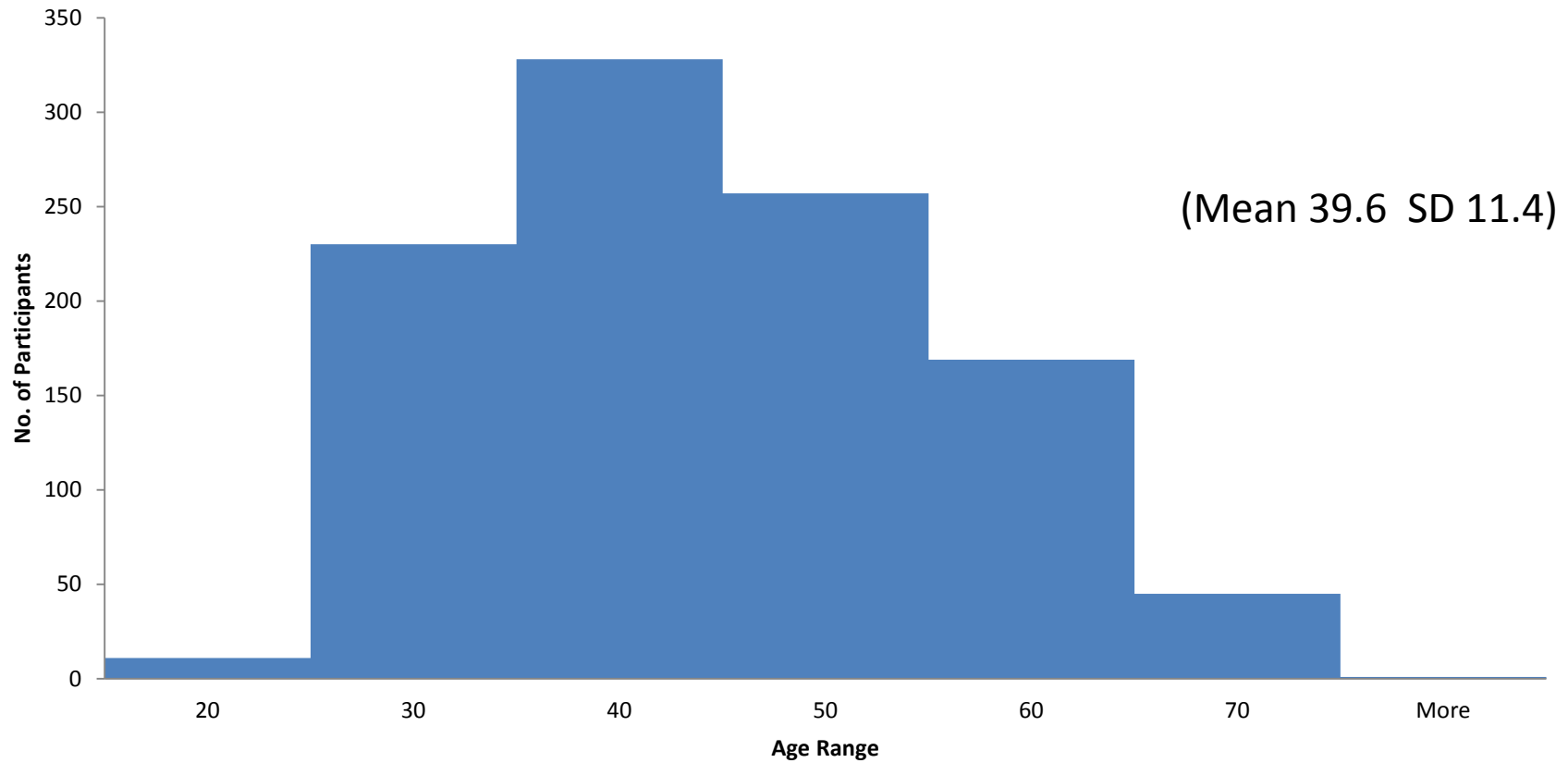
Study participants medical records in a practice management system at the Investigator site were reviewed for outcome of assessment, in particular OGUK certification restriction.

Results

- 
- 1631 Source population. Participants from study population having presented for Fitness For Work (FFW) assessment (6506 spirometry efforts)
 - 1306 Source population. Participants having presented for OGUK (UKOOA) based FFW assessments (5237 spirometry efforts)
 - 1041 Eligible population. Participants with reproducible FVC and FEV1 results (3375 spirometry efforts)
 - 30 Study participants. FEV1 < 60% and/or FVC < 75%

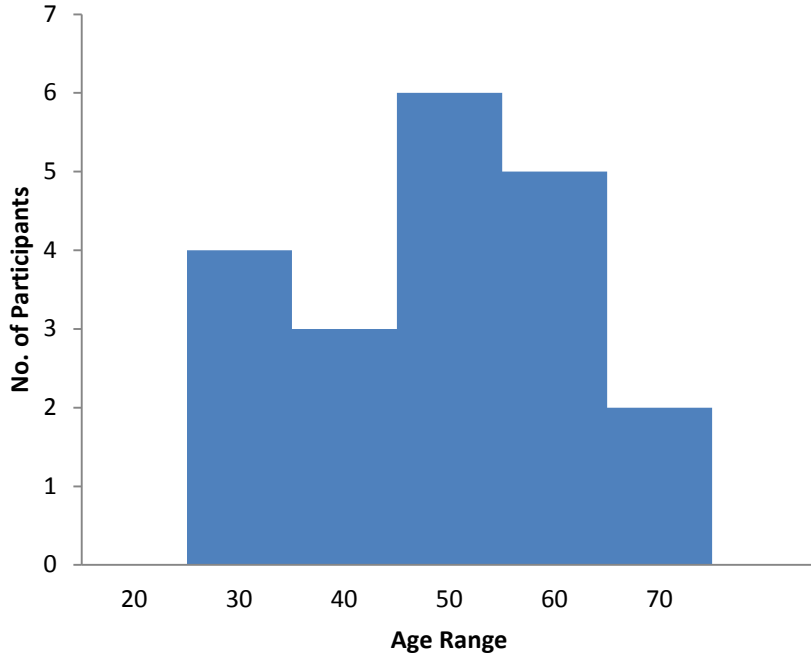
Results - continued

Eligible Participants

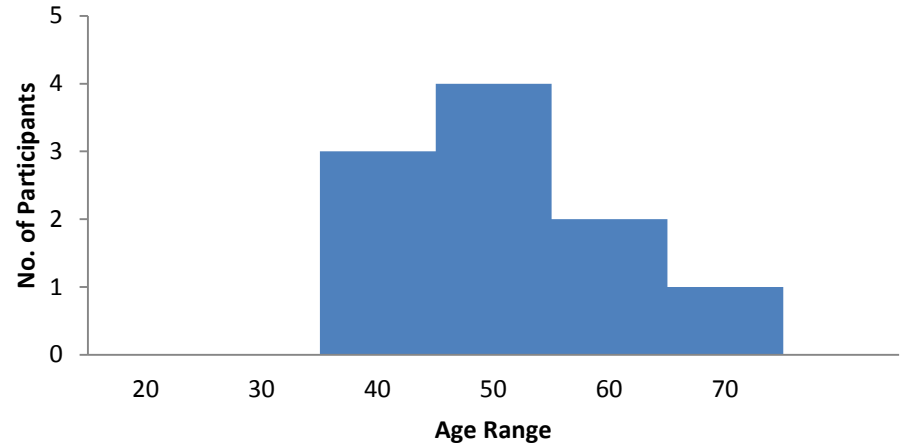


Results - continued

Age "Respiratory pos"



Age "Respiratory neg"



Study Participants: Age

Results - continued

Participant category

Outcome

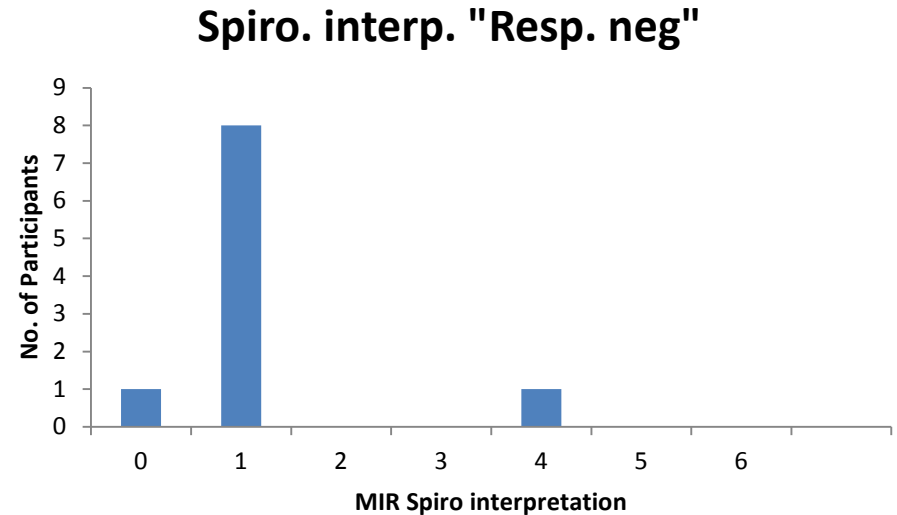
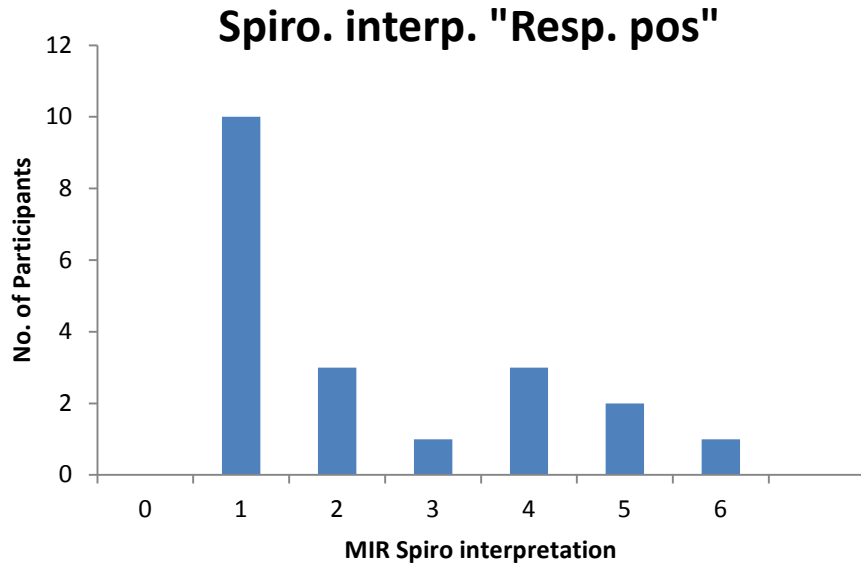
10
Respiratory negative (non smoker, no respiratory disease
Hx)

No restriction of
OGUK certification secondarily to spirometry assessment.

20
Respiratory positive (smoker and/or positive resp. Hx)

5 restricted
OGUK certification secondarily (at least partly) to
spirometry assessment abnormality.

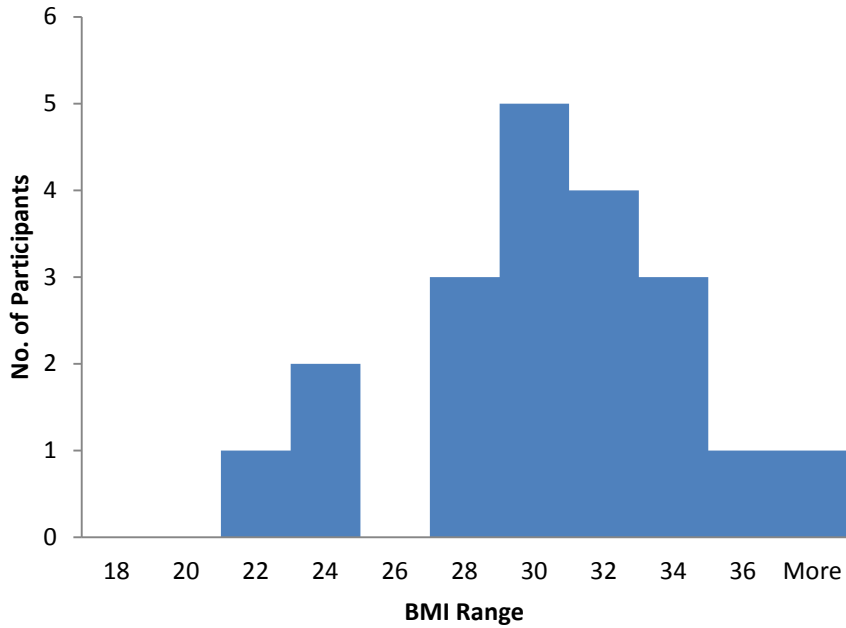
Results - continued



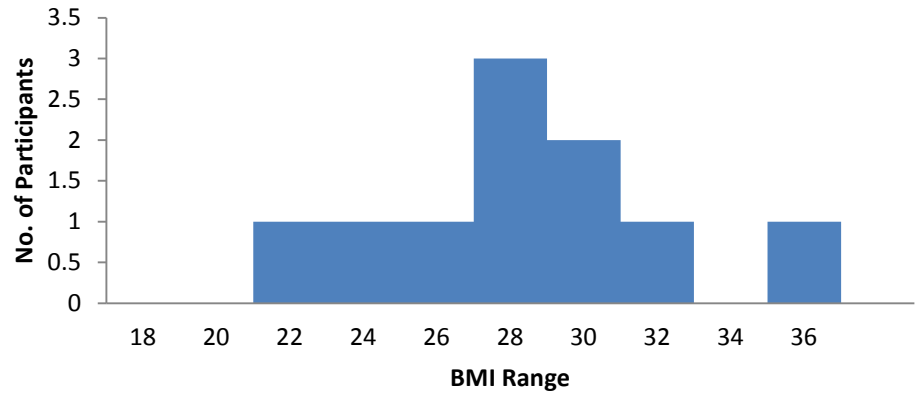
- 0 Normal Spirometry
- 1 Mild Restriction
- 2 Moderate Restriction
- 3 Mod/Severe Restriction
- 4 Obstruction with possible Restriction
- 5 Moderate/Severe Obstruction
- 6 Severe Obstruction

Results - continued

BMI "Respiratory pos"



BMI "Respiratory neg"



Study Participants Body Mass Index (BMI)

Results - continued

- 20 Respiratory positive (smoker and/or positive resp. Hx)**
- 5 restricted OGUK certification secondarily (at least partly) to spirometry assessment abnormality.**

Would I have placed restrictions on them without knowledge of the spirometry results?

Discussion

Study objective fulfilled?

“not performing spirometry on individuals, with no known respiratory symptoms or risk factors (smoking or disease), did not allow impaired workers access to offshore working environments.”

Discussion - continued

“Respiratory negative” – those without a smoking history or respiratory disease

Miss-classification related to ethnic normal values?

Occupation and occupational exposures

Possible confounding factors?

Discussion - continued

Limitations?

Single investigator site

Small no. of participants

Generalisable outside of New Zealand?

Australia?

Rest of world?

Discussion - continued

Further database use?

Study Two:

Longitudinal study

Respiratory function decline

Offshore Oil and Gas workers

Conclusions

Reassuringly, no certification restrictions applied to workers considered not “at risk” for spirometric abnormality.

Spirometry was useful in the risk assessment of Fitness to Work assessments of those with respiratory risk factors.

Questions?

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