Occupational exposure of midwives to nitrous oxide on delivery suites

In our opinion, the article “Occupational exposure of midwives to nitrous oxide on delivery suites” is in need of some remarks.

Many years ago, when $N_2O$ in urine was first evaluated, we frequently observed an uncommon concentration of $N_2O$ in urine of exposed and unexposed subjects. The phenomenon was kept under control and disappeared when urine samples were treated with a small quantity of $H_2SO_4$ (0.2 ml). For this reason, we suggested the following: “… Approximately 10 ml of urine were collected from all the subjects at the end of the exposure period in 120 ml gastight glass vials with airtight plugs. Caps were rapidly replaced in the vials to prevent any significant loss of $N_2O$. The vials contained 0.2 ml of sulfurous acid in order to avoid the in vitro production of $N_2O$ (probably due to microflora activity). “…

Another point we consider very important is that urine samples must be stored rapidly in areas known to be free of nitrous oxide, otherwise a significant contamination of samples can occur.

In conclusion, we think that among the simple precautions that should be taken to avoid significant errors (avoiding collection of urine samples in places contaminated with $N_2O$, carrying out collection rapidly, and using airtight collection vials in order to avoid any major loss of dissolved anaesthetic), one point should be emphasised in view of its importance: storage of urine before analysis can produce an endogenous formation of $N_2O$ originating from the oxidation processes of the nitrogen compounds present in biological fluids. Experiments performed to study this phenomenon have shown that the process is inhibited if the urine is kept acid. If, as a precaution, a few drops of strong acid are added to each collection vial before urine samples are collected, neof ormation of nitrous oxide will be avoided and the urine samples may then be stored as long as required prior to the analysis.

Author’s reply

Professor Imbriani and colleagues report experiments which showed that endogenous formation of $N_2O$ was inhibited if urine is kept acid. The convenience of adding 0.2 ml of sulphuric acid to vials recommends its routine use in practice and we do not disagree with this recommendation.

The likelihood that the pre-shift urine measurements which we reported arise from this phenomenon rather than other factors should be judged in the light of the following considerations:

- All pre-shift urine samples were collected in areas free of nitrous oxide.
- The period between sample collection and deposit in the vials is approximately the same for each sample. Despite this 24 midwives had zero $N_2O$ in their pre-shift samples and 22 had non-zero values, of whom 12 had very high values.
- The period between deposit in a freezer and analysis varied between samples but biological activity should not occur in the freezer.

The evidence for workplace counselling is in Medline

Henderson et al point out the increasing approval of counselling as an effective intervention to treat or prevent the effects of stress at work by British judges, although they could use expert advice on this matter. In reaction to this development, they pose the rhetorical question: where to find evidence on the effectiveness of counselling. In stead of answering this question they grasp the opportunity to criticise the report of the British Association for Counselling. I totally agree with their criticism of the report. It is of low quality and does not provide reliable evidence on the effectiveness of counselling. However, I was surprised by the fact that the authors did not present reliable evidence that does exist on the topic. The question cannot be left unanswered. We gave an answer to an almost similar question in our article on evidence based medicine. We showed the feasibility of searching for evidence in Medline for practitioners of occupational health. We elaborated an example of a teacher with symptoms of burnout who wanted to know the best treatment for his condition. Our search resulted in at least one good review and one meta-analysis. The meta-analysis by van der Klink et al firmly concludes: “stress management interventions are effective and cognitive-behavioural interventions are more effective than the other intervention types”. This is in line with the earlier findings of the review by Murphy that we found as well.

From the authors’ editorial it can be inferred that they favour interventions such as a reduction of working hours or increasing staff numbers, more than counselling. This does sound sympathetic to me as well and it is in line with the principle of hierarchy of controls, which states that primary prevention is to be preferred to, for example, personal protective equipment. However, in our case, there is not much evidence that supports such an approach. This is partly due to a lack of studies in the area of occupational interventions. The organisational intervention studies that have been done, however, do not yield a significant effect size. On the other hand, there seems to be enough evidence to conclude that cognitive behavioural interventions are effective in counterbalancing the effects of stress at work. So, even when only reliable evidence is used, there is still much to support counselling in the sense of cognitive behavioural treatment. In addition, there is a systematic review in the Cochrane Library on counselling in primary care, which concludes that it is associated with a modest improvement in short term outcome compared to “usual care” and not associated with more costs. Based on this evidence I would not simply reject counselling as ineffective.

This case illustrates that, in occupational health in general, there is a lack of awareness of the existence of evidence on effective interventions. That is the main reason why we are in the process of developing an Occupational Health Field within the Cochrane Collaboration. The Cochrane Collaboration is an international organisation, dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide. Have a look at www.cochrane.org for more details.

We hope that, in the near future, the Occupational Health Field will fulfil its promises and will simplify the finding of evidence on occupational health interventions like counselling.

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PostScript

LETTERS

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Another point we consider very important is that urine samples must be stored rapidly in areas known to be free of nitrous oxide, otherwise a significant contamination of samples can occur.

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References

Comments on article by Koh and Aw

Quoting both dictionary definitions and statutory requirements, Koh and Aw's educational article limits the definition of occupational "health surveillance" to the detection of adverse health effects resulting from occupational exposures. In doing so, they exclude international and national requirements for occupational health and medical surveillance to assess fitness for work.

Looking at the hazard of ionising radiation, international recommendations, European Directives, and UK National Legislation all identify a requirement for surveillance where the primary purpose is an assessment of the individual's fitness for work. Similarly, in considering surveillance of divers, a key element of requirements is an assessment of fitness for work. On a more general level, both in the public and in the occupational setting, systems of health surveillance exist for drivers where it is clearly nonsensical to exclude international and national requirements concerning surveillance to assess fitness for work. It is aimed primarily at employers, employees, and their representatives rather than occupational health practitioners or hazards; this is not a criticism—many occupational health practitioners will appreciate the way in which the subject of work-related stress is assiduously presented in all its complexity.

Far from being all about the practicalities of managing stress in the workplace, there are chapters which go into some detail about the nature of stress, current legislation, and the health and safety framework in the UK and, to some extent, Europe. Naturally there has to be constant reference to health and safety and employment law but also to civil and social problems, domestic difficulties, and unhealthy habits referred to by harassed middle managers. It is often a toss up to know who will "go off with stress" first. I am not sure that this book is very enlightening about how to manage those people and how to prevent the seemingly inevitable slide of such individuals into resentment, long-term sickness absence, and, eventually, Incapacity Benefit. There does, also, seem to be an emphasis on larger organisations and not much about the dynamics within small and medium sized enterprises (where most people work these days), which are different.

The book does, however, deserve to be "dipped into" because there is a wealth of descriptive material on which to build.

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doi: 10.1136/oem.2003.011551

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4 The Ionising Radiations Regulations 1999 (UK statutory instrument).

BOOK REVIEW

Tolley’s managing stress in the workplace


"Not another book about workplace stress"—emanating in this case, from the "stress industry" would be an understandable reaction. Carole Spiers, the author, unequivocally describes herself as an "occupational stress consultant" and head of the Carole Spiers Group: "International Corporate Well-being Consultants".

She faces up to the implications immediately by asking "Why indeed another book about stress? What makes it different from the others?" Well, this one is intended to be practical and user-friendly—a handbook that can sit on your shelf and act as a reference manual to be dipped into whenever required. It is aimed primarily at employers, employees, and their representatives rather than occupational health practitioners or hazards; this is not a criticism—many occupational health practitioners will appreciate the way in which the subject of work-related stress is assiduously presented in all its complexity.

Far from being all about the practicalities of managing stress in the workplace, there are chapters which go into some detail about the nature of stress, current legislation, and the health and safety framework in the UK and, to some extent, Europe. Naturally there has to be constant reference to health and safety and employment law but also to civil and social problems, domestic difficulties, and unhealthy habits referred to by harassed middle managers. It is often a toss up to know who will "go off with stress" first. I am not sure that this book is very enlightening about how to manage those people and how to prevent the seemingly inevitable slide of such individuals into resentment, long-term sickness absence, and, eventually, Incapacity Benefit. There does, also, seem to be an emphasis on larger organisations and not much about the dynamics within small and medium sized enterprises (where most people work these days), which are different.

The book does, however, deserve to be "dipped into" because there is a wealth of descriptive material on which to build.

D Snashall

NOTICE

28th ICOH International Congress on Occupational Health

The 28th ICOH International Congress on Occupational Health will be held in Milan, Italy, 11–16 June 2006. Further information: www.icoh2006.it
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doi: 10.1136/oem.2002.006239corr1

With reference to the paper “Risk of selected birth defects by maternal residence close to power lines during pregnancy” (Blaasaas KG, Tynes T, Lie RT. Occup Environ Med 2004;61:174–6), the authors state:

"The total number of births inside the specified corridor given as 128 680 in the Results was wrong. We verified, however, that only 42 223 pregnancies were completed on specific addresses inside the corridor. These 42 223 births represented the cohort from which we identified the 465 cases and selected 930 controls. This should have been specified in the paper. The error gave a wrong impression of the prevalence of defects but had no implications for the results of the paper."

Occupational exposure of midwives to nitrous oxide on delivery suites

M Imbriani, S Ghittori and L Maestri

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doi: 10.1136/oem.2003.012534

Updated information and services can be found at:
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