

# Occupational health

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**SOUTHERN AFRICA**

*Ethical guidelines  
for occupational health  
professionals: An  
Africa working group  
perspective*

*Job strain in the  
South African  
mining industry*

*The management  
of latent tuberculosis  
infection in health  
care workers at  
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**Gill Nelson,  
Editor**

## From the Editor . . .

The first paper in this issue of the Journal is a report, by London et al., of the International Commission on Occupational Health (ICOH) Africa Working Group, on the development of ethical guidelines in occupational health. This is an important topic that is of relevance to all of us who conduct (and plan to conduct) research in this arena. Leslie London is an advocate of workers' rights and has published on ethics in occupational health in the past.<sup>1-3</sup> For those of you who are interested in this topic, it is well worth reading the report on The ethics of research related to healthcare in developing countries,<sup>4</sup> written under the auspices of the Nuffield Council on Bioethics, which addresses ethical issues raised when research related to healthcare is carried out in developing countries and funded by sponsors from developed countries. This is the first paper on Issues in Occupational Health that we have published for some time, and we encourage our readers to submit similar papers, for information sharing or for debate.

The second paper discusses the negative impacts of job strain experienced by workers in the South African mining industry. Although gold mining production has decreased considerably over the last few decades, Statistics South Africa reports that 374 000 people were employed in the mining industry in the second quarter of 2013, representing 3% of total employment.<sup>5</sup> Not surprisingly, in Hodgskiss and Edwards' study, machine operators, which include rock drill operators, were classified as being in the "high strain" category. Paul Stewart from the School of Sociology, University of the Witwatersrand, recently completed his PhD on gold miners and, in August this year, his paper explaining why rock drill operators initiated the 2012 strike wave in South African mining<sup>6</sup> was published online. This fascinating paper describes the history of rock drilling and its central role in the mining labour process.

Tshitangano describes the poor state of affairs at hospitals in rural Venda with respect to issues around latent tuberculosis infection (LTBI) in health care workers. She conducted her research in seven of the eight hospitals in the Vhembe district – none of the hospitals is managing LTBI. The situation is not easy to remedy with no clear guidelines for the detection of LTBI infection in health care workers in South Africa. As stated by Lucille Blumberg, Deputy Director, National Institute for Communicable Diseases, National

Health Laboratory Service, the risk of infection in the workplace is significant, with progression to active disease in the presence of HIV co-infection, and exposure to multi-drug resistant tuberculosis, of grave concern.

On a lighter note, the MMPA, SAIOH and SASOM all report on their annual congresses in this issue, together with many photos to document the success of the events. SASOHN will be holding its conference in November at Emperor's Palace in Johannesburg. There are many other exciting events planned for the months ahead. Please refer to the Upcoming events page for details.

I am smiling, as summer has come to Gauteng, although it appears to be slow in reaching the Cape. Andrew and I wish all students good luck for their exams as the year starts to draw to a close.

### DID YOU KNOW?

Tuberculosis, also known as lupus vulgaris (tuberculosis of the skin), Pott's disease (tuberculous spondylitis), or consumption (pulmonary tuberculosis), caused around 20% of deaths in 17th-century London and 30% in 19th-century Paris; and has killed more people than leprosy (the 'black death'), or HIV. Approximately 1 billion people, globally, have died from tuberculosis in the past two centuries.<sup>7</sup>

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11	Polokwane	Limpopo
12	Tzaneen	Limpopo
13	Phalaborwa	Limpopo
14	Makhado	Limpopo
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17	Durban Central	KwaZulu-Natal
18	Pietermaritzburg	KwaZulu-Natal
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20	Bloemfontein	Free State
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# Upcoming events

## LOCAL MEETINGS

DATE	MEETING	TOPIC	PLACE	MORE INFORMATION
6–8 November 2013	SASOHN Annual Conference	EISH – Environment, Industry, Safety and Health	Emperors Palace, Johannesburg	Website: <a href="http://www.sasohn.co.za">www.sasohn.co.za</a>
9 November 2013	SASOM Namibia Branch Congress	Aspects of Occupational Health and Safety in Namibia	NICE, 2 Mozart Street, Windhoek	Jenny Acutt E-mail: <a href="mailto:info@sasom.org">info@sasom.org</a> Tel: +27 (0)12 803 7418
16 November 2013	MMPA Academic meeting	Medical inspections in the mining industry: expectations and challenges and aspects of managing medical incapacity	Lonmin, Marikana	Elaine Govender E-mail: <a href="mailto:elaineg@mpas.org.za">elaineg@mpas.org.za</a> Website: <a href="http://www.mmpa.org.za">www.mmpa.org.za</a>
22 November 2013	SASOM AGM and Annual Conference	Occupational Medicine	Kelway Hotel, Humewood, Port Elizabeth	Jenny Acutt E-mail: <a href="mailto:info@sasom.org">info@sasom.org</a> Tel: +27 (0)12 803 7418
25 January 2014	MMPA Academic meeting	To be finalized	Kimberley	Elaine Govender E-mail: <a href="mailto:elaineg@mpas.org.za">elaineg@mpas.org.za</a> Website: <a href="http://www.mmpa.org.za">www.mmpa.org.za</a>
21–24 October 2014	12th International Mesothelioma Interest Group Conference	The ongoing quest for cure	Cape Town International Conference Centre	Website: <a href="http://imig2014.org/">http://imig2014.org/</a>
30 October – 1 November 2014	SAIOH Annual Conference	Occupational Hygiene: Beyond dust and noise	North-West University, Potchefstroom campus	Johan du Plessis E-mail: <a href="mailto:Johan.DuPlessis@nwu.ac.za">Johan.DuPlessis@nwu.ac.za</a> Tel: +27 (0)18 299 1053

## HEALTH AWARENESS DAYS, WEEKS AND MONTHS

### OCTOBER 2013

Breast Cancer Awareness Month, Mental Health Awareness Month  
 9–15 National Nutrition Week  
 15–19 National Obesity Week  
 17 World Trauma Day,  
 17 International Day for the Eradication of Poverty  
 29 World Stroke Day

### NOVEMBER 2013

8 SADC Malaria Day  
 14 World Diabetes Day  
 25 International Day for the Elimination of Violence against Women

### DECEMBER 2013

Prevention of Injuries Month  
 1 World AIDS Day  
 3 International Day of Persons with Disability  
 10 International Human Rights Day

## INTERNATIONAL MEETINGS

DATE	PLACE	MEETING	MORE INFORMATION
28–31 October 2013	Rotterdam, The Netherlands	5th International Conference on the History of Occupational and Environmental Health	E-mail: <a href="mailto:info@ICOH2013-history.org">info@ICOH2013-history.org</a> Website: <a href="http://www.ich2013-history.org/index.php?id=27">http://www.ich2013-history.org/index.php?id=27</a>
4–8 November 2013	Sauipe Park, Bahia State, Brazil	21st International Symposium on Shiftwork and Working Time	E-mail: <a href="mailto:shiftwork2013@usp.br">shiftwork2013@usp.br</a> Website: <a href="http://www.fsp.usp.br/shiftwork2013">http://www.fsp.usp.br/shiftwork2013</a>
26 November 2013	London, UK	Innovation and Developments in the Role of Healthcare Support Workers	E-mail: <a href="mailto:bookings@mkupdate.co.uk">bookings@mkupdate.co.uk</a>
1–6 June 2014	Castellaneta Marina, Taranto, Italy	DUST 2014: International Conference on Atmospheric Dust	Website: <a href="http://www.dust2014.org">www.dust2014.org</a>
12–14 June 2014	Nairobi, Kenya	SASOM and the ARAOH Congress	Jenny Acutt E-mail: <a href="mailto:info@sasom.org">info@sasom.org</a> Tel: +27 (0)12 803 7418

# Ethical guidelines for occupational health professionals: An Africa Working Group perspective



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## ABSTRACT

The need for ethical guidelines in occupational health is widely recognised as key to good occupational health practice. Efforts by the International Commission on Occupational Health (ICOH) to update its Ethical Code led to the establishment of a Code Review Group (CRG) to which was affiliated an Africa Working Group to develop input to the ICOH Code revision process from an African perspective. The work of the group, over the past three years, has identified a number of key challenges for ethical occupational health practice in the region. This report summarises the trajectory of the groups' discussions and identifies areas for further action if occupational health practice in Africa is to deliver on its promise of protecting and promoting the health of working populations across the globe.

*Keywords:* ethics, professionalism, codes, Africa, global health

## BACKGROUND

Attention to questions of professional ethics is increasing among occupational health professionals worldwide. The growth of national and international guidelines and standards aimed at maximising the ethical behaviour of health professionals generally has also extended to addressing the particular health challenges facing health professionals in the occupational health setting. In some nations, primarily in the South and Latin Americas, existing professional occupational health codes have been integrated into national legislations, thereby providing them a new and different context and formal legal status.

Additionally, it has been argued that there has been a changing moral landscape that has propelled many categories of occupational health professionals into engagement with ethical questions and to seek ways to build up ethical competence for tasks in the labour

market.<sup>1</sup> Whereas globalisation has resulted in many serious threats to the health of working populations, it has also ushered in an unprecedented opportunity for harmonising ethical and human rights standards upwards to protect workers' health and the health of their communities.<sup>2</sup>

## THE ICOH ETHICAL CODE

The International Commission on Occupational Health (ICOH) is an international non-governmental professional society that aims to foster the scientific progress, knowledge and development of occupational health and safety in all its aspects. Founded in 1906, it is regarded as the world's leading international scientific society in the field of occupational health with a membership of over 2000 professionals from 93 countries. The ICOH Ethical Code was first developed in 1992 and has since been reviewed once, leading to the adoption of a revised edition of the Code in

2002. The Code plays an important role in establishing a benchmark for ethical conduct of occupational health professionals, particularly in developing countries, where national regulations or legislative frameworks are weak or absent. It currently lacks a developed articulation with the main ethical codes in research, a weakness identified by the ICOH Board in considering a review of the Code.

In 2009, ICOH began its most recent iteration of reconsidering the Code with a view to updating the Code by commissioning the Working Committee on Ethics and Transparency of the Board, chaired by Peter Westerholm, to carry out the task. The Committee became designated as the ICOH Board "Code Review Group" (CRG) and was strengthened through co-option of other ICOH office-bearers and by establishing contacts with health professional networks in regions of South and Latin Americas, Africa and Asia. The aims of the review were to strengthen the character of ethical guidelines and the practical usability of the Code; to address problems of interpretation of the Code; to revisit the ethical values as presently in the Code (emphasising the concept of professional independence); to expand the Code's applicability to the occupational health research realm; to enhance the value of the Code for training of occupational health professionals; and to increase the relevance of the Code to working populations from the most vulnerable settings across the globe. A task group for region Africa was constituted in May 2010 and affiliated to the CRG to address ethical issues related to the social context on the African continent. The revision of the ICOH International Code of Ethics is envisaged to be finalised during 2014.

### **The Africa Working Group**

As part of incorporating perspectives that normally would not find voice in a global organisation, the Africa Working Group adopted the following Terms of Reference: (i) examine the relevance of the ethical principles of Doing Good, Harm Avoidance, Autonomy and Justice in an African context; (ii) identify factors particular to the region pertinent to revising the Code; and (iii) produce a discussion document proposing revisions to the Code. The workgroup was characterised by diversity of membership in terms of disciplinary background (two occupational health specialists, a bioethicist, a legal academic, a psychologist and a molecular biologist), country distribution (South Africa, Cameroon, Zimbabwean in Botswana, Zimbabwe, Nigerian in the UK) and institutional bases (five universities in Africa and Europe and a research institution in Zimbabwe). The group met frequently by phone conference and used e-mail for reviews and discussions of drafts. The group identified issues of concern

in an African context, and generated comments on the Code, providing input to the ongoing ICOH process. The group has been recognised by the ICOH Board as a most active body during the Code review process, generating and providing significant inputs of review material to the ICOH Board.

At the triennial ICOH Congress held in Cancun, Mexico, in March 2012, two presentations were given, arising from this work. The first was a keynote address by Professor Godfrey Tangwa on fundamental principles of bioethics – presenting a perspective based on experience and work in Africa; the second was a special symposium on the revision of the Code at which perspectives from Africa, Asia and Latin America were aired.

Some of the key ethical issues identified in the Africa Working Group discussions at that point related to the questions of diversity, language, stigma and power in the workplace, and the place of autonomy in negotiating consent in non-'Western' settings. Additionally, two factors were highlighted as impacting on ethical practice in occupational health in the African context: the consequences of globalisation for occupational health and the weak distinction between workplace and domestic exposures in many communities in Africa. In general, settings with weak regulatory infrastructure rely heavily on professional codes for guidance; hence, ensuring that the ICOH Ethical Code captures key concerns for the African context is paramount.

The Cancun symposium discussion was well received within ICOH and this led the Workgroup to convene a follow-up as a pre-conference workshop at the 12th International Conference on Neurobehavioural Methods and Effects in Occupational and Environmental Health held in Cape Town, on 23 March 2013. The objectives of this workshop were to share the work of the Africa Working Group and to deepen discussion about the key ethical complexities raised in the Working Group's preliminary engagement. More broadly, the raising of ethical issues at the neurobehavioral meeting aimed to promote a multidisciplinary perspective on ethical issues in occupational health and to raise general awareness about ethical complexities in occupational health practice.

Although only three of the six Africa Working Group participants were able to attend the workshop, this was supplemented by the participation of the organiser of the Workgroup inputs from the ICOH Board, Peter Westerholm, from Sweden. There were thus four formal presentations to the workshop (Peter Westerholm, Godfrey Tangwa, Reginald Matchaba-Hove and Leslie London). An additional six non-Working Group participants were present for the discussions.

The discussion amongst the participants raised a set of important challenges facing the development of occupational health ethics in Africa. Firstly, academic developments in Africa with respect to ethics teaching in occupational health have not kept pace with global developments in guidelines, codes and conventions, and wider understandings of the importance of ethics in practice. Secondly, when considering how best to change practitioner behaviours, acting from 'moral conviction' would be preferable to acting on the basis of fear of legal sanction. Approaches that are more respectful of autonomy are more likely to lead to sustainable behaviour change. Thirdly, although law may tend to be confined within country jurisdiction, it may be the case that laws apply beyond national boundaries indirectly – witness the way US law shapes research ethics practice in developing countries. Thus, in general, we should expect guidelines to precede law or regulation.

An empirical question also emerged which begs research – how effective are guidelines in the absence of law? If one compares the experience of Ghana and Sudan (where there are putatively effective guidelines) to that of Uganda and Malawi (where there are unsuccessful attempts to introduce ethical standards in law), this might generate a better understanding of the reach and limits of law in comparison to ethical guidelines. Lastly, the concept of an Africa Code of Ethics, analogous to the African Charter on Human and People's Rights, may be a unifying rubric under which to organise the discussion. Similarly, the concept of harmony/ubuntu may be a unifying conceptual theme and intellectual contribution to advancing understanding of ethics in occupational health in an African context.

The workshop ended with a number of calls for action. Besides providing input to the process of the ICOH Code amendment, there are many opportunities for occupational health professionals in Africa to take the initiative. The need for ethical issues to be placed on the occupational health agenda with colleagues in the ILO, the AU, SADC and WHO-Afro was highlighted. Our teaching institutions need to be urged to expand their ethics teaching in occupational health to include teaching cases of real-life ethical questions such as those developed in the course of a project. Professional associations also need to be open to taking on this responsibility. If occupational health practice in Africa is to deliver on its promise of protecting and promoting the health of working populations, ethics needs to play a more distinctive role in occupational health practice. At the same time, international institutions, such as the ICOH, have much to learn from the grassroots experiences of occupational health professionals in

regions such as Africa, who are daily engaged in finding ways to address occupational health challenges in local and regional perspectives.

#### FUNDING SUPPORT

The Wellcome Trust provided support for the workshop held in March 2013 at which this work was finalised.

#### CONFLICT OF INTEREST

The authors declare they have no financial conflict of interest in the work published here. Three of the authors (LL, PW and RMH) are members of ICOH and PW is an ICOH office bearer.

#### AUTHORSHIP

All the authors contributed to the conceptualisation, drafting and editing of this manuscript and have approved its final text.

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# Job strain in the South African mining industry

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## ABSTRACT

The aim of this study was to assess which occupational and demographic groups have the highest risk of the negative impacts of workplace strain in the South African mining industry. Mineworkers (n=173) from various commodities completed a demographic questionnaire and an 18-item version of the Job Content Questionnaire. Occupational categories were plotted on a job strain risk matrix, and associations of job strain with race, transport type, housing type and highest level of education were also made. The “high strain” job quadrant contained equipment operators, “active” jobs included artisans and supervisors or team leaders, “passive” jobs included general mineworkers, and “low strain” jobs included artisan aids. Demographic variables relating to higher socio-economic status clustered in the active quadrant, while those relating to lower socio-economic status clustered in the passive quadrant. Preliminary indications of job strain risk provide directions for potential areas for intervention and culture transformation in the mining workplace.

**Keywords:** control, demands, occupation, socio-economic status, stress

## INTRODUCTION

The term “stress” is used to describe a state of disrupted homeostasis and may be defined as an imbalance between the demands placed on an individual and the resources that the person has for coping with these demands.<sup>1,2</sup> Stress is seen to have an impact on one’s mental health, physical health, social relations and economic performance.<sup>1</sup> Job stress has been recognised as a risk factor for health outcomes such as coronary heart disease, high blood pressure, type 2 diabetes, metabolic syndrome, depression, anxiety, burnout and musculoskeletal disorders, and is also related to

increased absenteeism, staff turnover, medical bills, compensation costs and work accidents, as well as reduced productivity.<sup>3-8</sup> “Strain” refers to the negative effects of stressful events, and may include psychological strains or physical and biological strains.<sup>9</sup>

The demand-control model of job strain published by Karasek et al. in 1998<sup>5</sup> remains relevant to the current workplace. This model predicts that the most adverse reactions of psychological strain occur when psychological demands are high while the worker’s decision latitude (control) is low, and low levels of social support increase this risk. High demands and high control (the “active” category) are seen to predict motivation, new learning behaviours, and coping pattern development, and thus could be termed “good stress”. This is seen in employees with various high-prestige occupations, such as public officials, engineers, and managers of all kinds. In contrast, conditions of low demands coupled with low control (the “passive” category) are associated with unmotivated job settings, leading to the gradual loss of previously acquired skills. Employees in positions associated with this sector include mine workers, clerical workers, and low-status service personnel, such as janitors. The “high strain” sector, namely those with high demands and low levels of control, includes machine-paced operatives, such as assemblers and freight handlers, as well as other low-status service operatives, such as waiters. “Low strain” occupations have low demands and high control, and include repairmen, linemen, and natural scientists,



and often involve significant training and self-pacing.<sup>5</sup>

Workplace stress and job strain have not been widely studied in the South African mining industry. We hypothesised that an interaction between the harsh working conditions in South African mines (as a result of environmental hazards, such as noise, heat, dust, physical work, as well as long working hours and high pressure to perform), job types (where production demands and high safety demands result in low levels of control), and organisational structures that result in low levels of social support (due to the strict hierarchical structures), could result in job stress and strain that could negatively influence the health and productivity of mineworkers.<sup>10</sup> The diversity of the educational and socio-economic levels among South African mineworkers could also be factors that influence job strain.<sup>11</sup> The current emphasis on culture transformation in the mining industry could potentially be informed by the results of an investigation of effects of demand and control on the job types in the industry.<sup>12</sup> Similarly, targeted intervention strategies, based on the results, could benefit the industry in terms of increased worker health and safety, lower rates of absenteeism, fewer compensation claims, and increased productivity.

The objectives of this study were to identify the occupational groups with the highest risk of the negative impacts of stress, and to examine other factors associated with levels of strain.

## METHODS

### Study sample

This study formed part of a larger study assessing workplace stress in the South African mining context.<sup>13</sup> This was a cross-sectional field-based study, and data collection took place in 2010 and 2011. A convenience sample of 173 volunteer mine workers from four different mining workplaces in South Africa was obtained.

### Ethical considerations

This research was approved by the Council for Scientific and Industrial Research (CSIR) Research Ethics Committee (Reference number: 22/2011). Informed consent was obtained from those participating in the research.

### Data collection


Information was gathered using a demographic questionnaire and the Job Content Questionnaire (JCQ).<sup>14</sup> These questionnaires were available in English, Afrikaans and Sesotho. Researchers were available to assist with the completion and understanding of questions, where language and educational levels prevented self-completion of the questionnaires.

Demographic information gathered included gender, age, length of service, position at work (occupation), race, housing type, mode of transport to work, and highest level of education attained. The variables of race, mode of transport, housing type, and highest level of

**“Relationships were seen between the worker- and lifestyle-related variables of race, housing type, transport type, and highest level of education attained and job strain categories.”**

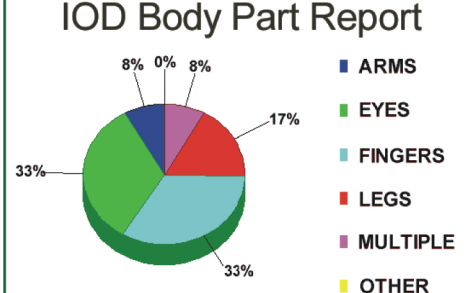
education attained were used as indicators of socio-economic status of individuals.

A shortened, 18-item version of the JCQ was used for job strain data collection.<sup>15</sup> The JCQ is based on the demand-control model of job strain. It is a self-report questionnaire that was designed to assess the psychosocial characteristics of jobs. The JCQ has been translated into numerous languages, has been standardised by occupation in several countries.<sup>5</sup> Despite cultural and economic differences between developed nations and



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developing country contexts, the JCQ has been found to have good global performance.<sup>16</sup> Evidence supporting the psychometric properties of the questionnaire, such as internal consistency, factorial validity, discriminant validity, test-retest reliability within occupational codes, convergent validity, and internal consistency of the scales, has been reported.<sup>17-19</sup>

The subscales of this questionnaire were: decision latitude, psychological demands, physical demands, social support, and noise in the workplace. "Decision latitude" refers to the level of control the worker has over job performance and is measured by two sub-dimensions: skill discretion and decision authority. These subsections of the questionnaire assess the level of skill, creativity, and flexibility afforded by the job, and workers' opportunities to make decisions regarding the work performed.<sup>14,17</sup> "Psychological demand" refers to the quantity of work, along with its mental requirements and time constraints.<sup>17</sup> The relationship between the control and demand scores provides an indication of the level of job strain experienced, according to the demand-control hypothesis. Social support, physical demands, and noise levels further mediate these responses.

### Data analysis

Each item in the JCQ was rated on a four-point Likert scale that ranged from "strongly disagree" to "strongly agree". The questionnaire was scored according to the user's guide of the JCQ.<sup>14</sup> Means and standard deviations of scores were obtained.

Owing to the large variations in the self-reported occupation names and the small numbers of participants in

**Table 1. Mean values and standard deviations (SD) of scales of the JCQ for the study sample (n=173)**

Subscale	Range	Mean	SD
Skill discretion	12-48	35.0	4.8
Decision authority	12-48	33.3	6.9
Decision latitude	24-96	68.3	9.0
Psychological demands	12-48	32.7	6.4
Physical demands	1-4	3.1	0.8
Social support	2-8	5.2	1.4
Noise	1-4	3.1	0.9

some groups, it was necessary to group the occupations according to the researchers' knowledge of the similarities in the content of mining occupations to facilitate the analysis. Some occupations were better represented in analyses than others, and occupations with fewer than three responses were excluded from the risk matrix, resulting in a sample of 161 for this analysis.

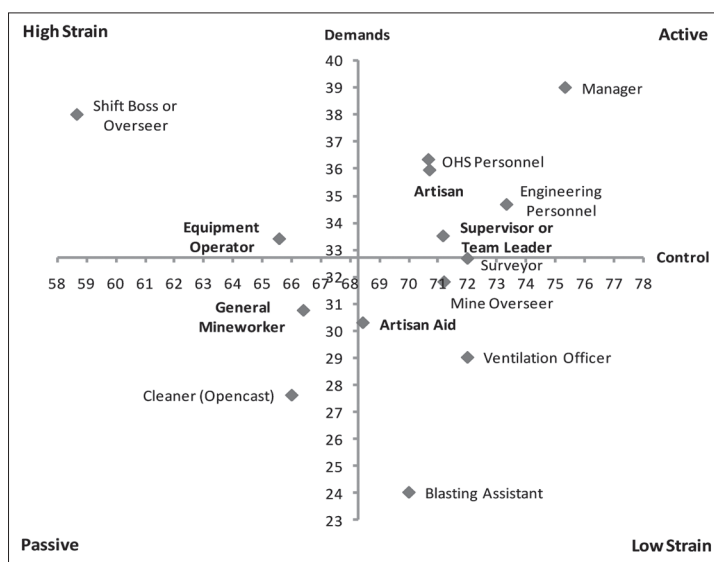
Using the mean decision latitude (control) and psychological demand (demand) scores for the whole study population, the results were classified for the occupations and the socio-economic variables into the four quadrants: "high strain" (high demands and low control), "low strain" (low demands and high control), "active" (high demands and high control), and "passive" (low demands and low control).

### RESULTS

The sample included workers employed in various occupations from platinum (n = 110; 64%), diamond (n = 40; 23%), and gold mines (n = 23; 13%), included day and night shift workers, and workers with various demographic characteristics. The majority of the sample (n = 146; 84%) was male, while 16% (n = 27) were female. The average age of the sample was 35 (±9) years, and the average length of service was 8 (±8) years.

The average results of the JCQ scales for this study are listed in Table 1. In terms of job strain categories, 23% of the study sample was categorised in the "high strain" category, 25% in the "low strain" category, 25% in the "active" category, and 27% in the "passive" category.

Analyses were performed to see which occupational groups were categorised in each of these four job strain quadrants, according to the mean scores for these groups (see Figure 1). The "active" quadrant contained the positions of manager (n=3), supervisor or team leader (n=24), engineering personnel (n=3), occupational health and safety (OHS) personnel (n=9), and artisan (n=17). General mine workers (n=35) and cleaners (n=5) fell into the "passive" quadrant. Artisan aids (n=14), surveyors (n=3), mine overseers (n=5), ventilation officers (n=4), and blasting assistants (n=3) fell into the "low strain" quadrant, while equipment operators (n=33) and shift



**Figure 1. Occupation classifications according to the four categories of the JCQ (occupations in bold indicate the most represented groups) (n=161)**

bosses or shift overseers (n=3) fell into the “high strain” quadrant.

Further classifications on this risk matrix were made, based on the socio-economic indicators. Relationships were seen between the worker- and lifestyle-related variables of race, housing type, transport type, and highest level of education attained and job strain categories (see Figures 2a-d). With regard to race, white (n=54) and coloured (n=13) participants scored in the “active” quadrant, while those who were black (n=106) scored in the “passive” quadrant, according to self-reported control and demand scores. In terms of housing type, those with built formal houses (n=122) were associated with the “active” quadrant, hostels (n=7) and flats (n=18) were associated with the “low strain” quadrant, and informal housing (n=24) with the “passive” quadrant.

For transport type, private vehicles (n=75) were associated with those in the “active” quadrant, staff buses (n=35) with the “high strain” quadrant, public transport (n=46) with the “passive” quadrant, and walking (n=16) with the “low strain” quadrant. Regarding educational levels, it was found that those participants with some form of tertiary education (n=25), and those who had completed high school (Grade 12) (n=84) fell into the “active quadrant”, those with some high school education (n=42) fell into the “low strain” quadrant, and those with primary schooling (Grade 7 or lower; n=19) were in the “passive” quadrant, according to average control and demand scores for each group.

## DISCUSSION

Means of various studies, using scales of the JCQ on more than 10 000 males and more than 6 000 females are reported by Karasek et al.<sup>5</sup> These include studies undertaken in the United States, Canada, Japan, and the Netherlands, on both white- and blue-collar workers. When the norm results from these international studies were compared to results obtained in the current study, the physical demands in the South African mining industry were higher than those of the international norms, which would likely reflect the physical nature of mining work compared to other occupations. The noise and social support scales used in the current study differed from those used in prior studies and, as such, comparisons are not possible.

Within the South African mining industry, the results indicate that job categories that have either supervisory or management roles, and those that have creative aspects to the jobs (e.g. artisans) tended to be grouped in the “active” control and demand category. This finding was expected, as engineers and those in management positions are generally categorised in this quadrant.<sup>5</sup> General mine workers and cleaners in the South African

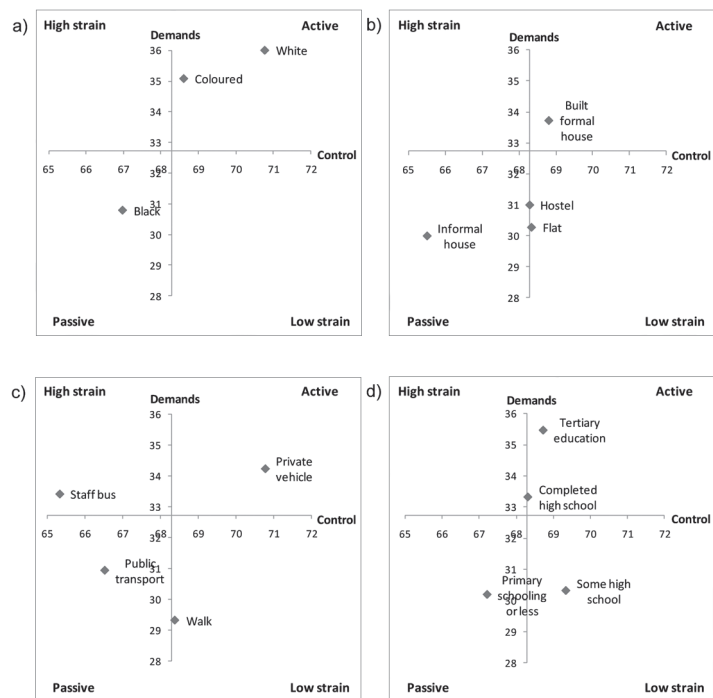


Figure 2. Associations of demographic variables with job strain categories: a) race; b) housing type; c) transport used to get to work; and d) highest level of education attained (n=173)

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mines were placed in the “passive” category, which supported international findings.<sup>5</sup> Similarly, the “high strain” category findings followed international trends and included equipment operators. The “low strain” category contained artisan aids, which could be due to the higher level of skill required in this position, with lower demands associated with assistant positions.

The job strain classifications of race, housing, transport and education groups were viewed as a whole, as an indication of socio-economic status. The “active” job strain quadrant included the white and coloured race groups, those with built formal houses, private vehicles, and those who had completed high school or received some form of tertiary education. Each of these aspects is associated with higher socio-economic status in South Africa. Conversely, the “passive” quadrant contained black Africans, informal housing dwellers, public transport users, and individuals with primary schooling. These aspects are associated with previously disadvantaged groups. The “high strain” quadrant contained only those using a staff bus. The “low strain” quadrant comprised those living in hostels and flats, and those with some high school education. This could be due to the nature of the work performed by these participants, and could also relate to differences in the location and facilities, such as housing, transport and schooling, available at different workplaces, for which different job characteristics are evident.

Socio-economic status was, therefore, seen to be generally related to the job strain category, as those in higher socio-economic groups tended to be in more “active” job categories, as opposed to the “passive” job categories of lower socio-economic groups. Socio-economic disparities, such as those relating to race, housing and transport, are evident in South Africa as a residual effect of apartheid. These differences extend into the educational and occupational spheres, and could be the reason for associations with job strain categories. Park et al.<sup>11</sup> similarly found that individuals with low personal incomes and those with lower levels of education were more likely to have “high strain” or “passive” jobs than those with high personal incomes and those with higher levels of education, who were more likely to have “low strain” or “active” jobs.

Those in the “active” job strain quadrant – including engineers, management, and those with higher socio-economic status – are exposed to conditions of “good stress” as, while high demands are experienced, high levels of control help to buffer the negative effects of these demands and increase motivation.<sup>5</sup> The “passive” job strain category – which includes general mine workers and lower socio-economic groups – is associated with low motivation and a gradual loss of acquired skills. Workers in the “high strain” quadrant – which include equipment operators – are seen to be at the highest risk of

experiencing adverse reactions due to workplace stress, while the converse is true for the “low strain” group.

### CONCLUSIONS AND RECOMMENDATIONS

There is potential for intervention strategies to reduce the risk of job strain. These strategies could include the reduction in both physical and psychological job demands, an increase in the level of control the worker has over the way the job is performed, a reduction in the noise levels experienced on the job, and an increase in the support received by management or co-workers. Considerations regarding the equipment used, work organisation, and training are necessary to reduce job strain. Levels of control that workers have could be increased through skills development, while psychological demands can be reduced by monitoring production expectations. These interventions should be prioritised according to the risk groups identified, and should be viewed holistically. Social interventions could include improved education, and housing and living conditions. Efforts to improve the living conditions and quality of life, such as those outlined in the Mining Charter<sup>12</sup> will result in a culture transformation that will help reduce job strain in the mining industry.

A variety of factors should be considered when assessing job strain and designing job strain prevention programmes. However, while it is more difficult to design interventions relating to extra-professional factors, it is possible to create a work environment that improves the workplace. A reduction in job strain in the workplace will result in better health and well-being of employees, as well as improved work performance, reduced absenteeism, and fewer incidents and accidents.

#### LESSONS LEARNED

- The use of job strain matrices can help to identify groups at high risk of job strain.
- There is an association of job strain categories with different occupations.
- Job strain categories are associated with indicators of socio-economic status.

### ACKNOWLEDGEMENTS

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### COMPETING INTERESTS

The authors declare that there are no financial or personal relationships which may have inappropriately influenced the writing of this paper.

“Those in the ‘active’ job strain quadrant . . . are exposed to conditions of ‘good stress’ as, while high demands are experienced, high levels of control help to buffer the negative effects of these demands and increase motivation.”

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# The management of latent tuberculosis infection in health care workers at hospitals in Vhembe district

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## ABSTRACT

Tuberculosis is a major occupational hazard in low and middle-income countries. Health care workers (HCWs) are frequently exposed to infectious tuberculous patients and are likely to develop latent tuberculosis infection (LTBI). This study investigated practices of managing LTBI in HCWs at hospitals in rural Venda. A qualitative approach, using a cross-sectional descriptive phenomenology design was adopted to study 57 focus group participants comprised of various categories of HCWs who were purposively selected from seven hospitals in Vhembe district. LTBI screening by HCWs in these hospitals was not accessible, primarily due to costs. Prophylaxis TB treatment was not given to HCWs exposed to infectious tuberculous patients. The tests performed to diagnose LTBI in HCWs at these hospitals were those performed to diagnose active TB disease. There is a lack of clear guidelines for the detection of LTBI in HCWs in South Africa, which had led to hospitals in the Vhembe district failing to apply appropriate practices. A call is hereby made to the South African National Department of Health for clarity on practices for the detection of LTBI.

**Keywords:** latent tuberculosis infection, tuberculin skin test, prophylaxis, tuberculosis screening

## INTRODUCTION

Tuberculosis (TB) is a major occupational hazard in low and middle-income countries.<sup>1</sup> Health care workers (HCWs) are frequently exposed to infectious tuberculous patients and are likely to develop latent tuberculosis infection (LTBI).<sup>2</sup> LTBI is a condition in which the body is able to fight the TB bacteria and prevent the development of active TB disease. The bacteria then become inactive but remain alive in the body.<sup>3</sup> Most people who have this form of TB never go on to develop active TB.<sup>3</sup>

Lee et al.<sup>4</sup> emphasise that the prevalence of LTBI appears to be higher in HCWs with a high risk of exposure in TB-related departments compared to those with a low risk of exposure. Surveillance for TB disease and LTBI among staff may provide data useful for TB control practices.<sup>5</sup>

Horsburg<sup>6</sup> emphasises the importance of LTBI screening, stating that identification and treatment of LTBI greatly reduces the likelihood of reactivation and has a potential to protect the health of individuals, as well as the public, by reducing the number of potential sources of infection. Similarly, Catanzaro<sup>7</sup> points out that tuberculin skin testing (TST), identifying latent cases of TB and treatment of LTBI, decreases morbidity, mortality, and the spread of TB in communities. The WHO<sup>8</sup> concurs that screening HCWs for LTBI is one of the essential components of a TB infection control programme.

According to the recommendations for the diagnosis and treatment of LTBI in HCWs in low TB prevalence settings,<sup>2</sup> the traditional TSTs can be used to monitor those who are initially tuberculin skin test negative (< 10 mm) with repeat testing at nine monthly intervals to identify conversion to positive (10 mm increase in size). Low sensitivity and generally negative tests in immuno-compromised persons, the need for the test to be read 48 hours after performing it, and the practicalities of testing large numbers of staff, limit its use for identifying HCWs with TB infection. Background infection rates are high in some population groups which renders the test useless as a monitoring tool. This makes any decisions regarding the source of infection difficult. Although the interferon gamma release assay is a good alternative to the TST as it does not require a person to return for reading of the test, similar limitations for its use would apply. Chest X-rays have low sensitivity and specificity for TB infection and cannot be used for monitoring, but may be considered at pre-employment examination as a baseline for comparison, should the HCW subsequently develop symptoms suggestive of TB.

The benefit of identifying infection early lies in reduced risks of progression to active infection in the year following infection, and the consideration for isoniazid (INH) treatment to reduce this progression in the small percentage of persons at risk.

However, the situation in South Africa is not clear cut. There is a very high prevalence of TB infection with consequences for TST testing. Singh et al.<sup>9</sup> warns that HCWs' TST screening is very resource-intensive, and should only be used in a setting where preventive therapy is offered.

### Purpose of the study

This study is part of a larger study that was conducted to collect baseline information for the development of a model for effective TB nosocomial infection control in rural hospitals of Vhembe district. This part of the study investigated practices of managing LTBI in HCWs at hospitals.

### Objectives

The objectives of this part of the study were to 1) describe pre-employment or pre-placement LTBI screening practices at hospitals in Vhembe district, in the year 2012; 2) determine what action is taken if HCWs are exposed to infectious tuberculous patients at these hospitals; 3) describe HCWs' accessibility to LTBI screening at these hospitals; and 3) describe the type of tests performed to diagnose LTBI in HCWs at these hospitals.

### METHODS

A qualitative approach was adopted, using a cross-sectional descriptive phenomenology design.<sup>10</sup> Vhembe district has eight public hospitals. One hospital is a psychiatric hospital which does not admit TB patients. This study was therefore conducted at the seven other hospitals. The target population was all the HCWs employed in the seven hospitals. Purposive sampling of a maximum variation type<sup>11</sup> was used to select representative focus group participants believed to have the information needed to answer the research questions. The participants in each focus group discussion varied and comprised nursing deputy managers, laboratory staff members, surgical ward nurses, Antiretroviral Therapy (ARV) clinic nurses, TB focal point staff, paediatric ward nurses, out-patient department (OPD)/casualty nurses, X-ray staff members, TB ward nurses, medical ward nurses, infection control nurses, occupational health and safety (OHS) nurses, pharmacy staff members, sub-acute ward nurses, maternity ward nurses and psychiatric ward nurses. There was one focus group per hospital, each comprising five to 10 members.

The central question for the focus group discussions was: "How would you describe the practices of managing LTBI in HCWs in this hospital?" It was first established that the study participants understood the question, after which, in response to the answers, follow-up and probing questions in the unstructured focus group discussion

**“Any nurse who wishes to be screened for TB at this hospital has to take the initiative and is expected to pay for the screening tests. However, if a nurse is found to be sick with TB, he or she is put on TB treatment free of charge.”**

guide were asked. The content and construct validity of the interview guide and the document study was checked and endorsed by the Vhembe district TB coordinator and then compared with the WHO<sup>12</sup> TB infection control policy. Data collection at the first hospital afforded the researcher an opportunity to pre-test the focus group discussion guide amongst 10 focus group members at a hospital with similar characteristics in another district in order to check the reliability of the tool. Furthermore, an interater test (where the researcher and two research assistants collected data from the same participants and compared the findings) was conducted to determine whether the wording and constructs were clear, as well as to check

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**Figure 1. Doctors discussing X-ray of patient**

the feasibility of the entire study. The data collection tools and processes were then adjusted accordingly.

Permission to conduct this study was obtained from the School of Health Sciences and University of Venda (UNIVEN) Higher Degree Committees, as well as from the Limpopo Provincial Department of Health. Ethical clearance was obtained from the UNIVEN Ethics Committee.

Data were analysed using an open coding method, following Tesch's<sup>13</sup> 8-step criteria described by Creswell.<sup>14</sup> Lincoln and Guba's<sup>15</sup> model, comprising four criteria or measures to ensure trustworthiness of the study findings, namely truth value (credibility), applicability (transferability), consistency (dependability) and neutrality (conformability) was adopted. In observance of these criteria, prolonged engagement of focus group participants during data collection provided a relaxed environment for sharing as much information as possible.

## RESULTS

The analysis of the qualitative data on the theme management of LTBI in HCWs yielded four sub-themes. The results are organised per sub-theme as follows:

### Hospitals did not conduct pre-employment or pre-placement LTBI screening tests such as TSTs and interferon gamma release assays

The American Academy of Family Physicians<sup>16</sup> advises that, if a HCW is exposed to a patient who has active TB, he/she should have a baseline TST (unless he/she has recently had an annual TB test) and a follow-up test in three months to show if the exposure resulted in infection. In this study, when focus group participants were asked if hospitals conduct pre-employment or pre-placement LTBI screening, the HCWs reported that only three of the seven hospitals conducted pre-employment or pre-placement screening examinations to rule out diseases in general. No hospital conducted TSTs or interferon gamma release assays. According to a paediatric ward nurse from



**Figure 2. Patients waiting in a queue in one of the hospitals**

hospital D, "Every nurse, including the general assistants, is screened periodically, free of charge, to rule out all diseases, though I am not sure how often these screenings are done per year". The remaining four hospitals did not conduct pre-employment or pre-placement screening. A radiographer from hospital G said: "In this hospital, no HCW is screened for TB, either upon employment or periodically".

### HCWs' screening for LTBI was not accessible due to costs

When a probing question was asked, HCWs answered that screening for LTBI was not accessible due to costs that would be incurred. Only two of the seven hospitals offered HCWs periodic screening, not specific to LTBI, free of charge. According to an ARV clinic nurse from hospital D, "Periodic screening in this hospital is free of charge." A TB ward nurse from hospital C added, "Periodic screening, not specific to LTBI, is done yearly and is free of charge." The remaining five hospitals expected their HCWs to pay for pre-employment or pre-placement screening. According to HCWs from hospitals A, B, E, F, and G, "Any nurse who wishes to be screened for TB at this hospital has to take the initiative and is expected to pay for the screening tests. However, if a nurse is found to be sick with TB, he or she is put on TB treatment free of charge."

### Hospitals did not give prophylaxis TB treatment to HCWs exposed to TB infection

Only one of the seven hospitals provided prophylaxis TB treatment, in the form of INH tablets, 270 mg daily for nine months, to HCWs working in close contact with TB patients. According to a TB ward nurse from hospital A, "HCWs who are working in close contact with TB patients are given prophylaxis treatment in the form of INH tablets". The remaining six hospitals did not provide anything to HCWs working in close contact with TB patients. Focus group participants from hospitals, B, C, D, E, F and G said,

*"It is not official that HCWs working in close contact with TB patients should take INH as a prophylaxis treatment. However, HCWs who realise the risk of contracting TB 'take the treatments unauthorised'".*

### **Inappropriate tests are used to screen HCWs for LTBI**

When a probing question was asked to identify the type of tests performed to diagnose LTBI in HCWs, it was stated that chest X-rays, ESR and FBC screening tests were done. No hospital conducted TSTs or interferon gamma release assays. According to focus group participants from hospital B, C, D, "Employees are offered pre-employment examination, which covers chest X-ray, ESR, FBC and hepatitis, the findings of which serve as baseline data."

### **DISCUSSION**

The management of LTBI in HCWs was incorrect in most of the seven hospitals in which the focus group participants were employed, and was not aligned to national and international TB standards. Hospitals did not conduct pre-employment or pre-placement LTBI screening, in some cases due to costs. In addition, prophylaxis TB treatment was not given to HCWs exposed to TB infection. The tests performed to diagnose LTBI in HCWs at these hospitals were those used to diagnose active TB disease. Each of these four themes is discussed below.

### **Hospitals did not conduct pre-employment or pre-placement LTBI screening tests such as TSTs and interferon gamma release assays**

In support of these findings, the University Research Co. LLC and the Desmond Tutu Tuberculosis Centre<sup>17</sup> state that only 40% of health care facilities in South Africa have a LTBI screening programme or a written occupational health policy. Furthermore, in 2008, Eshun-Wilson, et al.<sup>18</sup> reported that pre-employment, pre-placement or periodic screenings for LTBI were not done in South Africa. They found that, at Tygerberg Hospital, in Cape Town, South Africa, poor management of LTBI in HCWs was attributed to increased incidences of TB infection. The South African Labour Guide<sup>19</sup> states that the workplace provides a unique opportunity to screen for LTBI, particularly when included as part of an annual health care programme where screening is done once or twice a year, using TST or interferon gamma release assays.

The practice of not conducting pre-employment or pre-placement LTBI screening means that South African health services are not doing enough to create a conducive environment for HCWs, especially with regard to prevention of occupationally-acquired TB. The failure to conduct LTBI screening demonstrates ignorance on the part of employers. In South Africa, pulmonary TB acquired in the workplace, including health care settings, is recognised and classified as an occupational hazard, according to the Department of Labour's Circular Instruction No. 179<sup>20</sup> and the Compensation for Occupational Injuries and Diseases Act<sup>21</sup>. According to the Act, workers who are affected by occupational injuries and diseases are entitled to compensation. Thus, HCWs can claim compensation for contracting TB infection at work. Furthermore, the Act states that injuries or diseases caused by the negligence of a worker's employer may result in increased compensation. The employer would be able to make arguments against lawsuits if pre-employment or pre-placement LTBI screening tests were conducted and results were made available for every employee as proof of the LTBI status of an employee before employment or placement.

### **HCWs' screening for LTBI was not accessible due to costs**

Zungu and Malotle<sup>22</sup> argue that occupationally-acquired TB has the potential to disrupt the provision of quality health care services by HCWs as a result of absenteeism, decreased morale and, in extreme cases, loss of HCWs. Thus, offering LTBI screening free of charge would improve its accessibility, encouraging many HCWs to undergo such tests, enabling the organisation to record



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baseline LTBI data, and making it possible for the organisation to treat those HCWs found to have LTBI and to be at risk of progressing to an active TB disease state, thereby preventing service disruption. Expecting HCWs

**“A call is . . . made to the South African National Department of Health for clarity on practices for the detection of LTBI.”**

to pay for their own LTBI screening deters them from undergoing such tests. The South African Occupational Health and Safety Act<sup>23</sup> stipulates that employers should make medical surveillance programmes accessible, including TSTs for HCWs in high risk areas. HCWs who are diagnosed with LTBI should be submitted to the office of the Compensation Commissioner for compensation.<sup>21</sup> Costs saved by not providing screening to HCWs could well be increased if compensation is claimed.

**Hospitals do not give prophylaxis TB treatment to HCWs exposed to TB infection**

In support of the findings of this study, Eshun-Wilson et al.<sup>16</sup> found that prophylaxis TB treatment was not given to HCWs exposed to TB infection at Tygerberg hospital. Woldehanna and Volmink,<sup>24</sup> and Akolo et al.<sup>25</sup> argue that isoniazid preventive therapy (IPT) reduces the risk of active TB by approximately 33% amongst people with a positive TST. Grant et al.<sup>26</sup> further claim that IPT was effective in preventing TB when implemented routinely in an HIV programme for gold miners in South Africa prior to ART availability. Charalambous et al.<sup>27</sup> reported that mortality was lower amongst individuals receiving IPT with or prior to the start of ART treatment. However, a study on the effectiveness of IPT amongst the entire workforce of eight gold mines in South Africa (the Thibela programme) by Eldred et al.<sup>28</sup> showed no benefit of IPT in controlling TB. As a result, the CDC<sup>29</sup> believes that a combination regimen of INH and rifapentine (RPT) administered weekly for 12 weeks as directly observed therapy (DOT) is as effective for preventing TB as other regimens, and is more likely to be completed than nine month INH daily without DOT. However, the CDC warns that treating LTBI when TB is active could result in partial treatment and drug resistance.

**Inappropriate tests are used to screen for LTBI in HCWs’**

Zungu and Malotle<sup>22</sup> believe that screening tools such as chest X-ray, ESR, FBC and hepatitis cannot exclude LTBI and advise that a TB questionnaire, TST and interferon assays are warranted to screen HCWs for LTBI.

**CONCLUSIONS**

Even though the legislative framework for workers’ health in South Africa is progressive, there are no clear guidelines for the detection of LTBI in HCWs and rural hospitals of Vhembe district in Venda are therefore failing to apply appropriate practices. A call is hereby made to the South African National Department of Health for clarity on practices for the detection of LTBI. There is a need for the enforcement of the Occupational Health and Safety Act and its regulations, and penalisation of employers who fail to comply with these, by the Department of Labour.

**LESSONS LEARNED**

- Rural hospitals in Venda do not conduct pre-employment or pre-placement TB and LTBI screening tests.
- TB screening, where available, is not a free service.
- Prophylaxis TB treatment is not offered to HCWs at risk of TB infection, in most hospitals
- Tests used to diagnose LTBI in rural hospitals are not appropriate.

**COMPETING INTERESTS**

The author declares that there were no financial or personal relationships that might have inappropriately influenced the writing of this paper.

**ACKNOWLEDGEMENTS**

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## An aide memoire to Health Surveillance Primum non nocere FIRST DO NO HARM

**Dr Murray Coombs** – Occupational Medicine Specialist, Chairman SASOM Biological Monitoring Scientific Committee.  
Tel: +27 (0)12 678 0784, e-mail: mcoombs@iafrica.com

### DEFINITIONS OF HEALTH SURVEILLANCE

#### 1. Medical Screening and Surveillance (OSHA)

Medical screening and medical surveillance are two fundamental strategies for optimising employee health. Although the terms are often used interchangeably, they are quite distinct concepts. Medical screening is, in essence, only one component of a comprehensive medical surveillance programme. The fundamental purpose of screening is early diagnosis and treatment of the individual and thus has a clinical focus. The fundamental purpose of surveillance is to detect and eliminate the underlying causes of any discovered trends of illness/disease or symptoms, such as hazards or exposures, and thus has a prevention focus. Both can contribute significantly to the success of worksite health and safety programmes. However, OSHA "medical surveillance" requirements are generally clinically-focused (e.g. medical and work histories, physical assessments, and biological testing) with information obtained from the clinical processes used in the monitoring and analysis elements of medical surveillance.

#### 2. Medical Surveillance (OSHA)

Medical surveillance is the analysis of health information to look for problems that may be occurring in the workplace, that require targeted prevention. Thus, surveillance serves as a feedback loop to the employer. Surveillance may be based on a single case or sentinel event but, more typically, uses screening results from the group of employees being evaluated to look for abnormal trends in health status. Surveillance can also be conducted on a single employee over time. Review of group results helps to identify potential problem areas and the effectiveness of existing worksite preventive strategies.

Surveillance programmes (i.e. secondary prevention) should be designed to support programmes to control workplace hazards (i.e. primary prevention). In occupational safety and health, a surveillance programme should:

- identify cases of occupational illness or injury, and/or
- monitor trends of occupational illness or injury.

#### 3. Medical Surveillance (ILO)

This means that medical screening is no longer considered as consisting solely of a careful clinical examination combined with a talk between the worker and his doctor; it is now seen as a systematic examination of the man's (or woman's) condition, aimed at detecting, not only any weaknesses resulting from working conditions which are known or thought to be unhealthy, but also

any other pathological phenomena which have no connection with the individual's main occupation, such as epidemic and deficiency diseases, parasitic diseases, diseases directly attributable to our modern civilisation, and metabolic or neoplastic disorders.

#### 4. Medical Surveillance (CDC)

Surveillance is the ongoing, systematic collection, analysis and interpretation of health data essential to the planning, implementation and evaluation of public health practice which is closely integrated with the timely dissemination of these data to those who need to know. To be effective, surveillance must be directly linked to preventive action. In the case of occupational health, the actions prompted by the surveillance system should be directed not only at the individual case or the affected group but also at the responsible workplace factors.

### MODELS OF AND CHECKLISTS FOR HEALTH SURVEILLANCE

There are several models of health surveillance. In this and the next three issues of the Journal, we will be presenting four different models.

#### Model 1 – Self styled

##### Primary prevention

Limit occupational exposures – hazard identification, risk assessment, homogenous exposure groups, occupational risk and exposure profiles, occupational hygiene, environmental analysis, personal protective equipment, behavioural based programmes.

##### Secondary prevention

Limit adverse health effects/early detection – health surveillance, biological monitoring, biological effect monitoring, epidemiology, statistical analysis, surveys.

##### Tertiary prevention

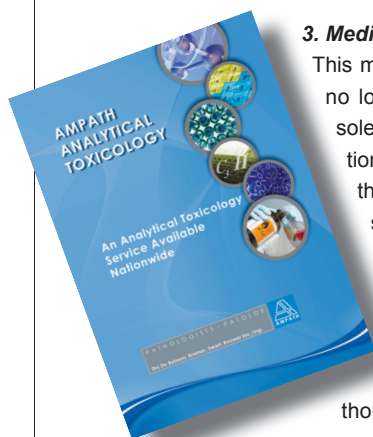
Diagnosis, treatment, rehabilitation and compensation.

Creating a checklist of the elements in Model 1 allows for regular checks and gap identification.

In the next issue of the Journal, we will present a second model of, and checklist for, health surveillance.

### RESOURCES

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# SASOM news

## WARM CAMARADERIE IN THE KALAHARI

The SASOM Northern Cape AGM and academic meeting was held on 14 August 2013.

The meeting was held in the splendour and wonderful setting of the Red Sands Resort in the Kalahari, a short distance outside Kuruman. Despite the cold evening, attendees came from Upington, Kimberley, Cape Town, Kuruman, Kathu and Hotazel. An occasional springbok also showed interest.

Dr Louis Ellis, now elected chair of SASOM Northern Cape, arranged and chaired the proceedings.

The first speaker, Dr Richard Schulenburg, cardio-thoracic surgeon, expounded on pleural effusion.

### Main points:

Any pleural fluid indicates pathology.

The following should all be referred for thoracoscopy or video-assisted thoracoscopic surgery (VATS):

1. Pleural effusion in presence of risk factors for malignancy.
2. Pleural effusion of unknown aetiology in patients >35 years.
3. Suspected TB pleuritis but cultures negative.
4. Recurrent pleural effusion.

Blind biopsies are poor practice.

Dr Jim teWaterNaude, Public Health Medicine specialist, spoke on asbestos disease and the work of the Asbestos and Kgalagadi Relief Trusts.

### Main points:

The Northern Cape has the highest provincial rate of mesothelioma at >30/million, five times the rate in any other province. All three asbestos fibres were mined in South Africa – blue crocidolite, brown Amosite and white chrysotile – have produced considerable disease burdens, with Amosite being the most fibrogenic, and crocidolite producing the greatest numbers of lung cancers and mesotheliomas. The International Mesothelioma Interest Group will be holding its biennial conference in Cape Town in October 2014.

Dr Chris van Tonder, Urologist, spoke on prostate cancer. In men, this is the most common malignant tumour, and the second highest cause of cancer deaths, with a surprisingly high number being an incidental finding at autopsy. PSA (prostate specific antigen), a glycoprotein produced by



**SASOM Northern Cape Branch Executive Committee, from left to right: Dr Louis Ellis, Sr Elna van der Merwe, Dr Andries Vorster with Dr Lady Jood, an active SASOM member, in front**

prostatic epithelial cells and the vehicle for sperm, is raised in prostate cancer, benign prostate hypertrophy, prostatitis, and urine retention. It is not raised by rectal examination. There is no normal range. If the PSA is >10 ng/ml, there is a 50% chance of prostate cancer, but a PSA of >4 ng/ml should be investigated at any age. A free/total PSA ratio of <15% indicates a low risk, while a ratio of >25% indicates a high risk of prostate cancer.

The academic programme was followed by the Branch AGM and the election of Dr Ellis as Chairman, Dr A Vorster as Vice Chairman and Sr Elna van der Merwe as Secretary.

The meeting attracted 22 attendees – mostly doctors – and went exceptionally well. We all enjoyed a supper together with superb food and catering provided by Alan, chef extraordinaire of Red Sands. The meeting was CPD accredited and sponsored by SASOM and Kimberley MediClinic.

*Report by Dr Jim teWaterNaude*

## MORE CAMARADERIE . . .

Everyone interested in any aspect of occupational health is cordially invited to the **SASOM Conference on 22 November 2013** at The Kelway Hotel, Brookes Hill Drive, Humewood in Port Elizabeth. The Conference will be followed by the **SASOM National Annual General Meeting**. Visit the SASOM website at [www.sasom.org](http://www.sasom.org) or contact Jenny Acutt in the SASOM National Office for more information, e-mail: [info@sasom.org](mailto:info@sasom.org) or telephone: +27 (0)12 803 7418.



**A group of doctors at the SASOM Northern Cape Academic Evening, from left to right: Drs. JC Bosch, J teWaterNaude, R Schulenburg, L Ellis, L Cronje, I Muller and C Van Tonder**





## SAIOH news

**F**irst, allow me to thank my predecessor, Johann Beukes, for the unselfish manner in which he has served SAIOH and its members, and the strong foundation he has helped to establish for SAIOH. It is a platform upon which it is easy for me to continue building.

SAIOH is a truly remarkable institute, striving to serve its members in many ways, some of which include:

- Hosting annual conferences.
- Hosting regular branch meetings in various regions throughout southern Africa.
- Contributing, in the form of scientific articles, to the Occupational Health Southern Africa journal.
- Professional registration of members.
- Securing international recognition for professional designations, making it easier for our members to practice internationally.

The recent AGM saw the election of new SAIOH councillors with the following persons elected by you to serve you:

Elize Lourens	Dept of Labour
Cas Badenhorst	Anglo American
Johan Du Plessis	University of the North West (Potchefstroom)
Kenneth Harvey	Gijima
Jaco Pieterse	Gijima

Further to this, the newly elected SAIOH council elected Cas Badenhorst to the position of SAIOH Vice President. Congratulations are in order, together with a warm word of welcome and many thanks for accepting the huge responsibility to serve SAIOH and its members. The new councillors and their profiles will be posted on our website shortly.

I would like to encourage each and every one of you to help build our wonderful profession so that we can continually improve Occupational Hygiene and workplace health. Let us endeavour together to keep raising the bar. Get involved in SAIOH activities and volunteer your time. Start with your local SAIOH branch and participate as often as possible. If you are uncertain as to who to contact, check out the SAIOH website or contact the SAIOH administrators ([admin@saioh.co.za](mailto:admin@saioh.co.za)) and let us know that you are willing to offer your time. Your name will be placed into a

database and you will be contacted as the need arises.

The year ahead also has a number of exciting events in store. SAIOH is looking to launch the long-awaited template guide to assist members in aligning themselves to the new SANS 17020 standard; a revamp of the website is due shortly, which will allow members to pay fees and enter CPD points online; and, of course, our 2014 annual conference – Occupational Hygiene: Beyond dust and noise, which will be held at the North-West University's

Potchefstroom campus from 30 October to 1 November. The Conference will be hosted by SAIOH's North-West branch. Diarise and book now as this promises to be a super conference!

As far as the SANAS accreditation of Occupational Hygiene AIAs is concerned, the process is steadily underway and on track. The SANAS Specialist Technical Committee (STC) met on 29 August, and the Department of Labour deadline for sub-

mission of applications to SANAS for accreditation was once again confirmed to be 1 February 2014. AIAs that do not submit applications by this date face suspension by the Department. In addition, currently approved AIAs that are not accredited by 30 September 2014 will also lose their approval status. The Department of Labour confirmed at the meeting that no further extensions will be granted. All SAIOH members managing AIAs need to take note of these dates and ensure applications are submitted by the due date.

Further to this, I would like to congratulate the first occupational hygiene AIA to be accredited in line with these new requirements. VDH Industrial Hygiene CC, under the leadership of Dawie van den Heever, a long standing SAIOH member, applied for accreditation and, after due process, was accredited in line with the requirements of SANS 17020 and additional Department of Labour requirements by SANAS. Well done!

Accreditation aims to set the standard to which we all need to be practising and I encourage all of you to support the process. You can contact Linda Grundlingh at [lindag@sanas.co.za](mailto:lindag@sanas.co.za) should you require more detail about the process.

*Report by PJ (Jakes) Jacobs, SAIOH President,  
e-mail: [Peter.Jacobs2@riotinto.com](mailto:Peter.Jacobs2@riotinto.com)*



**PJ (Jakes) Jacobs,  
newly elected  
SAIOH President**



**Cas Badenhorst  
was elected SAIOH  
Vice President**

# SAIOH Annual Conference 2013



The Annual Conference was held at the Elangeni Hotel in Durban from 19 to 21 August with the theme “Occupational Hygiene... Into The Future – A local and International Perspective”. Delegates enjoyed the lovely warm Durban winter weather, and were able attend many interesting presentations by local and international guest speakers.

The Conference was a truly international affair as the International Occupational Hygiene Association (IOHA) Board chose to hold their biannual board meeting in Durban in conjunction with the Conference. Fourteen IOHA representatives attended and our local occupational hygienists were able to take advantage of the plethora of expertise available.

Several firsts occurred, including the running of two full day Professional Development Courses (PDCs). Dr John Mulhausen of 3M (USA) presented an enlightening session on Modern Statistical Tools for Improving Data Interpretation and Professional Judgment, including decision analysis calculations using Bayesian statistics. This session served to raise awareness of the importance of confidence in results where important control decisions are made. John is an amazing speaker and made a complex subject enjoyable and easily understood. The second PDC was presented by one of our other international guests, Henri Heussen of Arbo Unie (The Netherlands) who presented an overview and interactive session on Stoffenmanager – A Validated Internet Tool for Assessing Chemical Exposures and Identifying Controls. He explained the use of Stoffenmanager, a public and freely available web-based tool for chemical exposure assessment and control.

Another first was the running of parallel sessions on both conference days. A total of 34 presentations by 31 speakers (both local and international) were given, covering a wide range of occupational hygiene topics, including mining, research, standards, statistics and general practice.

Four keynote addresses were presented, by the President or a representative from the IOHA, USA, UK and Australia. The key message from each speaker reminded us of the importance of our roles as occupational hygienists in southern Africa, and of the perception of occupational hygiene practice in southern Africa from our international peers. To add further

confirmation to the value of our voice, John Mulhausen (Director of Corporate Safety and Industrial Hygiene, 3M, USA) and David O'Malley (President of BOHS) ran an interactive session on Occupational Exposure Standards – our opinions were required for an international initiative and research project on OEL development and implementation.

While the presentations and development sessions were the main reason for attendance, a highlight of the conference this year was the annual award dinner where people voted as the top representatives practicing occupational hygiene in southern Africa during the past year were presented with awards.

The awards were as follows:

- Occupational Hygienist of the Year was Oscar Rikhotsko.
- Personality of the Year went to Johan Cornelius.
- Student of the Year was Liandi Viljoen.
- Article of the Year was awarded to Phanel Tau.
- Top Achiever – Assistant was Ms L Hugo for achieving 72% overall.
- Top Achiever – Technologist was Ms A Cilliers for an overall mark of 79%.
- Top Achiever – Occupational Hygienist was Ms A Marshall, also with a mark of 79%.

Guests were thrilled by a special performance by South Africa's World Champion and gold medal winning Choir at the 2012 World Choir Games in the USA, Kearsney College Choir, that entertained us with a wonderful repertoire of multi-cultural music and pop classics. Our chance to show our international

guests another of South Africa's amazing talents, and they were very impressed – as were we all!

The Conference, organised by Julie Hills and her core team of seven people from the KZN branch, was furthermore attended by about 30 representatives from 14 exhibitors and a total of about 120 delegates. It was a great success and the delegates left with lots of new knowledge and information, having spent time with their peers and international guests and being warmed by the Durban winter sunshine and hospitality. We look forward to seeing you all at the 2014 Conference at North West University next November.

*Report by: Julie Hills, Vice-chair, SAIOH PCB,  
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**Winner of the Occupational Hygienist of the Year Award, Oscar Rikhotsko, accepts his award from the President of SAIOH**



**Jakes Jacobs, the new SAIOH President, addresses the audience**



# Mine Medical Professionals' Association 16th Congress

The MMPA's 16th Congress was held over two days at the Riviera on Vaal Hotel in Vereeniging, at the end of August. The Association was pleased to welcome 67 delegates who took part in a full programme of presentations from occupational health industry practitioners.

"The 16th Annual Congress was a great success, both in terms of attendance and the quality of the presentations," said MMPA President, Dr Vusumuzi Nhlapho. "There was robust interaction between the presenters and delegates throughout the Congress as a number of critical issues, ranging from Noise Induced Hearing Loss (NIHL) to the health perspectives of the recent events in Marikana, were addressed."

The Congress commenced with a presentation on an historical recollection of Mine Social Services in 1949 by Ivan Wermuth from the School of Mines at the University of Johannesburg. He looked back on the status of Mine Social Services, five years after its formation in 1944. He argued that Mine Social Services added value to mine managements, through the prevention of development of suffering conditions and leading sufferers back to suitable and gainful employment. Wermuth noted that social, cultural, mental and financial advice was also given, often

using the mine panel doctor as the initial confidential advisor. Patients recovering from diseases, such as tuberculosis, and from mental health problems, were followed through their treatments with an end aim of rehabilitation and finding further gainful employment, either on or off the mine, if at all possible.

A number of presentations were dedicated to addressing the problem of tuberculosis in the mining industry with a detailed outline of the management of tuberculosis at local and community levels, as well as interventions at a regional level. Addressing the management and control of tuberculosis at local and community levels, Dr Liesl Page-Shipp, from the Aurum Institute, gave a presentation entitled 'Controlling TB in the Workplace' centred around the findings from the Thibela TB study. The study sought to explore what is needed to control tuberculosis in gold mines and how this applies to other workplaces. The aim of the study was to compare the effectiveness of isoniazid preventative therapy (IPT) given on a community-wide basis with the current standard of care on tuberculosis among gold miners in South Africa. The findings showed that the following interventions were imperative:





- Better case finding – including screening family members of tuberculosis-infected patients.
- Reduce treatment delay among sputum-positive cases.
- Maximise ART coverage – encourage HIV testing.
- Better INH preventative therapy.

With regard to regional interventions, Dr Thuthula Balfour-Kaipa gave a detailed outline of the Chamber of Mines' response to the SADC Declaration on tuberculosis in the mining industry. In addition, Dr Erick Ventura, Chief of Mission at the International Organization of Migration, emphasised the need for a coordinated approach in addressing tuberculosis in the SADC region.

Further presentations were delivered by delegates representing a wide range of organisations, including the Department of Mineral Resources (DMR), the Aveng Group, Anglo American Platinum, Lonmin, and AngloGold Ashanti, among others.

Ms Zeenat Dasoo, Partner at Webber Wentzel Attorneys, gave a thought-provoking keynote address during the Gala Dinner on the "HPCSA recent regulation on the employment of medical practitioners and implications for the mining industry".



**Dr Erick Ventura, Chief of Mission, International Organization of Migration and Dr Vusumuzi Nhlapho, President, MMPA**

All presentations delivered will be available on the MMPA website: [www.mmpa.org.za](http://www.mmpa.org.za)

"The MMPA is grateful for the sponsorships of Maponya911 Rescue and Aspen. Planning for the 17th

Congress will soon be underway and we are hopeful that this will be supported by an even greater number of delegates," stated Dr Nhlapho. "It is vital to keep abreast of developments within the occupational health field, specifically as it relates to the mining industry, and to gain a better understanding of the dynamics between socio-economic issues and the workplace, latest changes in clinical practice, and keeping abreast of regulatory changes. By attending the Congress, occupational health professionals are well placed to gain such insight and

knowledge," Dr Nhlapho concluded.

In order to promote interaction between Congresses, a series of academic symposia are scheduled for 2013/14. To end 2013, one will be held on 16 November 2013 at Lonmin, Marikana and the next one will be held on 25 January 2014 in Kimberley, Northern Cape.

*Report by Anne Van Vliet,  
e-mail: [anne@communiquepr.co.za](mailto:anne@communiquepr.co.za)*



6-8 November 2013

## EISH – Environment, Industry, Safety and Health Conference Programme

**S**ASOHN is hosting its annual conference in November 2013 at Emperors Palace, Johannesburg, Gauteng. This year there will again be three exciting pre-conference workshops on Wednesday 6 November. These workshops will run concurrently; the number of delegates at each workshop is limited to ensure maximum participation and benefit from the events. Bookings will be confirmed once payment is received. As is tradition, the Wednesday evening will allow members to network at a cocktail function with some interesting entertainment. The annual awards will be made on Thursday at the gala dinner. The event will close with the Annual General Meeting on Friday 8 November 2013. SASOHN Gauteng Central looks forward to hosting you at this event which is sure to be another highlight on the SASOHN calendar. Accommodation is available at Emperors Palace or at a number of other facilities in close proximity. For more information, visit the SASOHN website at [www.sasohn.co.za](http://www.sasohn.co.za). All bookings can be made through the SASOHN National Office.

### PRE-CONFERENCE PROGRAMME – 6 November 2013

#### **Workshop – Top to toe physical examination – a refresher to physical examination!**

Presented by Stacie Stender (MSN, MSc Inf Dis), FNP Africa Regional Technical Advisor, TB/HIV/ID, Jhpiego – an affiliate of Johns Hopkins University

#### **Workshop – Men’s health – what the OHNP needs to know**

Presented by Dr E Kok from the University of Pretoria

#### **Workshop – Legal compliance for the OHNP**

Presented by Advocate Braam Bezuidenhout (BComm Law, LLB, LL.M) Advocate Health, Safety and Environment  
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### CONFERENCE PROGRAMME – 7 November 2013

“Impact of ISO 14001 on occupational health” by Cara Stokes

“Hazardous spills – what should be done!” by Nic Du Preez

“Diversity in industry” by Dr Adele Tjale

“Knowing your labour rights as an OHNP” by Leigh McMaster

“Fatigue Management in the workplace” by Dr Tongai Mukwewa

“Professional DNA for the nurse practitioner” by Brendon Bairstow-Klopper

“Alcohol and drug abuse” by Steve Hamilton

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