Mine Medical Professionals’ Association

Professor Jill Murray

Professor Jill Murray’s contribution to the study and research of mining-related diseases in southern Africa has had a far-reaching and profound effect on their understanding and management. An award from the Dean of the Faculty of Health Sciences, University of the Witwatersrand in November 2012 for dedication and achievement in research is testimony to the influence that Jill has had on the understanding of this disease landscape.

Born in 1947 in Johannesburg and still a resident of that city, Jill was schooled at the renowned Roedean School from where she matriculated in 1964. She commenced her tertiary education at the University of Witwatersrand, where she obtained a BA degree and, later, a MBBCH. In addition to these qualifications, she has a degree in teaching from London University. She is currently an honorary Associate Professor in the School of Public Health.

Jill has spent most of her professional life as a pathologist at the National Institute for Occupational Health (NIOH) which is part of the National Health Laboratory Service. She is proud to be part of one of the largest non-forensic autopsy services in the world. “Until my retirement at the end of 2012 I had the good fortune to be the head of the Pathology Division of the NIOH, which undertakes examinations of the respiratory organs of deceased miners and examiners for compensation purposes,” she explains. “I am fortunate to still have a part-time appointment.”

Jill continues, “This service (which now has the findings of around 100 000 autopsies computerised since 1975) provides data not only for compensation but also for surveillance and research in lung disease, indeed all disease which manifests in the cardio-respiratory organs – with a particular emphasis on silicosis, tuberculosis and HIV.”

“Maintaining a consistent and high standard of data for the computerised Pathology Automation System (PATHAUT) requires an ongoing sustained effort by many people,” explains Jill. “The Pathology Division staff complement is fairly large with twenty-four members and highly specialised and complex laboratories. We also serve as a national reference centre for consultation purposes for all lung diseases.”

These data are widely utilised for disease surveillance. “Annual reports on the findings are now available on the NIOH website. This is the only source of information that we have on long-term trends of lung diseases in the mining industry, and can also be used to monitor and evaluate interventions,” Jill says, explaining the importance of such a source.

The Division also has an active research programme, and Jill has published more than 100 peer reviewed scientific papers as well as many technical reports. She has also produced a range of educational material for use in the workplace and by the mine medical services.

“None of this would have been possible without the extensive collaboration and support from the mine medical services which has been forthcoming over several decades,” Jill says. “The Departments of Mineral Resources and Health, as well as South African and many international academic institutions (including the National Institute of Safety and Health (NIOSH) in the USA, the London School of Hygiene and Tropical Medicine and University College London in the UK, and Dokkyo University in Japan) have also been key partners.” Although the emphasis has been on gold and platinum miners, research has encompassed many other commodities, including coal, asbestos and manganese. Jill has served as an advisor to the South African Departments of Mineral Resources and Health and her work has influenced policy, both nationally and internationally.

Teaching has always formed a large part of her activities. “Over the years I have mentored young scientists, many of whom have won awards,” Jill says with pleasure. “Particularly gratifying was the award of the Wits Faculty of Health Sciences Prestigious Postgraduate Award in 2013 to Gill Nelson for her PhD which I supervised.”

Jill has endeavoured to translate her research findings into practical applications in the workplace. “I have facilitated ongoing education to health professionals,” she continues, “such as the facilitation of spirometry workshops in 2005 and 2006 in collaboration with NIOSH, USA. Over many years I worked with the mine doctors to implement a review process for improving the clinical management of TB.” Jill also contributed to the Department of Mineral Resources Guidance Note on TB for occupational medical practitioners in the mining industry, and to the development of a comprehensive review tool for assessing the performance of TB programmes in the industry.

Jill’s activities have extended to neighbouring countries. “I was a member of the Work and Health in southern Africa Steering Committee of the Swedish International Development Agency programme to improve occupational health in the SADC region.” This initiative afforded her the opportunity to travel to some of the SADC countries where she facilitated workshops in Mozambique, Tanzania and Zambia.

Jill’s invitations to speak at symposiums, conferences and workshops have spanned the African continent from Cape Town, to Madagascar and The Democratic Republic of Congo. She has also presented invited papers in the UK, USA, France, Japan, China and Indonesia.

Jill has been an active member of many professional associations and societies, including the Mine Medical Professionals’ Association, the South African Thoracic Society, the International Academy of Pathology, and the International Union against Tuberculosis and Lung Disease.

OCCUPATIONAL HEALTH SOUTHERN AFRICA WWW.OCHHEALTH.CO.ZA
Now enjoying her semi-retirement, Jill has more time to travel for pleasure. She also has time to enjoy art and classical music and to amuse herself with creating pottery.

Jill has experienced many landmark events in her busy and illustrious career. The following is a summary of some of the key points in her life.

**OCCUPATIONAL HEALTH MILESTONES**

The very first autopsies – done on mine workers with HIV in the late 1980s.

We found that almost all of them had extensive TB. We knew this was an important finding but we had little idea of the magnitude of the HIV/TB epidemic which was to dominate the health landscape in future years, manifesting first in the mines and then throughout South Africa.

The Leon Commission in 1995, which found that silica dust levels had shown little if any change in the preceding 50 years. The Commission called for more research into miners’ diseases.

The advent of the Mine Health and Safety Act in 1995 was a truly progressive piece of legislation. The Mine Health and Safety Council has also played a key role in identifying and funding research.

The silicosis milestones of 2008 which set clear goals for the reduction of silica dust levels. The mines have made progress in reducing dust and now we need to ascertain that disease rates are falling in current and ex-miners.

The initiation of ARV treatment in the mines, the implementation of which was delayed until the end of 2003.

While much of the research has been translated into policy, there remains a gap in effective implementation. Disease rates are still high, the compensation system is still largely ineffective, and the negative effects of migrancy continue.

**RESEARCH HIGHLIGHTS**

Much of Jill’s research has resulted from studies of large cohorts of miners – running into the thousands – who were followed up over long time periods. In some of these studies, men were followed up after having left the mines and, with the help of The Employment Bureau of Africa (TEBA), were traced to their homes in the deep rural areas of South Africa and neighbouring states.

Research over the years has demonstrated that:

- TB is the leading cause of death in both the gold and platinum mining industries. This is true for men with and without HIV and even for men undergoing anti-retroviral (ARV) treatment. Much of the TB present at autopsy was not diagnosed in life.
- Silicosis rates at autopsy increased 10-fold from 1975 to 2007.
- Mortality rates in miners with HIV, taking into account age, are similar to men in other countries such as the UK, Europe and Canada.
- HIV infection has a minimal impact on work-related injury and fatality rates in miners.

One of the early landmark studies was a prospective study of TB in the gold mines, using the newly developed technique of DNA fingerprinting to identify TB strains. It was found that, despite a control programme that cured 86% of new cases of TB, most disease was due to the spread of TB within the mines. These findings were published in *The Lancet*.

A cohort of around 2 000 gold miners was followed up from 1970 to 1995, into retirement. It was found that many developed TB after dust exposure ceased, and that there was an increased risk of TB with silica dust exposure alone – even in the absence of silicotic nodules in the lungs. The results have implications for medical surveillance of silica dust-exposed workers while employed and after cessation of dust exposure, and also for compensation practices.

**PEOPLE WHO INFLUENCED ME**

Professor Ian Webster was head of the Pathology Division for many decades and played a key role in linking asbestos exposure with malignant mesothelioma. He taught me that, despite all of the technical advances in modern medicine, autopsies can make a very important scientific contribution, and that the mortuary truly is a place “where death delights to help the living”.

Professor Tony Davies recruited me into the NIOH and insisted that I enrol for the Diploma in Occupational Health. Many of my fellow students, such as Mary Ross, Dave Barnes, Leslie London and Jim Murphy became important future collaborators in the endeavour to improve workers’ health.

Professor Pete Lowe was the head of Medical Services of Gold Fields Limited. Over the years we travelled widely, visiting mines throughout the country.

**SELECTED PUBLICATIONS**


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**Occupational Health Southern Africa** would like to thank Dr Vusi Nhlapo, President of the MMPA, for highlighting the sterling work that Professor Murray has done over the years, in the hope that it will serve to inspire the current and next generation of pathologists and Mine Medical Professionals.