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## Contents

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2	Editorial
3	The Lesedi Project: Maintenance of STI control in Lesedi, a mining community in South Africa, following introduction of a targeted intervention
7	How do I carry out an occupational health risk assessment?
9	Issues in the economic analysis of HIV-prevention treatment and care programmes in the workplace
13	Disability management: towards clarity, promoting disability rights and new business opportunities. Part 1
17	Health hazards in the assembly of electronic devices
20	The impact of the International Labour Organisation's code of good practice on managing disability in the workplace
22	Letters to the editor
24	News and Events SASOM Natal Chapter Academic day
26	NET Page - Disability Sites

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**A**s this is the last issue for 2001 and the topics of HIV/AIDS and disability are of such significance, I am taking advantage of "editor's licence" and indulging in a longer than usual editorial! By the time this issue lands on your desk, Christmas and New Year festivities will be a thing of the past. It is my hope that you enjoyed a blessed and peaceful festive season.



## HIV and AIDS

In keeping with the world-wide commemoration of World AIDS

Day, the November / December issue of this journal has traditionally been devoted to HIV and AIDS. This year South Africa has seen a controversy raging over the cost, safety and impact of treatment for HIV/AIDS. In countries with widespread highly aggressive anti-retroviral therapy (HAART), transmission is not declining. If one considers that the cure rate being achieved with the treatment of an estimated 200 000 new cases of tuberculosis - where only six months of treatment is required - is only 65 %, and then realises that there are probably 4 million new cases of HIV infection, needing life-long treatment, the question of both affordability and practicality of treatment arises. Never-the-less, various agencies are out there offering solutions. Girdler-Brown in his thought-provoking article offers an approach to the evaluation of such AIDS intervention submissions.

One of the conditions favouring the transmission of HIV is a high rate of sexually transmitted infections (STI). De Coito details and updates one of the initiatives for the reduction of STIs. STI control has been maintained in the now famous Lesedi project and similar programmes have been initiated throughout Gauteng and the Free State Goldfields.

## Disability

HIV/AIDS leads to disability and we launch a series of disability-related articles with two contributions. Strasheim introduces the subject, its scope and complexities, and also indicates how the field of disability management is likely to dramatically change as a result of new legislation, codes and developments around disability. These include the rights of disabled employees, the new obligations that employers have to manage fairly, and the new skills which practitioners in the occupational health field may need to acquire. These new developments also enable practitioners to both promote social justice and access new business opportunities. A key aspect of this will also be the empowerment and skills development of employees with disabilities, who are either employed as persons with a disability, or become disabled. In this regard, Groote Schuur's 'Cyberschuur' initiative (see News and Events) is timely and valuable.

De Beer examines the ILO code and points out the new directions envisaged.

Coincidentally, the World Health Report which was launched in November, has as its theme Mental Health: New Understanding, New Hope. Mental disorders are among the leading causes of ill-health and disability worldwide.

The twelfth NetPage provides numerous sites on disability. Next year sites specific to various disabilities will be provided.

## Health risk assessments

Health risk assessments (HRA) are an essential part of occupational health practice. The simplified overview provided by Ferrie will be useful for demystifying this complex process to employers.

Calverley, Renton and Kielkowski in their report on a detailed HRA, conducted in the assembly of electronic devices, indicate that the biggest risk to health in the workplace may not lie only in the hazards at work. A lack of awareness of occupational health issues, and lifestyle outside the workplace can also have an impact.

## CPD

The cessation of this activity was viewed as a retrogressive step by many. With the assistance of a group of willing occupational medicine practitioners, this will be re-introduced in the New Year. Our thanks to Dr Danie Ungerer, Nelda van Zyl and Marina Botha, and to SASOM for funding this year-long trial.

## Update on the progress of the journal

Van Selm's letter in the previous issue alerted me to the fact that readers may not know why the previous journal "failed", as he terms it. Although I saw it as a temporary "suspension" and not a failure, and bearing in mind that one can never be so bold as to profess to "have all the answers", the liquidation of the previous publishers, with the loss of a large portion of our subscriptions, was certainly the major factor. The occupational health nurses, who had paid the total subscriptions to the publishers to enjoy the discount, suffered the brunt of the loss. The doctors and hygienists also each lost a sixth of the year's subscriptions. It is with pleasure, and with thanks to the hard work of the nurses who are part of the editorial board, that I can announce that from January 2002, the nurses will again be subscribing to the journal and will hopefully still be our "greatest allies"!

Van Selm is not clear on what is providing the "magazine slant", nor why he believes that we are "heading for trouble". If this is in response to the advertising on the cover, readers must appreciate the financial implications of losing 78% of annual subscriptions. Income from advertising was therefore essential to ensure the life of the journal. Fortunately through the endeavours of members on the editorial board alternative funding has been obtained, which will make the financial viability of the journal in an era of decreased spending on advertising, less vulnerable. Advertising, as well as subscriptions, will however continue to be important sources of income.

I would like to take this opportunity to thank all the members of the editorial board, our publisher, printers and advertisers for their efforts, hard work and support during 2001, which has been a rather difficult year for Occupational Health Southern Africa!

Fiona Robinson

## The Lesedi Project

### *Maintenance of STI control in Lesedi, a mining community in South Africa, following introduction of a targeted intervention*

by T DeCoito<sup>1</sup>, E Olivier<sup>2</sup>, S Ralepeli<sup>3</sup>, MG Leong<sup>2</sup>, J Porotloane<sup>3</sup>, M Semela<sup>3</sup>, R Steen<sup>4</sup>, G Dallabetta<sup>4</sup>, RC Ballard<sup>2</sup>.

#### Abstract

This article details an intervention to reduce sexually transmitted infection (STI) prevalence among women living around mining communities, and the results. The primary objectives were to sustain STI control gains in a South African mining community following introduction of a targeted intervention, to monitor effectiveness of the intervention by following trends of ulcerative and non-ulcerative STI syndromes among miners living at variable distances from the intervention area, and to expand and replicate the targeted intervention activities to a site outside the initial intervention area. This was achieved by providing curative and preventive services, including periodic presumptive treatment (PPT) to women at high risk in a mining community. Mean monthly STI rates have remained consistently lowest in the intervention area. Some narrowing between the intervention and intermediate sites, over the 27 months may be occurring as a result of expansion of the intervention. It concludes that targeted interventions are sustainable and replicable in mining communities with partnerships between local community and mining industries. Expansion of targeted intervention activities to a site outside the initial intervention area, has achieved similar successful results. Miner STI rates remain low in areas covered by the PPT project and rates in intermediate areas have also declined with time as the intervention has expanded.

#### AIDS in South Africa

South Africa is facing a staggering, but still largely hidden HIV epidemic. Approximately one tenth of the world's annual new infections now occur here (ie about 1,700 new infections every day). The data from the most recent national survey of antenatal clinic attenders indicate that 24.5% of pregnant women nationally are infected with HIV suggesting that up to one in four sexually active adults is already infected with HIV.<sup>1</sup> The population of South Africa is

1. Harmony Gold Mining Company, 2. Reference Centre for STIs, National Health Laboratory Service (SAIMR), Johannesburg, 3. Lesedi Project, Virginia, Free State, South Africa, 4. Family Health International, Washington DC, USA

approximately 40 million and it is estimated that 3.6 million are now living with HIV.

Among the social and economic factors that are believed to fuel the spread of HIV in South Africa are population mobility facilitated by a developed transportation infrastructure, extensive migrant labour and widespread commercial and casual sex. Rural poverty induces people to migrate in search of work, and migrant labour conditions often separate families and stimulate development of commercial sex networks. Consequently, HIV prevalence among female sex workers in urban and mining areas reached high levels early in the epidemic, and increases in general population prevalence in those areas soon followed. More recently, prevalence has increased in rural areas as migrant workers and others travel back and forth between migrant and home communities.

Conditions favouring transmission of HIV in urban and other migrant areas include low levels of preventive behaviour and high rates of other sexually transmitted infections (STI), particularly among sex workers and their clients. Unprotected sexual contact in the presence of another STI greatly increases the probability of HIV transmission at the level of the individual. At the community level STIs account for a large population attributable fraction (PAF) of HIV infection. Reducing this co-factor through effective STI control is thus an important strategy for reducing the efficiency and rate of HIV transmission.

Migrant labour is employed on a large scale in South African gold mines. Miners typically come from remote areas and live apart from their families for most of the year in single sex hostels. Employment is far more limited for women living in and around mining communities. Formal and informal commercial sex networks develop in response to a large demand for sexual services from the miners. Condom use is generally low and STI incidence and prevalence high.

#### Intervention in a gold mining community

In 1996 an intervention was established in a Free State community in collaboration with Harmony Mines, the South African Institute for Medical Research, Family Health International and the Institute of Tropical Medicine

(Antwerp). The objective of the intervention was to make effective preventive and curative STI services accessible to the many women at high risk living around the Harmony mines. The belief was that by intervening to reduce STI prevalence among these women, prevalence would also fall among the miners and in the larger community.

The strategy employed had several components. An outreach and peer education effort was organised to inform women about the intervention, promote condom use and encourage women to make monthly visits to a mobile clinic. At the clinic a nurse was trained to do examinations and provide syndromic management for STI when signs or symptoms indicated. In addition, women were offered a single oral dose of azithromycin monthly as presumptive treatment for the common curable STIs in the community. This periodic presumptive treatment (PPT) was expected to cure both symptomatic and asymptomatic gonorrhoea, chlamydia and chancroid, and to result in reduced prevalence of these diseases in the community. Syphilis screening was also provided twice a year.

This initial PPT intervention was evaluated in 1997 and the results have been published. Based on the large reductions in STIs documented for both women using the services and local miners, the mining companies namely Harmony Gold Mining Company, Gold Fields Limited, and Anglo Gold agreed to take over the running costs and expand the intervention. The expansion included a subsequent intervention site (Meloding). Both intervention sites (Saaiplaas and Meloding) were compared with mines 2-4 km and >5 km from the intervention sites which acted as controls to determine whether the intervention was not only sustainable but also replicable. Beginning in mid-1997, the Lesedi Project has been managed by a steering committee with representation from the community, mines, union and health department.

In 1999, the Lesedi steering committee requested technical assistance with evaluation of the Lesedi intervention and with expanding the services to new mining areas. There was also interest in adding a PPT component to a large community HIV intervention in another large mining area in Carletonville.

## Methods

STI services for high-risk women were provided at mobile clinics each staffed by a professional nurse trained in the study protocol. All women who met the inclusion criteria and who were considered to be at high risk of STI (reporting commercial sex work or having at least two sexual partners besides spouse) were offered the opportunity to participate. Each woman was administered a standardised questionnaire assessing demographic, obstetric and sexual history and current symptoms. A genital examination, which included speculum, was performed and a urine sample was collected. Venipuncture was performed to obtain serum for serologic testing for syphilis. Urine specimens were stored in a cold box in the mobile clinic and transported daily to the laboratory where specimens were aliquoted and frozen at  $-20^{\circ}\text{C}$ . Specimens were analysed for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* using ligase chain reaction (LCR) (LCx, Abbott, Chicago, IL). Serum was tested for quantitative rapid plasma regain assay (Immutrep, Omega Diagnostics, Alloa, Scotland)

All participants were given presumptive treatment with 1-g dose of azithromycin under direct observation. Azithromycin was chosen for its activity against *C trachomatis*, *N gonorrhoeae*, and *Haemophilus ducreyi*, which are common pathogens in the community.

In the beginning of March 2000, the tapering of Azithromycin started from a monthly period to a three-monthly period. It was emphasized that the medication was effective for only a few STIs, and that taking the medication was not a substitute for other prevention measures such as partner reduction and condom use, which were also promoted. Additionally, women with symptoms or signs of genital infection were managed according to standard syndromic algorithms.

At monthly follow-up visits, risk behaviour was assessed using a brief questionnaire to determine symptoms, number and types of sexual partners, and condom use. The physical examinations were repeated except for the speculum, and urine was collected for LCR testing.

In order to evaluate the impact of the intervention on community STI prevalence, miners living in hostels in the intervention area were examined. In 1996/7, two separate samples of miners presenting for annual pre-leave physical examinations were screened for signs and symptoms of STIs at baseline and 9 months later. Discharge and ulcers were noted, and a first catch urine sample was collected for LCR testing for *N gonorrhoeae* and *C trachomatis*, as described above. Results were returned within two weeks and free treatment was provided to miners with positive test results.

Evaluation of STI rates through miner STI surveillance was an ongoing activity from 1996. All symptomatic episodes of STIs among miners living in hostels in the intervention and control areas were recorded. Mine hospital records of outpatient visits were examined and annual rates of genital ulceration and discharges for each of the intervention areas (miner pop 2,883 and 2,011 respectively) were computed. These were compared with respective rates for miners living in more distant areas (intermediate 2-4 km, pop 7,336; distance >5 km, pop 1,866).

## Results, initial project 1996/7

The impact of the intervention was evaluated after nine months of PPT. This was done for both the miners and the women at high risk.

The results from the first stage of the project were impressive. In miners, gonorrhoea and chlamydia were

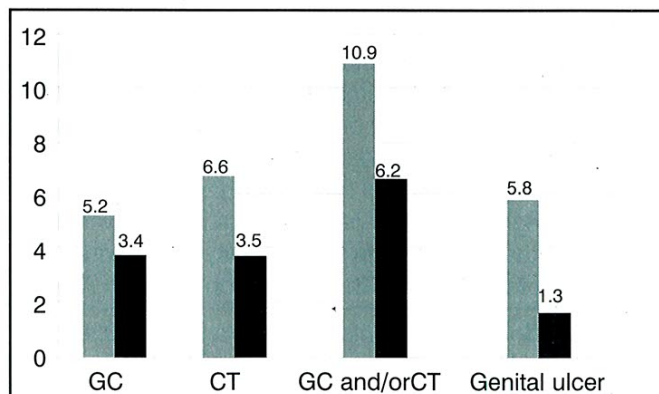


Figure 1. STD decline among miners in intervention area, Lesedi Project

reduced by 42% and a 77% reduction in genital ulcers was observed (see Figure I). In mine hostels, reduced rates of symptomatic STIs were also observed (see Figure II). Among the women, similar dramatic declines in the STIs were seen (see Figure III).

A cross sectional randomised sample was taken from the miners at different hostels. Prevalence rates of gonorrhoeae and/or chlamydia declined after 9 months by 43% (from 10.9% to 6.2%) and the prevalence of clinical evidence genital ulcers declined by 77.5% (from 5.8% to 1.3%).

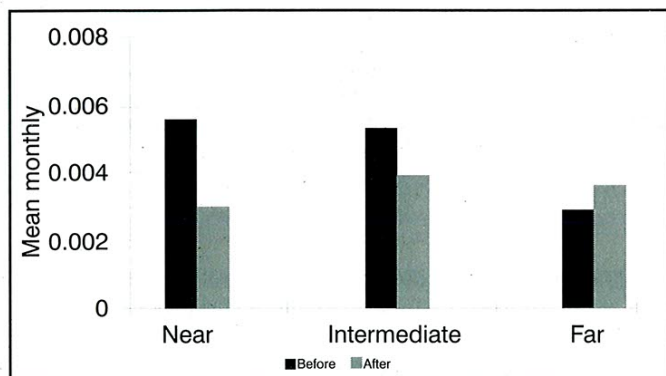


Figure 2. Miner STI Surveillance: GUD 1996-7

During the postintervention period, STI attendance rates decrease for miners closest to the intervention area; for the more distant hostels, the difference was inversely related to distance from the intervention. This pattern was most evident with general ulcer disease.

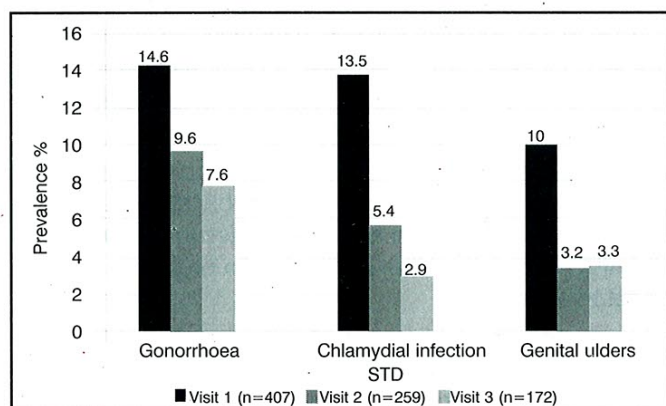


Figure 3. STD decline among women at high risk

The prevalence of gonorrhoeae and/or chlamydial infection declined by 77% (from 24.9% to 5.7%) in women who attended the clinic on at least four occasions, and the prevalence of clinical evidence of genital ulcers in these women declined by 86% (from 6.4% to 0.9%).

## Results, expansion in 1998,1999

Following the initial successes, the intervention expanded to the nearby areas of Meloding and Theunissen.

Looking at the miner STI surveillance of 1998, (Figure IV) the effect of the intervention was more marked amongst miners nearest to the intervention area

Mean monthly incidence rates of genital ulcers among miners seen at outpatient clinics at the various sites are shown in Figure IV (1998 & 1999). In 1998 the rates recorded at the initial intervention site (Saaiplaas) were

maintained at a similar level (0.26%) to that recorded following the introduction of the intervention two years previously (0.34%). Rates at more distant mines were 2.1 times (2-4 km) and 5.4 times (>5 km) those recorded at the initial intervention site. In 1999 the rates were 0.36% for the Saaiplaas intervention site, 0.44% for Meloding intervention site, while rates of 0.87% were recorded for intermediate (2-4km) and distant 2.14% (>5km) shafts.

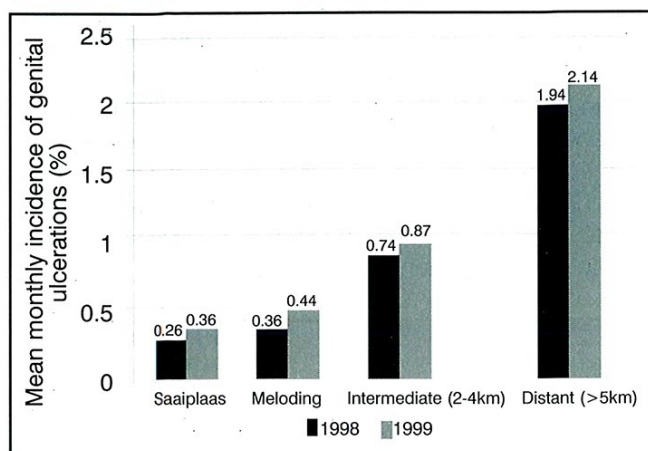


Figure 4. Monthly incidence of genital ulcerations among miners at Harmony Hospital Outpatient Department Free State 1998 and 1999,SA

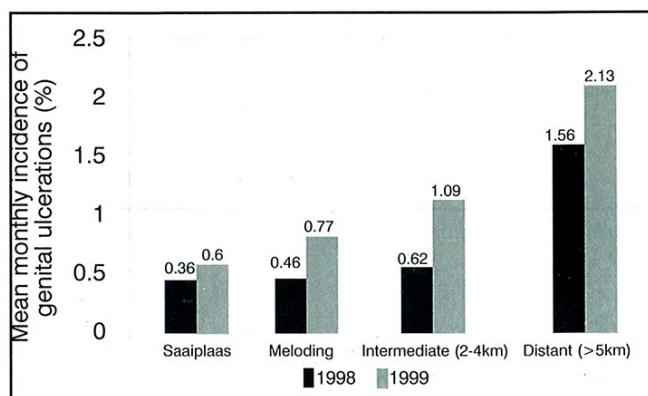


Figure 5. Monthly incidence of genital discharges among miners at Harmony Hospital Outpatient Department Free State 1998 and 1999

Similar findings were documented with respect to genital discharges. Mean monthly incidence rates of genital discharges are shown in Figure V (1998 & 1999) with rates at intermediate (2-4 km) 1.7 times and at distant sites (>5 km) 4.3 times the rates recorded at the initial intervention site. The rates recorded in 1999 were 0.60% for the Saaiplaas intervention and 0.77% for the Meloding intervention sites, 1.09% for intermediate shafts (2-4km) and 2.13% (>5km) for more distant shafts.

Both genital ulcers and discharges were significantly reduced in intervention sites when compared to distant (control) sites (for 1998 ulcers  $X^2=12.38$ ;  $p=0.0004$  and discharges  $X^2=7.81$ ;  $p=0.005$  and for 1999 ulcers  $X^2=11.15$ ;  $p=0.0008$  and discharges  $X^2=8.0$ ;  $p=0.005$ ). Although the rates of genital discharge increased in 1999 compared to 1998, the difference between intervention and distant sites remains. We believe that the increased rates in 1999 are due to earlier detection (screening programmes, improved customer service and increased awareness).

## Results 2000, Sustainable and Replicable

By 2000 the Lesedi project was so successful that the mining companies in the neighbouring town of Welkom, funded a similar project, the Lechabile project.

At the Lesedi Project, tapering of Azithromycin took place from monthly to quarterly, while safer sex practices through peer education was reinforced.

The results obtained through ongoing miner STI surveillance of the Lesedi project from 1998 to 2001 show that the STI rates of miners nearest to the intervention site remain low despite the tapering of PPT (see Figure VI). This could be seen for both genital ulcers and urethral discharge. STI rates are significantly higher in the miner areas distant from the intervention. With the introduction of the Lechabile Project in 2000, a significant decline in STI rates was noted in the distant mines.

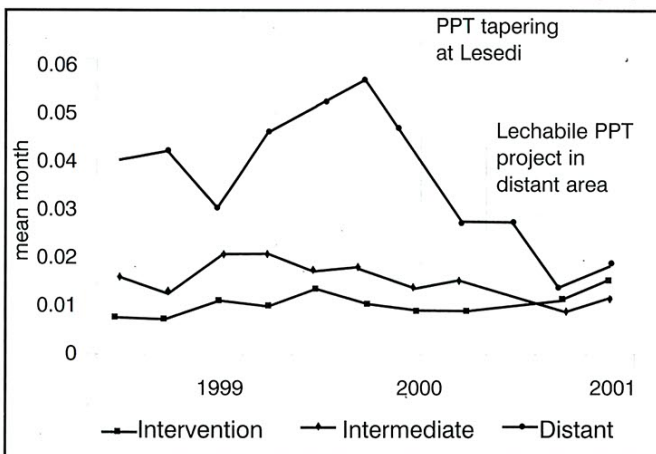


Figure 6. Lesedi Miner Surveillance: GUD and URD Jul 1998 - Mar 2001

STI rates among the women at high risk increased during 2000 while reported condom use increased as well. (see Figure VII). Tapering of Azithromycin from monthly to quarterly was introduced during 2000. The increase of STIs was the highest for gonorrhoea and somewhat less so for chlamydia. No increase of symptomatic genital ulcers was seen however.

## Conclusion

Provision of STI services, including periodic presumptive treatment, for high risk women, may lead to sustainable control of curable STIs in communities with large populations of migrant labourers living apart from their families. This comprehensive STI service resulted in maintaining constant low rates of STIs in miners in areas covered by the PPT project. Rates in intermediate areas have also declined with time as the intervention expanded, miner workplace HIV/AIDS programmes were implemented and project sites assimilated. Genital ulcer disease rates have gradually decreased in distant sites while the incidence of urethral discharge in those sites remain highly variable. In a situation of relatively low reported condom use (< 60%), it appears that the three monthly regimen of PPT as given in 2000, is not sufficient to keep gonorrhoea and chlamydia at a constant lower rate in the women (see Figure VII). However, relatively low rates of genital ulcer disease were maintained during this period (1997 – 2000).

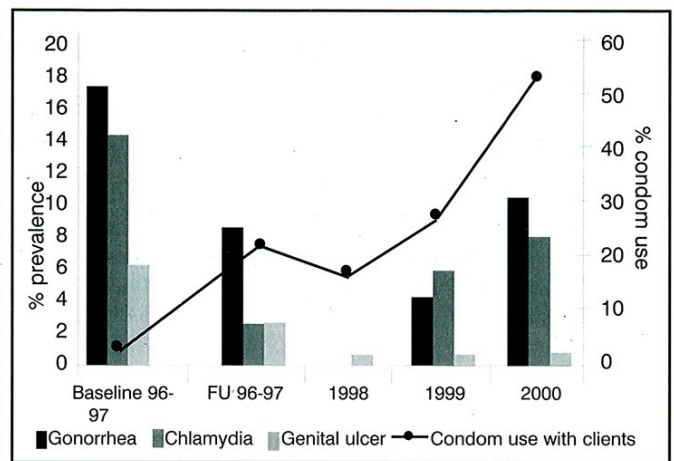


Figure 7. STI rates and reported condom use among women using the PPT services: Lesedi 1996- 2001

Although data on HIV were not available, estimates of how these reductions in STIs affected HIV transmission were developed using Family Health International's AVERT model. This probability-based computer model estimated that providing periodic presumptive STI treatment and peer education to 400 women had averted 40 HIV infections (39%) among the women and 195 HIV infections (48%) among the larger group of miners, i.e., a 46% decrease in the total number of estimated HIV infections.

The AVERT estimates were also used to develop simple cost-benefit calculations comparing the cost of the intervention to the potential savings in medical costs due to averted HIV infections. The result, an estimated cost benefit of R6.8 million to the mining companies suggests that the intervention is highly cost-effective.

In this South African setting, this approach was found to be not only sustainable but also replicable at a nearby site, Lechabile and at a site in an already existing community HIV/AIDS intervention, the Mothusimpilo project in Carletonville.

In view of these results, a comprehensive STI control programme has recently been initiated throughout the Gauteng and Free State Goldfields funded by mining companies and the provincial health authorities with union and community support. The main elements of the programme include:

- improved STI care,
- promotion of condom use through peer education, and
- provision of services to women at high risk as outlined in these studies.

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## How do I carry out an occupational health risk assessment?

*Rob Ferrie, Southern African Institute for Occupational Hygiene (SAIOH)*

**A** risk assessment should usually involve identifying the hazards present in any working environment or arising out of commercial activities and work activities, and evaluating the extent of the risks involved, taking into account existing precautions and their effectiveness.

In this context:

- a hazard is something with the potential to cause harm to health (this can include articles, substances, plant or machines, methods of work, the working environment and other aspects of work organisation);
- a risk is the likelihood of potential harm arising from that hazard. The extent of the risk will depend on:
  - i. the likelihood of that harm occurring;
  - ii. the potential severity of that harm, i.e. of any resultant adverse health effect; and
  - iii. the population which might be affected by the hazard, i.e. the number of people who might be exposed.

The Southern African Institute for Occupational Hygiene (SAIOH) publication, 'Guide to Conducting an Occupational Health Risk Assessment', breaks the process into easy stages:

### Step 1

#### Look for the hazards

If you are doing the assessment yourself, walk around your workplace and look afresh at what could reasonably be expected to cause harm. Ignore the trivial and concentrate on significant hazards that could result in serious harm or affect several people.

Ask your employees or their health and safety representatives what they think. They may have noticed things that are not immediately obvious. Manufacturers' instructions or data sheets can also help you spot hazards and put risks in their true perspective. So can ill-health records.

### Step 2

#### Decide who might be harmed, and how

Don't forget young workers, trainees, new and expectant mothers, etc who may be at particular risk;

- cleaners, visitors, contractors, maintenance workers, etc

who may not be in the workplace all the time; and members of the public, or people you share your workplace with, if there is a chance they could be harmed by your activities.

### Step 3

#### Evaluate the risks and decide whether existing precautions are adequate or whether more should be done

Consider how likely it is that each hazard could cause harm. This will determine whether or not you need to do more to reduce the risk. Even after all precautions have been taken, some risk usually remains. What you have to decide, for each significant health hazard, is whether this remaining risk is high, medium or low.

First, ask yourself whether you have done all the things that the law says you have got to do. For example, there are legal requirements on when respiratory protection must be worn. Then ask yourself whether generally accepted industry standards are in place.

But don't stop there – think for yourself, because the law also says that you must do what is reasonably practicable to keep your workplace free from risks to health. Your real aim is to make all risks small by adding to your precautions as necessary.

If you find that something needs to be done, draw up an 'action list' and give priority to any remaining risks that are high and/or those that could affect most people. In taking action ask yourself:

- can I get rid of the hazard altogether?
- if not, how can I control the risks so that harm is unlikely?

In controlling risks apply the principles below, if possible in the following order:

- use a less hazardous material;
- prevent access to the hazard (e.g. by enclosure);
- organise work to reduce exposure to the hazard;
- issue personal protective equipment;
- provide welfare facilities (e.g. washing facilities for removal of contamination).

### Step 4

#### Record your findings

This means writing down the significant hazards and conclusions. You must also tell your employees about your findings.

Health risk assessments must be suitable and sufficient. You need to be able to show that:

- a proper check was made
- you asked who might be affected
- you dealt with all the obvious significant hazards, taking into account the number of people who could be involved
- the precautions are reasonable, and the remaining risk is low.

Keep the written record for future use and reference.

### Step 5

#### Review your assessment and revise it if necessary

Sooner or later you will bring in new machines, substances and procedures which could lead to new hazards. If there is any significant change, add to the assessment to take account of the new hazard.

Don't amend your assessment for every trivial change, or even for each new job, but if a new job introduces significant new hazards of its own, you will want to consider them in their own right and do whatever you need to keep the risks down.

The regulations require that the assessment is reviewed at least every two years but in any case, it is good practice to review your assessment from time to time to make sure that the precautions are still working effectively.

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that is enjoyed by the whole of society, so that those who wish to enjoy this benefit may do so without constraint or rationing, and without depleting the quantity of political and social stability that is available.

As a result, one cannot expect market forces to ensure that consumption is efficiently allocated through the price mechanism. This is an example of a "good" that is "non-rival" in its consumption. The provision of such goods is commonly regarded to be a public sector responsibility<sup>6</sup>.

The extent to which an individual firm might be expected to use its scarce resources to prevent one of its workers from becoming infected with HIV is defined, from this perspective, by the value of the direct monetary benefits that the firm might enjoy if such an infection were to be prevented. This does not imply that there are no other benefits from preventing a case of infection, or that these are of no value to the firm. These additional, indirect benefits are external to the firm and may be non-rival in consumption; hence, from this perspective, their costs are best carried by the public sector and met from taxes that affect all firms in as equitable a manner as possible.

In theory, firms should be prepared to invest just as much money for the prevention of an additional infection with HIV as is counterbalanced by the direct monetary costs of one extra case of infection. At that point the monetary cost will equal the monetary benefit (from the firm's perspective). If, on average, each new case of HIV infection costs the firm R30 000 at present value, then the firm should be prepared to spend up to R30 000 at present value to prevent a new infection.

A potential problem with this attempt to "parcel-out" responsibility is that the current public sector infrastructure may not have the capacity to control the epidemic of HIV or to provide the necessary care (even without the provision of antiretroviral therapy) to those who need it.

Under such circumstances private/public sector partnerships might prove to be useful in the future, as might inter-industry partnerships that level the playing fields for all firms, so that the costs and benefits are shared by all in an equitable way. Such

arrangements would then change the correct perspective from which to carry out any economic evaluation of prevention and care programmes.

### The time horizon

The time horizon chosen is important since the timing of the costs and benefits may be widely separated. If most of the costs are incurred early on, but most of the benefits accrue after several years, then too short a time horizon will result in a present value of costs that exceed the present value of the benefits, discouraging firms from embarking on the intervention. If the time horizon is too long, the danger is that new circumstances might dramatically alter the present values of the costs and/or benefits, or even render current interventions obsolete.

From a firm's perspective, it is desirable that benefits are captured during the normal working life of the affected individuals, so that interventions would be more valuable in those firms where the rate of employee turnover is low and where retrenchments and "down-sizing" are not being contemplated.

### The discount rate

Present values are used to compute the costs to the firm of a case of HIV (these would be the benefits enjoyed if the case is prevented) as well as the costs to the firm of an intervention to prevent a case of HIV infection. Money spent today on prevention or treatment costs is no longer available for alternative uses, so that there is an advantage to be gained by delaying payment.

On the other hand, benefits are best enjoyed as soon as possible; delaying the benefits results in foregone enjoyment of those benefits. Ideally we would, therefore, gain greater value if we were to obtain benefits as soon as possible and make the payment for those benefits as late as possible. The timing of the costs and benefits must therefore be taken into account when they are compared. Their respective values need to be determined at a common point in time before they can be weighed against each other, and, for convenience and standardisation it is usual to determine them at "present" time value.

As an example, the cost of preventing a case of HIV infection may have to be paid this year, but the benefits may only accrue after some 6-8 years, when the worker would most likely become ill had the case not been prevented. In the meantime we have spent the money, cannot use it to acquire alternative benefits, and are not yet enjoying any of the benefits from the intervention. This sacrifice has a value that must be factored into our deliberations. This is done by means of "discounting" the costs and benefits to present value and then adding them up before comparing the two totals<sup>8</sup>.

A "discount factor" is used to bring the values of the costs and benefits to present value so that they can be weighed up against each other. For example, if the discount factor is 4%, then R100 of expenditure (or benefit) in 1 year's time is considered equivalent to R96 spent today. The World Health Organization recommends that a discount rate of 4% should be used for evaluating health sector interventions (Dr Gary Ginsberg, Israeli Health economist, 2001, personal communication), although a rate of 3% is sometimes preferred in developing countries.

Ideally the effect of altering assumptions about the discount rate should be explored, and one should be wary of analyses that do not include the results of such a sensitivity analysis, unless it is patently clear that alteration of the discount rate would not change the decision.

It should be noted that the theoretical basis for the "discount factor" has nothing to do with the inflation rate. One sometimes sees reports in which discount rates of 10-15% have been used. The reason is that in these studies the monetary values of the costs and benefits have been estimated in nominal terms, so that they have been inflated into the future: they must therefore be deflated at the same inflation rate plus the 3 or 4% discount factor chosen<sup>9</sup>. This problem can be overcome if one uses only current (real) prices in estimating costs.

The choice of discount factor clearly influences the relative present values of the costs and benefits. Let us consider a scenario where costs accrue within the next two years, but benefits

are not enjoyed for 6-8 years. In this case, if a low discount rate is used, say, 2% per annum, the present value of the costs might just be equal to the present value of the benefits.

However, if a higher discount rate is used, say, 4%, then the present value of the costs may exceed the present value of the benefits.

## Types of economic analysis

Partial economic analyses are those that consider only the costs or only the benefits of a particular intervention, or those in which only the costs and benefits of a single intervention are estimated<sup>8</sup>. Partial analysis might be of relevance if a firm wishes to estimate the present value of the costs per case of HIV infection. This estimate is of interest since this represents the present value of what the firm should be prepared to spend in the future in order to prevent a single case of HIV infection.

By contrast, full economic analyses are concerned with all the relevant costs AND benefits of two or more interventions of known efficacy and effectiveness, given a defined perspective, time horizon and assumption concerning the discount rate.

There are 5 different kinds of economic analysis that are commonly encountered, and these are briefly described below<sup>9</sup>.

- i Cost-minimization analysis. In these analyses the costs of two or more interventions are compared where the disease being treated is the same and the effectiveness is the same for each intervention being compared. The decision-maker might choose the least-cost option.
- ii Output maximization analysis. In these analyses the outputs are compared for two or more interventions that have the same costs. The intervention with the highest value output would be selected.
- iii Cost-benefit analyses. In cost-benefit analyses the outputs must be measured in monetary terms, so that one ends up with a ratio of cost in Rands to benefit in Rands. The incremental costs and benefits of a single proposed or actual intervention may be evaluated using this technique, or the costs and benefits of two or

more interventions may be compared. If this ratio is greater than 1 then this means that the intervention will result in a net cost. If it is less than 1 then it will result in a net profit. If it is equal to 1 then the monetary costs and benefits will break even. In practice, major outcomes such as survival or quality of life may be difficult to express in monetary terms, at least in a non-controversial way.

- iv Cost-effectiveness analysis. In these analyses one compares the cost per unit of output of two or more interventions that may be directed at different conditions, but where the outputs are measured in standard units, such as lives saved, patients cured, or hospital bed-days.
- v Cost-utility analysis. Cost-utility analyses are analogous to cost-effectiveness studies, except that the outcomes are measured in units of utility such as quality adjusted life years (QALYs) or disability adjusted life years (DALYs).

Often it is useful to combine the different types of analysis. For example one might find that a particular intervention for, say, treating hypertension, represents a net cost (monetary costs less the monetary benefits) at present value of R90 000. In addition, the individuals being treated enjoy 9 extra full quality years of life equivalent at present value. The cost per QALY of this intervention is thus R10 000 at 2001 prices. This result may then be compared to the costs per QALY for various other interventions, also at 2001 prices.

If the net cost per QALY for treating an HIV-infected person with antiretrovirals is less than R10 000 then it would make sense, from an economic point of view, to spend scarce resources on antiretrovirals rather than anti-hypertensive therapy, and to treat hypertension only if there are still funds available after all persons with HIV infection have been placed on antiretroviral treatment. Antiretroviral therapy is then sometimes said to be "more cost-effective" (even though a "cost-effectiveness" study was not carried out) than anti-hypertensive therapy.

Of course this statement does not imply that the monetary benefits of

antiretroviral therapy exceed the monetary costs. On the other hand, should the net cost per QALY of using antiretrovirals exceed R10 000 then anti-hypertensive therapy would be the preferred intervention if it is not possible to fund both. It should be noted that these "cost/QALY" results tell us nothing about the political feasibility and practicality of selecting either intervention.

## Quantification of the costs and benefits

Due to the fact that we frequently work with incomplete information, economic analyses also characteristically involve a number of additional assumptions that need to be made in order to work out the costs and the likely benefits of an intervention. As an example, in an economic analysis of the introduction of antiretroviral therapy it may be necessary to make assumptions about a large number of parameters, such as the baseline HIV prevalence rate, incidence rate, range of supportive laboratory investigations, patient adherence rate, prices for laboratory investigations and drugs in the future, costs of hospital and ambulatory care, productivity changes on therapy and so on.

These assumptions will render the analysis controversial. One solution is to conduct sensitivity analyses by varying the values of the main cost and benefit parameters. Another is to supply an interactive financial model to the target audience so that they may vary the values of these parameters at will and then make up their own minds about the likely net cost or net profit from the intervention.

One of the problems that firms face when trying to decide how much they should invest in HIV prevention is the determination of the monetary value of the costs and, especially, benefits that they might enjoy from such an intervention. Another is to determine the timing of the costs, and, more particularly, the benefits.

Many of the benefits, although direct, may be difficult to quantify in monetary terms. For example, what is the monetary value of improved worker morale and productivity as a result of fewer deaths from HIV-related illnesses among the workers and their families?

Other direct benefits may, in theory, be quantifiable in monetary terms, yet the quantification may be difficult. For example the cost of recruiting and training new people to replace workers who have left the job due to HIV-related illness or death may vary considerably depending on the skills required for that particular job, as well as on the scarcity effect that HIV-related deaths might have on wages and salaries for that particular kind of work. One result from the economic analysis might be that firms discover that they might be prepared to spend more money on the prevention of a new infection among highly skilled employees than among less skilled employees, and this raises ethical and moral questions that need to be addressed. (At the very least, however, more highly skilled grades of employee should attract the same intensity of prevention interventions as less-skilled grades, and this may not always be done.)

A note of caution should be mentioned at this point. Often an economic analysis has been carried out in a particular firm or industry and the results may be offered as being valid for all other firms. Costs, and potential benefits, however, will vary from firm to firm, depending on the age and risk profiles of its workforce, and the rate of staff turn-over. In general, it would usually be best to have a firm-specific analysis performed.

Interventions for the treatment of HIV-infected individuals will appear to be more attractive if the firm has an expensive medical scheme, especially one that provides for hospice care, since the introduction of antiretroviral therapy will result in proportionately higher savings than will be the case for firms with less comprehensive or less costly schemes. Even such firms, however, need to be sure that such medical costs savings will be passed on to them in the form of lower premiums.

## Summary

Firms that are concerned about the costs of the HIV epidemic may wish to carry out economic analysis of various interventions in response to the epidemic, either for prevention of new infections, or to provide care to those already infected. The results of these analyses will help firms to make the

costs, especially the net monetary costs, explicit, although they will not provide the only evidence to be considered when deciding on a new intervention.

The first thing that needs to be determined is the scope of the analysis: which costs and benefits are to be included in the study? Clearly firms will always want to include their own monetary costs and benefits in the scope of the analysis. They may, too, for strategic, or social, reasons, wish to include some external benefits as well, particularly if they are considering an industry-wide, inter-industry or public-private sector initiative.

Thereafter, firms would be well-advised to confine their attention to the evaluation of interventions of known efficacy and outcome, and that are feasible in practical terms. In addition, the time-horizon and discount rates need to be carefully selected. All assumptions that are required should be listed and a sensitivity analysis should be performed on any that may be controversial.

Finally, firms would be well-advised to conduct their own, firm-specific, analyses, and to be wary of "generic" findings, and to bear in mind that quite different results may simply be due to differences in perspective, time horizon and the discount rate chosen.

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## Disability management:

*towards clarity, promoting*

*disability rights and new*

*business opportunities*

Part 1 of 2

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Many of us have heard about disability management, but are uncertain about what it involves. Some disability management providers seem short on strategy and services. Disability management may be a matter of form and not substance - whatever a service provider decides it is, or markets it as. The effects have been negative: service fragmentation, divergent content, uneven standards and quality levels. Clients are increasingly confused, and significant damage is done to an important and emerging discipline with consequences for human rights. This also obscures the clear benefits disability management offers employers, retirement funds, insurers and the Compensation Commissioner.

Moreover, the new rights of disabled employees and disabled job applicants under the Employment Equity Act<sup>1</sup> are negatively affected. All in-house and contracted-in service providers will face new risks where employers rely on them to guide corporate compliance with the new legislation.

### **Towards clarity of concept and content**

This two-article series aims to contribute to clarity around "disability management" (DM) as a concept, its ambit and the scope of its services.

DM is set to become an increasingly important part of occupational health (OH), OH nursing, and for occupational therapists (OT) who specialise in work, function and vocational rehabilitation. These practitioners have key roles in promoting disability equity and therefore human rights. Clarity about DM's scope and content is also required for guiding practitioners in identifying new roles, and in accessing the new opportunities to position appropriate business services and consultancy strategies.

Therefore this first article tracks the evolution of disability management in South Africa and its current status. Thereafter all the key new legislation which promotes disability rights is overviewed, together with their related Codes of Good Practice on disability as well as disability management. The former is anticipated to be available from the Department of Labour in early 2002<sup>2</sup>.

The second and final article contributes to conceptual clarity and service certainty by offering an integrated model<sup>3</sup>. The model is functional, and outlines all key occupational health components of prevention and health promotion, and how they are easily integrated into the key DM components of retention, disability management, claims assessment and case manage-

ment. Finally the evolution of DM over the next few years is considered.

In line with foreign countries, in South Africa disability claims against retirement funds and disability benefit schemes started to escalate after 1992. This also coincided with the advent of the then new democratic dispensation, and as employers began to implement planned transformation and workplace change initiatives to address discrimination and ensure fair and appropriate representation levels of black people and women in the workplace.

### **The 1990s disability claims crisis**

By 1995 workplace change had precipitated a 'disability claims explosion', which developed into a serious industry-wide concern. Then, in late 1995, the present Labour Relations Act<sup>4</sup> was passed. Eskom, the national electricity supplier's retirement fund had also been very negatively affected by escalating claims experiences. It was identified that the Labour Relations Act presented a unique opportunity to strategically address the claims crisis, manage a very adverse claims experience, and at the same time ensure fair labour practices under the Act's good practice guidelines for employee incapacity<sup>5</sup>.

This strategy proved very successful for Eskom and its retirement fund. It was shared with many other funds and insurers, and reported in this journal<sup>6</sup>. Following a re-insurer<sup>7</sup>-sponsored national roadshow and subsequent reporting<sup>8</sup> and training events, over time many insurers, funds and intermediaries successfully adopted and applied the new labour law principles and practices. Rule changes were made, and leading funds have attended to adapting claims process administration to accord with improved assessment instruments, as well as effective appeal and dispute processes.

## Evolution of disability claims management

Using the new claims management opportunities presented by the Labour Relations Act, new specialist service providers emerged in the market. Usually linked to insurers or intermediaries, service providers fulfilled new strategic claims management for retirement funds, and marketed their services to fund trustees.

Disability claims management was positioned in the market as "disability management"<sup>9</sup>. Service offerings usually involved disability claims assessment, claims assessment, claims management and claims dispute mediation, sometimes linked to a case management service for declined claims for employers who were willing to purchase it<sup>10</sup>.

By 2001, it has become clear that disability claims management (often accompanied by case management) services by funds, broker intermediaries and independent providers have been very successful at managing claims down, even if the service itself has not necessarily been profitable for the provider. Almost without exception, disability claims have been brought under control and, are now well managed by retirement funds.

Presently, the Pension Funds Adjudicator's disability-related determinations can be expected to improve claims assessment quality and fairness. At the same time, the use of untrained assessment service providers will raise risk levels for insurers and funds as the law and practice rapidly changes in this dynamic developing area.

The next development in the evolu-

tion of disability management in South Africa was the passing of the Employment Equity Act<sup>11</sup>, which aims<sup>12</sup> to prohibit unfair discrimination and promote affirmative action in the workplace for "black people"<sup>13</sup>, women<sup>14</sup> and "people with disabilities"<sup>15</sup>.

This unplanned sequence of events was a welcome coincidence: funds and insurers had mastered disability claims management, but had few answers for employers on managing disabled employees whose impairments had not been able to be awarded the available disability benefit. And funds and insurers were in no position to persuade employers to implement any solutions they might have had. The LRA's "Code of Good Practice: Dismissal" guidelines were limited to steps to avoid dismissal of an employee with an incapacity.

By 1998, what disability management then needed was a coherent range of precepts and guidelines on the rights of disabled employees in the workplace to guide employers. Around this time, but in a different context, government had accepted that disability rights were a fundamental human rights issue, for the workplace and civil society. It is therefore helpful to examine why the legislative measure called the Employment Equity Act (EEA) was considered necessary and what the key aspects of the new legislation in relation to disabled job applicants and employees with disabilities are.

## A need for legislative measures for people with disabilities

Historically, "people with disabilities" have been denied social justice and excluded from equal opportunity and participation in most workplaces, often due to unfair discrimination based on the fears, myths and misconceptions of people who are not (yet) disabled. Many selection and hiring procedures for job applicants aim to detect disability in order not to hire.

But participation in employment is the key element in the full economic and social integration of people with disabilities into South African society. Employment provides disabled people more than just income; it gives independence, a sense of inclusion, and the opportunity to contribute and

compete equally.

Constitutional social justice and equal opportunity for disabled people to apply for and land jobs is a key employment right. Sadly, this is still more theoretical than real. People with disabilities in South Africa remain under-represented in almost every workplace. This is more particularly the experience of people living with more impairing conditions.

## Low levels of representation in workplaces

Unfair discrimination in employment on the basis of disability has persisted despite a history that shows that people with disabilities have been, are and can be equal contributors. Two surveys reflect this:

The Community Agency for Social Enquiry (CASE) report<sup>16</sup> found that "the overall employment figures are low at 12%, being less than a third of the employment rate for the general population. Of the total number of disabled people 15 years or older, 88% were economically inactive and/or unemployed but looking for work compared to 63% of people in the general population in a similar position."

The Central Statistical Service (CSS) in its October 1995 survey<sup>17</sup>, reported a disability prevalence of approximately 5% in South Africa, according to the Integrated National Disability Strategy<sup>18</sup>.

## Inappropriate labour law models

In our labour law, a range of substantive law and fair labour practices for people with disabilities never evolved. The Labour Relations Act<sup>19</sup> (LRA) "Code of Good Practice: Dismissal"<sup>20</sup> is limited to the context of termination of service, and gives guidelines for dismissal of 'incapacitated' employees only.

Fair practices did not develop to guide advertising, recruitment and selection practices for job applicants with disabilities. No guidelines for appropriate employee benefits and training exist, and no practices and alternatives for retaining disabled employees in service developed. Therefore many job applicants with disabilities have been unfairly denied employment, undergone medical and

psychological testing which was used to exclude them from job opportunities, and had their services terminated on account of disability, instead of being retained with reasonable accommodations.

## Legislative intervention: Employment Equity Act

The EEA intends to redress unjustifiable exclusion and promote workplace equity for black people, women and people with disabilities. The EEA recognises the rights of people with disabilities to work, the role they play at the workplace and their contribution in the world of work and the nation as a whole. Numerous international surveys have demonstrated that there is no significant difference between the safety, attendance and performance records of employees with disabilities and another not (yet) disabled employee.

The EEA therefore requires employers to address the disadvantages experienced by "people with disabilities" in the sphere of employment and the workplace. In general the EEA:

- prohibits unfair discrimination against "people with disabilities"<sup>21</sup> which requires that all unfairly discriminatory policies and practices in the workplace are identified and removed
- designates "people with disabilities" for "affirmative action measures"<sup>22</sup> to achieve their equitable representation in the workplace, by increasing their representation "in every occupational category". Measures must include "making reasonable accommodation" as well as "measures to retain and develop".

## Roles for occupational health and vocational rights and rehabilitation professionals

The disability rights aspects of the EEA should change attitudes to disabled job applicants and employees in the workplace, increased their representation in the workplace and instil a new culture of respect, value and non-discrimination.

A key aspect is the contribution health service professionals can make to the transformation process, by working with and guiding employers

and people with disabilities. Generally employers have no models for managing disability or existing skills to promote the new rights. The contribution of health service professionals to promoting rights and participation may not necessarily be primarily "medical" in nature. This is because many job applicants with disabilities are not sick but live with a disability. The need is more to recognise ability than about diagnosing disability. The goal is to identify and remove impairment-related barriers to equal participation, not to identify impairments.

In ways, skills developed from training based on the medical model will often have less application in promoting disability equity in employment than functional ability enhancement and vocational rehabilitation. This is because the right to "reasonable accommodation"<sup>23</sup> is the key statutory right available to people with disabilities. In the context of disability management the key contributions by health professionals will be to identify practical and affordable ways to accommodate disabilities, determine eligibility under the definition and related matters.

The EEA was drafted to specify all key obligations, which would over time be developed, clarified and supplemented by regulations, codes of practice and courts decisions. On this basis, for a multi-disciplinary team, the author drafted a recommendation that the Department of Labour (DOL) publish a code of good practice to guide disability rights in the workplace. The recommendation was accepted, and the multi-disciplinary team<sup>24</sup> researched and produced a draft code of good practice on disability for the DOL.

In April 2001, the DOL announced<sup>25</sup> and published<sup>26</sup> the final draft "Code of Good Practice on Key Aspects of Disability in the Workplace"<sup>27</sup> for public comment. The Department of Labour issues the Code, on the advice of the Commission for Employment Equity. In early 2002, the draft version is expected to be finalised. The current draft sets out the guidelines for good practices when applying and complying with the Employment Equity Act provisions relating to "people with disabilities".

## The Code's Good Practice guidelines

The Code offers the key guidelines for complying with the Act's rights of "people with disabilities" - all of which are very new areas of HR practice and employment law. The Code helps identify, understand and implement strategies to avoid the employment barriers that unfairly discriminate in relation to disability, and recommends good practices when employing people with disabilities, and for retaining employees who become ill or injured. It also covers all the important HR, IR and "employment policy and practice" that the EEA refers to in section 1 of the Act.

## What principles inform the Code?

Key principles included in the "Code of Good Practice on Key Aspects of Disability in the Workplace" are based on fundamental constitutional rights of people with disabilities and explain key legal requirements and aspects contained in the Employment Equity Act.

All the Human Resources, Industrial Relations and Occupational Health good practice guidelines which support compliance with the EEA are derived from best practices in Canadian, UK, US, Australian, Irish and German law, adapted where necessary for South Africa. Key recommendations made in the Integrated National Disability Strategy (INDS)<sup>28</sup> and the Green Paper on Employment and Occupational Equity have also been incorporated.

## What is the Code's legal status?

This Code doesn't impose legal obligations over those in the EEA or in any other Act mentioned in the Code. Not observing it will not, by itself, render an employer liable in any proceedings, except where the Code refers to obligations set out in law. However (as in the LRA's Code of Good Practice: Dismissal) an employer who chooses not to follow the Code would, if challenged, need to be able to justify their non-compliance.

The Code should be read in conjunction with other Codes of Good Practice that may be issued by the Minister of Labour. In this regard the

following are specifically important: the EEA's Code of Good Practice on HIV and AIDS in the Workplace<sup>29</sup>; Code of Good Practice: Dismissal (LRA) and the future EEA Code of Good Practice on Human Resources Practices which may be issued in 2002.

## So how does this Code apply?

The Code has application to the workplace in a variety of important ways.

Firstly, it requires an employer to increase the representation of "people with disabilities" in the workplace. Accordingly the Code applies to job applicants, which has the effect that recruiters and interviewers will need to know more about disability, types of disabilities, reasonable accommodations, etiquette, placement, selection and testing and other information. Every employer and applicant's objective is a hiring decision that benefits both the enterprise in terms of productivity, and the job applicant in landing a job in which they can contribute and grow.

Secondly, it requires employers to "retain" employees with disabilities (see below). Current employees already have impairments, illnesses, injuries or diseases that qualify them as people with disabilities - or still will in the future. Thus the concept of disability management is much more significant than it once was, and the termination of the services of disabled employees via disability benefits and dismissal may no longer be a logical action to take (the representation level decreases) or be as simple as it once was.

So under this Code, the job applicant, both the CEO and the humblest employee with a disability that qualifies in terms of the definition will enjoy equal rights - and equal protection.

## The beginning of a completely new paradigm

Most employers will be encountering key aspects of this new Code for the first time, since few will know what a disability is, or have appropriate practices and procedures established to accommodate disabled employees. In the past the emphasis was usually on trying not to hire disabled job applicants, or on the conventional approach

of terminating the service of a disabled employee via dismissal, disability benefit departure or retirement.

Therefore the new Disability Code marks the end of past approaches to understanding and managing disability, and the beginning of an entirely new paradigm for disability equity in the workplace and disability management of employees with disabilities.

## References

1. Employment Equity Act No 5 of 1998
2. Per personal communication with the Department in November 2001
3. Derived from international best disability management practices and adapted for South Africa
4. Labour Relations Act No 66 of 1995
5. See the Labour Relations Act's "Code of Good Practice: Dismissal" in Schedule 8 to the Act
6. Strasheim, P in consultation with Botha, Dr AT, Managing Employee Incapacity in terms of the new Labour Relations Act and related legislation, Occupational Health South Africa Vol 2 No 4 July/Aug 1996 (Part 1) and Vol 2 No 5 Sept / Oct 1996 (Part 2)
7. Sponsored by the then Mercantile and General Reinsurance Company
8. A Totally New Ball Game, Cover Magazine Vol 8 No 10 March 1996
9. See for example Van Niftrik J, Disability Management in South Africa Occupational Health South Africa Vol 2 No 3 May / June 1996 14 - 21
10. See for example "Assessors Under Fire" in Cover Magazine December 1996 at 7
11. Employment Equity Act No 55 of 1998
12. The objectives of the Act as stated in its preamble are as follows: " to promote the constitutional right of equality and the exercise of true democracy; eliminate unfair discrimination in employment; ensure the implementation of employment equity to redress the effects of discrimination; achieve a diverse workforce broadly representative of our people; promote economic development and efficiency in the workforce; and give effect to the obligations of the Republic as a member of the International Labour Organisation"
13. In the Employment Equity Act "black people" is a generic term which means Africans, Coloureds and Indians
14. In the Employment Equity Act "women" is not defined
15. in the Employment Equity Act "people with disabilities" means people who have a long-term or recurring physical or mental impairment which substantially limits their prospects of entry into, or advancement in, employment
16. "We also count" - The extent of moderate to severe reported disabilities and the nature of the disability experience in South Africa: "Summary on disability prevalence and distribution"
17. Chapter 1, page 1
18. Integrated National Disability Strategy; White Paper; Office Of The Deputy President; November 1997
19. Labour Relations Act No 66 of 1995
20. LRA Schedule 8: "Code of Good Practice: Dismissal"
21. Definition of "people with disabilities" in section 1 of the Employment Equity Act
24. The team comprised Ms L Swart (Occupational Therapist), Dr D Van Zyl (Occupational Health Medical Practitioner), Mr P Reineck (Employee Benefits consultant), Mr R C Robinson (DPSA consultant), Ms F Lagadien and Ms P Linders (DPSA members), and the writer (legal, labour and Disability Law consultant). Mr W Sekwati (Attorney) had to withdraw due to work commitments
25. The launch of the "Draft Code of Good Practice - Key Aspects of Disability in the Workplace" was announced by the Minister of Labour, the Honourable MMS Mdladlana, MP, at Gallagher Estate, Midrand, Gauteng on Friday, 20th April 20, 2001
26. The draft Disability Code was published for public comment by the Government Printer in Regulation Gazette No 7407 Vol 430 No 22209 on 19 April 2001
27. The draft Code can be accessed via the internet from the Department of Labour's website [www.labour.gov.za/docs](http://www.labour.gov.za/docs)
28. See above
29. See the "Code of Good Practice: Key Aspects of HIV/AIDS and Employment", which was published by the Government Printer in Regulation Gazette No 6942 Vol 426 No 21815 on 1 December 2000

# Health hazards in the assembly of electronic devices

by Angela Calverley, *Epidemiology and Surveillance*  
Section NCOH

## Abstract

Exposure to fumes and chemicals, inadequate ventilation and lighting, ergonomic and psychosocial stress, were all identified as potential health hazards in the assembly of electronic devices. Most of these were found during a health hazard evaluation in a typical local factory.<sup>1</sup> Of the 90 workers 27 reported work related musculoskeletal pain, associated with restricted movement and monotony at work. Seven cases of occupational asthma and five of dermatitis were diagnosed.

## Introduction

Workers in microelectronic / electronic manufacturing can be exposed to hazardous chemicals and processes in the workplace. Occupational health research has focused mainly on the production of semiconductors. In South Africa one company manufactures relatively few of these; the assembly of commercial, domestic and industrial appliances, instruments and devices is a more typical manufacturing process. This industry offers employment to many workers, particularly women - who have been neglected in occupational health research. Many areas of "women's work" have not as yet been researched in South Africa, particularly in newer industries generated by technological advances. Assembly of electronic devices had not been investigated, so the NCOH undertook a health hazard evaluation to identify potential hazards in this type of work, and effects on the health of the workers in a typical factory.

## The workplace

The factory employed about 100 production workers, mainly women. They manufactured electronic measuring devices by assembling pre-manufactured components. An imported ready-made circuit board was "populated" by the manual insertion of small components. These were then soldered into position in a wave-soldering machine, where boards pass through flux and molten solder. Excess solder was removed and inadequate soldering "touched up" using a soldering iron. After testing, and any necessary repairs, the boards were put through an automated coating process. After the addition of more components, for example circuit breakers and wiring, completed boards were installed into the plastic housing of the final product. Following quality control and testing, goods were packed for dispatch.

## Potential hazards

From literature and observation on site, possible hazards in this type of manufacturing were: inadequate lighting and ventilation; exposure to chemicals, particularly organic solvents and colophony (a known sensitiser) in soldering fumes; ergonomic stress of poorly designed workstations and repetitive precise work, and psychosocial stress.

In this industry, the stringent requirements for illumination of fine work on assembly plants (500 lux) and inspection of fine work (1 000 lux), to minimise eyestrain and fatigue, make lighting particularly important. Poor air quality is a hazard where chemicals are in use, good

general ventilation is important.

Volatile organic solvents, widely used as vehicles for other chemicals, and for their degreasing properties, have been implicated in many health effects. These include irritation of eyes, skin and upper respiratory tract, and symptoms of the central nervous system. Because of their volatility they are easily inhaled, and many are also readily absorbed through the skin. Lack of forced ventilation effectively increases exposure by both routes.<sup>2</sup> Exposure to sensitising soldering fumes is a likely hazard, and extraction of these fumes at source to prevent exposure, is stipulated in Material Safety Data Sheets (MSDS) distributed by manufacturers of soldering materials.

In assembly work there are ergonomic hazards from repetitive, restricted movement in precision work resulting in static loading of the muscles.<sup>3</sup> Effects can be considerably worsened by incorrect working positions. Correct working height is at elbow height or a little lower for seated workers. Chairs should be height adjustable with backrests, and seats not so deep that they impact on the back of the knees. Workers should have adequate legroom and thigh clearance under the workbench, and be able to put their feet flat on the floor.

Common psychosocial stressors in "women's work" are lower wages and social status. Domestic responsibilities are an added burden. In this industry poor physical working conditions, monotonous work, lack of job control in an interdependent assembly line situation, quota or incentive

schemes or unrealistic piece rates, could all be relevant. Additive effects of stress on musculoskeletal pain have been recognised.<sup>3</sup>

## Workplace study

### Methods

Health hazards and their effects in a specific factory were investigated using a descriptive, cross-sectional study design. Factors of occupational hygiene and workstation dimensions were measured in the workplace, and a questionnaire was administered to 90 women workers who were at work during the survey; only one worker declined. Workers reported their personal details and domestic arrangements, occupational histories, psychosocial stress at work and everyday life, and health problems – general, respiratory and skin symptoms, and musculoskeletal pain. Physical measurements of workers were taken to assess compatibility with the workstation. Provision was made for further medical evaluation of respiratory symptoms at the NCOH referral clinic, and of skin problems by a specialist dermatologist Dr H. Carman.

## Results

### Occupational hygiene

Inspection on one day only, using standard methods showed compliance with standards for physical factors. Air quality was compromised by poor ventilation; by mid afternoon the carbon dioxide level peaked at twice the ambient level outside the factory, close to the action level of 1 000 ppm. Measurements of air concentration of the most evident organic solvent, Methyl Ethyl Ketone (MEK), a constituent of the coating process were within stipulated limits. Other chemicals in limited individual use were not measured, but were identified and their health effects noted. MEK and other organic solvents used were skin absorbable; all substances in use had at least one component that was described as irritant to the nose and throat, and one or more of - skin, eyes, and respiratory tract. Neither this combined exposure nor possible health effects could be accurately assessed.

Visible fumes emanated from hand soldering, by up to 36 workers (on days we were present). Systems for

the extraction of these fumes at source were not provided, although stipulated in the manufacturer's MSDS. Considerably less fumes escaped from entry and exit points of the enclosed wave-soldering machine, which had an integral extraction system. All production workers were in one room and potentially exposed to some degree. This was confirmed when one or both of the two major components of solder fumes - abietic and dehydroabietic acid were detected in 26 of 28 workers' urine samples examined by the Health and Safety Laboratory (UK).<sup>4</sup>

### Workstation suitability

Calculations for suitability of the workstation showed that the workbench was too high for this female workforce. The "typist" chairs provided were height adjustable within a range for correct working heights, but 52% of the workers would not be able to put their feet on the floor without footrests (which several workers had improvised for themselves). For 16% of workers the seats were too deep, forcing them to sit forward without back support. Thigh clearance under the bench was probably inadequate for 24% of the workers. There was plenty of legroom, but this was restricted in some cases by equipment and more often by general clutter, like rubbish bins and boxes. The workers had not adjusted their chairs - they didn't know how to, or that it may be beneficial.

### Psychosocial stressors

Those identified in the work place were dissatisfaction with physical working conditions including fumes and odours, the lack of challenge or interest in the work, low salaries and social status of "women's' work". The impact of these stressors was probably relieved to some extent by good social support and interaction among employees.

### Study of workers

#### Lifestyle

From workers' questionnaires most had a demanding schedule combining full time work and domestic responsibilities. Most workers got up at 5am to be ready to face an hour-long trip to work, and a similar trip

home after 10 hours at the workplace. Most women had children and often other family members to care for, and also did more than half of the household chores. Forty one percent of the workers were sole breadwinners, 30% had been the victims of domestic violence, and 88% were worried about not having enough money.

## Health effects

### Work related musculoskeletal pain

Pain lasting 24 hours or more, in the past 12 months was reported by 27 (30%) of the workers. In one case this pain was severe and chronic, but mild and intermittent in the majority of cases (14). Pain was not age related, but was more prevalent in workers doing assembly tasks with restricted movement, than those with greater activity (eg packing), Prevalence Ratio (PR) 3.08 (95% CI 1.02 – 9.32). However, there was also a significant trend associating work related pain and the level of discontent with the lack of challenge at work - Chi square for trend 15.057 (p value 0.0001) which increased to 18.708 (p value 0.00002) after adjusting for job type suggesting that the psychological influence was more important than the physical one, in this instance.

### Dermatitis

Five workers had dermatitis related to workplace exposures. One reacted strongly to colophony and thiuram (as well as fragrances); four reacted to cobalt and/or nickel salts, which is common among women in general, from domestic exposures.

### Respiratory and eye symptoms

Eighty percent of the workers reported itchy eyes, sore throats, rhinitis or breathing problems at work. Fifteen workers with the most severe symptoms were given full respiratory evaluations at the NCOH clinic, where 8 cases of probable asthma were identified. Seven of these were diagnosed as occupational asthma, associated with soldering fumes; all cases had developed symptoms after soldering for between one and eight years, with no previous history of asthma. Only one was a new case, in the other cases asthma had already been diagnosed, but the occupational

origin had been overlooked. Workers had consulted private doctors, rather than the company doctor qualified in occupational medicine.

## General health

Workers reported frequently encountering adverse physical and environmental working conditions, many women volunteered "odours, gases" as the main problem. Only about half the workers (46) felt they were "well". There was a significant association between frequent headaches, the most common complaint, and feeling "unwell". Depression was the next most frequently reported symptom, how often this was true clinical depression was unknown; 20 of the 38 affected workers sought medical attention for the condition, but no further details were obtained. Other researchers have found significant associations between depression, and low-level exposure to solvents for more 50% of the working day.<sup>5</sup>

## Summary

The most obvious health hazard was exposure to soldering fumes, causing asthma and dermatitis, as well as general irritation. The discomfort factor of itchy eyes, sore throats and rhinitis at work was clear, but not the individual contribution of rosin fumes and airborne organic solvents. Poor ventilation would effectively allow the concentration of airborne chemical hazards to increase during the work shift. Monotony was an important factor in work related musculoskeletal pain, but difficult to overcome. Pain may be reduced by better ergonomic planning of assembly line workstations, to suit the women workers who predominate in this type of work. In this case reducing the workbench height from 75 mm to 650 mm (the lowest recommended by the ILO) would enable all workers' feet to comfortably reach the floor, and a more relaxed position.<sup>5</sup>

The biggest risk to health in the work place lay not only in the hazards themselves but in lack of awareness of occupational health, at all levels. Management had MSDSs for hazardous materials, but recommendations were not implemented, and the union apparently took no action prior

to the survey. Workers were not aware of the health implications of work exposures. Despite the workplace occupational health clinic, workers went to their general practitioners with asthma symptoms, and diagnoses did not reflect occupational sensitisation.

## Conclusion

In electronic assembly work potential hazards of chemical exposure can be prevented or minimised by efficient extraction and ventilation. Musculoskeletal pain could be reduced by good working posture, and job rotation and social interaction to alleviate monotony. However the single most important measure to improve occupational health would be adequate education and training - across the board.

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## Product News

# Important news for users of Audiometric Management Software

**New Regulation 171 (See Government Gazette No 22834 16th November 2001)**

Accurate, regular hearing checks are paramount to a successful hearing conservation programme. Precise record-keeping using computerised audiometry is the norm in most industry today.

A number of important changes have recently been implemented to

the prevailing regulations resulting in the need to upgrade existing Audiometric Management Software to ensure compliance with new Hearing Screening Regulation 171.

With the introduction of Regulation 171, Clinics and Medical Centres will be compelled to update their audiometry software to fall in line with the Departments of Labour and Minerals and Energy's regulations. Some of the services offered by Amtronix include updating all existing audiometry software, the supply and installation of audiometers and booths and audiometer calibrations.

Occupational health practitioners requiring information or assistance with regard to audiometers and Management Software Updates, are invited to phone their free advisory service. Steve 082 464 1055 or Ken 083 266 4884.

# The impact of the International Labour Organisation's code of good practice on managing disability in the workplace

*Dr Chris de Beer, General Manager Employee Benefit Risk Management, Coris Capital*

A survey done by the World Health Organisation in 1998 indicated that there were 610 million people with disabilities worldwide. Of these, 380 million were between the ages 15 – 65 years. Unemployment figures for people with disabilities ranged from 8-13% in developed countries, to 80% in developing countries<sup>1</sup>. Unemployment of these large numbers of people deprives the individuals themselves, and the economies of the relevant countries, of opportunities to contribute to their own prosperity and that of the world economy as a whole.

## Background

In attempts to address this problem, several countries have already developed relevant legislation and guidelines. During 2001, the Department of Labour in South Africa developed a draft code of good practice which is intended as a guideline for employers on handling key aspects of disability in the workplace<sup>2</sup>.

On the international scene, the International Labour Organisation responded to the challenge by arranging a tripartite meeting of experts on the management of disability at the workplace. Twenty seven experts from around the world met in Geneva, Switzerland to finalise and adopt the Code of Practice on Managing Disability in the Workplace<sup>3</sup>. This workshop took place from 3-12 October 2001 and the experts consisted of nine employer representatives, nine employee representatives and

nine government representatives. Developed and developing countries, as well as large and small companies were represented, to ensure that the international code would be relevant for all stakeholders concerned.

The professional way in which every item was handled by all parties present was encouraging as it indicated a true spirit to develop a product that would benefit employees, employers and governments.

## The code

The ILO Code of Practice looks at practices which will effectively enable people with disabilities to integrate into the workplace. The objectives of the Code are as follows:

- Ensuring equal opportunities in the workplace
- Facilitating recruitment, job retention, advancement and return to work
- Promoting safe, healthy and accessible workplaces
- Minimising costs associated with disabilities for employers
- Maximising the contributions of employees with disabilities

The Code is to provide guidance to employers, competent authorities (defined later), employers' organisations and workers' representatives on the actions to be taken to ensure fair practices in relation to people with disabilities who apply for vacancies as well as employees who contract

injuries and/or illnesses which may result in permanent disabilities. It differs from the South African code in that it does not only focus on the employer but also addresses the obligations of the other role players in the disability management process. This is a sound principle as disability management is a team effort and should not be the sole responsibility of medical service providers, human resource practitioners, or any one department.

It is however also important to realise that to implement these principles effectively, specific skills and competencies, not currently readily available in South Africa, are required, namely the skills of a professional disability manager and/or disability coordinator. This means that a new approach is needed to mould existing practices into effective, efficient and integrated disability management programs which will address the specific needs of employers. The successful implementation of the principles will also, in most instances, lead to cost savings for the employer.

## The impact of the code

Effective and efficient implementation of disability equity and disability management takes specialist knowledge and skills. Medical service providers, human resource practitioners and managers can no longer make decisions not to employ, not to retain, or to terminate services of employees with disabilities, just

because of a perception of incapacity, or that a possible threat to the health and safety of such an employee (or co-employee) exists. Decisions now have to be made only after careful consideration of scientific evidence of specific risks and after consultation with the relevant stakeholders.

### **Impact on the employer:**

The employer will have to develop a strategy which will address disability equity and disability management. This strategy must be linked to the human resources development as well as the occupational health and safety strategies. The focus of such strategy must be on recruitment, retaining, advancing and training of people with disabilities. New and creative strategies will be needed to ensure reasonable accommodation as well as the compensation of people with disabilities who, as a result of deteriorating physical or mental conditions, will later become too disabled to continue in the position to which they were appointed. It will take careful management, using a "step-down" approach, which takes into consideration the person's ability to work. A practical example of this is a person living with HIV; such a person may require a less strenuous position as his or her condition deteriorates.

A second point to note is that training methods, training modules and the development of career paths may have to be adjusted and that the person with a disability will play a more important role in the formulation of his or her own development program.

The real challenge for the employer will be to adjust the working environment to enable optimal contribution from people with disabilities, instead of requiring all employees to be 100% fit and well before returning to work.

For the employer it is essential to think about his disability management program as an integrated programme involving a wide range of different specialists and functions and not only to rely on the medical service provider, or occupational health specialists, to manage this essential, and very specialised field.

### **Impact on the Occupational Health Professionals:**

A considerable mindset change is required from all occupational health

specialists. New applicants and/or employees who suffer from a disability cannot be prevented from working in a risky area, or being excluded from other benefits only because such a person has a potential health and/or safety risk. The specific risk of such an employee will have to be evaluated, and quantified in a professional and scientific way.

Occupational health professionals will have to engage in literature searches and will have to take into account relevant research results to determine the risks of specific medical impairments. A great deal more emphasis will have to be placed on the measurement of the actual working capacity of employees and the guidelines used by the World Health Organisation (ICDIH-2) to determine the ability to work. The occupational therapist also becomes an essential part of the evaluation team to ensure more accurate quantification of functional capacity.

Cooperation of occupational health professionals with pension fund administrators and other insurance carriers becomes a vital part of the decision-making process to determine what will happen to the employee who becomes unable to work. Early notification of the pension fund and other possible insurance carriers is essential, as is the initiative from the occupational health practitioner to put together a structured, approved process of management for such a person.

Special training is imperative for occupational health practitioners to equip them with the competencies to effectively manage disability in a true integrated disability management programme.

### **Impact on Employee:**

In keeping with the principles embedded in other health and safety legislation, the employee (and new applicant) also has a responsibility. The main responsibility of such a person is to cooperate with the employer in all efforts implemented to ensure recruitment, retaining and advancement. This means that such an employee will have to obey specific safety rules, cooperate fully with treatment and rehabilitation programmes and to fully participate in relevant training and development programmes. Affected employees will

also have to realise that they also have a duty to actively assist in the search for solutions to their problem and not resort to passive behaviour.

### **Impact on Government:**

The ILO Code defines "competent authorities" as ministers, government departments or other public authorities having the power to issue regulations, orders or other instructions having the force of law. The code also spells out their responsibilities. These responsibilities are focussed on supporting people with disabilities to acquire the necessary skills for employment, as well as supporting employers to develop effective disability management strategies. Employers are also enabled, through specific contributions and grants, to employ people with disabilities.

### **Conclusion**

The ILO code of practice on managing disability in the workplace is a well-balanced document outlining responsibilities of all the role players in disability management. Correct and successful implementation of the code will have definite benefits for employers and for people living with disabilities, as well as for the economy as a whole. Existing practices for managing disability in the workplace however will have to change dramatically from isolated, individual functions to fully integrated systems involving a variety of functions and specialists.

It is also very clear that specific training and education of occupational health specialists will be imperative to guarantee effective and efficient development, implementation and monitoring of disability management strategies and programmes.

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## Detection of employees with new pulmonary tuberculosis

This is to inform you about a report on the case detection of employees with new pulmonary tuberculosis (PTB) at the Impala Platinum Mines, in the context of the HIV epidemic<sup>1</sup>.

The setting of this study was a platinum mining company tuberculosis (TB) ward, North West Province, South Africa. A survey was conducted to evaluate whether active PTB case findings during periodical fitness examinations of about 25 000 mine workers at Impala Platinum was still optimal. The objective was to describe the case detection of employees with new PTB, and to compare this with figures from the gold mines in South Africa<sup>2,3,4</sup>. Information was collected between March 1998 and February 2000 from new PTB cases, as well as from Impala Medical Services annual TB reports and clinical statistics.

There were 236 completed questionnaires, of which 6,4% had to be rejected and 220 cases were evaluated. The response rate was 61,9% (i.e. 236 of 381 new PTB cases were reported on). Data regarding the manner of referral of the cases to hospital, home, history, symptoms, age, basis of diagnosis and special investigations were evaluated.

Results showed that there was a 1041 per 100 000 population incidence in 1999 for all TB cases at Impala Platinum, compared to an incidence of 2476 per 100 000 at the gold mines, whereas the HIV prevalence in these TB cases was similar in the gold mines (1996) and Impala Platinum (1999) at about 43%. This suggests that the 2,4 times higher TB prevalence in the gold mines may be ascribed to silica containing dust exposure.

Only 40% of the new PTB cases were detected through active screening, whereas the majority (60%) were detected passively after they presented with classical TB symptoms, of which fever was an important symptom and sign. This is more than the 51% of TB cases that presented passively in the gold mines. It confirmed the impression that the efficacy of the mass miniature radiological screening program was declining.

Recommendations regarding PTB and HIV/AIDS case detection controls and standards, patient and community education, as well as epidemic case comparison and monitoring are discussed, e.g.:

- More frequent, effective and active screening for PTB.
- To adhere to the standards for PTB diagnosis as set out by the Department of Health.
- To have clearly identified steps in the process of diagnosis, submission, classification and compensation of this occupational disease.
- To involve the employer in leadership and employee HIV education, proper statistical monitoring and on-site treatment of sexually transmitted diseases.
- To involve the community leaders in combating these diseases.
- Formal research regarding TB and HIV/AIDS to be done in a co-ordinated and co-operative manner between the affected mine groups.

It is clear that all the relevant stakeholders have to be drawn into the management of the HIV/AIDS and TB epidemics in South Africa. Only a combined effort in this regard will result in limiting the destructive tide of these diseases that is plaguing our country.

Yours,  
 Dr Martin Herrmann (MMed, DIH)  
 Impala Medical Services

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## NOSA and Compensation Commissioner versus Employer and Employee

### Erratum

In the letter titled "NOSA and Compensation Commissioner versus Employer and Employee" published in July/August 2001, Vol 7 No 1, *Occupational Health Southern Africa* incorrectly acknowledged Ben Botha as an employee of NOSA. He is in fact a medical practitioner from the Brakpan area. We apologise for this error.

Following is NOSA's response to the letter.

- The NOSA Integrated Five Star System is benchmarked against International accepted indicators for

# GUIDELINES FOR AUTHORS

## Occupational Health Southern Africa

Official Journal of the **SA Society of Occupational Health Nurses (SASOHN)**, the **SA Society of Occupational Medicine (SASOM)** and the **Southern African Institute for Occupational Hygiene (SAIOH)**

Safety, Health and Environmental Risk Management.

- The NOSA System evaluates conformance to minimum legal requirements i.e. Reporting of Occupational diseases in terms of Schedule 3 of the Coid Act No. 130 of 1993 as amended.
- Any incident resulting in an employee being absent from work / unable to continue with his/her work, has always been considered as part of the DIFR calculation (both injury and disease).
- An organization is penalized for the occurrences of the occupational disease, on diagnosis, and not in terms of its severity (days lost).
- The system provides recognition (star rating) for both the effort (systems / procedures / risk reduction to minimize exposure levels) as well as for experience (DIFR calculation)
- The NOSA System also measured the effectiveness of preventative programmes and provides the employer with concrete data on system failures.
- The NOSA System provides a quality assurance system for risk identification and reduction through the implementation of systems. Compliance is monitored in terms of the system and the risk. The effectiveness component will provide an indicator of control measures effectively applied resulting in a reduced number of employees diagnosed with Occupational Asthma.
- Separate draft indicators for Safety, Health and Environment are proposed, and may be implemented in 2002.

### Articles

Articles may be submitted in the following categories:

#### • Original and Review

These should follow the format of: Introduction, methodology, results, discussion and references. The length should be between 2 000 and 2 500 words.

- Original and review articles must include a short abstract of less than 150 words and will be refereed. Manuscripts will be submitted to referees as confidential without naming the author and all referees shall remain anonymous.

#### • Opinions or short reports

These are short reports, with a length of less than 1000 words

#### • Case studies

Less than 1000 words

#### • Letters to the Editor

Less than 400 words

### Factual accuracy

Authors are solely responsible for the factual accuracy of their work and that their work does not infringe copyright

### Manuscripts

#### • Layout

- Manuscripts should be typed double spaced, using only one side of the paper
- Pages should be numbered consecutively and leave wide margins
- A word count should be included
- Scientific measurements should be expressed in S.I. units.
- Abbreviations and acronyms should only be used if absolutely necessary and must be defined on first use.
- Illustrations, tables and graphs should be submitted on separate sheets as black and white prints. They should be clearly identified. Tables should carry Roman numerals, I, II, III etc and illustrations should use Arabic numerals, 1,2,3 etc.

- X-ray films should not be forwarded, but glossy prints submitted

#### • Author's details

- A separate title page should contain the title, the author's full names, contact details relevant to correspondence and the author's place of work and job designation.

#### • Submission

- Authors should submit one original article and two copies of each manuscript. This should be accompanied by a diskette or sent via e-mail.
- Diskettes will be returned

#### • References

- References should be inserted in the text as superscript numbers and listed at the end of the article in numerical order (not alphabetically). The accuracy of references is the author's responsibility.
- Personal communication and unpublished observations may be cited in the text, but not in the reference list.
- References should be set out in the Vancouver style and only approved abbreviations of journal titles should be used.

#### Examples

1. Zwarenstein M, Barron P, Tollman S, et al. Primary Health Care Depends on the District Health System. *S Afr Med J* 1993;83:558.
- Book references
1. Thompson L.A. History of South Africa. Newhaven and London: Yale University Press, 1990.

#### Proofs

Alterations to proofs must be limited to misprints or factual errors. Major alterations or new material cannot be accepted. Proofs not returned within the time limit specified will be regarded as approved.

#### Contact person

Articles should be sent to Debbie Myer at PO Box 72366 Parkview 2122, or faxed to (011) 886-1332 or e-mailed to delinds@mweb.co.za

# SASOM Natal Chapter Academic Day

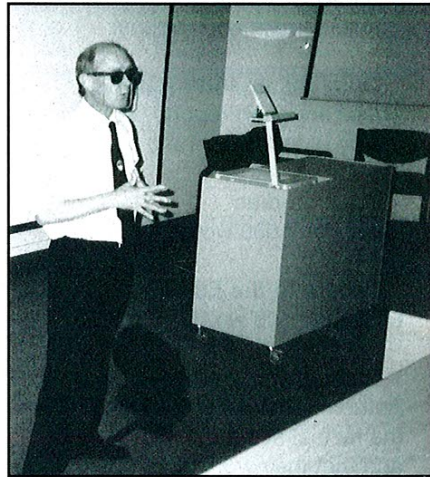
The SASOM Natal Chapter presented an excellent programme at their Academic Day held in Durban at the end of November 2001. Dr Kevin Rainier and his executive committee planned the event to provide useful information on new initiatives: *Use of Internet for Occupational Health* by Dr David Stanton, *Disability Assessment: Working together to Streamline the Process* by Dr Deon van Zyl, or updated information on topics of particular relevance to the occupational health disciplines, such as absenteeism and sick certification, noise induced hearing loss, audits, national health legislation, driver medical examinations, shift work, the permit system and new guidelines. Copies of most of the presentations are available from Ms Dehlia Muller at the SASOM National office, telephone 012 - 667 5160 or e-mail: sasomdm@iafrica.com.



Occupational Health by Dr David Stanton, *Disability Assessment: Working together to Streamline the Process* by Dr Deon van Zyl, or updated information on topics of particular relevance to the occupational health disciplines, such as absenteeism and sick certification, noise induced hearing loss, audits, national health legislation, driver medical examinations, shift work, the permit system and new guidelines. Copies of most of the presentations are available from Ms Dehlia Muller at the SASOM National office, telephone 012 - 667 5160 or e-mail: sasomdm@iafrica.com.

Mr Barry Blomkamp delivered a somewhat different presentation entitled *You don't need eye sight to have vision*. Barry, who was an auto technician, lost his eyesight in a motor vehicle accident in December 1988 and is now involved, part of his time, with motivational and inspirational speaking. The delegates definitely derived inspiration from him, as did the attendees at the AGM and annual dinner, where Barry was the guest speaker, enlightening the audience about the importance of sesame seeds.

Congratulations to the Natal Chapter!!!



Barry Blomkamp delivers his presentation with his dog Lambert at his side



Dr Johan Kielblock is serious about the affects of shift work



Dr Thabo Sibeko delivers a challenging presentation from Mr Gopalong Sekobe



Dr Deon van Zyl explains the process and benefits of disability management



The Chairman of the Natal Chapter, Dr Kevin Rainier did not rest from early morning till the last guests left the dinner at an undisclosed time

## Technology Minister praises Groote Schuur "Cyberschuur" initiative

Minister of Constitutional Affairs and Technology, Minister Audrey van Zyl, commended the opening of the newest addition to staff skills and training development at Groote Schuur hospital. An in-house internet facility for staff, funded by Provincial Government aims at equipping all hospital staff with the necessary skills to be computer literate.

Under the guidance of a supervisor, the new facility will allow both day and night staff to access the internet and hospital intranet, conduct personal online banking transactions and shop via the e-commerce facility.

This innovation will also enhance communication among staff and hospital management. It is the tool via which staff will be informed about developments at the hospital.

"As a leading hospital in the medical field in the province opening a facility of this nature is indeed a step in the right direction," said Minister Van Zyl.

"It does, however, sadden me that over so much of Africa, across our land and even in many communities in this great city, many do not have computer skills nor access to computers and all the good that this technological world might bring to them.

"This makes us all the poorer.

"I believe that if we are to progress to reach our full potential as a society, everyone should have access to this wonderful technology and more importantly, access to the necessary basic computer skills training to work these magic keyboards and screens to their best advantage.

"The new internet facility at Groote Schuur is a great step in the right direction. I look forward to this initiative taking root in not only our hospitals, but also other public institutions across

our province," said Minister Van Zyl.

The facility will not only serve as an internet cafe, but during office hours it will also be used as a training centre for patients in the children's ward and the day care facility. It will provide the youth with the necessary basic computer skills required to succeed in the work place.

The computers were supplied by the Provincial Administration of the Western Cape. The Teaching Hospitals Board funded the furniture, fittings and installation.

### The 2001 World Health Report

## Mental Health: New understanding new hope

To commemorate the launch of the 2001 World Health Report, the South African office of the World Health Organisation (WHO) hosted a visit by Dr

Benedetto Saraceno, the Director of Mental Health of the WHO. He is one of the principal authors of the report with the theme Mental Health: New Understanding New Hope.

One in four people in the world will be affected by mental or neurological disorders at some point in their lives. About 450 million people currently suffer from such conditions, placing mental disorders among the leading causes of ill-health and disability worldwide.

At a presentation on the report to key stakeholders, Dr Saraceno spoke of the number of mental disorders, and the small percentage of budget spent on them. He dispelled the myth that mental disorders occur only in rich and not in developing countries. He pointed out that mental disorders are actually ubiquitous; it is only the distribution and type of disorders that differ between the two.

Commenting on the treatment available, he strongly felt that "full citizenship of the person with a mental disorder, is the treatment". There is a need for an intelligent combination of science, passion, ethics and public health with human rights being respected. Cost effective and cheap therapeutic interventions are available, but there is also a need for psychosocial manipulation of the environment. The mainstays of modern mental health treatment lie in de-institutionalisation (with appropriate awareness and care in the community) and the integration of mental health care into primary health care.

He ended by saying, "We must fight the stigma and discrimination which accompany mental disorders; we need more science, less ideology and a lot more passion!"

The report is available from: WHO Liaison Office, 7th Floor Metropark Building, 351 Schoeman Str, Pretoria and the WHO website: <http://www.who.int>



## Mine Medical Officers Association's fifth Annual Congress

Please diarise the following dates for 2002: 3 to 5 May



2002. This is when the Mine Medical Officers' Association's Fifth Annual Congress will be held at the Malaga Hotel,

Waterval Boven, Mpumalanga.

These congresses are renowned for the relevance and excellence of the topics presented, and also the networking opportunities which are provided.

The dinner and entertainment with which the congresses have traditionally ended almost eclipse the congress itself!

This is an event which is not to be missed!

## Disability Sites

**T**his NetPage (twelve) provides a listing of sites providing information on disability. Further links are included on the Disability pages of ASOSH.ORG and its mirror site ASOSH.TRIPOD.COM.

### Links

Affiliates (<http://www.ability.org.za/safcd/>) South African Federal Council on Disability (SAFCD)  
 A-Z to Deafblindness (<http://www.deafblind.com>) USA  
 Disabilities (<http://www.links2go.net/topic/Disabilities>) Links2Go, USA  
 Disabilities ([http://dir.yahoo.com/Society\\_and\\_Culture/Disabilities/](http://dir.yahoo.com/Society_and_Culture/Disabilities/)) Yahoo!, USA  
 Disabilities (General) (<http://medlineplus.nlm.nih.gov/medlineplus/disabilitiesgeneral.html>) MEDLINEplus, USA  
 Disability (<http://www.ccohs.ca/resources/disabili.html>) Internet Directory, CCOHS, Canada  
 Disability Link Barn (<http://www.accessunlimited.com/links.html>) Access Unlimited, USA  
 Disability Links (<http://www.bath.ac.uk/~ecsfmah/DisabilityLinks.html>) Bath University, UK. Includes a listing of Sub-Saharan Disability Organisations  
 Disability Resources on the Internet (<http://www.disabilityresources.org>) Disability Resources, inc., USA  
 The DRM WebWatcher Complete Index (<http://www.disabilityresources.org/DRMwwwINDEX.html>)  
 Handitel (<http://www.socialnet.lu/handitel/home.html>) ADAPTH asbl, Luxembourg  
 Internet Disability Resources (<http://www.netreach.net/~abrejcha/websites.htm>) Alex Brejcha, USA  
 Internet Disability Resources (<http://www.netreach.net/~abrejcha/vl-webst.htm>) WWW Virtual Library  
 Links (<http://www.dpi.org/links.html>) Disabled Peoples' International (DPI), Canada  
 Links (<http://www.wid.org/pages/links.htm>) World Institute on Disability (WID), USA  
 Links to Disability Resources (<http://www.independentliving.org/links/links-index.html>) Institute on Independent Living, Sweden  
 Occupational Therapy & Disability Web Site Links (<http://www.ex.ac.uk/Affiliate/stloyes/netlinks/lnk1ot.htm>) Graeme Barber, UK  
 Other Disability-related Links ([http://www.ahead.ie/other/other\\_links.html](http://www.ahead.ie/other/other_links.html)) AHEAD, Ireland  
 Other WWW Sites DISABILITY (<http://www.cdc.gov/niosh/disabil.html>) NIOSH, USA  
 Untangling the Web: Where Can I Go to Get Disability Information? (<http://www.icdi.wvu.edu/Others.htm>) International Center for Disability Information (ICDI), USA

### International

CIRRE (<http://cirrie.buffalo.edu>) Center for International Rehabilitation Research Information and Exchange, University at Buffalo, USA  
 Disability and Work (<http://www.ilo.org/public/english/employment/skills/targets/disability/index.htm>) ILO. Includes the new Code of practice on managing disability in the workplace  
 Disability World (<http://www.disabilityworld.org>) USA. International disability news and views  
 Disabled Peoples' International (DPI) (<http://www.dpi.org>) Canada  
 Disabled Peoples' International Asia Pacific Region (<http://www.dpiapro.org>)  
 Equality of Opportunity for People with Disabilities ([http://europa.eu.int/comm/employment\\_social/soc-prot/disable/index\\_en.htm](http://europa.eu.int/comm/employment_social/soc-prot/disable/index_en.htm))  
 Links to the various programmes and activities of the European Union  
 European Disability Forum (EDF) (<http://www.edf-feph.org>) Belgium  
 GLADNET (<http://www.gladnet.org>) Global Applied Disability Research and Information Network on Employment and Training, Canada  
 Handicap International (<http://www.handicap-international.org>) France  
 Inclusion International (<http://www.inclusion-international.org>) France. NGO for intellectual disabilities  
 International Center for Disability Resources on the Internet (ICDRI) (<http://www.icdri.org>) USA  
 IPWH (<http://www.ipwh.org>) UK. International Organisation for the Provision of Work for People with Disabilities and who are Occupationally Handicapped  
 JAN on the Web (<http://janweb.icdi.wvu.edu>) The Job Accommodation Network, West Virginia University, USA. International toll-free consulting service that provides information about job accommodations and the employability of people with disabilities  
 Persons with Disabilities (<http://www.un.org/esa/socdev/enable/>) UN  
 Rehabilitation International (RI) (<http://www.rehab-international.org>) USA  
 WHO Family of International Classifications (<http://www.who.int/classification/>) WHO  
 World Association of Persons with Disabilities (WAPD) (<http://www.wapd.org>) USA  
 World Institute on Disability (WID) (<http://www.wid.org>) USA

## Australia

Blind Citizens Australia (BCA) (<http://www.bca.org.au>)  
 World Wide Web Accessibility (<http://www.bca.org.au/webacc.htm>)  
 Disability Information and Communication Exchange (DICE) (<http://www.dice.org.au>)  
 Disability Information Victoria (<http://www.disabilityinfo.org.au>)  
 Disability Programs (<http://www.facs.gov.au/disability/ood/index.htm>) Department of Family and Community Services, Commonwealth of Australia  
 People With Disabilities (WA) Inc - PWD(WA) (<http://www.pwdwa.org>)  
 VICNET Disability Page (<http://www.vicnet.net.au/disability/>)  
 Women With Disabilities Australia (WWDA) (<http://www.wwda.org.au>)

## Singapore

The Disabled People's Association Singapore (<http://www.dpa.org.sg>)

## South Africa

Ability.org.za (<http://www.ability.co.za>) Resource for people with disabilities  
 Code of Practice on Key Aspects of Disability in the Workplace, Employment Equity Act No 55, of 1998 (<http://www.labour.gov.za/docs/legislation/eea/codegoodpractise.htm>) Department of Labour  
 DEAFSA (<http://www.deafsa.co.za>) Association of deaf societies, South Africa  
 Disabled People South Africa (DPSA) (<http://www.dpsa.org.za>)  
 Down Syndrome South Africa (<http://www.downsyndrome.org.za>)  
 Integrated National Disability Strategy White Paper ([http://www.polity.org.za/govdocs/white\\_papers/disability1.html](http://www.polity.org.za/govdocs/white_papers/disability1.html)) Office of the Deputy President November 1997  
 Occupational Therapy Association of South Africa (OTASA) (<http://www.otasa.org.za>)  
 Occupational Therapy in the Public Sector of South Africa (<http://www.linx.co.za/occther/>)  
 Services provided for disabled people by national and provincial government departments (<http://www.case.org.za/htm/disabser.htm>) Community Agency for Social Enquiry (CASE)  
 South African Blind Workers Organisation (SABWO) (<http://www.sabwo.org.za>)  
 Employment of disabled people in terms of current legislation (<http://www.sabwo.org.za/emplegal.htm>)  
 South African Federal Council on Disability (SAFCD) (<http://www.ability.org.za/safcd/>)  
 South African Guide-Dog Association for the Blind (SAGA) (<http://www.guidedog.org.za>)  
 Guide Dog Schools Worldwide (<http://www.guidedog.org.za/worldwide.html>)  
 South African National Council for the Blind (SANCB) (<http://www.sanCB.co.za>)  
 Southern African Spinal Cord Association (SASCA) (<http://www.linx.co.za/sasca/>)  
 The Disability Rights Movement: its development in South Africa (<http://www.independentliving.org/ToolsforPower/Tools6.html>)  
 Disabled People South Africa  
 The Living Link (<http://www.thelivinglink.co.za>) Support for mentally disabled adults  
 The Rand Mutual Assurance Company Limited (<http://www.randmutual.co.za>)

## Sweden

Institute on Independent Living (<http://www.independentliving.org>)

## UK

British Council of Disabled People (BCODP) (<http://www.bcodp.org.uk>)  
 Centre for Accessible Environments (<http://www.cae.org.uk>)  
 Centre for Disability Studies (<http://www.leeds.ac.uk/disability-studies/>) University of Leeds  
 Disability (<http://www.disability.gov.uk>) Disability Unit, Department for Work and Pensions  
 Disability Now (DN) (<http://www.disabilitynow.org.uk>) Disability Now newspaper  
 Disability Rights Commission (DRC) (<http://www.drc-gb.org>) Promotes civil rights for the disabled  
 Motability (<http://www.motability.co.uk>) Help for the disabled to become more mobile  
 The Mental Health Foundation (<http://www.mentalhealth.org.uk>)  
 Yourable.com (<http://www.yourable.com>) Information, products and services for the disabled

## Canada

Canadian Mental Health Association (CMA) (<http://www.cmha.ca>)  
 Helpful links ([http://www.cmha.ca/english/info\\_centre/info\\_frmset.htm](http://www.cmha.ca/english/info_centre/info_frmset.htm))  
 Council of Canadians with Disabilities (CCD) (<http://www.pcs.mb.ca/~ccd/>)  
 Disability Information for Students and Professionals (<http://www.abilityinfo.com>)  
 International Disability News Ticker (<http://www.abilityinfo.com/ticker.html>)  
 Disability Studies Web Ring (<http://www.escape.ca/~ccds/webring.html>)  
 Institute for Work & Health (<http://www.iwh.on.ca>)  
 Millard Centre (<http://www.millardcentre.com>) Offers a full continuum of rehabilitative services  
 National Institute of Disability Management and Research (NIDMAR) (<http://www.nidmar.ca>)  
 Public Service Commission of Canada (<http://www.psc-cfp.gc.ca>)

## USA

ACCESS (<http://www.uvm.edu/~access/>) Accommodation, Consultation, Counseling & Educational Support Services, University of Vermont  
 Center on Disability and Community Inclusion (<http://www.uvm.edu/~uapvt/>)  
 American Association of People with Disabilities (AAPD) (<http://www.aapd-dc.org>)  
 American Disability Association (ADA) (<http://www.adanet.org>)  
 Americans with Disabilities: 1994-95 (<http://www.census.gov/hhes/www/disable/sipp/disable9495.html>) U.S. Census Bureau  
 Americans with Disabilities Act (ADA) (<http://www.usdoj.gov/crt/ada/adahom1.htm>) U.S. Dept. of Justice  
 Association for Persons in Supported Employment (APSE) (<http://www.apse.org>)  
 Center on Disability Studies (CDS) (<http://www.cds.hawaii.edu/>) University of Hawaii  
 Disabilities Studies Quarterly (DSQ) (<http://www.cds.hawaii.edu/dsq/>)  
 Centers for independent living (<http://www.hud.gov/indepliv.cfm>) U.S. Dept of Housing and Urban Development  
 Cornucopia Of Disability Information (CODI) (<http://codi.buffalo.edu>) University at Buffalo, The State University of New York  
 Disabilities Studies and Services Center (<http://www.dssc.org>) Academy for Educational Development (AED)  
 DisabilityDirect (<http://www.disabilitydirect.gov>) Office of Disability Employment Policy, U.S. Dept. of Labor  
 Disability Rights Education and Defense Fund, Inc. (DREDF) (<http://www.dredf.org>)  
 Disability Services (<http://www.etsu.edu/students/disable/disable.htm>) East Tennessee State University  
 Information Center for Individuals with Disabilities (<http://www.disability.net>)  
 Margaret A. Stanton Office of Disability Services (<http://www.gsu.edu/~wwwods/>) Georgia State University  
 Mobility International USA (MIUSA) (<http://www.miusa.org>)  
 National Clearinghouse on Disability and Exchange (NCDE) (<http://www.miusa.org/general/aboutmiusa.html>)  
 National Attention Deficit Disorder Association (NADDA) (<http://www.add.org>)  
 National Council on Disability (NCD) (<http://www.ncd.gov>)  
 National Institute on Disability and Rehabilitation Research (NIDRR) (<http://www.ed.gov/offices/OSERS/NIDRR/>)  
 National Rehabilitation Information Center (NARIC) (<http://www.naric.com>)  
 Psych Central: Dr. John Grohol's Mental Health Page (<http://www.grohol.com/grohol.htm>)  
 The Work Site (<http://www.ssa.gov/work/>) Social Security Administration  
 WORK Inc (<http://www.workinc.org>) Provider of rehabilitation services

## Other

Building Leadership Among Disabled Women in Southern Africa (<http://www.rehab-international.org/MUSAKANYADorothy.html>)  
 Southern Africa Federation of the Disabled (SAFOD), Zimbabwe  
 Disability: Challenges Vs Responses (<http://www.healthlibrary.com/reading/disability/index.htm>) Health Education Library for People (HELP), India. Online book  
 Medical Aspects of Disability (<http://www2.msstate.edu/~glen/MedAspects.html>) Mississippi State University, USA. Online course

Contact the authors at the following addresses: David W. Stanton - [davidws@asosh.org](mailto:davidws@asosh.org);  
 Frank Fox - [Frank\\_Fox@mondi.co.za](mailto:Frank_Fox@mondi.co.za); Hans van der Merwe - [polimed.merwe@cyberserv.co.za](mailto:polimed.merwe@cyberserv.co.za)

# Directory of Occupational Health and Hygiene Practitioners



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For further information visit Barry's website: [www.i-market.co.za/bb.htm](http://www.i-market.co.za/bb.htm)

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**was a racing car nut**  
**- until a crash left him blind!**

*Barry passes on authentic life-skill mind-spanners, reminding us to sort and retain the lessons that life gives us, focus on our purpose and be grateful for what we have.*

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Barry Blomkamp Nd. Bsc (UL)

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fax: +27 21 559-1164 e-mail: [turbotalk@xsinet.co.za](mailto:turbotalk@xsinet.co.za)

web site: [www.i-market.co.za/bb.htm](http://www.i-market.co.za/bb.htm)

# HEARING TESTING made simple, quick and easy!

*Tremetrics Audiometers with Windows Based Software*

## Wizard

Easy-Touch  
Audiometer



Digital Screening  
Audiometer

## RA 300



RA 300 digital screening audiometer from Tremetrics. The unit is affordable, requires minimal operator training and provides valid hearing test results - automatically. RS232 interface and Windows software. Talk-over feature. 64 internal audiogram storage. (RA 300 Data Plus model only).

- Full colour adjustable touch-entry display
- Separate left/right baselines
- Extra wide format, high speed printer
- Long-life thermal paper
- Dual calibration for two headsets
- 2000 internal audiogram storage
- High speed RS232C interface. Windows software
- Talk-over
- Multi-lingual subject instructions - up to seven languages

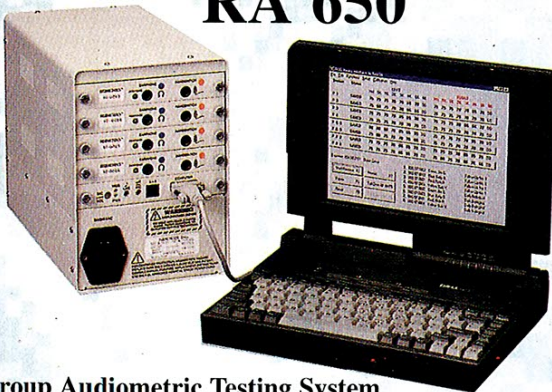
## RA 600



### Group Audiometric Testing System

The Tremetrics RA 600 fully automatic system provides a one to ten person testing capability in the space required by a single audiometer. The complete audiometer is controlled and monitored by a computer on which all results are stored and categorised using our special software programme.

## RA 650



### Group Audiometric Testing System

- Integrated Windows®-based software
  - Increased productivity - one operator can simultaneously manage eight tests
  - Fewer retests - advanced software adapts automatically when testing difficult subjects
  - Individual and group audiogram printouts
- RA 650 saves time and money. Tremetrics RA 650 can test as many as 48 people per hour (with an 8-channel system). It can be easily operated by one person which substantially reduces overhead costs.

### Innovative software for faster results

Time-saving hearing testing is guaranteed. Every Tremetrics audiometer contains special programming which reduces test time while maintaining accuracy and validity. These audiometers continuously analyze responses, then present tones at levels closer to a subject's hearing threshold levels. Tests can be completed in as little as three minutes. Have hard to test subjects? An "adaptive" mode allows a longer response time and eliminates the need for manual testing.

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For more information and advice on which Audiometer is right for you, contact:

**Amtronix**

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