
Mining & Healthcare

Drs Dave Clark and Fazel Randera offer rare insight into innovations in mining.
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DUE TO DIFFICULT geographical and environmental conditions and the inherently dangerous work of extracting mineral wealth from the earth, healthcare has been a close companion of formal mining in Africa since the day the first rock was broken. From its early days as the domain of missionaries, it has evolved significantly, often setting best practice examples for the world to follow. Today, healthcare provision in the African mining sector includes globally insured evacuation funding for prospecting geologists, vanguard containerised injury services (for small operations), well-equipped general clinics and hospitals, and even world class specialist service hospitals.

In some cases, mining companies have gone so far as to partner with the host country to augment national services with the provision of equipment, drugs and/or trained personnel. On the other side of the coin, a few of the major mining companies have taken the decision that health service development is not part of their core business and instead provide medical insurance to all staff as part of a basic benefit package. It is a model that works well as long as health services in the surrounding communities are sufficiently developed. When a mining operation does develop its own health service, the standard of care and treatment is often noticeably superior to that available in the surrounding community. To counter the sociopolitical discontent this disparity creates, some mining companies have extended health services to the wider community, allowing it to feel the benefits of their country's natural wealth in tangible and important ways.

+ CONTRIBUTIONS OF MINING HEALTHCARE

Within the scope of this article it is not possible to systematically and comprehensively review all aspects of mining healthcare in Africa over the last 100 years. However, there are a number of examples which stand out when examining what mining healthcare has contributed to areas in which mines are situated. These examples remain a testimony to the healthcare professionals in mining, to the farsighted policies of mining employers, to the constructive interventions by organised labour, and to mining communities in their efforts to make mining safer and healthier.

Occupational trauma

Underground deep level gold mining is inherently dangerous given the pressures and stress levels of the rock strata in which the gold is found. For most of the last century it was not uncommon for severe compound fractures of the legs, pelvis or back to be received every day at the A&E departments of mining hospitals in South Africa. It was also the norm to find the patients who survived these injuries languishing in hospital for months in traction/immobilisation frames whilst their bones and soft tissue injuries healed. Orthopaedic and general surgeons of the mining health services have played a leading role in the modernisation of fracture treatment methods and implementation of protocols for trauma management. The standardisation of trauma emergency management systems from time of injury to point of definitive treatment significantly raised the chances of survival for patients in the first few hours after injury.

Pioneering adoption of internal fixation techniques in the 1980's and 1990's together with aggressive physiotherapy and occupational therapy dramatically increased the survival and rehabilitation to work of patients with major fractures. These techniques have been used to train physicians from all over the continent, not only in mining but also in general trauma services, and immobilisation frames have been assigned to the scrap heaps of history in all but the very poorest settings. Gone too are the long hospital stays with loss of livelihood and practical function and high risks of hospital acquired illnesses. In an interesting spin-off from the higher levels of understanding of the effects of trauma on the mineworker, two large mining companies in South Africa have developed a much-envied functional work capacity measurement system aimed at accurately assessing the ability of injured and ill mineworkers to return to their work once they have recovered. The system strives to simulate the working environment and, under the watchful eye of trained occupational health doctors and therapists, workers are objectively assessed for readiness to return to the rigours of their jobs.

The system does away with the arbitrary and subjective approaches of fitness to work assessments still used in much of the industry today. This system should be properly reviewed and adopted as part of the rehabilitation of injured workers throughout the mining industry.

HIV/AIDS

HIV/AIDS has reached epidemic rates in several African countries, imposing heavy duties on the individual, the family and the country. It has been argued that mining contributes to the complexity of the epidemic by clustering people in conditions which favour the spread of HIV, including through staff transfers when new mines are developed and the accommodation of migrant workers in hostels or mining villages away from their families—an environment that has attracted a burgeoning sex industry. In South Africa, a slow response to the epidemic by all social partners (but especially government) undoubtedly contributed to creating one of the world's highest prevalence rates. Frustrated, in 2002 Anglo American took the politically risky but morally correct step of making anti-retroviral drugs and HIV testing available to all its employees.

The decision was soon followed by other mining companies, opening the way for the rational treatment and survival of many workers who elected to avail themselves to the care. The cynical will take a view that these decisions were largely made in self-interest. That said, the fact is that people who ought to have been dead were alive and at work in 2007, because the drugs and proper support policies and programmes are available. There have also been significant contributions to the body of medical and health economics knowledge arising from research into the roll out of comprehensive anti-retroviral programmes amongst mining employees, contributions which have in part led to the normalisation of HIV/AIDS treatment in the general health services of South Africa. A point to ponder though: what would the course of events have been if mining companies had not been pathfinders in this critical issue?

Elsewhere on the continent, the case has increasingly been made that treating HIV/ AIDS makes good business and corporate responsibility sense. Some of the remaining hurdles include massively improving uptake of HIV testing and care access, expanding the care to dependants of mineworkers, and improving adherence to treatment to prevent the emergence of drug resistant HIV strains in mining communities. Much work also needs to be done in preventing infection in the first place, but research needs to be funded to discover successful and practical behaviour change techniques in mining communities throughout the various community settings in Africa. It is clear that containing this pandemic is going to require much more than just treatment of the infected.

Tuberculosis

Tuberculosis (TB), the ancient consumptive lung disease, has been and remains epidemic wherever poor socioeconomic and crowded circumstances prevail. While contained in many regions of the world, it remains pandemic in Africa and is the major opportunistic infection associated in immune compromised people living with HIV and is the leading cause of death in HIV infected people. In the mining industry, TB prevalence rates are higher in operations where the silica content of ore is relatively high. This the long acknowledged association has resulted in mine health services developing some of the most sophisticated surveillance and treatment programmes in the world. Modern mine occupational surveillance systems allow for regular TB screening using some of the most sensitive diagnostic equipment available.

Knowledgeable and well-trained staff administer comprehensive treatment, resulting in cure rates that exceed WHO standards. And yet, South Africa's gold mines continue to have the highest TB incidence rates in the world. Clearly, multifactorial issues are at play and new approaches are required. Paving the way towards a new era of TB control is a landmark study being unrolled in three South Africa gold mines. Using an approach analogous to the one employed in the quest to eradicate polio, the goal is to reduce the levels of TB by as much as 60% in the trial communities with protection lasting as long as 10-15 years. To achieve the objective, 38,000 gold miners have been asked to take the well established TB treatment drug, isoniazid, as a prophylactic against the disease. With 12,000 workers already in the treatment arm of the study, one amazing outcome has already been realized: that of mining management and mine health services working together with government and especially organised labour, to mobilise entire communities of mine workers to take ownership of preventing an infectious disease in the community.

Malaria

Malaria is a parasitic disease of red blood cells spread by the anopheles mosquito. It is a leading killer of people in developing countries and a major cause of morbidity and loss of productivity amongst workers in those countries where malaria is prevalent, which includes virtually all African countries apart from the most northern. Malaria continues to catch out unsuspecting healthcare workers unfamiliar with the disease when they are presented with ill mine employees who have been in malaria areas. Not uncommonly, these episodes result in severe morbidity and even death before the link to malaria is made and treatment started.

Apart from the usual responses of providing workers with access to the latest malaria diagnostics and drugs, some mining companies, affected by the absenteeism and community impact of malaria on their operations, have taken the unusual step of getting involved in public health interventions affecting whole regions of malaria endemic countries. In examples in Mozambique, Zambia, Mali and Ghana, mining companies have partnered with public health officials and academic experts to implement vector control programmes to eradicate anopheles mosquitoes and their breeding places in large areas of land surrounding mining operations. In Ghana, for instance, household spraying programmes have included whole towns, having a wide effect on reducing malaria in general in those regions. The programmes have been highly successful and have

been written up in international literature as models of what can be achieved to check this disease.

These programmes of vector control, diagnosis and definitive treatment go beyond an expedient motive to make a difference to the lives of thousands, especially children, who are the group worst affected by malaria.

Common food and water borne infectious diseases

Mining operations need water and power. In bringing water and power to their operations, mines have typically also brought electricity, potable water and sewerage management to the communities set up to house workers and their families or in villages surrounding mines from which labour is drawn. An important consequence of addressing these cornerstones of healthcare provision is to reduce food and water borne infectious disease in these communities.

This provision of water to communities is hardly a universal phenomenon in mining in Africa, but where it does happen it clearly has an important impact on the basic health status of communities.

General healthcare clinics and comprehensive care

It was mentioned earlier in this article that many mining healthcare interventions have developed well beyond the provision of occupational injury and disease services to more comprehensive healthcare facilities from general clinics to sophisticated multidisciplinary hospitals. These general facilities usually span a range of care encompassing nurse-based general care, maternal and child health, doctor led clinics and specialist level advanced medicine. They have also provided excellent training opportunities for generations of nurses, doctors and the paramedical healthcare sciences in many countries. In some of the best models, care extends from the mine level clinic to the tertiary hospital in a seamless system of stepped referral funded by the mining operations.

These models resemble the staff model capitation systems of the United States and have demonstrated cost effective care (provided there are sufficient volumes of patients in the base to extract economies of scale). As resource-rich countries respond to the challenges of providing universal healthcare to their populations, much can be learned from the extensive experiences of the mine health services. The key question is whether industry, government, organised labour and lobby groups can get together to explore the positive lessons for the benefit of the greater society, or whether they will forever be locked in combat over the negative health spinoffs of mining activities.

The latter should be responsibly addressed without losing sight of the important contributions of the former.

LEGACIES AND DILEMMAS

In Africa, mining has a colonial foundation and a history rife with exploitation, racism and other attendant ills from that strangely romanticised era. In South Africa, for example, it was once (and not too long ago at that) considered okay for mine owners to compensate white miners stricken with silicosis with lifetime pensions to compensate their disablement, whilst giving black workers a much reduced cash payout, or nothing at all, for the same disease. This legacy is the subject of present day litigation on behalf of previously affected black workers. How it will unfold is uncertain, but unless proactive and constructive decisions are taken by all concerned to rationally address the future situation, the economic and sociological consequences could be profound and not necessarily in the interests of the worst affected.

Given that so much good has been done in the field of healthcare provision by mining companies and mining employed healthcare professionals, surely the positive and considerable wisdom of all stakeholders can be brought to bear in finding sustainable solutions to equitable healthcare problems in the industry. The last area that bears mention when discussing healthcare and mining in Africa is that of the environmental and sociological risks attendant upon mining operations. From cyanide spills and mud rushes to water contamination and unplanned urbanisation, mining activities generate significant risks to people and the land that sustains them. In a number of examples the poor management of these risks have led to tragedy and epidemic. They have also, however, led to increased knowledge in the science of active risk management in many disciplines.

Through responsible planning and contingency development aimed at these risks, the bittersweet that is mining can be sustainably steered to the greater good of Africa and direct investment in its mineral resources.

+ PRIORITIES

A review of any mining company's annual report shows that health and safety are frequently mentioned in the same breath, implying even-handedness in response. Despite all the successes outlined in this essay, however, this is seldom the case. Because of the immediate (and often vivid) impact of mining accidents in terms of injuries and fatalities, issues of safety carry an extreme sense of urgency and are most often acted upon quickly and decisively. In contrast, most occupational diseases associated with mining take many years to manifest clinically, sometimes only becoming apparent years after the employee has stopped working in the mines.

With so much on the immediate horizon, it is easy to see how regulators, organised labour and employers fail to make health issues their top priority. Although this matter is receiving increasing urgency in mine health services, health needs to be elevated to benefit from the same levels of rigour, investment and focus as that of safety, if lives are to be saved and affliction to individuals and communities reduced. An increasingly popular development is the concentration within mine health services on the concept of wellness within the workplace and on causing zero harm to people working in mining.

+ CONCLUSION

In this brief review of the evolution of mining healthcare, we have toured some highlights and some of the darker side of the industry. More could be written on healthcare research, surveillance development and compensation issues, but perhaps on another occasion. It remains to be said that the positive well outweighs the negative. Provided that governments, organised labour, the medical profession, responsible investors and lobby groups remain vigilant, there is every reason to believe that the legacy of mining in Africa will permanently contribute to the improvement of the health of Africans throughout the continent.