Health promotion in FIFO and resident mine workforces: a case for a Wellness-Watch program

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Abstract

Fly-in-Fly-out (FIFO) mining workforce practices are currently the subject of a House of Representatives Standing Committee inquiry, and have received sustained media attention. A recent review of key themes arising from the inquiry identified potential impacts on health services in host and source communities. However, little attention has been given to workforce health in this debate.

This paper presents a case for a pilot ‘Wellness Watch’ health surveillance program, generated with a specific South Australian mine in mind that is serviced by a FIFO workforce. The health impacts of the FIFO lifestyle on individual worker health, mine safety performance, and workforce sustainability are explored more generally to include resident mine workers. The program rationale is collectively informed by a review of health literature and occupational health and safety surveillance data scheduled under various state legislative requirements.

Recommendations are offered on how health professionals might better collaborate with mineral resources researchers, mining industry workers and policy makers to create a step-change in workforce health status in the mining sector. A major premise of our arguments is that health promotion should be driven by the workforce community, in keeping with WHO guidelines. Input from health experts can be sought at strategic points but should not control the process.

While discussions presented are tailored to the rural and remote mining context, the underlying principles are considered applicable to broader workplace safety concerns. It is hoped the proposed pilot program might act as a catalyst for a national, industry-wide initiative for improving mining workforce health.

Introduction

In the Australian mining industry, occupational health and safety legislation (OHS) has resulted in a narrow application of the term ‘health’; focused on measures of occupational disease or illness, workplace injury or fatalities, and fitness for work requirements. Recent harmonisation of Australian OHS laws and workplace safety policies sets a precedent for mining companies to think beyond the standard OHS formulae and ensure their workforce is not only safe, but healthy too. To achieve this, we believe, the influences of mine worker wellness on both safety performance and workforce sustainability need to be better understood.

Here, we argue a collaborative approach driven from within rural and remote mine workforce communities is needed to generate meaningful health monitoring and promotion activities to better manage worker health and consequently workforce sustainability. ‘Workforce community’ refers to numerous stakeholders within a mining company or site, including the workers themselves, their managers, their families, and extended support groups. We believe sufficient risk management expertise already exists within the workforce community and can be applied to managing workforce health. Thus, input from health experts might be sought at strategic points but should be focused to support and enhance existing capacity.

We explore the use of Bow Tie Analyses (BTAs) as a tool for developing a pilot Wellness-Watch program and present a model of what this might look like. This discussion is influenced by the World Health Organisation (WHO) viewpoint that health promotion benefits from placing responsibility on
the community rather than health service providers. It is hoped the proposed pilot program might act as a catalyst for a national, industry-wide initiative for improving mining workforce health.

**Part A. Background and rationale**

Historically, workforce health in the Australian mining industry has been regulated under a combination of State-specific mining health and safety and workplace health and safety legislation; although the latter is not uniformly empowered across both the coal and metals industries.

A priority of these regulatory tools is to minimise those hazards with potential to result in multiple fatalities (principle hazards), single fatality (serious accidents) and injury (incidents); a reflection of the high-risk nature of some mine environments. To achieve this, in recent years, the industry has commenced transitioning away from a prescribed approach of regulation, to one of risk management process, supported by a series of Australian standards and guidelines for industry best practice.

In July 2008 the Council of Australian Governments (COAG) signed the Intergovernmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety. This Agreement aims to reduce the complexity of existing workplace OHS practices by developing nationally consistent or ‘harmonised’ health and safety legislation. Subsequently, Safe Work Australia has released new Model Codes of Practice, providing guidance to companies on their health and safety duties under the new harmonised legislation. For these Codes of Practice to be enforced, they must be empowered by State legislation modified to align with the national Model laws.

The Australian Work Health and Safety Strategy 2012-2022 provides a 10 year policy framework to achieve continued improvements in workplace health and safety. A collaborative approach between the Commonwealth, State and Territory governments, industry and unions and other organisations is promoted to achieve this national vision of healthy, safe and productive working lives. The strategy is underpinned by two key principles: 1) “All workers, regardless of their occupation or how they are engaged, have the right to a healthy and safe working environment”; and 2) “well-designed, healthy, and safe work environments result in more productive workers over the course of their working lives”.

The Strategy is consistent with the United Nations Universal Declaration of Human Rights which established duties of care principles in all Australian work health and safety legislation. The umbrella philosophy being that all workers should be assured the highest practical level of protection against harm to their health and safety caused by hazards and risks relating to work. Although, at present, there is no legal requirement to assess worker health concerns caused by factors beyond the work environment or job task (e.g. workforce obesity), the Strategy sets a precedent that obligations on health and safety duty holders should extend to all health risks associated with work. Indeed, most lifestyle diseases continue to fall outside interpretations of work-related health risks.

To date, there has been varied acceptance of the new Model health legislation and policy across Australia’s States and Territories. Resistance within the mining industry stems from concern that the new Model policy is not adequate to manage their high-risk work environment, and the potential for leading standards in risk management practices to drop. A drop in risk profile performance translates to significant risk not only to worker health but also to business risk such as production loss, fiscal down turn, and reputational damage. WA and Qld, Australia’s largest mining states, share a stance that separate Acts for the mining industry should be maintained, declining to fully adopt the harmonised laws. Victoria has also chosen not to adopt the legislation.

The national harmonisation process has the potential to reduce the risk profile of worker health in the mining industry by requiring a standardised process towards health surveillance across all mine types. However, arguably the detail of surveillance design and rigour remains subject to the occupational hazard and injury focus of current Codes of Practice and the absence of centralised tracking systems to
monitor change. The WHO defines human health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’. Expanding the definition of ‘health’ in the new harmonised laws, and subsequent mining-specific Codes of Practice, to align with that of WHO could in part overcome this hurdle. For effective enforcement to be realised all States would need to adopt the new Model laws and provide powers over those of existing mining safety and health legislation. Currently this appears unlikely to eventuate.

While a logical connection exists between safety health outcomes and the broader parameters of the WHO definition of health, companies are understandably reluctant to take responsibility for lifestyle diseases. Historically, health outcomes linked to lifestyle factors have been argued to be beyond the responsibility of the mining industry. Perceived risks of litigation or workers compensation claims have amplified this reluctance. Those lifestyle factors that are monitored (smoking, drugs, alcohol) have been linked to safety management objectives. This vulnerable and reactive position for management is currently mitigated by an absence of cause-effect knowledge.

From an external viewpoint, one wonders if this approach has clouded the ability to rationalise such risks against the threat of longer term chronic illness on workforce sustainability. Over half the Australian mining workforce is reported to be overweight with high incidence of obesity-related symptoms, with evidence that long distance commuter (LDC) specific figures exceed those for the wider community. The continued emergence of media headlines relating LDC to substance abuse, sexually transmitted disease, depression, and relationship breakdown all suggests a more holistic approach to monitoring and managing worker health is warranted. The challenge that remains is how best to achieve this. Perhaps if companies were to accept that the health of their workforce is just another risk they should manage; then innovative initiatives might flow.

Some companies have implemented their own policy and contractual conditions regarding employee fitness and health requirements. Increasing diversity in health promotion initiatives available to the industry has seen companies invest significantly in external services and infrastructure in recent years. However, these health initiatives are rarely mapped, monitored or evaluated against performance indicators to demonstrate health or business benefits. While health professionals might argue differently, the primary driver behind these investments is not necessarily the health of employees. Nor is there a formal process (e.g. business case) for identifying and prioritising the what, why and how behind such investments. Instead, decisions are often based on perceived competitive benefits of these investments for workforce recruitment and retention.

Internally, health promotion is generally managed by Health Safety Environment and Community (HSEC) management teams, who must prioritise worker health against legislated compliance requirements of workplace safety and environment protection. Little research is undertaken to engage with the primary stakeholders (employees) to understand their personal needs or objectives for managing their own health. Instead, advice is sought from external service providers on a model of best fit that can be readily procured and rolled out when a lull in competing priorities eventuates. The success of these initiatives often hinge on those individuals previously exposed to the benefits of health promotion activities who actively champion a healthy lifestyle. Collectively, these internal factors can result in inequity in access to health promotion and health services. For example, higher level management often have better options, even though operational staff may be in greater need. This may in part explain why health and lifestyle changes achieved through health promotion are rarely sustained in the mining industry.

The WHO identifies a range of key strategies necessary to promote health including developing social skills, community engagement, placing responsibility on the community rather than health service providers by reorienting health services, developing and implementing healthy public policy and creating supportive environments. If companies were to support wellness programs set up and driven by the workforce community, as per this WHO model, ownership and empowerment of the working
population would need to be supported across multiple business levels. This support might be
demonstrated by financial or in-kind means, allocated towards achieving those steps considered
necessary for change. Admittedly, the WHO model is recognised to be difficult to implement at a whole
of population level. However, we argue the existing management resources and the captive population
of the LDC and resident mine environment might in fact make this more achievable. Certainly, the
workforce has a relatively homogenous socioeconomic and educational status which should make
targeting programs easier.

We believe the mining industry is well positioned to test such a community driven approach and
potentially set a national precedent for approaching workforce wellness. To achieve this, mine
workforce communities need to establish appropriate performance indicators by which to identify and
monitor individual and workforce health. Collaborative approaches to identify suitable key performance
indicators (KPIs) (such as BMI, smoking and cholesterol) could help stimulate a much needed step-
change in mine workforce health. For example, ‘reducing the number of persons classified as overweight
or obese by 20%. Such a KPI could then be used to calculate predicted benefits to individual and
workforce health outcomes and demonstrate to financial managers and shareholders the flow on
benefits to workforce sustainability and safety performance.

Building on this rationale, we suggest a new model tailored to the mining industry which presents
health in the contexts of risks to the mine workforce community, and manages it with existing risk
management practice and expertise. We believe this model is best achieved in a collaborative forum
between members of the mine workforce community, whereby common goals of achieving workforce
health are set and effective controls to implement and manage positive change are identified.

**Part B. Managing health in the context of business risk**

From a corporate perspective, the principle aim of risk management in mining is to optimise
stakeholder investments whilst safeguarding company assets. While health impacts all aspects of
enterprise risk (e.g. fiscal, operational and business) it is often only prioritised in relation to injury, lost
time or death. Workforce health has long been neglected by companies, partly because they have felt
unable to manage it. Thus, recognising that the health of the mine workforce community is in fact a
manageable risk is fundamental to generating a step change in workforce health. From there it’s a
matter of identifying an appropriate, industry-relevant, risk management tool to stimulate conversation
and generate a shared understanding of what workforce health might look like and how this might be
achieved. We believe the following is an example of such a tool.

**Bowtie analysis**

The BTA is a risk management tool linking knowledge management to risk management practice. Also
known as the butterfly diagram, the BTA became popular in the 1990s with its use in health, safety and
environment (HSE), political, business, security and enterprise wide risk management. The BTA has
been globally used by a broad range of companies, industries and regulators including the United
Kingdom’s defence industry, the French government, Australian regulators and the Shell Group. The BTA has
furthermore its flexibility has enabled varied application including auditing systems, incident
investigations, layers of protection analysis and company reorganisation/ merging/acquisition.

The BTA is often graphically represented as a bowtie (Figure 1). A conditional event forms the centre
(or knot) of the bowtie, signifying the point at which control can be lost relative to the topic of interest
(e.g. in this case ‘poor workforce health’, or more specifically ‘onset of mine workforce obesity’). The far
left of the bowtie represents causes which may result in the knot (e.g. sedentary job role, poor diet,
sedentary, insufficient exercise, failure of health monitoring systems). The far right of the bowtie represents known
or likely consequences of the knot (e.g. personnel morbidity or mortality, equipment damage, production
loss, regulatory or reputation damage).
Note: 1a presents the overall conceptual framework of the BTA, whereby a conditional event (workforce health) forms the knot of the bowtie, causes which result in the loss of control of the knot are presented on the far Left Hand Side of the bowtie, and possible consequences of the knot are on the far Right Hand Side. Note: the tool is not governed by cause-consequence pathways, but is instead focused at developing controls relative to the knot. To this effect, 2b Preventive Controls (Primary Prevention) are positioned on the Left Hand Side of the bowtie and designed to reduce the likelihood of workforce health issues arising; whereas, 2c Mitigation Controls (Secondary Prevention) are located on the Right Hand Side of the bowtie to reduce the severity of the consequences. (Figure adapted from Moore et al., 2012).
Controls to achieve tolerable risk are positioned between the ‘causes and the knot’ and ‘the knot and the consequences’. Importantly, the BTA focuses on developing controls relative to the knot and is not governed by direct pathways between causes and consequence. Accordingly, controls positioned to the left of the bowtie are tailored to reduce the likelihood of the conditional event at the knot (preventive controls; primary prevention) (Figure 1b). Alternatively, the controls positioned on the right of the bowtie are designed to reduce the likelihood or severity of the consequences (mitigating controls; secondary prevention) (Figure 1c).

Unlike traditional risk management tools, the BTA can be applied to any risk type. BTA illustrations are clear and simple, encouraging a logical thought process that aids in both understanding and communication. The tool itself can be used to relate risks, controls and management systems, enabling administrative risk management approaches to link to operational process; creating ownership and involvement at varying levels of the workforce. Thus, the BTA process can be used in the control of any unwanted risk, in this instance, poor workplace health. Importantly, information gathered from the workforce community would form the foundations of the BTA development process.

Without in-built capacity to prioritise or rank control pathways, the BTA works on the assumption that all controls are of equal importance. While some may view this as a limitation, we view this as an opportunity to build a platform for dialogue between industry and non-industry expertise. In the context of this paper, such a platform could be used to establish collaborative relationships and joint ownership of well-balanced mine health management practices. More importantly, the collaborative process recognises and utilises knowledge and skills from multiple perspectives that would otherwise not be acknowledged, allowing for effective best practice interventions to be employed.

**Part C. A case for a pilot Wellness-Watch program**

A fundamental premise of this paper is that the responsibility for developing a wellness program, and establishing KPIs and instituting programs to achieve these targets, should be placed in the hands of the workforce community. We believe the mining industry is generally well-resourced with risk management expertise to manage this process: everyday miners and mine managers make choices to manage risk as part of their everyday activities. Input from health experts can be sought at strategic points but should not control the process. A shared understanding of how collaborations between the workforce community and health expertise might support and enhance existing capacity should be clearly established early. We believe a staged approach to developing a pilot program using the BTA framework could readily be used to manage this process.

A Wellness-Watch program should:

- empower individuals, the workforce community, managers and hence organisations to take control of workforce health and manage it as they would any other risk
- develop a risk-based assessment framework and performance indicators to use in setting goals for managing workforce health
- perform longitudinal assessments of overall risk to assess effectiveness of programs and strategies employed
- feedback to individuals about changes in their personal performance indicators and to companies on overall trends in workforce health.
Steps towards achieving a BTA:

1. **Define BTA scope and identify stakeholder involvement**
   - Select a multi-disciplinary focus group to map important health-related issues from broad perspectives. Present a synthesis of site-specific information collected, including voluntary representation from members of the workforce community.
   - Identify all associated stakeholders groups with direct or indirect links to workforce health and site risk management practice. Consider how these groups are related, how they communicate and their respective priorities.
   - Generate a shared understanding of why worker health and health related risk management are important; including expectations of what the BTA might achieve, the value and benefits of being involved in the process, and how effectiveness of outputs will be measured.
   - Reflect on any possible barriers to achieving a collaborative BTA such as conflicting interests, high staff rotations or geographic isolation.

2. **Establish clear leadership, a diverse knowledge pool and commitment**
   - The BTA workshop process is best facilitated by a dedicated project team who function as a driver of workforce health risk innovation to address all stakeholder concerns. The composition of this team will be pivotal in positively engaging the various parties and maintaining interests through to project completion.
   - The BTA expertise should comprise mining health and safety leaders, union representatives, support groups and individuals at various organisational levels to ensure the BTA is approached strategically.
   - Selecting a major stakeholder or respected figurehead to champion BTA discussion is advisable. Medical/health expertise can be drafted to the team as required. Popular or emergent leaders from within the workforce who are willing to share their stories and viewpoints will provide valuable checkpoints on workshop outputs.
   - Confirm stakeholder and participant commitment to the BTA Network process e.g. adequate in-kind and financial resources necessary to achieve set objectives.

3. **Generate mine workforce health BTAs**
   - The BTA focus groups will need to be preceded by collating important site-specific contextual information on health facilities and services offered, as well as available data on workforce demographics, injuries and fatalities, and non-safety health statistics.
   - Reconnaissance visits by the workshop project team members to meet with various representatives of the workforce community and introduce the concepts of the pilot project is also an important first step to seek employee input into both design and drivers of the program and workshop program.
   - Rules governing the way that bowties are formed, structured and used should be guided by those priorities raised by the workforce community and during the development of the BTA workshop program (Step 1). Strategically working through these priorities in facilitated forums will generate a diversity of health-centric BTAs.
Priority should be placed on establishing clear KPIs that can be managed at both individual and workforce scales. Where possible, instituting systems should be linked to business performance reporting that can be collectively managed by the workforce community (management and individuals).

4. Build in flexibility via consultation, collaboration and continual improvement

- In the BTA context, a functional workforce wellness environment is one where workers, managers and stakeholders collaborate to continually achieve common goals of acceptable health risk and in doing so sustain the viability and productivity of the business.
- Consultation will be paramount to an effective risk management process. The views and experience of many builds an in-depth understanding of how workforce health management practices might influence the effectiveness of business risk strategies.
- Policies and systems will be required to support the BTA and subsequent integration of business risk management practices. Review of corporate and external policies will also be important, including a process to trigger audit and review with changing risk profiles. This should include a mechanism for collecting and monitoring workforce feedback on such policies and systems.

Concluding comments

Improved workforce health management benefits both employer and employee. Health promotion has only enjoyed limited success in the industry setting, despite the opportunities a ‘captive population’ should offer to influence workforce health behaviour. In the past health promotion efforts have largely been directed by corporate management and external medical experts; and to some extent, imposed on employees without understanding their personal needs or objectives for managing their own health. We know from the WHO guidelines and other sources that community ownership is essential to the success of wellness programs. Our case for a Wellness Watch program is presented in this light.

We believe placing the ownership of workforce health management squarely in the mining workforce community offers the greatest potential for improved outcomes. Further, workforce health should be regarded in the same way as any other organisational risk for the mining community and be managed along existing risk management lines. The recommended program development process [BTAs] instils ownership at all levels of the work community, harnessing the benefits of working with a ‘captive population’ and existing industry-relevant risk management expertise. Further, the proposed approach has the potential to improve workforce health management by long established outcome-based KPIs and support programs to achieve these goals. In this model, medical expertise is used as a reference source rather than as a driver.

The primary objective of this paper is to stimulate informed debate on worker health and industry-wide action to achieve a step-change in mining workforce health. By working collaboratively with a range of stakeholders, mining, work safe, and public health sectors would all be in a stronger position to develop proactive policy and interventions. Our staged approach to the development of a Wellness Watch program presents a forum for such collaborative dialogue; to our knowledge the application of the BTA framework to workforce health is novel to this paper. While discussions presented are tailored to the mine industry, the underlying principles are considered applicable to the broader workplace and thus to the Australian Work Health and Safety Strategy 2012-2022.

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References


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