# Tailoring technology to create a health ownership culture

Helen Scott, Dietitian/Exercise Specialist, Corporate Bodies International
Emily D'Alterio, Senior Health and Safety Advisor, Rio Tinto Coal Australia Kestrel Mine

**Abstract**

In recent years the increased presence of technology has led to changes to the mediums through which workplace health and wellbeing programmes are delivered. Transition from face-to-face consultations and follow-up, to an online, computer-based learning system is changing the face of workplace health initiatives. The use of this technology coupled with the shift from onsite to offsite health initiatives will, in the long-term, assist in building a health ownership culture within the mining industry.

This paper examines the case study of Rio Tinto Coal Australia's Kestrel Mine. Corporate Bodies International (CBI) has tailored the Rio Tinto 'Achieve Health' programme to meet the needs of the Kestrel Mine workforce. The online 'Health Risk Management System' and 'Myhealth' personal online health page is coupled with face-to-face consultations during the initial and high risk intervention phase. This ensures individuals are provided with the knowledge and skills to improve their health. The programme has grown from strength to strength and CBI and Kestrel Mine will share the lessons learnt to benefit other companies and providers who are looking to effectively utilise technology and offsite interventions to optimise their health and wellbeing initiatives.

## Introduction

Technology is changing the face of workplace health and wellbeing programmes. The terms “e-health” and “health platforms” are now being used to describe computer mediated interventions including; online health programmes, computer-based interactive health resources, telephone counselling, mobile phone messaging and smart phone applications. The growing popularity and effectiveness of these approaches in the general population is now supported by evidence-based research, however, further research is needed into the effectiveness of e-health in the blue collar setting.

Employee health has long been a priority within the mining industry, with most sites engaging in some form of health promotion. It is well documented that shift work and extended working hours put employees at an increased risk of many chronic diseases (Costa, 2008). As health care costs continue to rise, the demand for improved workers’ health and a return on investment has never been greater. Looking to the future, health programmes within the mining industry that establish employee ownership need to be created. There is little argument that workplace health programmes do provide very real benefits to the workplace (Glasgow, 1993). However, the challenge for both employers and health providers is to deliver health programmes that focus on improving the health ownership culture within the workplace, whilst still resulting in positive health outcomes for both the company and most importantly the employee. Information technology and the increase in the e-health resources may be part of the solution. Supplementing onsite, work-time health interventions, with offsite, out of hours interventions may in the long term, also help to build this health ownership culture and enable long term lifestyle improvements.

Health-enabling technologies, such as online tailored nutrition programmes, have significant potential in the workplace. They can be tailored to the individual, provide interactive options and can allow personally relevant information to reach a large target audience at a relatively low cost (Bouwman, 2005). This approach is particularly effective in terms of reducing the costs for rural and remote workplaces, where the expenses of health professionals and one-on-one counselling are quite high. However, the effectiveness of technology based approaches to workplace health promotion is highly dependent on the target population group. Employees and health providers need to work together to ensure an adequate assessment of the target audience’s readiness for technology and that possible barriers to this method of learning are adequately assessed prior to implementing such a programme.

A substantial portion of research on the benefits of technology based health promotion in the workplace comes from white collar environments. Comparisons of the effectiveness of web-based health programmes against print materials indicate that web-based programmes are significantly better on measures of behaviour change with regards to nutrition (Oenema, 2005). The effectiveness of e-health programmes in nutrition education can be attributed to the fact that individualized information commands greater attention from the individual, is processed more intensively and contains less redundant information (Brug, 2003) (Brug, 1998). When

looking at comparisons of web-based versus print materials for other health measures such as stress and physical activity, the difference in less pronounced. When print material is targeted at the stage of motivational readiness (to mimic the online system), research has shown little difference between print and web programmes on reported physical activity (Marshall, 2003). When web-based interventions are compared with in-person support the results suggest that internet support does not appear to be as effective as the one-on-one consultation, especially with regards to facilitating long term weight management (Harvey-Berino, 2002). The evidence supports the proposition that online health information, particularly nutrition education, is an effective health promotion tool, however, the research is still inconclusive with respect to weight management, especially long-term weight management.

The question of whether e-health is a viable option in the blue collar, mining work environment needs to be further investigated. Cook et al (2007) found that the positive web-based programme effects, for measures relating to nutrition, are closely associated with the frequency of internet access. In a blue collar mining environment many employees do not access computers on a day-to-day basis whilst at work. Another challenge in the mining industry is the demographic shift to an ageing workforce, which brings with it increased risk associated with chronic diseases and co-morbidities. A study of urban older adults found that regular computer users were generally younger, had a higher level of education and were healthier and more active than non-regular users (Crescri, 2010). Furthermore, studies have indicated that computer usage is lower for those residing in the rural setting compared with urban environments (Licciardone, 2001). Taking this into account it is then questionable as to how successful technology based interventions will be for the associated demographics in the mining workplace; rurally based, male dominated, ageing demographic, lower computer usage requirements at work and various levels of education.

Just like all health promotion programmes, whether the intervention is face-to-face or online, it is critical to ensure the information presented is relevant. The essential components of the programme need to be agreed upon by key stakeholders; not only by management but also employees, to elicit higher levels of ownership and participation. It is also important to ensure that the e-health programme is connected to the worksite environment in tangible ways, such as incentives programmes and being built into health and safety policies, with evidence suggesting that this will in turn lead to higher usage and involvement in the programme (Cousineau, 2008).

## Putting the evidence into practice: Rio Tinto Coal Australia Kestrel Mine Case Study

Kestrel Mine is Rio Tinto Coal Australia's only underground operation. The mine is located 40 kilometres north east of emerald and produces coking and thermal coal for export. An investment of more than $1.1 billion is currently underway to extend the life of Kestrel Mine to 2032 and increase production to 5.7 million tonnes per annum. Kestrel Mine has made significant progress and is a high performer in Rio

Tinto health initiatives. There has been a number of programmes implemented in response to employee's feedback and health trends to further engage the workforce and create health ownership.

In 2010, Kestrel Mine commenced a technology-based health and wellness programme. The 'Achieve Health' Health Risk Management System (HRMS) is a Rio Tinto initiative aimed at improving the health of employees and their families. Employees use an interface called the myhealth system which allows them to complete an online health assessment and then receive personalized information to manage their risks. The myhealth page provides a detailed health report and provides individuals with GP referral letters, fact sheets, e-learning workshops and a lifestyle coaching programme. Myhealth is a personalized, integrated health platform that promotes a 'health ownership' culture, where participants take responsibility for their health through self directed coaching programmes.

High participation rates are essential for a health programme to successfully meet business goals such as increased productivity, improved employee morale, decreased absenteeism and reduced musculoskeletal injuries. To ensure high participation rates a number of considerations were made when tailoring the 'Achieve Health' programme at Kestrel Mine, including; previous site based health interventions, gender and age composition of workforce, education level, information technology literacy levels and proportion of professional/support versus operational (i.e. operators/maintainers) employees.

In the initial needs assessment in January 2010 it was identified that a large proportion of the workforce were operators/maintainers and male, with a 96% male workforce. Historically, male blue collar workers tend not to use health services, especially when they relate to preventative health (Henning 2001). Strategies used when making initial contact and marketing programmes are crucial when it comes to gaining the support of the employer and employees, particularly males. Low risk employees that are already fit and healthy, are more likely to join in while those who are considered high risk are less likely to participate (Mavis et al, 1992). Men are well known for this. Most men view their health as being much better than it is and only seek help when there is a problem (Korda et al 2002). Corporate Bodies International (CBI) has a long-standing relationship with Kestrel Mine, having conducted workplace health interventions since 2003. Most interventions prior to 2010 have involved onsite programme promotion, with all interventions conducted offsite and involvement from partners and families encouraged. From the initial needs assessment it was identified that due to the demographics of the Kestrel Mine workforce the e-learning aspects of the 'Achieve Health' programme would need to be slowly introduced to ensure both the short-term and long-term success of the programme. Last year 65% (240) of the employees and 86 of their partners had a health assessment. This placed Kestrel Mine at the top of the Rio Tinto Coal Australia sites in terms of participation.

## Initial Consultations

It was decided that Kestrel Mine employees would be assisted in the health assessment phase of the programme. The recommended Achieve Health Model involves employees individually completing the initial health assessment questionnaire online and then making an appointment with their GP or Health Professional to collect their biometrics. Once this was completed the individual could then download their individualized health report and interpret and action the information provided in the report. It was identified that individuals might have some difficulties with the online system and the interpretation of the results and as a result the process was modified; a CBI health professional completed the questionnaire and biometrics during a face-to-face consultation with the employee. All information was entered onto the online health risk management system and the employee was then educated about their myhealth page and how to access it at home/work. This approach was advantageous as it provided assistance and education to employees with the online aspect of the programme whilst still focusing on the primary goal of improving the health of the individual and company.

## Follow Up Programme

Partners were also encouraged to attend the initial consultation. A supportive family environment has been shown to positively impact on health outcomes (Lomas, 2003). Inviting family to participate in the programme has been shown to increase participation and men are more likely to make changes when their partners are involved. Partner attendance is even more advantageous in a male dominated workforce as females have been shown to be more accepting of online health education, thus assisting the partner with ongoing myhealth usage.

As part of the Achieve Health programme phone-based and online health coaching is offered to those individuals classified as ‘at risk’. The online system focuses on the individual’s stage of change with respect to their areas of risk. At Kestrel Mine it was again decided to tailor the programme, with face-to-face follow-up consultations offered. Research has shown that although phone consults are a cheaper, more time effective option for follow-up, face-to-face consults are more effective in inducing positive health outcomes (McKinstry, 2010). As part of the follow-up consultation employees were assisted to set their personal health goals on their myhealth page and instructed on the different functions of the system. Partners were again encouraged to attend the consult and offered individualized advice if required. In 2010, the average age of participants in the follow-up programme was 42years, with males accounting for 92% of participants. The average age (39 years) and also male-dominated cohort supports the decision’s made regarding the use of face-to-face consultation, rather than relying on the individual to target their high risk results through use of the online myhealth page.

## Workplace Incentives

It is becoming increasingly common for the workplace to offer incentives and benefits that aim to promote the employee’s wellbeing, such as gymnasium and health club memberships, sporting team memberships, vouchers to sports stores, and

professional consultations. Such incentives provide a win-win situation. Employees feel appreciated and rewarded for their work efforts and the company benefits from an improved organizational profile through increased productivity, enhanced employee moral and wellbeing, and greater employee retention (McKeown 2002). At Kestrel employees are eligible to claim an annual health and wellness rebate. To link this rebate into the 'Achieve Health' programme it is stipulated firstly, that employee must participate in a health assessment to be eligible for a rebate and secondly, that the money should be primarily used to address any higher risk areas, as identified in the health assessment.

**Be Active Challenge**

Shift work and travelling time can make it challenging for mine employees to fit exercise into their routine. Computer based exercise programmes are gaining popularity, as they promote opportunities to become more active during work hours. Rio Tinto runs a global programme called BeActive, in which employees are encouraged to increase their physical activity rate by using pedometers to record the number of steps they walk each day, in a virtual race against other employees around the world. Pedometers cannot be used in the underground setting and as a result there was limited participation from this cohort; only 6% of the participants in the BeActive challenge in 2010 worked predominately underground. It's this portion of the workforce that on average engages in higher levels of shift work and is at greater risk of the lifestyle related disease through disruptions to their circadian rhythm (Costa, 2008). Another challenge with the BeActive programme was the need to have internet access to report on a daily basis. With non-desk based, shift work employees being away from their homes for up to 14hours a day when "on tour" this presented a significant barrier to ongoing participation in this programme. As a result of these identified barriers the BeActive programme was tailored to the Kestrel Mine workforce in 2011.

To make this programme more effective and targeted in 2011 the programme issues relating to both reporting and step conversion were addressed. Individuals can now sms their "steps" at the end of each day, which increased the convenience and ease of reporting, especially for those with limited access to computers. The step converter has also been expanded to incorporate "estimated steps" for common underground mining tasks. These initiatives, coupled with increased promotion and employee knowledge about the programme, have led to a 22% increase in the total number of Kestrel employees participating in the challenge. There was also an increased underground participation across Rio Tinto's global operations in the Be Active programme of 22% in 2011. This increase in underground participation was accredited to an increased awareness of personal health through other initiatives, such as periodic health surveillance, healthy breakfast and fatigue training, provided onsite to the workforce.

**Working towards a health ownership culture within the Kestrel Mine workforce**

Traditionally, workplace health programmes are offered to employees at work, during work hours and at cost to the employer. Corporate Bodies International and Kestrel

Mine identified inherent challenges with this delivery mode. Firstly, in the mining workplace, it prevents the family being involved in the health and wellness intervention. As previously mentioned, involving the family in the programme has been shown to increase participation and men are more likely to make positive health changes when their partners are involved. Secondly, and more importantly, continuing to offer all health incentives during work time may start to decrease the importance employees place on looking after their own health, diminishing employee health ownership. To address these issues, all health assessments, follow-up consultations and nutrition seminars for Kestrel Mine employees were conducted off-site and out of work hours, with partners strongly encouraged to participate. It is hoped that continuing with this delivery mode and increasing the ability of the workforce to use of the online health platform will continue to strengthen the health ownership culture within the Kestrel workforce into the future.

**Future of the programme**

2011 is the second year of the 'Achieve Health' programme at kestrel. There are a large number of participants to date returning for their review assessment, however, of this <5% of participants actually report knowing their username to access their myhealth online page, with no one reporting regular usage of the online system since its launch in 2010. This indicates that the online health risk management system is being significantly underutilised at Kestrel. This also supports the decisions made during the initial needs assessment at the commencement of the 2010 programme, which included offering all individuals face-to-face initial consultations to assist with the online data entry and face-to-face follow-up to ensure health outcomes are being achieved.

It is hoped that continuing to assist individuals with the HRMS will increase the proportion of the workforce that access the myhealth page on a regular basis into the future, with less reliance on the face-to-face consultations. More research is required to identify whether the limited usage of this system is related to the workplace culture created by previous health interventions, which were always face-to-face, or whether it's related to the predominantly male, ageing, blue collar workforce.

**References**

Brug, J, Oenema, A, Campbell, M (2003), *"Past, present, and future of computer-tailored nutrition education"*, Am J Clin Nutr. 77(4), p1028S-1034S.

Brug, J, Glanz, K, Assema, P, Kok, G, Van Breukelen, G.J (1998), *"The impact of computer-tailored feedback and iterative feedback on fat, fruit and vegetable intake"*, Health Educ Behav. 25(4), p.517-31.

Bouwman, L.I, Hiddink, G.J, Koelen, M.A, Van't Veer, P, Van Woerkum, C, (2005), *"Personalisaed nutrition communication through ICT application: how to overcome the gap between potential effectiveness and reality"*, Eur J Clin Nutr, Aug, Vol 59, Suppl 1 S108-15.

Cook, R.F, Billings, D.W, Hersch, R.K, Back, A.S, Hendrickson, A, (2007), *"A Field Test of a Web-Based Workplace Health Promotion Program to Improve Dietary Practices, Reduce Stress and Increase Physical Activity: Randomized Controlled Trial"*, J Med Internet Res. 9(2), e17

Costa, G, Milia, L.D, (2008), *"Ageing and Shift work: a complex problem to face"* J Chronobiliolgy International, 25(2-3), P.165-181.

Cousineau, T, Houle, B, Bromberg, J, Fernandez, K.C, Kling, W.C, (2008) *"A Pilot Study of an Online Workplace Nutrition Program: The Vale of Participant Input in Program Development"*, J Nutr Educ Behav, 40(3), p.160-167

Cresci, M.K, Yarandi, H.N, Morrell, R.W, (2010), *"The Digital Divide and urban older adults"*, Comput Inform Nurs. 28(2) p.88-94.

Glasgow, R. McCaul, M. Fisher, K. (1993) *Participation in Worksite Health promotion: A Critique of the literature and recommendations for future practice.* Health Education Quarterly Vol 20 (3) pp 391-408.

Harvey-Berino, J, Pintauro, S, Buzzell, P, DiGiulio, M, Casey Gold, B, Moldovan, C, Remirez, E (2002), *"Does using the Internet facilitate the maintenance of weight loss?"*, Int J Obes Relat Metab Disord, 26(9), p1254-60.

Henning, D. (2001), *"Providing health care to men in general practice"*, Editorial-Current Therapeutics.

King, A., Sweeny, S. & Fletcher, R. (2005), *"A checklist for organizations working with fathers using the non-deficit approach*", Children Australia, Vol 20 (3), pages 1-13

Korda, R.J., Strazdins, L., Broom, D.H. & Lim, L.L. 2002, *"The health of the Australian workforce: 1998-2001"*, Australian and New Zealand Journal of Public Health.

Licciardone, J.C, Smith-Barbaro, P, Coleridge, S.T (2001), *"Use of Internet as a resource for consumer health information: results of second osteopathic survey of health care in America"* J Med Internet Res. 3(4), e.31

Lomas, L., (2003) Men at Work. Men's Health Journal, Vol 2 (1) pages 4-5.

Marshall, A.L, Leslie, E.R, Bauman, A.E, Marcus, B.H, Owen, N, (2003), *"Print versus website physical activity programs: A randomized trial"*, American Journal of Preventative Medicine, 25(2), p.88-94

Mavis, B.E., Stachnik, T.J., Gibson, C.A & Stoffelmayr, B.E. 1992, *"Issues related to Participation in worksite health promotion: A preliminary study"*. American Journal of Health Promotion, Sept/Oct Vol 7 (1), pages 53-60

McKeown, G. 2002, *"A four-step guide to building business case for a healthy workplace"*, NQI

McKinstry, B, Hammersley, V, Burton, C, Pinnock, H, Elton, R, Dowell, J, Sawdon, N, Heaney, D, Elwyn, G, Sheikh, A (2010), *"The quality, safety and content of telephone and face-to-face consultations: a comparative study"*, Qual Saf Health Care, 19, p.298-303

Oenema, A, Tan, F, Brug, J (2005), *"Short-term efficacy of a web-based computer-tailored nutrition intervention: main effects and mediators"*, Ann Behav Med. 29(1), p.54-63.