

Join us for a health trip – and don't forget your passport

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Abstract

The 'Passport to a Healthier You' was a six month pilot program for three Xstrata Copper Mount Isa Mine Departments completed in July 2008. Forty four people completed the program. Positive results were achieved in the following areas: - reduction in smoking, body mass index, hip to waist ratio, blood pressure and pulse and an increase in physical activity, self efficacy and a healthier diet. This paper will examine the evaluation methodology, highlight the successes and limitations and discuss the recommendations for the future.

Gemini Medical

Gemini Medical is a division of IPN, which is the second largest operator of medical centres in Australia, facilitating quality general practice for approximately 4 million Australian consultations per year. IPN's network of more than 95 medical practices is situated throughout Australia and maintains the expertise of over 700 doctors.

Gemini Medical is a leading medical services provider with its main operations based in Western Australia. With over 100 doctors operating from 40 clinics the Gemini Medical group is able to provide general practice and occupational health services to corporate, government and private clients.

Xstrata North Queensland Operations

Xstrata North Queensland operations comprises of Xstrata Copper and Xstrata Zinc, employing approximately 5500 employees and contractors. Operations include Mount Isa Mines, Ernest Henry Mine, Copper Refinery, Port Operations and Bowen Coke.

Gemini Medical / Xstrata Relationship

Gemini Medical and Xstrata Mt Isa Mines have worked closely for the past seven years. Services include; three full time doctors, full Registered Nurse (RN) and admin support onsite, 24 hour occupational health service, comprehensive injury and health management services, fully integrated occupational health services and health promotion. Health promotion services incorporate health awareness activities including onsite displays, healthy lifestyle screening and assessment, health education such as toolbox talks, resource development specific for Mt Isa Mines needs, Mine to Market magazine, vaccinations and skin screening.

Xstrata Health Management Program

The Passport to a Healthier You Pilot Program fits within Xstrata North Queensland's Health Management Strategy, this includes five categories of Health Assessment, Occupational Hygiene, Injury Management, Employee Assistance Programs and Health Promotion. Under the strategy health promotion aims to educate workers on general health issues, facilitate and support targeted health clinics as well as link in with State, Federal and industry health promotion initiatives.

Workplace Health Promotion in a GP Setting

Doctors and practice nurses in a general practice setting can positively impact on the health of individuals. In particular, practice nurses have been shown to be effective in counseling patients with health problems related to their lifestyle, including smoking, hazardous drinking, nutrition, immunisation, as well as chronic diseases, including cardiovascular disease, asthma and diabetes[1].

The most effective workplace health promotion programs offer a range of different strategies to encourage healthier behaviours. They also offer services that are voluntary, easily accessible and gain the support of management [2]. As the Gemini Medical Mt Isa clinic is located onsite and open seven days a week it is reasonable to hypothesise that the implementation of a nurse based health promotion intervention at Gemini Medical will positively affect on the health of individual Xstrata employees.

Passport to a Healthier You Pilot - Program Development

The 'Passport to a Healthier You' Pilot Program builds on existing health promotion principles and evidence to assist people to make healthier choices. The program is voluntary, conducted outside of the employee's normal working hours and is facilitated by a Registered Nurse with the support of Doctor.

The program is supported by existing services and tools that are widely available such as the 10 000 steps program and the Commonwealth 'Lifescrpts' program coordinated by the Australian Division of General Practice [3]. In addition, the program offers best of proven health promotion programs including;

- Pedometers and incentives [4] [5]
- Personalised and intensive sessions including individual goal setting and motivational interviewing encouraging individuals to take responsibility for their own health [6].
- Encouragement to include family and partner in consults or through taking as passport home [7].
- Basic health assessments measuring key risk factors for chronic health conditions such as blood pressure

The 'Passport to a Healthier You' pilot program was launched in January 2008 and completed in June 2008. Three Xstrata Copper Mount Isa Mines Departments volunteered to pilot the project. These sites included; Site Services (86 FTE staff), Mt Isa Copper Operations Coordination (140 FTE staff) and Copper Smelter Maintenance (68 FTE staff).

The Passport

The Passport was designed by Gemini Medical in consultation with Xstrata Copper. Aspects of the passport were based on the Mt Isa Mines *Safety & Health Pocket Pal* and were designed to be attractive to the predominantly male workforce who may want to be discreet about their involvement in the program. Inside the Passport participants were provided with a short introduction about the program, useful information regarding managing their health, important things to tell their doctor, 'what to get checked when' as well as how to use their pedometer and information on the 10 000 steps program.

During their first appointment, baseline measures were recorded in the passport and participants were then asked to record their daily steps and how they felt they were progressing towards their goals. Participants were encouraged to share their progress with their partner.

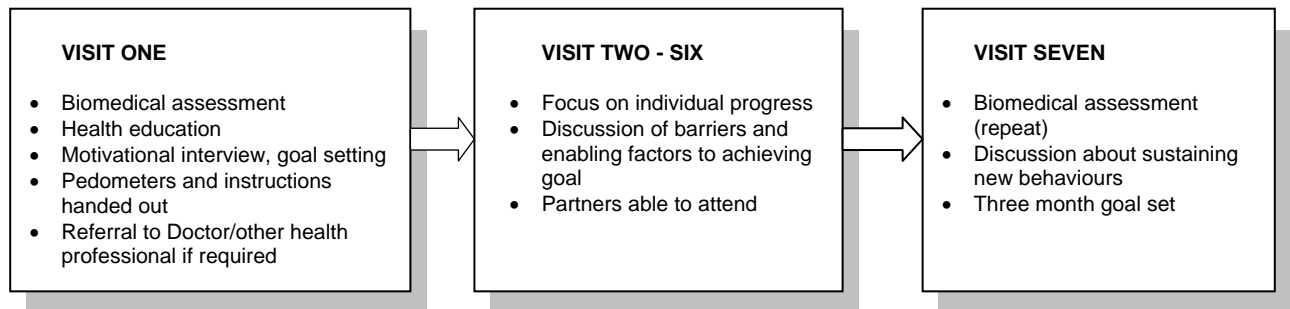
The Procedure

The Passport to a Healthier You Pilot Program was coordinated and conducted by a Registered Nurse (RN). A single nurse was used to improve consistency of service across participants, reduce training and reduce demand for resources in an already busy clinic.

The goal of the nurse was to act as a facilitator of change whilst allowing individuals to come to a decision regarding what their motivating factors or barriers to health change were. The nurse assisted individuals by providing relevant health promotion information in the form of pamphlets as well as support and advice.

The Program consisted of seven confidential fortnightly visits to the nurse over approximately three months. Each visit was tailored to the individual but followed a similar sequence outlined in the below diagram.

Visit Summary



Recognition for Participants

All participants that completed the program were invited to a healthy barbecue breakfast to celebrate their successes and to publicly acknowledge those participants who made significant progress towards their health. Each participant was presented with a certificate, while the first place and runner up 'goal getters' were presented with a small prize donated by Xstrata Copper and businesses in the local community.

Evaluation

The 'Passport to a Healthier You' Pilot program was evaluated using a single group pre and post test experimental study design. This design has the advantages of being simple to conduct and coordinate and provides good observational data to guide the program into larger groups.

Program Aim

Implementation of the 'Passport to a Healthier You' program will positively affect the health behaviour of participating Xstrata employees.

Objectives

- To increase awareness of health issues amongst Xstrata staff participating in the program
- To increase Xstrata employees ability to set health goals
- To increase the efficacy of Xstrata employees to make healthier lifestyle choices
- To increase Xstrata employees knowledge about their personal health issues
- To reduce modifiable risk factors among staff participating in pilot
- To increase the use of pedometers
- To increase physical activity

The objectives of the pilot program were measured using self report surveys, biomedical assessments and nurse assessment of risk factors.

The self report surveys asked both quantitative questions using a combination of tools including an adaptation of the Audit C [8] and the General Self Efficacy (GSE) score [9], as well as qualitative questions to assess awareness of health issues and the implementation of the program. The survey measured health awareness, ability to set goals, efficacy of employees to make healthier lifestyle choices and knowledge.

Self report surveys were administered prior to first appointment, after their last appointment, and if the person discontinued with the program. Follow up surveys and assessments will be sent out 3 months after the final visit to assess the immediate sustainability of the program.

Health assessments were conducted on all participants at the first and last visit. The aim of the assessment was to provide individual participants with a general health awareness of specific issues relevant to them as well as provide baseline data. The following tests were included in the assessment; Body Mass Index (BMI) and Hip to Waist ratio as measures of obesity, blood pressure, resting pulse, instant cholesterol and instant glucose. Instant cholesterol and glucose tests were utilised as a less invasive way to get a general indication of levels. Fasting tests were conducted on some individuals; however their results are not included in this study.

The nurse provided risk ratings for participants relating to their cancer risk, cardiovascular disease, depression/anxiety, diabetes, alcohol, nutrition and physical activity. Whilst physical activity and alcohol assessments indicated a quantifiable score, other risk assessments were based on the number and significance of individual risk factors.

Promotion of Passport

The Passport to a Healthier You' Pilot Program was firstly promoted to middle and senior management of each pilot site to gain their support and commitment. The program was then promoted using various mediums including; the December and January *Mine to Market* magazine; a flyer; emails from management and a series of seven promotional sessions to about 200 people held over January at pre start and safety meetings.

The majority of people (28 responses) heard about the program through work or management followed by a workplace presentation (17).

Program Uptake and Attrition

Seventy people from the three pilot sites registered interest and of those sixty five people commenced the program including six others approved by Xstrata's Health Risk Management Superintendent. Each site represented around a third of program participants. Forty four people completed the program by 30 June 2008, representing an attrition rate of 32.3%.

The majority of people discontinued after their 5th visit (7), followed by their first (5) and third (4) visits. The most common reasons for discontinuing included, left Xstrata (5) and not the right time/did not want to change behaviour at this time (5). Seven people did not respond.

Results – What we know so far...

Participant Profile

The *Participant Profile* table demonstrates that 84.6% of the participants were men, and the majority of people (32.3%) were aged between 35-44 (21), followed by 25-34 (20) year olds and people in the 45-54 (13) age group.

People joining the program ranged from apprentices and trades assistants through to senior management. They decided to participate to improve health (35), lose weight (20) and increase fitness/strength (15).

Participants wanted to achieve weight loss, increase fitness, better their health, reduce stress and to quit smoking as a result of the program. Forty three participants were optimistic about seeing positive results as a result of the program.

Participant Profile

Who were they?	84.6% were men 63% aged between 25 – 44 (41) From a range of occupations from tradespeople, to management, to professionals
Why did they join?	To improve health, lose weight, and increase fitness/strength
What were their most important health issues?	Weight, smoking and diet
What were their health goals?	Weight loss, increase fitness, have better health, reduce stress and to quit smoking.
If they could improve one thing it would be	Fitness and weight loss

Participant Satisfaction

The following table summarises some of the key areas of participant satisfaction following the program.

Participant Satisfaction

Achievements	Better eating habits, increase in physical activity, increased knowledge and awareness of health issues and weight loss
Liked best	Encouragement, motivation and support and pedometers
Liked least	Pedometers (often broke) and length and frequency of visits
Suggestions for improvement	Providing or subsidising gym membership, increasing the length of visits over a longer period of time
Recommend program to a friend	91% said they would recommend the program to a friend
Feedback regarding nurse	The majority of people felt that the nurse assisted them to achieve their goals and felt listened to during their appointments.

When asked if the participants had seen positive personal results from the program the majority of individuals answered yes, citing a diverse list of improvements from increased physical activity as well as awareness and knowledge gained through to having a better relationship with their family. Seven people responded that they had not seen improvements due to other distractions/commitments, being away and to dietary changes.

Participants ranked the encouragement, motivation and support shown by staff members' as the best part of the program. Others liked using the pedometer to measure progress and the daily log of steps. One person commented ... "it was a factor to achieve my goal. I have tried in the past and failed due to lack of knowledge. Also felt motivated due to keeping record of the program and discussion on the same day of the visits."

When asked what they liked least about the program the most common response was 'nothing'. The second least liked thing about the program included the pedometers as they often broke and the appointment times and frequency (being too short).

The most common suggestions for improving the program included subsidising or providing gym membership in conjunction with the program, followed by longer appointment times for follow ups and increasing the program duration past 12 weeks. One person commented that "Xstrata can introduce a health club for employees with a gym, few indoor sports etc. That may help in long term. Circulate a flyer with benefits of program to attract more people and to motivate them. Health club not just a gym but also recreation facilities for family."

Forty three people stated that the nurse helped them to achieve their goals, with the most common reason being for encouragement, positivity and motivation, followed by providing information and ideas about how to achieve their health goal. One person reported... "Yes, helped keep me focused, provided guidelines on minimum fitness requirements, steps etc. Talking about issues makes you more aware of your own lifestyle".

Forty three people stated that the nurse listened to them in their appointments. Additional comments included that the nurse provided good feedback, answered questions and provided useful tips and resources as well as support and encouragement. One person stated "Yes, the nurse and I have good chats / the nurse listens to where I have had troubles and guides me on how I can improve".

Self Reported Indicators

Self reported indicators measures of health included smoking, nutrition, alcohol consumption, physical activity and self efficacy. The results have been summarised in the below table indicating that except for alcohol consumption all measures had improved. Items were marked as improved if more than half of the people that completed the program showed a personal improvement.

Summary of Self Reported Indicators n=44

Health Factor	Improved	Same	Worsened	Comments
Smoking	✓			2 people quit smoking and 6 improved readiness to quit
Nutrition	✓			56.8% of people improved their diet in accordance with Australian Dietary Guidelines
Alcohol		✓		45.5% reduced their risk, however the same percentage risk rating remained unchanged
Physical Activity	✓			81.8% increased their physical activity
Self Efficacy	✓			63.6% increased their self efficacy score by an average of 4 points. Significant score p=0.020655

Biomedical Indicators

Biomedical indicators included Body Mass Index (BMI), Hip to Waist Ratio, blood pressure, Instant random glucose, instant total cholesterol and resting pulse. The summary of biomedical indicators below indicates group improvements for BMI, hip to waist ratio and resting pulse.

Summary of Biomedical Indicators n=44

Health Factor	Improved	Same	Worsened	Comments
Body Mass Index	✓			77.3% decreased their BMI
Hip to Waist Ratio	✓			68.2% reduced their Hip to Waist Ratio
Blood Pressure	✓			77.3% had lower blood pressure on the day
Glucose		✓		93.2% had no change to their glucose risk
Cholesterol n=38		✓		71% had no change to their cholesterol risk level
Resting Pulse	✓			Average pulse rate dropped from 72 bpm to 64bpm. Significant score p=0.05302

Nurse consultation indicators

The risk for developing certain diseases were ascertained through nurse assessments of both modifiable (smoking, diet) and non modifiable (family history, gender) risk factors for each category. The risk ratings below should be interpreted as a guide to a risk level only. Following a health assessment on the first visit the nurse was required to refer appropriate participants to their own doctor for follow up and to get approval before commencing the program. Eleven (16.9%) people were referred to their GP as a result of the basic health assessment.

The table below illustrates that the group risk levels for cancer, cardiovascular disease, diabetes and depression/anxiety remained the same.

Summary of Nurse Risk Indicators n=44

Health Factor	Improved	Same	Worsened	Comments
Cancer		✓		71% remained at the same risk level for cancer
Cardiovascular Disease		✓		65.9% remained at the same risk level for cardiovascular disease
Diabetes (type 2)		✓		59.1% remained at the same risk level for diabetes
Depression/Anxiety		✓		36.4% remained at the same risk level for depression and anxiety

Case Studies

The following case studies represent both how the program affected someone with chronic conditions as well as someone who is at risk of developing these conditions without intervention.

Case One (Person X)

Person X is aged over 40. They joined the program to increase their physical activity, lose weight and improve dietary habits. On assessment the nurse noted that Person X was on medication for high blood pressure and high cholesterol. Although they rate their health to be good, they acknowledge binge drinking and only incidental exercise.

During the program Person X reports that the program is 'life changing' and consistently comments that they had more energy and felt good about themselves. With each visit they increased their physical activity and even started jogging. Person X shares that they have support from their partner and children and exercises with their partner.

As a result of the program Person X states that they now have a need to exercise, a desire to be healthy, improved diet and fitness, although they are a little disappointed about slow weight loss. The tables below demonstrate their progress.

Person X Self Report Indicators

Health Factor	Improved	Same	Declined	Comments
Smoking		✓		Ex-smoker
Nutrition	✓			Increase in vegetable intake, reduction in extras Wholegrain bread and eating breakfast, Reading labels
Alcohol		✓		Score of 7. Has included alcohol free days but is still at risk due to medical history due to existing conditions.
Physical Activity	✓			Increased score from 10 to 18 Increased daily planned exercise now walks every evening 45 minutes. Uses pedometer everyday
Self Efficacy	✓			Increased score from 36 to 39

Person X Biomedical Health Indicators

Health Factor	Improved	Same	Declined	Comments
Body Mass Index	✓			Improved slightly 27.51 to 27 (weight loss 1.8kg)
Hip to Waist Ratio		✓		0.94 to 091 (low risk)
Blood Pressure	✓			On blood pressure medication 120/80 – 118/80
Glucose		✓		Increased slightly from 4.3mmol/L to 5.7mmol/L (variations in fasting)
Cholesterol	✓			At start of program was on cholesterol medication which has been halved since the program
Resting Pulse	✓			78bpm to 48bpm

Person X Nurse Risk Indicators

Health Factor	Improved	Same	Declined	Comments
Cancer	✓			Family history and sun exposure. Improvements in lifestyle have lowered risk
Cardiovascular	✓			Has previous history of CV disease and through an increase in physical activity is beginning to reduce his risk
Diabetes (type 2)	✓			Has improved hip to waist and waist measurement to being to reduce his risk of diabetes
Depression/Anxiety		✓		Managerial role, however reports minimal stress

Case Two (Person Y)

Person Y is aged under 40, has no medical conditions and does not smoke or drink alcohol. However at baseline Person Y was overweight and has a sweet tooth leading them to make unwise food choices.

Person Y joined the program to improve food habits and become fit. Their most important health issue reported was being overweight. During the program Person Y used a food diary and calorie counter to help them to improve their diet and lose weight. Person's Y's partner also came to some appointments to support them to achieve their goal.

At the end of the program Person Y had lost 8.9% of their body weight and comments that the program was a factor to achieve their goal. Person Y states that they had tried in the past and failed due to lack of knowledge. They also felt motivated due to keeping record of the program and discussion with the nurse. Person Y's health outcomes are displayed in the below tables.

Person Y Self Report Indicators

Health Factor	Improved	Same	Declined	Comments
Smoking		✓		Never smoked
Nutrition	✓			Low calorie diet, reduction in sat fats, and increase in unsaturated fats, increased cereals reduction of sugar, and increase in vegies.
Alcohol		✓		Person Y does not drink alcohol
Physical Activity	✓			Reports that they overestimated the amount of exercise partook in previously. Now participates in consistent moderate activity for health
Self Efficacy	✓			Increased from 36 to 40

Person Y Biomedical Health Indicators

Health Factor	Improved	Same	Declined	Comments
Body Mass Index	✓			Decreased from 28 (overweight) to 24.9 (normal)
Hip to Waist Ratio		✓		0.89 to .89 (low risk)
Blood Pressure	✓			125/90 (borderline) to 108/80 (normal)
Glucose		✓		Mild improvement from 4.4mmol/L to 4.2 mmol/L
Cholesterol		✓		Mild improvement of 4.51 to 4.06
Resting Pulse		✓		56

Person Y Nurse Risk Indicators

Health Factor	Improved	Same	Declined	Comments
Cancer		✓		Low risk
Cardiovascular		✓		Improved due to weight and activity
Diabetes (type 2)	✓			Has family history and risk has improved sue to diet and exercise
Depression/Anxiety		✓		Low work stress and supportive family

Limitations

The results are subject to several limitations and all results should be used with caution and as a guide when discussing the impact of the program in relation to changes in health behaviour and biomedical indicators.

Firstly the study design is limited due to the size of the sample and lack of comparison group, making it difficult to link health changes experienced by the participants to the program as opposed to other confounding factors such as public health campaigns etc.

Participants with pre and post data were analysed in more detail to determine individual health outcomes. Specific characteristics of people who discontinued the program were not analysed in this report as the response rate for follow up surveys was poor. Comparisons of unequal pre and post groups can bias the results.

The measures used to evaluate health behaviour changes are also limited. The survey, although using several validated tools and questions were not pre-tested extensively and there is anecdotal evidence of some questions being misinterpreted. Furthermore, all self report surveys are subject to self report and social desirability bias as participants were aware that the nurse who implemented the program would be reviewing their survey and therefore likes and dislikes, as well as comments about the nurse may be skewed.

The results are also limited by the risk factor assessments conducted by the nurse. Although objective measures were used, subjective measures regarding an overall risk after conversations with participants have the potential to bias the results.

As with many pilot studies this report is also limited by the fact that the program implementation altered slightly throughout the course of the program. The major aspect was appointment frequency as only one person had appointments every 2 weeks as planned; the majority had varying appointments from 1 week to 8 weeks. The length of appointment also varied slightly for each individual which may have affected their outcomes.

Although widely used and accepted tools have been used and interpreted by a Registered Nurse each test does have limitations including measurement error. Measurement error was reduced by providing a clear 'guide to results' for the nurse as well as utilising the same nurse to take measurements.

What Worked?

There were several aspects of the 'Passport to a Healthier You' Program that worked well. Firstly, the program was easy to access for participants as their appointments were held in the Gemini Medical clinic onsite and could be scheduled around shift times and on weekends. Utilising the skills of a Registered Nurse was also beneficial as they have good general knowledge of a range of health issues and possess a medical background supported by General Practitioners for any areas of concern. Furthermore several people reported that they enjoyed having a personalised program, built up a good rapport with the nurse and felt that they were supported to achieve their goals.

The fact that family members and partners were able to attend appointments was also beneficial for participants as it worked to increase support for their goals at home.

Secondly, the program had an overwhelming support of both middle and senior Xstrata Copper management. Supervisors from each of the pilot sites, not only conducted extra promotion on top of planned Gemini promotional activity, they also joined the program as an example and encouraged their staff to participate.

The use of incentives such as pedometers was very successful, with the majority of people using them everyday. The pedometers encouraged a sense of 'friendly' competition between participants and also created hype around the program. It has been reported that several people are still using their pedometers even though they have finished the program. Other incentives such as frisbees, T-shirts and pens, although inexpensive, proved popular among the participants as rewards to working towards their goal.

Improvements and Recommendations for the Future

Improvements and recommendations for the future of the program have been sourced from participants of the program, Xstrata Copper management and Gemini Medical staff and include the following:

- Development of specific passports suited to the individual's goals (eg. weight loss, stress management).
- Review of passport implementation.
- Increase the total length of the program to be conducted over a six to 12 month period with monthly appointments.
- Inclusion of optional small group workshops, web based 'health portals' discussing health information and to provide support in between appointments
- Allow partners to have their own passport and be part of the program.
- Investigate the use of fasting glucose and cholesterol tests as well as incorporate body composition methods such as skin folds or bioelectrical impedance.
- Assess the quality of pedometers used for further programs.
- Increase the program to include more participants from various sites.
- Follow up the pilot program, at 6 and 12 months in addition to the scheduled 3 month follow up. These modifications will allow Xstrata to extrapolate in more detail the impact the program may have on absenteeism, injuries, productivity and overall health of employees and therefore the economic return on their investment.

Conclusion

The 'Passport to a Healthier You' Pilot Program is an example of how the partnership between the resource industry and medical sectors can work together to improve the health of staff and address the issues faced by the mining and rural and remote communities.

Furthermore, the pilot is an example of how varied promotion channels such as group presentations, electronic and print fliers and importantly the support and encouragement of management can increase uptake of a health program. The attrition rate of 32.3% was not uncommon for this type of intervention however efforts will be made in the future to follow these people more carefully to find out if they benefited from any health change and the reasons why they discontinued.

The pilot also had positive participant feedback with the majority of participants stating that they liked the incentives such as the pedometers, had increased knowledge and awareness of health conditions, achieved their health goal and felt better about themselves. The majority also thought the nurse was helpful and would recommend the program to a friend.

Pre and post test analysis of participant surveys revealed that there had been improvements in all health areas except alcohol consumption, however future programs could address this issue further. In addition self efficacy significantly increased over the program which suggests that this type of intervention is useful for building the capacity of individuals to take control of their health.

Each biomedical test should be interpreted as a general indication of progress. These tests supported the self reports of increased physical activity and better nutrition through the reduction in BMI, hip to waist Ratio, blood pressure and resting pulse. Glucose and cholesterol levels remained unchanged for the group as these indicators not only affected by fasting status, but also require a longer time to change.

Similarly nurse reported risk factors were also subject to biases and remained unchanged for the majority of participants. Further continuation of the program may see these risk factor ratings improve over time as the change in biomedical measures for risk become more evident.

Overall the 'Passport to a Healthier You' Pilot program shows promise in its ability to improve the health of Xstrata Copper employees.

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