

**Issues in the Economic Evaluation of
Health Promotion in the Workplace**

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Executive Summary

The National Centre for Health Program Evaluation(NCHPE) was commissioned by the National Heart Foundation(NHF) to prepare a paper describing a framework for the economic evaluation of health promotion in the workplace. This paper is the outcome of that work and designed to contribute to an understanding of the role of the workplace setting for health promotion activities. This paper should be of interest to agencies with a charter to deliver health promotion, groups delivering health promotion programs and all companies and enterprises with a concern about the health status of their work-force and the interface between worker health, organisational health and company performance.

With an increasing realisation that resources for health promotion and health services more generally, are scarce, the role for economic evaluation to ensure resources are applied efficiently with respect to their effect on health status and health inequalities is now widely accepted. However the rigorous use of economic evaluation models for this purpose is still relatively uncommon. The focus of this paper is the conceptual framework for the evaluation of health promotion in the workplace and description of some of the possible tools. The broad steps in conduct of economic evaluation are summarised, and definitions provided of cost-benefit analysis, cost-effectiveness analysis and cost-utility analysis, the most commonly applied economic evaluation models.

There are substantial challenges in implementing economic evaluation models in the work-place setting. There is a wide range of views concerning what constitutes health promotion in the workplace and the primary objectives of such programs. The boundary of a company's 'health promotion' activity, particularly when implemented as part of a broad cultural change/industrial change agenda, is difficult to define, confounding program description and costing. Furthermore key relationships, between: i) health promotion activities and health status, ii) health status and company parameters, and iii) organisational health initiatives and health status and company performance, are exceedingly complex, certainly synergistic and influenced by external factors,

(such as the labour market, competitive environment, community/media based health promotion activities. Thus not only is it likely to be difficult to define the health promotion program, but it will be difficult to attribute any observed changes in company or health status parameters to the program.

While the evaluation of work-place based health promotion programs will always be problematic, insights into the effectiveness and cost-effectiveness of such programs can be obtained through the rigorous approach to data collection. But for genuine insights to be obtained the range of parameters on which information needs to be collected is surprisingly broad. A health promotion program cannot be viewed in isolation from company organisational structures.

Evaluation of work-place based health promotion requires an understanding of the company, the market within which it operates, internal organisational and industrial arrangements, and the nature of the work-force. Thus data sources to inform the evaluation will ideally include:

- i) *A careful description of program elements and cost* - distinguishing program elements which primarily and directly address a health agenda from those targeted primarily at company performance; the description may need to cover policies/interventions introduced over a period of time and not necessarily as part of a cohesive 'health promotion package';
- ii) *Identification and measurement of key health status parameters*, these should include,
 - clinical parameters, such as blood pressure, cholesterol, obesity, diabetes,
 - health outcomes, fatal and non-fatal events (and cause), stress/sense of wellbeing),preferably assessed before implementation to provide baseline data and post implementation, and if possible for 'controls' eg 'matched' controls, historic controls, or industry averages;
- iii) *documentation of key lifestyle attributes* - covering such parameters as smoking prevalence, activity levels, alcohol/drug use and abuse;
- iv) *documentation of key company parameters indicative of performance* - including such parameters as absenteeism, work-force turnover, Workcare premiums, accident/injury experience, productivity, profitability, industrial experience;
- v) *subjective assessments of participants* - of the role and impact of health promotion activities, as a whole and identifiable components.

Rigorous case study work will be required to progress evaluation methods, and to address implementation issues.

A small number of workplace based health promotion initiatives are described in this paper, essentially to illustrate the range of program elements. Evaluation of any specific health promotion initiative was beyond the scope of this paper.

None-the-less, from theoretical principles, as well as some case study evidence, it can be postulated that health promotion in the work-place setting should be able to contribute to the communities health and industry objectives:

1. To support cost-effective means of delivering health promotion and health care.

Preliminary evidence/analysis would suggest that health promotion/health service delivery through the work-place may well represent a highly cost-effective means for the community, of delivering health care and enhancing health status. This is based on limited case study evidence, and theoretical consideration of the issue which highlight the synergistic relationships between program elements.

Further, because health promotion in the work-place is largely funded by industry (with even direct medical services generally funded by the company and not bulkbilled to Medicare), savings to the health care budget may be achieved. Work-place based health promotion should be particularly attractive to government agencies, with restricted health promotion budgets.

2. To reduce health inequalities by targeting population groups with high risk behaviours.

Various studies have highlighted the existence of significant health inequalities in the Australian community. A relationship between poorer health and lower socio-economic status has been identified. While poorer health contributes to lower socio-economic status, the causality also runs the other way, through high risk life style behaviours (smoking, poor diet, sedentary lifestyle etc) and a reduced sense of control over individual health. (National Health Strategy, 1992, and H&CS and EPA Vic,1994. A stated government objective is a reduction in health inequalities. The work-force provides an opportunity for the targeting of health promotion activities to community groups at high risk, by selecting regions/localities, ethnic groups, and occupational groups that have been identified with poor health status.

3. To enhance performance of individual companies

Due to the inter-relationships between; i) individual health status, ii) the work environment (organisational structure, communication models, work culture, occupational health and safety, industrial relations, training and career development), iii) absenteeism and work-force turnover and iv) company performance; a comprehensive work-place based health promotion program has the possibility of simultaneously contributing to company performance as well as worker health status. (see figure E.1)

This conclusion particularly applies to a comprehensive health promotion approach, incorporating:

- * industrial and organisational health components,
 - * direct health service delivery and
 - * health promotion for risk factor modification.

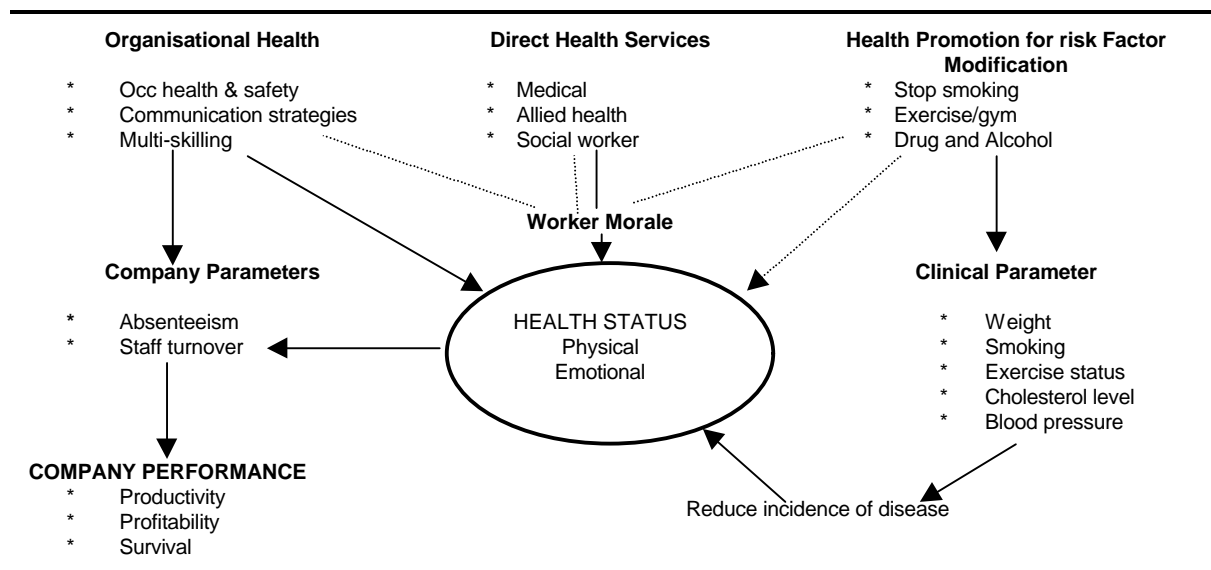
4. Health promotion in the workplace can potentially contribute to the governments industry objectives and the micro-economic reform agenda.

Implementation of a work-place based health promotion program incorporating the three components illustrated in figure A.1, the contribution to performance of individual companies will contribute to the governments industry objectives and the micro-economic reform agenda.

Figure A.1

Inter-relationship between Health Promotion in the workplace, Health status and Company Parameters

THE WORKPLACE HEALTH PROMOTION PROGRAM



This review/analysis suggests that involvement in workplace based health promotion, could well represent for industry and government and the National Heart Foundation an effective and cost-effective means of achieving health promotion objectives, enhancing individual worker health status and contributing to company performance. What is required immediately is support for pilot implementation and evaluation of various models of health promotion in the workplace setting to test this hypothesis.

Issues in the Economic Evaluation of Health Promotion in the Workplace

1 BACKGROUND

1.1 Scope of Research Paper

The modest aim of this research paper is to progress the debate on the value of health promotion activity in the workplace. In particular the aim is to:

- provide a structured approach to description of work-place based health promotion;
- document a methodological framework to explore the potential value of company based health promotion to the worker, companies, society, and the government;
- consider the possible role for government in the support of workplace based health promotion and in its evaluation.

It is hoped that this document will contribute to the debate about how to achieve health goals and targets pertaining to life style change of modifiable risk factors. It is also hoped the document will contribute to the allocative efficiency debate concerned with how changes to the health service mix may increase the health status of the community. Optimisation of the health service mix requires identification of and support to programs which can make greatest contribution to health status per dollar allocated, and the withdrawal of funding from less cost-effective programs. (See Segal & Richardson 1994). There is reason to believe the current health service mix is far from optimal with possibly too few resources allocated to health promotion. It is also probable that health promotion is not delivered through the most effective (and cost-effective) settings.

Companies exploring options for health promotion in the workplace, may also find this paper useful in considering alternative health promotion models to adopt, and how performance might be assessed.

Before considering standard approaches to economic evaluation (Section 3) the meaning of health promotion is explored (Section 2). In Section 4 the steps in evaluating a workplace based health promotion program are described. Some general implications are presented in the final section of this paper and in the Executive Summary.

1.2 Definition of Health Promotion

Health promotion, in its broadest sense covers activities designed to promote health and well-being. The Ottawa Charter for Health Promotion defines health promotion thus:

'health promotion is the process of enabling people to increase control over, and to improve their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realise aspirations, to satisfy needs and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasising social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles into well-being.'

Ottawa Charter 1986

An exceptionally wide range of activities could fall within this general definition. It is not clear that this interpretation is universally accepted, especially if we consider activities normally included under health promotion in Australia, which often appear quite narrow. We cannot assume that there is agreement about the scope of health promotion activities, particularly within the workplace setting.

Three alternative ways of defining the scope of health promotion activities are suggested, which move from a narrow to a broader focus, and reflect the range of program types commonly associated with health promotion.

i) Disease paradigm - primary prevention focus

A narrow view of health promotion would incorporate only programs directed at the primary prevention of disease through risk factor modification with avoidance of associated morbidity/mortality. Causes of death and morbidity typically targeted by primary prevention programs are cardiovascular disease, lung cancer, cervical cancer and motor vehicle accidents. There are numerous examples of health promotion activities designed to modify high risk behaviours. These include for instance 'heart health' programs which may focus on smoking, or activity levels and nutrition.

The aim of such programs is to change high risk behaviours to reduce disease incidence and ultimately achieve a drop in mortality and morbidity from the target diseases. Such programs, are implemented through media campaigns (national/regional) and community based approaches and have been credited with major behaviour changes, in relation to adult smoking, consumption of saturated fats, driving under the influence of alcohol and other high risk behaviours. For an evaluation of the Transport Accident Commission campaign (see Cameron et al 1993), and of the

Sydney Quit campaign Pierce et al (1986), and weight reduction, GutBusters (1993). Epidemiologists conclude that health promotion programs have contributed to the massive fall over recent decades in the incidence of cardiovascular disease and road trauma.

ii) Disease paradigm - secondary prevention

A somewhat broader view of health promotion would incorporate programs addressed at secondary as well as primary prevention. This includes besides the above, programs targeted at modifying behaviours of those with chronic illness, to reduce the risk of known complications. This may incorporate programs to encourage better nutrition and greater physical activity for those with high blood pressure or diabetes. Patient education/empowerment models for chronic disease management which focus on lifestyle change and stress management/relaxation may be seen as health promotion activities.

The focus under both of these definitions is on modifying behaviour to change identifiable risk factors to reduce incidence of disease and/or progression of complications and associated morbidity or mortality. Health promotion is, under both paradigms, an indirect contributor to health status via modification of risk factors to eventually change fatal and non-fatal events.

iii) Direct impact on current health status

A broader definition of health promotion is supported by the Ottawa Charter, current medical research and work on the development of quality of life instruments. It is increasingly recognised that emotional/psychological health must be acknowledged as an input to current health status and sense of wellbeing, both as a direct input to wellbeing and through the inter-relationship between emotional and physical dimensions. Evidence of the interrelationship between emotional and psychological state and development and progression of disease is being obtained in a range of fields including cancer, diabetes, chronic pain. (At a personal level the effect of anxiety on physical symptoms such as perception of pain, abdominal symptoms and energy levels are a simple illustration of this relationship.)

Immediate health status can, under this model, be directly and immediately influenced by lifestyle (behaviour and attitudes) through its impact on coping and resilience and sense of wellbeing. The effect of lifestyle and personal attributes on health status is NOT limited to that component mediated through disease incidence. The work, home and social environment, which influence sense of self worth and control over ones life, are thus all inputs into health status. The focus in health status/quality of life measurement, is increasingly on emotional and psychological health, and is certainly evident in the development and use of multi-attribute utility instruments (see Walker & Rosser 1993). Even physical ability is increasingly expressed in terms of capacity to fulfil role/function, and thus dependent not just on objective description of physical health state but also individual characteristics and the social environment.

The possibilities for health promotion activity are substantially broadened under this more comprehensive definition of health status, which recognises that health state is influenced by a wide range of aspects of a persons life; including their place within the community, school, work, family. This concept of health state suggests a different focus for program delivery, in terms of program content, setting, the population target. It also suggests different expectations of success and an alternative approach to performance monitoring. With this broader understanding of health, improvements in health status can be expected more immediately from health promotion programs than is possible when health status is described solely by disease incidence. The latter inevitably involving extended lead times.

A recent VicHealth Health Promotion Conference 'Beyond the Disease Paradigm' Melbourne November 1994, strongly endorsed this latter definition of health promotion. What constitutes health promotion activity would seem to be in the process of redefinition.

1.3 The Health Promotion Setting

Health promotion can be offered through a variety of settings, including the national or local media (print, TV, radio, billboard), the community (community health centres, major events etc), schools, health professionals, the workplace. Within each of these settings there are many possible approaches to implementation. It could be expected that a comprehensive health promotion program, would incorporate many dimensions with a mix of activities to cover a range of messages, to reach various target populations and delivered through a range of settings.

The issue to be addressed in this paper is whether the workplace is likely to be an appropriate and cost-effective setting for the delivery of health promotion programs from the perspective of:

- society with a commitment to health promotion;
- companies and enterprises;
- employees and their families.

2 HEALTH PROMOTION IN THE WORKPLACE - A Conceptual Framework

2.1 Health Promotion in the Workplace - Scope of Activities

Taking the broad definition of health promotion, workplace activities that may plausibly come under the definition of health promotion are exceedingly broad. They could encompass:

- occupational health and safety programs to prevent accident and injury on the job - including programs to encourage employees to wear appropriate protective gear, redesign of tasks to reduce occupational hazard, attention to ergonomics, provision of adequate training for new staff to ensure they are safe to themselves and others;
- structured approach to rehabilitation of injured workers - options for early return to work, direct rehabilitation services;
- strategies designed to address workplace culture and organisation to reduce worker stress and directly contribute to worker sense of well-being; through management workshops, worker management committees, replacement of hierarchical management structures with greater opportunity for worker participation in decision making;
- provision of career paths and training opportunities, multi-skilling;
- timely/convenient access to health services - on-site medical and allied health services to enhance disease management and minimise risk of complications and address emotional health of workers;
- drug and alcohol programs;
- programs to address unhealthy lifestyle for the immediate impact on health status and sense of wellbeing and resilience - stress management, exercise, nutrition;
- specific programs targeted at risk factor modification - implemented through changes to the workplace (eg no smoking bans, visible stairs as an alternative to lifts), and programs directed to individuals, to discourage smoking, enhance fitness, improve nutrition.

Under a narrow definition of health promotion, only the latter group of programs, those targeted at risk factor modification, for cardiovascular disease, some cancers etc, would be identified as health promotion.

The other programs would not necessarily be considered part of health promotion. Certainly companies may have a commitment to industrial relations reform to enhance company

performance, but this does not mean that such actions will not contribute to employee health, particularly if introduced as part of a broad package of reforms. Perhaps, a distinction is made between programs introduced as part of normal business practice (such as a more participative management culture), or as a result of legislative or regulatory requirements (notably occupational health and safety programs), and programs introduced primarily to promote the health of workers, with company profitability a secondary focus. Occupational accidents still represents a major cause of death and serious injury in Australia. (At an estimated 1544 work related deaths annually between 1982-4. There were 90,000 new Workers Compensation cases reported for 1992-3, (Department Human Services and Health 1994).

The implication of accepting the wider view of work-place health promotion is a theme of this paper.

Before proceeding a brief description is provide of a small number of workplace based health promotion programs, concentrating on programs which have encompassed the broader definition of health promotion.

2.2 Illustration - Comprehensive Company based Health Promotion Program

2.2.1 Ericssons:

Ericssons is an example of a comprehensive approach to health promotion, incorporating organisational and cultural change as well as specific health promotion activities.

Components of the Ericssons Health promotion program are reported in the document 'Best Practice in Health Management'. Health promotion activities of the company listed here are derived from this document and discussions with the senior medical officer. An exceedingly wide range of activities have been listed by the Ericssons under the umbrella of health promotion:

- Management style - introduction of independent teams and project groups within blue collar work-force as part of award restructuring process;
- Communication - shared decision making, senior management to be more accessible to staff;
- TQM, commitment to quality;
- Safety - comprehensive occupational health and safety teams, safety officer;
- Women's Development group network;
- Child care;
- Affirmative action for employment of female staff;
- Direct provision of health services through an on-site health team (medical practitioner, clinical psychologist, social worker, physiotherapist);

-
- Provision of traditional health promotion activities for risk factor modification, through:
 - development of healthy lifestyle booklets on alcohol, cancer, fitness, smoking; healthy eating, blood pressure, stress. A kit with booklets on each of these topics is distributed to each worker;
 - development and distribution of patient held record card containing basic information on selected clinical/behavioural parameters with provision to recording information on blood pressure, weight, cholesterol, pap smear test, health insurance details, medical history, immunisation (self and children);
 - organisation of programs to facilitate and encourage healthy lifestyle (yoga sessions, fitness activities etc);
 - banning of smoking at the workplace;
 - review of canteen services to ensure healthy meal option available;
 - provision of on-site gym with fitness instructor;
 - occasional screening programs;
 - Healthy lifestyle program targeted at workers with poor absenteeism record.

Ericssons is also committed to monitoring of their health promotion program.

2.2.2 Holden Engine Company

The Holden Engine Company provides another example of a comprehensive approach to health promotion incorporating organisational and cultural change as well as targeted health promotion activities. This brief description is based on presentation by the managing director of Holden Engine Company at the VicHealth Health Promotion Forum November 1994 and discussions with the managing director and industrial relations manager.

For the Holden Engine Company (and Ericssons) international competitiveness is required for survival and thus health promotion initiatives must contribute to profitability as well as worker health status. (Cost increases cannot be simply passed on to the customer).

Program activities identified as part of their health promotion activities include:

- direct health service provision, through medical centre; medical practitioner, nurse, social worker (to deal with work based or home/family based issues);
- gym (instructor at expense of workers);
- healthy lifestyle campaigns and risk factor screening (hearing, blood pressure cholesterol);
- occupational health and safety;
- off-site management development program to instil cultural change for a more cooperative management style;
- enterprise agreement covering a range of issues including absenteeism.

The company has an active data collection function to monitor:

- company parameters such as: staff turnover, absenteeism, customer satisfaction, productivity, on-time delivery, utilisation of floor space;
- health status/risk factors covering both clinical parameters and perceived health status, (attitude to the job etc.) through an employee survey;
- occupational health and safety (injury experience, Workcare claims, premiums).

There is no public report of the effectiveness and cost-effectiveness of this wide-ranging program to enhance the work environment, worker health and profitability. However advice was that staff turnover had been reduced, absenteeism was down, output and productivity up, and quality improved with level of scrap/rework down.

A formal analysis of outcome measures (company and health status) would be possible. The major difficulties would be:

- in defining the scope of the health promotion program and the approach to costing;
- attribution of any change in health status or company performance to particular program features.

2.3 Illustration - Health Provider Programs

A number of private and government agencies work with industry in the health promotion field. Two examples are outlined here:

2.3.1 VicHealth Partnerships Program/Health Investors Program

The Victorian Health Promotion Foundation has launched a health promotion program focussed on health in the workplace entitled 'Partnerships with Healthy Industry'. The program takes a view of the role and scope of health promotion, consistent with the Ottawa Charter, it acknowledges the importance of the work environment to individual health and wellbeing and incorporates international best practice for workplace based health promotion. The Partnerships approach to organisational health recognises that an organisation's culture, approach to human resource management and the workplace environment play a vital role in employee health and the health of the company.

The Partnerships program provides an opportunity for enterprises to use the expertise of VicHealth to assist them to address the health of their work-force. The program is marketed to industry on its capacity to improve enterprise performance, as well as enhancing worker health status. The partnerships model of organisational health is illustrated in Figure 2.1, reproduced from the VicHealth Partnerships Brochure.

The Partnerships program offers a number of services to enterprises who become health partners. These services facilitate the development of organisational change to promote a more healthy work environment and improved health status of workers.

Services offered include:

- health management workshops and seminars;
- Health Audit tool, developed to assist companies to establish baseline information to monitor key performance indicators;
- documentation and distribution of best-practice case studies;
- access to resource library;
- Health check proforma for individual health behaviour appraisal, designed to raise awareness of healthy lifestyle issues.

Figure 2.1 The Partnerships Model of Organisational Health

Under a second level of the program, 'Health Investors', VicHealth Partnerships staff work directly with enterprises to improve employee health through organisational change aimed at enhancing the health of the organisation, with potential also for improved company performance through lower absenteeism, reduced staff turnover, gains in output quality or reduction in costs of accident/injury.

The Partnerships program commenced in 1993, and already has attracted over 160 health partner companies. VicHealth proposes to evaluate the health partners program during the next twelve months, taking the perspective of the company, employee health and as a VicHealth initiative. A process is in place for the collection of data to a consistent format as part of the Health Investor methodology. The experience of program participants is being recorded, covering parameters such as: absenteeism, staff turnover, and selected health status indicators. This information is provided back to the Health Investor partners and is to be made more widely available as action research case studies, after sustainability has been tested.

It will be most informative to follow the progress of this Program, both for evidence of improvement in worker health status and company performance, but also for insights into the role for alternative evaluation tools.

Holden engine company and Ericssons are original members of the VicHealth Partnership program and a Health Investor program.

2.3.2 GutBusters

GutBusters is a workplace based health promotion program, established initially with government support, but now privatised. This program is focussed primarily on the weight problem of working men. Materials and program design have been developed specifically to be relevant to the middle aged overweight male. This group was seen as largely ignored by main stream health promotion activity.

The GutBusters team work with industry, usually through company health officers, to offer the GutBusters program at the work-place. The program consists of 5 sessions, with the primary objective, reduction in waist measurement. Participants are encouraged to make small but manageable changes to their life style, through improved diet, reduction in alcohol and increased level of exercise. A second stage of the program (recently developed) encourages men to take control of other aspects of their health, such as stress, cancer awareness etc. The cost of the program is usually met by the participants, with the company facilitating through provision of meeting room etc. Some companies reimburse the cost of the program (of ~\$200 per participant) for participants meeting their waist reduction goal at the completion of the program.

The team who set up GutBusters are committed to evaluation of the program, and are monitoring performance with respect to the immediate objective of reduction in waist measurement. At program completion most participants achieve reduction in waist measurement, (72% achieve 5% waist reduction goal). Average weight loss at 18 month follow-up for those who lost weight at the end of the program is 4.4 kg. While some participants slip back, others improve on their result.

It would be possible to translate the change in waist/weight measurement into change in disease risk for say cardiovascular disease or diabetes. The possibility of direct enhancement to

immediate health status through such a program could theoretically be explored using a suitable quality of life questionnaire.

Establishing any possible impact on company performance is more complex. Certainly data on absenteeism, staff turnover, premature death/disability of the work-force could be monitored in relation to participants in the GutBusters program, possibly against a matched control group. Required follow up would need to be quite lengthy with large sample sizes in both the intervention and control groups to help minimise the influence of possible confounders.

2.4 The Relationship Between Health Promotion Activity and Outputs: the Evaluation Challenge

The challenge is to establish when the provision of health promotion in the workplace makes a net contribution to the goals of the company and society. Do the benefits exceed the costs of implementation. That is, are the benefits in excess of those expected from alternative opportunities for investment, or compared with the health gains from alternative approaches to health promotion.

There is a complex interface between the possible elements of a workplace based health promotion program, and outcomes such as risk factor modification, worker health status, worker morale and productivity and profit. The nature of the relationships are illustrated in Figure 2.2 below.

In the Figure three broad components of workplace health promotion program are identified:

- Industrial/organisational change;
- Direct health service provision;
- Health promotion for risk factor modification.

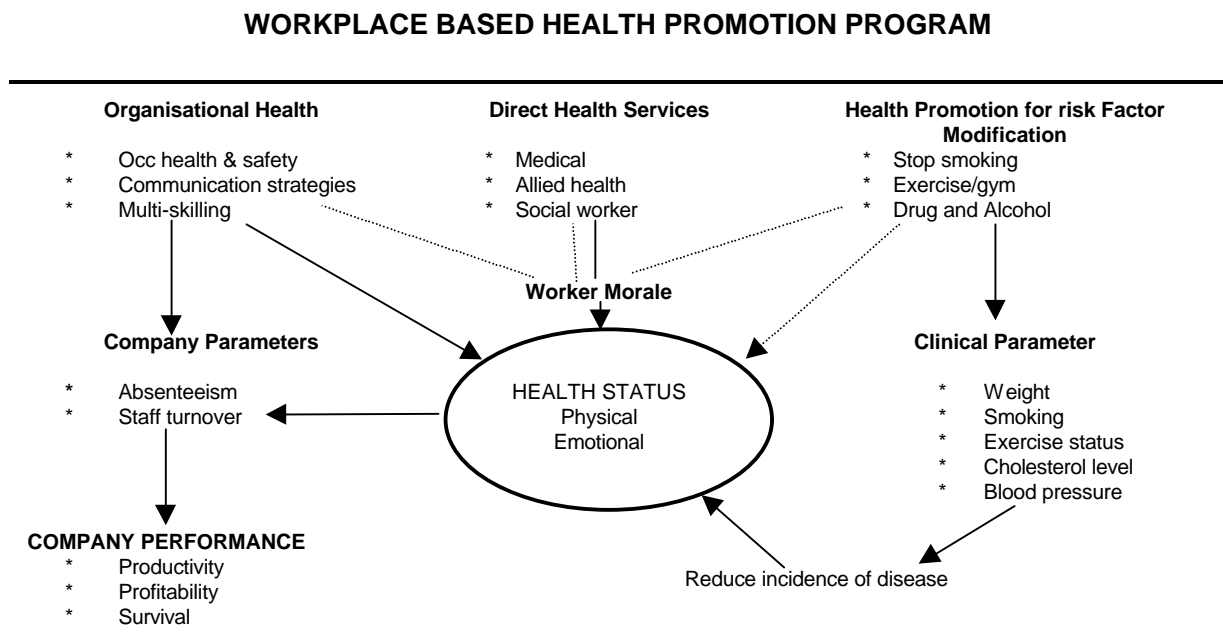
The figure illustrates that worker health status can be enhanced through each component of the program, i) acting directly or ii) as mediated through worker morale or iii) as mediated through a change in disease incidence. Further, each program component can contribute to company performance i) directly for industrial/organisation health elements or ii) indirectly (health service provision, health promotion for risk factor modification), mediated through worker morale or enhanced health status.

A health promotion program with all three components should enhance the possible effect on individual health status and company performance through the synergistic relationship between program elements.

To assess the success of a company based health promotion program ideally all the relationships identified in Figure 2.2 need to be explored:

- between the health promotion program and the behaviour of workers;
- between behaviours and health outcomes (intermediate outcome such as cholesterol, weight or blood pressure, and final health outcomes such as illness and death);
- between health outcomes and company parameters (such as morale and absenteeism, and lifestyle and absenteeism);
- between intermediate and final company parameters (such as between absenteeism, staff turnover and productivity and profitability).

Figure 2.2 Model of How Investment in Work-Place Health Promotion can Contribute to Health Status and Company Performance

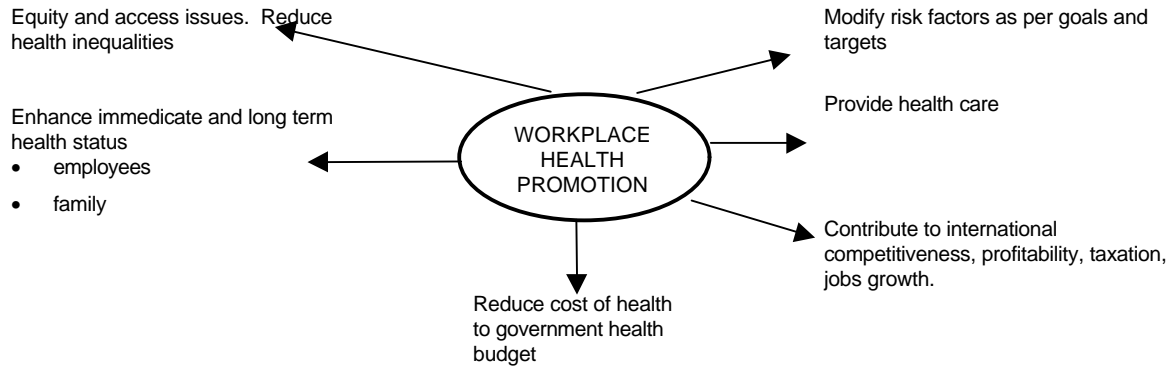


2.5 Whose perspective - Possible Beneficiaries

2.5.1 Introduction

The provision of health promotion in the workplace setting needs to be looked at from the perspective of the employee, the company, society and the government. In Figure 2.3 we illustrate the number of goals to which a workplace based health promotion program may contribute.

Figure 2.3 Range of Objectives to which a Workplace Based Health Promotion Program Can Contribute



2.5.2 Employees

Employees may gain clear benefits from a health promotion program:

- provision of health promotion and health services on site can provide convenient access to health care and health promotion, yielding a saving in time and money, for the employee compared with accessing such services within the community, This may also facilitate greater use of health services when needed;
- the workplace represents a major focus of the life of the worker and the work environment can be expected to impinge directly on sense of wellbeing;
- health of the worker could be enhanced, both general health and avoidance of injury through attention to work related accidents.

2.5.3 Employees' Family

- sometimes an employees' family can access some health services offered through the company;
- more broadly if the employee works within a supportive and healthier work environment and is encouraged to address physical and emotional aspects of health status, this should be of direct benefit to families.

2.5.4 Company

The potential of workplace health promotion to contribute to company goals will depend on the type of program introduced. The comprehensive program illustrated in Figure 2.2 which incorporates industrial/organisational health, direct health service provision and health promotion for risk factor modification has potential to influence various aspects of company performance:

-
- directly through organisational policies for instance, targeted at absenteeism or, staff turnover or occupational injury record;
 - indirectly through improvement in worker morale, which may result from any of the health promotion program elements;
 - indirectly through improvement in health status.

Health promotion focused on risk factor modification is probably the least direct means for addressing company goals, so that the likelihood of being able to identify and measure any effect on 'company financial performance' is probably unrealistic.

2.5.5 Government

Figures 2.2 and 2.3 illustrates why workplace based health promotion may represent an effective and cost-effective setting for the implementation of health promotion objectives from a government perspective. Health promotion delivered in the workplace could contribute to a wide range of important government health objectives and simultaneously contribute to employment and industry objectives:

Equity and access - reduction in health inequalities

A number of reports have highlighted the health inequalities in the Australian community (eg National health strategy (1992)). Studies also identify that healthy life style messages are not taken up uniformly across society. In general blue collar workers are found to exhibit life style behaviours which increase their risk of disease, particularly of CVD, lung cancer, diabetes. A stated government objective is to reduce health status differences. Targeted health promotion strategies are required to address the high risk behaviours of blue collar workers. The workplace is a logical place to target this group and some success with risk factor modification in the workplace setting supports the potential value of this form of targeting.

In addition from the government budget perspective, companies and employees meet a substantial part of the costs of such programs, whereas when such programs are delivered through the community setting or the media the government invariably bears the full cost. Encouragement of workplace based health promotion programs by government, is likely to expand substantially the possible scope of targeted health promotion programs.

The work-place setting both provides a means for addressing health inequalities and directing health promotion programs to a high risk group in a way that is relevant to the group targeted.

Enhancement to health status of the community in an efficient manner

Governments are concerned to enhance the health status of the community. There is increasing evidence that the provision of health promotion in the work-place is an effective means of contributing to positive health outcomes:

-
- Occupational health and safety programs which have been shown to reduce accident and injury at the work-place and carefully designed work-place based rehabilitation program can reduce long-term disability;
 - Provision of direct health care at the work-place is also likely to represent an efficient means of health service delivery to workers;
 - organisation reform at the workplace with the introduction of a more cooperative workplace culture may well be shown to represent an efficient means of contributing to health status.

Research on all these questions would be most valuable. While the question of efficiency for particular programs can only be established on a case by case basis, because health promotion in the work-place may contribute to company performance as well as health outcomes, not all program costs would need be attributed against improvement in health status. There is some case study evidence that health promotion delivered through the work-place can be highly efficient (eg GutBusters, Shephard 1989).

Reduce cost to the budget of provision of health care

Company provision of health promotion services may in some areas directly replace government expenditure on health care, resulting in cost savings. Work-place medical and allied health services are generally directly funded by companies. There will be some transference from private medical services funded through Medicare and publicly funded allied health services to the company health centre, resulting in a direct saving to the health budget. Any improvement in risk factors and reduction in disease incidence which reduced health service costs down stream would represent an additional budget saving.

Support international competitiveness

Any program which contributes to a reduction in labour costs through reduce rates of absenteeism, and labour turnover, and increased productivity of the work-force will support the international competitiveness of industry. Research is needed to establish whether or not, or to what extent this class of benefit is realised.

3 ECONOMIC EVALUATION MODELS

3.1 The Economics Discipline

The economics discipline is primarily concerned with the maximisation of community well-being in the face of scarce resources. Economists study what constitutes well-being, how it can be measured and resource use, its definition and measurement.

Part of economic theory is devoted to the description of markets and decision making under 'perfect or pure competition'. Theory demonstrates that under perfect or pure competition, defined by competition amongst buyers and sellers, excellent information flows, and an absence of externalities and restrictive regulatory practices, and where equity considerations are not paramount, resources will be allocated efficiently by the market to maximise well-being. Under conditions of 'market failure' when even one characteristic of a perfect market is absent, optimisation will not automatically occur and government intervention will be required if well-being is to be maximised. The most common attributes of market failure are:

- problems with access to information;
- existence of a natural monopoly, where provision of services by a single seller is the most rationale way to organise supply, notably engineering services such as sewerage and electricity distribution;
- where issues of equity/income distribution are paramount and cannot be addressed separately through the income distribution system;
- existence of externalities, where inputs or outputs of production bypass the market, as occurs with pollution.

Clearly the provision of health occurs within an imperfect market, by virtue of inadequate information, and unequal access to information by consumers and suppliers and because of the importance of issues of equity and access that cannot be resolved by income transfers through the social security system. If the market will not solve resource allocation for health, formal analysis is required to establish how best to allocate resources to health.

It is in those markets which exhibit important attributes of market failure that government involvement through provision of services, funding, direct regulation or planning typically occurs. Economists have a major role in the development of evaluation models for the evaluation of programs and policy options, giving rise to the disciplines of transport economics, agricultural economics and health economics. All these studies rely on the principals of Welfare Economics, concerned with the development of models and techniques for establishing when a resource shift (associated with a program or policy) will result in a net increase in community welfare.

3.2 Economic Evaluation Models

3.2.1 Introduction

There are several texts/papers on the conduct of economic evaluation, particularly written for the evaluation of health programs and a few that focus on health promotion. These include Drummond (1987), Tolley (1993), Cohen (1994), Richardson (1991), Segal and Jackson (1993). In this section, a summary only of the key steps in conducting economic evaluation in the health sector, is described. Some of the more important concepts are defined in Appendix II. The basic steps in the conduct of economic evaluation are relatively straightforward and can be described simply. The challenge in the evaluation of health programs arises with implementation. Problems are likely to be encountered, with program specification and identification of program effects and their valuation. This is particularly so with health promotion and even more so with health promotion in the work-place setting.

Economic evaluation is essentially concerned with a comparison of program benefits with program costs, where cost is defined as the opportunity (benefits) forgone in using the resources for the particular program and not an alternative. The available economic evaluation models essentially reflect different approaches to the measurement and valuation of program benefits.

3.2.2 The Basic Steps in the Conduct an Economic Evaluation are:

- | | |
|--------|---|
| Step 1 | Establish purpose of evaluation and perspective to be taken; |
| Step 2 | Document program objectives and Describe program components; |
| Step 3 | Identify and measure resource use (program costs); |
| Step 4 | Identify and document program effects: <ul style="list-style-type: none">- health;- other. |
| Step 5 | Value program effects; |
| Step 6 | Assess performance - compare resource use with program benefits, and draw conclusions. |

The commonly recognised economic evaluation models for application to individual programs are:

- cost-benefit analysis;
- cost-effectiveness analysis; and
- cost-utility analysis.

These models are identical with respect to steps 1 to 3 above and parts of 4 that is program definition, assessment of costs and documentation of program effects. They differ in the approach to valuation of program benefits. A useful discussion of these three techniques is provided in Cohen (1994).

3.2.3 Cost-Benefit Analysis

Cost-benefit analysis addresses the question of whether, or to what extent, any policy or program is worth pursuing. It does this by identifying all costs and benefits and weighing one against the other.' Cohen (1994)p 282. In its pure form this requires the translation of all effects, cost and benefits into dollar values. Performance can then simply be expressed in dollars, either as a net present value estimate, or rate of return (see definitions in Appendix II). Results of the program under review can be compared with rates of return or net present value achievable from other types of investments/programs to establish relative performance.

Cost-benefit analysis has been unpopular in the evaluation of health programs due to concerns about the ability to translate health outcomes, like enhanced quality of life or reduction in risk of premature death, into dollars. There is however, increasing interest in the application of cost-benefit analysis to health program evaluation, with willingness to pay methods being used to elicit values for change in health status or change in risk of death. There is clearly an advantage in having both costs and benefits are expressed in the same unit.

A modified version of cost-benefit analysis is to express in dollars those program attributes, costs and benefits which can be more readily expressed in dollars, but to document in descriptive terms, effects for which agreement on dollar value cannot be reached. Assessment of performance then becomes more complex, with a comparison between costs and benefits partially in dollars and partially in descriptive terms. Even so, it is often possible for quite robust conclusions to be drawn.

From a company perspective, if health promotion is seen to compete with other 'investment/expenditure' options it would clearly be useful to be able to establish the rate of return for this type of investment, to enable direct comparison with alternative investment options.

3.2.4 Cost-Effectiveness Analysis

Cost-effectiveness analysis examines the "how" of decision making, when a decision to proceed has already been taken. It compares alternative ways of pursuing a specific, often narrowly defined objective', Cohen (1994 p283). Cost-effectiveness analysis does not require program outcomes to be expressed in dollar terms, but in terms of an appropriate health status attribute. This represents an intermediate step in cost-benefit analysis.

This type of analysis is most commonly applied where a number of alternative health programs, designed to contribute to the same health objective are to be compared, such as a number of programs targeted at smoking cessation or weight control. Decisions still need to be made about how best to describe program outcome. In these examples it may be number of smokers who quit, or change in average cigarette consumption, or for a weight loss program, number of participants, or proportion of target, achieving more than x kg weight loss or their target weight

loss or change in average weight for participants or the target group. These outcome measures represent 'intermediate' health objectives as they do not directly measure health status.

Alternative programs are then compared in terms of cost per unit improvement in the nominated outcome variable. The precise relationship between the intermediate measure (usually a clinical parameter) and health status, need not be well understood. Final health outcome measures of a more generic nature are also commonly used in cost-effectiveness analysis, such as fatal events/events avoided, change in risk of death or non-fatal events, life years 'saved'.

Time frame for follow up is critical. In some cases to ensure the effect of the program has time to be observed and in others to allow for a possible regression in apparent benefits achieved.

There are numerous examples of cost-effectiveness analysis of health programs, which illustrate how in practice the implementation issues are addressed. See for example Carter et al (1993) for cost-effectiveness analysis of breast cancer screening, or Sculpher et al (1991) screening for diabetic retinopathy. In the health promotion field much evaluation is of an anecdotal nature with reviews quite critical of the standard of economic analysis. (As reported in Shephard R 1989; Warner et al 1986). An example of a limited evaluation of a worksite weight loss program is described by, Seidmen L et al (1984).

3.2.5 Cost-Utility Analysis

Cost-utility analysis is a particular type of cost-effectiveness analysis, where the unit of outcome is the quality adjusted life year (QALY). The simple product of quality of life and time in health state.

This method of evaluation, requires measurement of the change in health status of participants attributable to the intervention. This approach is attractive in that it offers a single, universally applicable description of health outcome, broadening the range of health interventions which can be directly compared. The QALY, it is postulated encompasses all aspects of health status in a single measure, which can then be related to program cost to yield a dollar cost/quality adjusted life year. Cost/QALY can be compared across any health programs to establish relative performance. A program yielding a lower cost/QALY would be preferred to a program costing more per QALY gain.

A number of multi-attribute utility survey instruments have been developed for assessing quality of life with a formula for calibrating quality of life score. A complete discussion of multi-attribute utility instruments and their role can be found in Walker and Rosser (1993). Alternatively, quality of life can be estimated directly using the time trade-off technique, standard gamble technique or rating scale.(see Appendix II for definitions). Agreement is yet to be reached concerning the validity or robustness of the available instruments. However, given that the ultimate objective of health promotion is to enhance health status, working with quality of life instruments could well be necessary to capture important outcomes. Life expectancy, or expected time in health state,

would need to be derived from known epidemiology, supported as necessary by expert opinion or other evidence.

Despite increasing interest in the technique the number of studies in the international literature is still relatively small, possibly reflecting the complexity of such analysis and concerns about the available instruments, but see for instance Kaplan et al (19), Richardson et al (1994), Geelhoed et al (1994). In the health promotion field, and more specifically health promotion in the workplace, published reports of cost-utility analyses have not been identified.

The results of cost-utility analyses have been compared and 'league tables' developed and suggest a hierarchy of alternative health interventions. While there is valid criticism of this process (eg as explained in Mason et al.1993), and the need to minimise the effect of methodological differences between evaluations, differences in the cost/QALY between interventions may be so overwhelming as to support conclusions about relative performance, despite known problems with comparability.

The major difficulties in the conduct of cost-benefit analysis, cost-effectiveness analysis or cost-utility analysis, in the context of workplace based health promotion, will be describing the program and 'health promotion', tracing the effects of health states and company performance and attributing any change in health status or company parameters to health promotion. If the effects can be traced, the choice of whether benefits should be expressed as dollars, basic clinical parameters or quality adjusted life years is less of an issue - techniques are available to do this.

While the randomised control trial is identified as the preferred approach for establishing the impact of a health intervention, it tends to be applied rarely in the health promotion field, and even less commonly in the workplace setting, with a few important exceptions. This approach not only requires substantial research resources and extensive follow-up, it is not easily applied to complex multiple intervention programs where program elements may be expected to interact with each other and where exogenous variables may also be important. Thus the control trial may have a role in for a narrowly defined health promotion program with a small number of components and a clear relationship between the intervention and expected outcome measures (such as banning of cigarettes in the workplace). It will be less useful in assessing the effects of a multi-faceted program including a comprehensive organisational health strategy, direct health service provision and targeted risk factor modification. Careful analysis at the site of the intervention may be the only possible approach. That is it may never be possible to convincingly answer the question what would have happened if this program had not been implemented.

3.2.6 Policy Analysis

In recognition of the complexity of the real world, particularly where evaluation is focussed on 'programs' which are ill-defined and complex, where the expected impact will be interactive and influenced by a range of external factors in a way that cannot be easily described let alone modelled, an alternative form of economic analysis is proposed, called 'policy analysis'. It involves a rigorous approach to a 'review' at but where the expectation is not to be able to formally and precisely describe or measure costs and outcomes. The structure of the approach is similar to the above but involves more subjectivity and judgement and first principles reasoning. The broad steps in the approach are:

- Step 1 Describe objectives;
- Step 2 Establish program attributes/components that should contribute to objectives (eg theoretical construct/ the literature etc);
- Step 3 Confirm program is implemented as intended;
- Step 4 Review for end parameters and perceptions of various parties regarding effectiveness;
- Step 5 Monitor overall performance of the company and of employee health states and assess in a subjective way the possible role of program elements;
- Step 6 Endeavour to draw conclusions about whether approach works - But don't expect to be able to measure costs or benefits or relationship between the two. Consider how program implementation can be optimised.

Some of the issues raised in this section are developed further in Section IV where the tasks of conducting an economic evaluation of work-place based health promotion are outlined.

4 APPROACH TO EVALUATION OF WORK-PLACE BASED HEALTH PROMOTION - TASKS

4.1 Introduction and Overview

The primary questions to be addressed by an economic evaluation of a work-place based health promotion program are:

1. Did the program make any difference? A question complicated by the indirect nature of the relationship between health promotion program, worker health status and company performance, and the possible influence of exogenous (internal and external) factors.
2. How can any observed changes in health status or company performance be valued?
3. Does the program represent good value for the resources allocated?

The economic evaluation models outlined above provide a broad structure for the conduct of work-place based health promotion evaluation, vis:

- Step 1 Gain an understanding of the company;
- Step 2 Describe the health promotion program:
 - document program objectives and program components;
 - establish purpose of the evaluation, including perspective.
- Step 3 Identify and measure resource use (program costs);
- Step 4 Identify and document program effects:
 - health;
 - other.
- Step 5 Value outcomes;
- Step 6 Establish performance.

It must be recognised that because of the complexity of the relationships economic evaluation is seeking to explore, precision and certainty are rare. Economic evaluation invariably involves value judgement; the limitations of economic analysis must be recognised. Its main role is to encourage a rigorous analysis of the relevant issues to improve understanding of the likely value of program attributes.

This document is necessarily broad in focus in part reflecting the wide range of programs could plausibly be encompassed within the scope of health promotion in the work-place. Some comments are provided on each of the six steps listed above.

4.2 Comments on Each Task

4.2.1 Gain Understanding of the Company

Gaining a reasonable understanding of the company, the market within which it operates, its labour force, is necessary background. The precise set of information and the detail at which it needs to be obtained, will vary. Some understanding of the aspects listed below (and possibly others) will in most case be required:

- what constitutes the primary business (businesses) of the company;
- consider the industry within which it operates, competitiveness etc;
- describe internal structures - industrial relations, unionisation, career paths, training, models of communication, management model;
- occupational health and safety policy, injury/accident record (highlighting areas of risk), Workcare premiums, rehabilitation policy and record;
- direct health service provision, reimbursement for use of private health services, or for private health insurance;
- health promotion activities for risk factor modification: screening programs, fitness programs, etc;
- institutional health environment for risk factor modification: eg workplace smoking policy, canteen policy, access to gym/fitness opportunities;
- major influences on costs and profitability of the company, sources of concern;
- level of absenteeism and work-force turnover, comparison with industry averages;
- nature of the work force, age structure, gender mix, ethnic mix;
- what is known about the current health status of the work-force;
- mix of occupations and nature of tasks of the work-force;
- dynamic situation, changes under way in company operating environment (both externally and internally generated);
- physical structure of the company, sites, plants etc.

4.2.2 Describe Purpose/Objectives of Health Promotion Program.

Based on documentation and views of management group, describe purpose of the health promotion program. Consider relative importance of:

Health objectives:

- current health status of workers, physical and emotional - highlight key concerns/targets;
- lifestyle related health risk - highlight key concerns/targets
- occupational hazard;
- rehabilitation - focus on particular types of injury if pertinent.

Industrial relations:

-
- morale;
 - communication;
 - days lost through strikes.

Profitability/survival:

- absenteeism;
- work-force turnover;
- customer satisfaction;
- quality of product;
- quantity of output;
- staffing level;
- Workcare premiums, direct payments;
- superannuation pay-outs.

Consider also the likely synergy between classes of objectives, such that a genuine attempt to simultaneously address the three broad goals, may maximise the possible gains, in comparison with a narrow focus.

4.2.3 Establish Objectives of the Evaluation

Whose perspective is the evaluation to take, not necessarily limited to a single perspective. For instance the impact on the company and the employee may both be important. Possible perspectives of most relevant to companies will be:

- The company's perspective (overall or at a plant or divisional level) : profit, productivity, absenteeism, staff turnover;
- The employee (and their family).

Where other agencies are involved, the implication also for society and the government budget may be of interest.

The role of the evaluation needs also to be specified. There are at least three possibilities:

- Pre-feasibility - to establish the possible benefits of a health promotion program and to contribute to decisions about implementation, and program components;
- Monitoring - to establish success of implementation. Is it being implemented as intended, with outcomes of the type expected. Do there seem to be unintended consequences, desirable or undesirable. Should the program be modified.
- Summative - to establish whether the program has achieved the objectives, and ultimately whether it represents a worthwhile investment for the company, (or society). This is normally the primary focus of economic evaluation models.

4.2.4 Describe Components of Health Promotion/Industrial Health Program

Establish whether the program is broad based and integrated say with industrial relations policies, or more narrowly defined.

List all program components and classify:

- identify those parts of the program which represent integral company activities that are unequivocally part of the primary business of the company, and for which costing is probably not appropriate at a theoretical level and would any case probably be impossible at a practical level;
- identify program elements that may be considered separable from the main company business and for which independent costing and attribution to 'health promotion' is relevant;
- where uncertain place in an intermediate category, where some joint cost attribution may be appropriate.

Describe program components in detail, distinguishing program development from implementation, establish time-frame for implementation, and expectations with respect to outcomes, mechanism of implementation. Differentiate on-going programs from once off, individual worker focussed (health check) from organisational (eg banning of smoking at the workplace, canteen policy).

4.2.5 Determine Program Cost

Direct costs to the company

Establish program elements to be costed, concentrate on those components which may be considered tangential to the primary business of the company (such as providing gym facilities, development and distribution of risk factor information booklets). There will be important boundary problems, for instance the occupational health and safety policy and services of the medial centre. Change to the management culture, award restructuring, change in training opportunities would be pursued primarily for company performance objectives.

Establish approach to measurement of program costs and collect cost data. Determine timeframe to be used (eg 2,5 10 years) and approach to discounting of future costs (and benefits). (See Appendix 2). Consider whether focus is to be on 'real resource costs (to society) or financial impact on the company.

Cost each component separately. Ideally the aim would be to establish the relative contribution of program components to any observed change in health status, so that the cost-effectiveness of program elements could be established. that is likely to prove to be exceptionally difficult.

Direct costs (cost saving to employees)

Costs to employees can be assessed in terms of real resource costs but also in terms of net financial burden on them. These represent two different types of calculations (see Appendix II for definitions).

To assess real resource impact, identify any cost components directly incurred by employees, not included in the cost to the company, which represent part of the program, eg payment by employees for gym instructor. Identify any cost savings which represent a real reduction in service use elsewhere, (eg use of on-site medical services by employees can be expected to reduce demand for private community based health services.

Cost to Government (and possible savings)

Calculate the net budget impact on the government sector of workplace based health promotion would be exceedingly complex, needing to take account impact on use of Medicare funded services, and use of community health centres and hospitals for: primary care, health promotion, rehabilitation. If health promotion reduces incidence of premature death and permanent or temporary disability this may change health service use downstream and income support. Such an exercise would normally be beyond the scope of the individual company, but may be a perspective which governments may wish to pursue.

4.2.6 Establish Evaluation Model to be used-Defining Approach to Benefit Estimation

Consider whether analysis is to be cost-benefit, cost-utility, cost-effectiveness, or broad policy review.

Make decision on possibility of setting up a control:

- employees/plant not included in the program;
- other companies;
- historic 'control';
- industry average.

Determine time-frame of the program and for the evaluation.

4.2.7 Establish Performance Data to be Collected and Approach to Data Gathering

Determine data to be collected pertinent to the intervention and 'control'. That decision will need to reflect:

-
- program scope;
 - ease with which information can be collected;
 - confidentiality issues;
 - resources available for evaluation;
 - other uses to which base line data may be put.

Type of information to be collected at base line and at some follow up date could cover:

- i) Employee Health:
 - clinical parameters:
 - weight, cholesterol, blood pressure, blood glucose, fitness level etc.
 - employee behaviours:
 - smoking, exercise, drug/alcohol use, eating habits etc, strategies for stress reduction, protective behaviours for cancers (skin, breast, prostate).
 - employee attitudes/perceptions:
 - perceived health status, responsibility for own health, attitudes to life style, stress.
- ii) Company/employee interface perspective:
 - morale;
 - communication, employee involvement in decision making, sense of control over job;
 - training and career paths.
- iii) Company/health parameters:
 - description of work environment directly pertinent to health eg smoking policy, canteen policy;
 - direct health service provision;
 - active health promotion activities;
 - workplace accidents, injuries, illness, return to work experience.
- iv) Company performance parameters:
 - absenteeism (and apparent reasons);
 - work-force turnover;
 - output;
 - quality of output/customer satisfaction;
 - superannuation pay-outs;
 - Workcare premiums;
 - profitability/survival.

4.2.8 Collect Information

Collect nominated base line information and follow-up data and control data; using surveys,

- company information retrieval/data collection systems (existing and specifically designed);
- data from medical centre etc.

4.2.9 Conduct Analyses and Draw Conclusions about Program Performance

- Document identifiable/avoidable program costs.
- Document Outcomes - Endeavour to establish whether change has occurred in relevant parameters.
- Try to establish whether/which changes can be attributed to the health promoting policies.

Employee health:

- participation and attitude to program;
- change in employee attitudes, behaviour, lifestyle;
- change in targeted risk factors/clinical parameters;
- direct measure of current health status, (perceived quality of life);
- accidents/injury on the job and return to work outcomes.

Company Health

Provide background to general performance of the industry, the competitive environment, labour market etc, which parameters may be expected to influence company performance, as a background to consideration of the possible role of 'health promotion' in any change in key company parameters. Identify particular parameters that may have been targeted, such as absenteeism, or work safety performance, and pay particular attention to these parameters:

- absenteeism;
- output/quality;
- profitability, survival;
- industrial harmony, work practices;
- staff turnover;
- early super pay-outs for premature death or serious injury.

If necessary/possible undertake specific studies to establish the costs to the company of absenteeism, staff turnover, workplace accidents/injury etc in order to be able to assess the value of improvements in these parameters, and the major reasons for any change.

It is important to recognise that there is not a simple relationship between ill health and absenteeism or labour turnover. These are not a simple reflection of early retirement or due to illness or premature death, or absences due to illness. Rather it has been convincingly demonstrated that labour turnover and absenteeism are as much or more influenced by attitudes to work as objective measures of illness. These parameters are more likely to respond to a targeted campaign with several dimensions.

If possible, and specific funding available try to assess value to government eg

-
- financial impact on the government budget;
 - contribution to government health objectives;
 - contribution to industry objectives,.

through for instance:

- company provision of medical or allied health services;
- implication of any projected change in disease incidence;
- health status of the community;
- achievement of health goals and targets;
- on-the-job injury/death;
- equity issues, eg health status and lifestyle attributes of blue collar workers, certain ethnic groups etc;
- international competitiveness.

5 CONCLUSIONS/RECOMMENDATIONS

We are able to draw some conclusions about the possible benefits to be derived from health promotion in the work-place and the role for economic evaluation to confirm the existence of postulated benefits and their order of magnitude. Conclusions reflect:

- the theoretical construct concerning the patterns of interaction between the components of a company based health promotion program and health status and company performance (see figures 2.1 and 2.2);
- a knowledge of the industrial literature relating to models of management (see eg ACTU 1987, NSW Dept IR and Employment, 1989); and
- preliminary case study evidence - documented and perceptions.

It is hypothesised that:

The comprehensive approach to health promotion in the work-place setting incorporating; i) industrial health elements involving cultural change for a more cooperative and healthier workplace, ii) direct health service delivery and iii) health promotion for risk factor modification is capable of:

- the direct enhancement of the health status of company employees;
- reduction in modifiable risk factors of employees with subsequent impact on morbidity and mortality;
- contributing to improvements in company performance and profitability.

Certainly there is every reason to believe work-place based health promotion can be of direct value to employees (and their families), companies and governments. Further, this approach offers the prospect of being highly cost-effective for companies in terms of 'return on investment' and for governments in meeting a range of objectives at minimal cost to the health budget: (Example contributing to greater equity in health outcomes, reducing the incidence and cost of preventable disease, enhancing the current health status of the community, and promoting international competitiveness in industry).

Recommendation:

What seems to be required at this time is a commitment from government and industry to support work-place based health initiatives, both programs for risk factor modification amongst high risk groups, and for the broader organisational approach to health promotion.

Government support should be focused on funding of research into:

- alternative models for work-place based health promotion;

-
- means for documenting and attributing effects on health status, lifestyle behaviours and company performance; and
 - assessing outcomes in terms of individual employee health gains, industry profitability and contribution to the achievement of national health goals and targets.

Economic evaluation models, as outlined in this paper, provide a framework for the definition and measurement of the costs and benefits of work-place based health promotion programs. While economic evaluation of these programs will be fraught with difficulties, the rigorous collection and analysis of relevant data, within a suitable analytical framework can make a valuable contribution to our understanding of the value of work-place based health promotion to the company, to employees, to society and from a government budget perspective.

A commitment to economic evaluation is likely to require the allocation of substantial resources, both to health promotion interventions and their evaluation. Government funded research support of pilot programs and evaluation could be an important catalyst. The need for government support reflects the lack of alternative independent funding sources (eg drug company funding is unlikely to be available) and because the evaluation task is exceedingly complex.

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Definition of Terms

Cost:

'Cost' has a precise meaning when used by economists which is different from the lay understanding of cost. Confusion in understanding costs is frequently the cause of errors in program evaluation (even in the international literature).

(real) Resource cost: reflects the actual use of scarce resources of labour, materials and capital goods, whereby their use for the particular purpose denies their use for an alternative purpose. The term '*opportunity cost*' is also used to describe economic costs and emphasises the opportunity forgone, that is alternative benefits is the real cost of using resources for a particular purpose. If resources are not used up, there is no cost, even if money were to change hands.

Transfer payments: refer to transfers of money without an associated resource use, such as pension payments which represent a transfer from the taxpayer to the pensioner, but do not involve the use of the community's real resources, similarly superannuation payouts or unemployment benefits are also transfer payments. Such payments cannot be added to real resource costs and are not a cost in the economic sense.

Financial Impact: Particular groups will have a legitimate interest in establishing the financial impact of interventions. Transfer payments as well as real resource costs will need to be included in such calculations. Financial impact could be assessed for the employer, employee, different levels of government.

Average, marginal cost: Average cost is simply total cost divided by number of units of production, marginal cost is the cost of producing the last unit of output, which may be higher if additional units are more expensive to produce, or lower than average depending on whether there are economies of scale.

Present value cost: is the means of translating a stream of costs to what they would be if incurred in the first time period. A suitable discount rate is applied to a future stream of costs before they are summed to yield a present value estimate to reflect the fact that costs incurred in the future are less onerous than costs incurred today, (also that resources can be invested today to yield more in the future. Similarly present value of benefits allows a future stream of benefits to be discounted and summed.

Benefit/Outcome

Direct health benefits consist of the change in health status, whether measured by morbidity, mortality or quality of life benefits. Any change in use of health resources is properly classed as an *indirect* or second order effect resulting from the change in health status. The costs of implementing the program also represent a direct effect on the cost side of the equation. Any change in production as a result of a change in health status is also classed as an indirect or second order effect. The measurement of such effects and their inclusion in cost-benefit analysis is still extremely contentious.

Health impacts are often classified as intermediate or final outcomes. Intermediate outcomes would include clinical parameters such as blood pressure, or serum cholesterol which while not representing ultimate health outcomes are said to have a direct relationship with disease incidence. Final health outcomes include, fatal and non-fatal events, perceived quality of life and represent the real objectives of health interventions.

QALY

The *quality adjusted life year* has been developed as a measure which combines health status and time (weeks, months years) in a nominated health state. A QALY is calculated by simply multiplying time in each health state with the estimated quality of life in each health state, where quality of life is measured on a scale from 0 to 1 where 1 represents best possible health and 0 death or worst possible health state.

Multi-attribute utility instruments are specially designed survey instruments, covering emotional, psychological health, physical health, to measure quality of life and translate into a single score, for use in QALY measurement.

Time-trade-off is a technique used to score health states. Individuals (patients, health professionals or members of the public) are asked to assess for a defined health state (or their current health state), how many weeks or months of life they would be willing to trade to obtain full health. *Standard gamble* is another technique used to score health states, relying on identifying equivalence of changes in risk of death at different health states. The *rating scale* is the simplest technique for assessing health state and involves asking individuals to score the nominated health state (or their current health state) on a scale from 0 to 1 or 1 to 100. Much research has been undertaken into the validity of these techniques. All such research suffers from the lack of a 'gold standard' against which results can be compared.

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