Society of Occupational Medicine

Occupational health: the value proposition

Occupational health specialists enhance employee health, workforce productivity, business performance and the economy

"This report provides a comprehensive analysis and evidence review of the value of occupational health. It comes at a critical time for the policy agenda for work and health, and the challenge of the productivity gap. It is essential reading for managers, clinicians and policy makers."

Lord Blunkett, SOM Patron

A report from the Society of Occupational Medicine

May 2017

"With responsibility for people's health and wellbeing increasingly falling on employers, Occupational Health can play a vital role in supporting them to put in place an effective framework. The valuable contribution that Occupational Health professionals can make to an organisation can be far wider than is often realised – not only by providing effective rehabilitation and return-to-work strategies when people are already ill but giving expert advice and introducing initiatives to help prevent ill health in the first place. Employers that invest in this area are likely to more than reap the benefits in terms of better health outcomes for staff but also from their increased engagement and loyalty."

Rachel Suff, Policy Lead for Health and Wellbeing, Chartered Institute of Personnel Development

" 'Occupational health: the value proposition' brings together in one place key research and evidence detailing the business benefits for the provision of occupational health within the workplace. Taking the assessment beyond legal compliance, this honest and accessible report highlights how occupational health can bring added, measurable value in terms of employee productivity and engagement. The report supports and complements the practical guidance produced by IOSH. Ensuring that employees are happy, healthy and in work is at the heart of IOSH's vision and this report offers further evidence of the benefit such an approach can bring to all organisations."

Bev Messinger, Chief Executive, Institution of Occupational Safety and Health

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Foreword

This report aims to provide a narrative synthesis of the evidence from the scientific and wider literature to help illustrate and publicise the benefits that occupational health services provide to employees, employers and to the economy. This report is aimed at policy makers and commissioners of services and will form the basis of summary leaflets for employers and workers and their representatives.

This report cites the most recent comprehensive sources of evidence; where possible to a systematic review, which includes all earlier original studies in that area. Direct reference to original studies is made where there is no systematic review, where they are not included in the original review(s), have been published subsequently, or where necessary to support an important point.

Occupational health services improve the health of the working population, help prevent work-related illnesses, provide early interventions for those who develop a health condition thus preventing avoidable sickness absence and increase the efficiency and productivity of organisations. They can play a major part in protecting and revitalising the UK's economy.[1]

Demographic trends such as the ageing population and a focus on workplace health and well-being have pushed the health of working-age people higher up the policy agenda in recent decades. However, at the same time the number of occupational health professionals has fallen.

One challenge is to overcome the view that occupational health services are a cost and do not contribute to the bottom-line. However, occupational health services should be highly cost-effective provided that there is an effective skills mix; people work to their distinctive competencies and perform work that adds value.[2]

It is recognised that there needs to be active marketing of occupational health, coupled with evidence-based proposals for cost effective interventions.[2] However, measuring benefits from occupational health services is inherently difficult.[3] With that in mind this report endeavours to assimilate the evidence from a wide variety of sources in order to articulate the occupational health services value proposition.

It is suggested that employers commission occupational health services for two prime reasons:

- to enhance performance of the organisation
- to ensure compliance with regulations or policy

Therefore, it is necessary to present occupational health services as affordable and cost effective to organisations and good for their business.[4] It is appropriate to view health as a social investment to be leveraged rather than a cost to be justified.[5]

This report aims to define the value proposition of occupational health beyond economic return on investment in order to make a broad business case based on wide-ranging and sometimes intangible factors. While economic analyses are useful for informing public policy, they do not provide a sound rationale for individual employers to invest in occupational health.[6] In compiling this report evidence was evaluated using a narrative synthesis approach involving a systematic search of relevant biomedical databases and the grey literature.

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Executive summary

This report synthesises the evidence from the scientific and wider literature to help illustrate and publicise the benefits that occupational health services provide to employers, workers and to the economy.

The evidence demonstrates that there is a rounded business case for investment in occupational health services. Well-integrated and supported workplace health initiatives have been shown to be associated with better employee health status and productivity in the workplace. Research supports the proposition that investments in occupational health add value through reduced costs associated with the prevention of ill health, improved productivity and a range of intangible benefits.

Employers state that the reasons they provide an occupational health service are:
Financial – to reduce costs or add value to the business
Legal – to comply with health and safety laws and regulations
Moral – it is the right/ethical/socially responsible thing to do

Occupational health doctors and nurses have unique training, expertise and perspective to understand the link between health and work; as well as how to help injured, ill and ageing workers remain productive and at work. These specially trained and competent health professionals provide preventive services for the entire workforce; support services for individual employees; and competent professional support to management.

Occupational health professionals help employers to ensure a healthy workplace culture and properly organised and healthy work. This, along with managing employee health, contributes to the organisation's success. Providing access to occupational health also helps employers to demonstrate that they are caring and socially responsible; this can help to protect and enhance corporate image with customers, employees, investors, regulators and shareholders. Ensuring employee health and wellbeing contributes to successful business performance, can enhance employee engagement and reduce avoidable business costs due to sickness absence and lost productivity. The evidence reveals that highly effective companies commit to a culture of health – good workplaces, employee engagement, wellbeing and productivity are inter-related.

Work-related ill health and health problems related to unhealthy lifestyles are a significant burden for individuals, employers and to the taxpayer. Protecting and promoting employee health is in the interests of individual workers, employers and the state. The health programmes required will depend on the nature of the work and risks involved; such that off-the-shelf solutions should be avoided and bespoke services should be provided following suitable and sufficient needs and risk assessments. Expert consideration is required to design, develop and deliver occupational health services that provide safe, quality care that is both effective and cost-effective. Several occupational health interventions have been shown to have short payback periods. Such services can deliver significant tangible and intangible benefits at several levels (Table 1):

Table 1: The benefits provided by occupational health services

Employees	Employers	Economy
Protect and promote health	Help reduce sickness absence	Reduce NHS care costs
Help prevent work-related illnesses	Improve business performance	Reduce the cost of state benefits
Manage return to work after illness	Avoid litigation	Increase tax revenues
Maintain earnings	Improve corporate image	Revitalise the UK economy
Maintain quality of life		

Occupational health specialists enhance employee health, workforce productivity, business performance and the economy

1 Introduction

Developing a healthy workplace culture and adopting a systematic approach to occupational health will contribute to an organisation's success. Occupational health services can support employers in achieving these aims and help ensure compliance with the law.

Multidisciplinary occupational health services staffed by competent professionals contribute to the effective management of the health of working people and workplaces. Depending on the size of the service the clinical members of the team may include occupational physicians, occupational health nurses, physiotherapists, counsellors and occupational health technicians. Occupational health teams support employers to meet their responsibilities and needs to:

- provide healthy workplaces and work to protect people from harm
- provide early intervention to help prevent people being absent for health reasons
- improve opportunities for people to recover from illness while at work
- use the workplace to promote individual health and wellbeing
- enhance employee wellbeing and engagement[1,2]

Reasons for providing occupational health services

Organisations will provide access to occupational health services for a number of reasons including size and complexity; legal and regulatory requirements; and any specific processes and hazards at their operations. An organisation's occupational health programmes are not directed just by economic value or scientific evidence; less tangible variables may influence the services provided.[3]

In a survey of UK employers the overall cost of health and safety failures was not perceived to be a primary organisational concern. Although some tangible cost elements were considered to be issues (e.g. employers' liability claims and insurance premiums, sickness absence rates), other factors were perceived to be more influential in driving the health and safety agenda, including: moral obligations; customer or client expectations; maintenance of brand image; potential legal exposure; external pressure from insurance companies; government targets; staff morale, retention and recruitment issues.[4]

In recent decades workplace wellbeing has risen sharply up the public policy agenda – but this is not necessarily the case for access to core occupational health services focussed on workplace hazards and risks. A survey of 1,000 UK employers reported that the commonest reasons to spend on health and wellbeing initiatives were: a healthy, motivated workforce is more productive (41%); to help attract and retain staff (25%); and to be seen as a caring employer that takes duty of care requirements seriously (21%). The report also surveyed 1,000 employees and reported that many employees were more likely to choose an employer who took employee health and wellbeing seriously (66%) and would feel they have a duty to work harder (43%).[5]

Access to occupational health services in the UK

Only a minority of the UK workforce can access a comprehensive occupational health service. A telephone survey of 2,250 British employers in all sectors of the British economy enquiring about broad health and wellbeing provision reported that 13% of employers report providing access to occupational health services in the last year, however the term occupational health service was not defined.[6] A telephone survey of 4,950 UK employers examining specifically the use of occupational health support defined comprehensive occupational health support as hazard identification, risk management, provision of information modifying work activities, providing training on occupational health-related issues, measuring workplace hazards, and monitoring trends in health. Using this definition only 3% of UK employers provide access to comprehensive occupational health services.[7] Both surveys reported that more large organisations provide access than small companies. The range of services was also determined by legislative or statutory requirements within each industry sector.[7]

Small and medium-sized enterprises account for 99.9% of all UK private sector businesses and employ 15.7 million people (60% of private sector employment).[8] Consequently it is useful to define the national level of employee access to occupational health services. The health and wellbeing survey of employers reporting that 13% of employers provided access to occupational health services indicated that 59% of employees were covered.[6] The same authors also surveyed

2,019 employees and only 38% reported access to occupational health services. Again the term occupational health services was not defined. The range was 10 to 63%, access increasing with increasing organisation size and being higher in the public sector than in the private sector.[9]

The burden of sickness absence

Health problems among the working population have a significant socio-economic impact. Population surveys estimated that 131 million days were lost due to sickness absences in the UK in 2013. Minor illnesses were the commonest reason given and accounted for 27.4 million days. The greatest number of days were due to musculoskeletal problems (30.6 million). Mental health problems (i.e. stress, depression and anxiety) contributed to 15.2 million lost days.[10] Employers surveys confirm these to be the major causes of sickness absence;[11,12] as well as waiting for NHS appointments, tests, investigations and surgery and recovering from medical treatment.[12]

The population and employer surveys estimate that the number of days lost/employee/year lie between 4.4 to 6.9 days; with sickness absence rates of 2.1% to 3.0%. One employer survey reported 9.1 days lost/employee/year costing UK businesses an estimated £28.8 billion each year.[13] The overall median cost of absence per employee is estimated to be £554.[11] Depending on how absence is covered it is reported that absence may account for 2-16% of payroll.[14] Consistently over time occupational health involvement is most commonly ranked among organisations' most effective methods for managing long-term absence.[11] Long-term sickness absence is also a huge cost to the state – £14.5 billion being paid out as Employment and Support Allowance in 2015/16.[15]

The burden of work-related ill health

Work-related illnesses place a heavy burden on individuals, employers and society. Despite the decline in manufacturing and heavy industry, an estimated 25.9 million working days were lost due to work-related illness and 4.5 million due to workplace injury in 2015-16 with an estimated annual cost of £4.8 billion for injuries and £9.3 billion for new cases of illness in 2014-15.[16] 1.3 million people who worked during the last year were suffering from an illness they believed was caused or made worse by their work, of which 500,000 were new conditions that started during the year. A further 0.8 million former workers (who last worked over 12 months ago) were suffering from an illness which was caused or made worse by their past work.[17] For example, around 13,000 people die each year from occupational lung disease and cancer as a consequence of past workplace exposures, primarily to chemicals and dusts.[16]

Key points

- Occupational health services support employers to develop a healthy workplace culture; contribute to an organisation's success; and help ensure compliance with the law
- Employers who provide access to occupational health services do so for several reasons – legal, financial, moral, reputation, etc
- Sickness absence places a huge burden on organisations and society
- Occupational illnesses significantly exceed occupational injuries in both number and cost to individuals, employers and society

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2 Making the business case for occupational health

Factors discussed in the previous chapter emphasise the need to develop a business case for occupational health i.e. that only a minority of the UK workforce can access a comprehensive occupational health service and the burden of sickness absence and occupational illnesses. The business case must present stakeholders with compelling and transparent reasons to invest in occupational health services. The business case should demonstrate that the investments have effects at organisational and individual levels.[1] This report recognises that:

1. reasons to invest in occupational health and safety are not confined to financial reasons;[2,3,4] and
2. generally the methodological quality of economic evaluations of occupational health is low[5]

Hence this report considers the business case in terms of 'value' in the broadest sense rather than mere economic/financial value. In spite of the wealth of studies which report 'return on investment' demonstrating economic value is particularly problematic. Studies use different methods to estimate the indirect costs of health-related productivity and should not be relied upon to inform decisions about occupational health interventions.[6] The sources of bias and error in economic evaluations are discussed in Appendix A.

Key investment drivers

Legal, financial, and moral reasons and reputational risk are the key drivers for employers to invest in healthy workplaces and occupational health and safety.[2,3,4] The business case should reflect all of the key drivers.[7] Studies alternately report reputational risk or regulatory compliance as the main drivers; other studies report that employers are not driven by the financial business case.[4] The moral case is important among small employers – who may know the employees – whereas among large employers the moral case is expressed at the corporate social responsibility level.[4] Reputation is also more important to 'high street name' employers.[4] Survey respondents from all sizes of organisations perceive that:

- Damage to reputation could cause them to lose business
- Health and safety is a big risk to the business if they get it wrong
- Health and safety is important for staff productivity and morale[4]

Value propositions

A value proposition is a short and compelling statement that communicates clearly the benefit to the customer and how it is provided distinctly better than alternatives. It defines not only how customer value is created by delivering specific benefits; but more critically the compelling reasons to buy – in terms of capability, impact, proof, and cost. It should answer the customer's questions 'What's in it for me?' and 'Why should I buy this service?' The value proposition should focus on **points of difference** i.e. the services that only occupational health can provide – activities that make a meaningful difference and generate the greatest results for customers. Other points will distract from the winning messages e.g. **points of parity** (services anyone can offer) and **points of irrelevance** (important duties which don't communicate added value e.g. maintaining confidentiality).

Key points

- Legal and regulatory compliance and concern about reputational risk are the main drivers influencing employers health and safety expenditure
- The business case should reflect value in the broadest sense and not focus on financial value
- A value proposition should communicate occupational health unique selling points and how they add value to the employer's business

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3 Occupational health: the legal imperative

The Health and Safety at Work, etc Act 1974 and *The Health and Safety at Work (Northern Ireland) Order 1978* are the key primary legislation addressing occupational health and safety in the UK. The Health and Safety Executive (HSE) and the Health and Safety Executive Northern Ireland HSENI, with local authorities (and other enforcing authorities), are responsible for enforcing the Act and other Acts and Statutory Instruments relevant to the working environment. Statutory Instruments are pieces of secondary legislation and cover a wide range of subjects e.g. control of asbestos at work, diving, ionising radiation and working at heights.

The Management of Health and Safety at Work Regulations 1999 and *The Management of Health and Safety at Work Regulations (Northern Ireland) 2000* generally make more explicit what employers are required to do to manage health and safety under the aforementioned Acts. Regulation 7 requires employers to appoint an adequate number of competent persons to assist the employer in meeting their legal duties, taking into account the size of the undertaking and the risks at the workplaces.

Statutory medical examinations

Several regulations require employers to ensure that their employees have the relevant statutory medical examinations at the required intervals using the services of an HSE / HSENI Appointed Doctor or Approved Medical Examiner of Divers.

- *The Control of Asbestos Regulations 2006*
- *The Control of Lead at Work Regulations 2002*
- *The Control of Substances Hazardous to Health Regulations 2002 (as amended) Schedule 6*
- *The Diving at Work Regulations 1997*
- *The Ionising Radiations Regulations 1999*
- *The Work in Compressed Air Regulations 1996*

and their equivalents in Northern Ireland.

Health surveillance

In addition to statutory medical examinations occupational health doctors and nurses provide health surveillance services for employers whose employees are exposed to certain hazards at work e.g. under:

- *The Control of Noise at Work Regulations 2005*
- *The Control of Substances Hazardous to Health Regulations 2002 (as amended)*
- *The Control of Vibration at Work Regulations 2005*

and their equivalents in Northern Ireland, where a suitable and sufficient risk assessment identifies that there is still a risk to health after the implementation of all reasonable control measures.

Health assessments

The Working Time Regulations 1998 (as amended) require that employers offer night shift workers health assessments. *The Health and Safety (Display Screen Equipment) Regulations 1992* require employers to provide eye and eyesight tests to display screen equipment users. Occupational health staff can advise on the specific needs and arrange or provide suitable programmes.

Statutory reporting

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (and Northern Ireland 1997) place duties on employers, the self-employed and people in control of work premises to report certain serious workplace accidents, occupational diseases and specified dangerous occurrences. Reportable diseases must be diagnosed by a doctor.

Some of the reportable conditions can have other causes e.g. asthma, dermatitis and tenosynovitis. It is important that the doctor can take an effective occupational history and be competent to identify whether work has caused or aggravated the disease.

Competent advisers

While a health professional is not needed in all circumstances an employer will still need to call on an appropriately qualified doctor or nurse to deal with any ill health discovered. Employers who have a large workforce may wish to consider having a competent occupational health professional employed to be in charge of their programme, to advise and help manage health risks.[1]

Occupational health staff

Occupational health doctors and nurses are the suitably qualified persons to enquire about symptoms, inspect or examine employees.[1] Occupational health technicians may perform lung function tests and hearing tests, under the supervision of occupational health doctors or nurses.

Corporate Governance

Corporate governance i.e. the system by which businesses are directed and controlled also means complying with the law, regulations and guidelines including those relating to health and safety.[2]

Directors responsibilities

Directors can be personally liable when health and safety legislation is breached: board members have both collective and individual responsibility for health and safety. If a health and safety offence is committed with consent or connivance of, or is attributable to neglect on the part of, a director, manager, secretary or similar officer, then that person and the organisation can be prosecuted. Those convicted are liable for fines and, in some cases, imprisonment. In addition, the courts may disqualify an individual convicted of a health and safety offence in connection with the management of a company and requires no additional investigation or evidence.[3] Individual directors are also potentially liable for other related offences i.e. gross negligence manslaughter, which is punishable by a maximum of life imprisonment.[3]

Enforcement and prosecution

Inspectors enforce health and safety standards by providing advice; by ordering improvements and if necessary, prosecution of companies and/or individuals for breaches of health and safety law.

In the year to March 31 2016, HSE prosecuted 46 company directors and senior managers for breaching health and safety law – up from 15 in the previous year. By making senior management responsible for the health and safety failings of their business and their staff, the increased enforcement is a serious boardroom issue. Fines routinely hit the £1million mark for non-fatal offences and are a potential serious threat to a company's bottom line.[4]

Civil litigation

In addition to criminal prosecution individuals who have suffered an injury, illness or disease as a result of another person's negligence can make a personal injury claim for compensation.

Adverse publicity

HSE and other regulators manage online public registers of prosecutions which resulted in a successful conviction by the courts and issue press releases for each successful prosecution. Cases of civil litigation heard in the courts also enter the public domain. Such publicity risks damaging an employer's reputation. Most employers appreciate that damage to reputation could lead to lost business.[5]

Key points

- Employers must appoint one or more competent persons to assist them in meeting their legal duties, taking into account the size of the undertaking and the risks at the workplaces
- Occupational health doctors and nurses are the competent / suitably qualified persons to enquire about symptoms, inspect or examine employees
- Both companies and / or directors can be prosecuted for breaches of health and safety law and face significant fines and potentially imprisonment
- Litigation risks company reputation which can threaten business

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4 Occupational health: the moral imperative

Increasingly employees, customers, shareholders and investors expect employers to demonstrate high standards of corporate social responsibility and to integrate social, ethical and environmental concerns into business operations. Social concerns include employee health and wellbeing; consequently occupational health can play a major role in employers corporate social responsibility programmes.[1] The Health and Safety Executive expects businesses to move beyond compliance with health and safety regulations to continuously improve all aspects of the working environment such that the workforce is 'happy, healthy and here'.[2] As a result of improvements in occupational safety, the focus has shifted from occupational safety to occupational health.[2]

Employers' organisations recognise that looking after employee health makes the workplace a more productive, attractive and corporately responsible place to work and that it benefits the local community and the country as a whole since healthy people require less support from the health and social services.[3] Over three quarters (78%) of surveyed employers feel they demonstrate commitment to corporate social responsibility by looking after employee health; a view shared by employees.[4] Over half (53%) of surveyed employees feel that employers would be encouraged to care more for employee health if they were obliged to report progress in annual reports.

Societal impact of work-related ill health

The avoidable costs of work-related ill health extend to the state and society and to individuals and their family members. In Great Britain around 24% of the cost is borne by the government, 57% by the individual and his/her family and 19% by the employer.[5] These costs include:

Individuals: lost income, prescription costs; quality of life of individual and family
Employers: lost productivity, sick pay, employers liability compulsory insurance premiums, compensation
Government/taxpayer: state benefits paid and lost tax receipts (~ 80%), NHS treatment (~20%)[5]

HSE's latest estimates of the annual cost of work-related ill health produce a total of £9.3 billion i.e. £17,600 per individual case. Using HSE modelling for accidents and ill health the total cost of £14.1 billion is borne as follows: individuals – £8 billion; government – £3.3 billion; employers – £2.8 billion.[5] The cost of prevention and the benefits delivered may not occur at the same level.[6] Despite the costs of occupational ill health being greater to society, there are few external financial incentives to drive employer investment in workplace prevention (see Chapter 6). A review of case studies concluded that economic incentive schemes are feasible and reasonably effective; and that the costs of incentives are offset at the societal level by the number of prevented accidents and sick leave.[7] Some employer expenditure is cost-effective for the employer, whereas for some interventions the greatest benefit/cost saving is at a societal level e.g. health surveillance is paid for by employers but the cost-effectiveness ratio is more attractive from a societal perspective.[8] Other interventions might reduce health care utilisation costs significantly without delivering any significant differences in days of sick leave and productivity loss costs.[9]

Key points

- Protecting and promoting employee health is integral to corporate social responsibility
- Employees think employers should be more proactive in providing workplace health interventions
- Work-related ill health is a significant cost to individuals, employers and the taxpayer
- Employer paid interventions may save more money at a societal level (health and social care)

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5 Occupational health: the business imperative

Globalisation with increased imports from countries with much lower labour costs, the continuing difficult economic situation following the 2008 global financial crisis and uncertainty about the possible effects of Brexit challenge all employers directly or indirectly. As employers are 'doing more with less' the risks of stress-related issues are greater; which together with the burden of sickness absence described in chapter 1, the costs of work-related ill health discussed in chapter 4 and the ageing workforce compound the business challenges and help to foster employer initiatives focussed on having healthy and productive employees. The ageing population with accompanying long-term health conditions and technical advances in healthcare have led to spiralling healthcare costs and health insurance premiums; costs which may be borne by some employers in some countries. Since ultimately we all pay for the costs of healthcare through taxation it is also of concern for government and for society.

Employers' organisations recognise "that if employees are in a good state of health and wellbeing, this must surely contribute to successful performance".[1] Organisations that place value in and continuously improve the health and wellbeing of their employees gain through improvements to their profile as well as to their bottom line – factors which are strategically important but difficult to quantify. Nevertheless, highly effective companies commit to the importance of health and its impact on the business by including employee health and productivity in the organisation's goals / values statement to articulate a desired "culture of health".[2]

Wellbeing, presenteeism and productivity

It is often reported that employee wellbeing is positively linked to subjective measures of e.g. presenteeism, productivity, employee engagement, etc. There are difficulties and uncertainties in measuring presenteeism.[3] Recent systematic reviews conclude that while presenteeism is a costly problem for employers the exact amount cannot be determined,[4] since many jobs do not have easily measurable output[5] and methods for measuring and valuing health-related productivity vary widely[6] generating widely varying estimates of productivity loss.[7] More and higher quality research is needed to reveal the connections between presenteeism and a company's turnover, personnel costs and profit.[8]

A large US Gallup survey identified reciprocal causality between wellbeing (career, social, financial, physical, and community) and employee engagement, workplace turnover, and health outcomes, etc; albeit wellbeing was a stronger predictor of employee engagement than the reverse.[9] This study and the five components of wellbeing highlight that a sense of wellbeing is multi-factorial and not solely dependent on health – career satisfaction and reward being among the key influences. An individual's subjective wellbeing at work is influenced by characteristics of the job and workplace and tends to be higher when employees have autonomy over how they do their job, variety in their work, clarity over what is expected of them, opportunities to use their skills, effective supervision, higher pay and clear career prospects.[10] Among the indicators most associated with poor health and wellbeing are atypical or variable working hours, disruptive interruptions, exposure to restructuring, environmental hazards and job insecurity.[11] Consequently wellbeing strategies must extend beyond health to encompass the working environment, culture and interpersonal relationships.[2]

Business benefits

Much commentary points to the link between wellbeing and increased employee productivity. While there is little high quality research there is a prima facie case for employers to invest in employee wellbeing on the basis of likely performance benefits.[10] Many employers' organisations e.g. Business in the Community, Chartered Institute of Personnel Development and Institute of Directors recognise the benefits to be gained by employers taking a strategic, proactive approach to wellbeing to boost employee engagement and productivity. Employers who run health and wellbeing programmes do so because they want to:

- Improve work performance and productivity
- Reduce costs associated with absenteeism, presenteeism and disability
- Reduce healthcare costs
- Improve the culture of the organisation and retain existing employees
- Improve the organisation's image, attract talented employees and fulfil corporate social responsibility obligations[12]

Leading companies which connect health and productivity strategies to business objectives report employee health improvements, lower costs, reduced work loss and higher productivity. These are also linked to significant competitive and financial advantages, including higher revenues per employee and total shareholder return.[2] It should be acknowledged that the employers who introduce such programmes are likely to be the type of enlightened employer who utilises a range of practices that affect productivity and competitiveness; and that employers who are already profitable may be more likely to afford such programmes.[13] Nonetheless it is appropriate to view employee health as a social investment to be leveraged rather than a cost to be justified.[14]

Key points

- Employee health and wellbeing contributes to successful business performance
- Highly effective companies commit to a culture of health
- Wellbeing strategies must extend beyond health to encompass the work environment, culture and interpersonal relationships

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6 Occupational health: the financial imperative

Employees enable organisations to survive and thrive. Good workplaces, employee engagement and wellbeing and increased productivity go together.[1] Conversely poor employee health is associated with significant costs to employers. While employers largely agree with the principles of looking after employee health and wellbeing, it is not a high priority for investment; among surveyed employers just over a half believe that it provides a financial return.[2] Larger employers are more likely to recognise the financial benefits.[2] As noted in chapter 1 sickness absence is estimated to cost UK businesses £28.8 billion each year; an overall median cost of £554 per employee, and anywhere between 2-16% of payroll. Additionally as noted in chapter 3 work-related illnesses and accidents cost British business £2.8 billion every year. Hence it should stand to reason that strategically focused occupational health services which address the specific needs and risks at individual workplaces have the potential to deliver significant savings to a range of employer's direct and indirect costs – by preventing work-related ill health and helping to promote employees' general health and performance at work. The most visible avoidable adverse costs are those related to sickness absence. However, worker productivity is a combination of sickness absence i.e. time off work and presenteeism i.e. being at work but with reduced levels of productivity.

Cost of non-conformance

Approaching employee health and wellbeing in quality management terms it is possible to understand the wide-ranging sources of the price or cost of non-conformance i.e. the cost of not delivering a quality service. The various tangible and intangible employer costs that can be eliminated by an effective occupational health service as part of a wider strategy to protect and promote employee health are described in Table 2.

Table 2: Employer costs related to employee ill health (* additional costs associated with work-related illness)

Tangible costs		Intangible costs
Direct	**Indirect**	
• Restricted duties • Sick pay • Disability pension • Fines* • Legal costs* • Compensation*	• Overtime cover • Temporary agency staff • Management time • HR / payroll time • Recruitment fees • Training of replacements	• Presenteeism • Lost productivity • Engagement • Staff turnover • Lost productivity • Employee relations • Corporate image

Strategic approach to cost reduction

Sickness absence and presenteeism are significant drivers of productivity loss. Companies with the most effective stay-at-work and return-to-work strategies implement programmes which:

- Include a needs assessment (absence data, occupational illnesses, etc) and interventions designed to address the top sources of productivity loss
- Target the top preventable causes of absence and refresh approaches regularly
- Gain insights into unplanned absence and its causes
- Customize programmes to address key physical and lifestyle risks of individual participants.[3]

Financial incentives

The greatest costs associated with sickness absence from all causes are borne by the state. A recent report argues that government must introduce a major shift in incentives with greater obligations on employers to support employees to stay in work, and greater financial liabilities if they fail to do so.[4]

A European literature review concluded while there were methodological difficulties comparing studies that a strong argument could be made for the benefits of external economic incentives to improve occupational health and safety.[5] Insurance-related economic incentives, where specific prevention efforts are rewarded, were considered to be an effective way to motivate organisations to invest in occupational health and safety. However, they should be part of a group of strategies, including tax incentives and funding schemes.[5]

Providing more financial and especially tax incentives could encourage more employers to invest in employee health and wellbeing.[6] NHS England argues that there would be merit in extending incentives for employers who provide effective NICE recommended workplace health programmes for employees.[7] While economic incentives may be feasible and reasonably effective there is scarce or good quality analysis of their efficiency; however a few studies demonstrate positive results for large samples.[8]

Deductions and allowances for employer's expenditure

Employers are able to reduce their tax liability by deducting from their profits everyday *revenue* expenditure that is wholly and exclusively for the purposes of business. Allowable expenses include occupational health salaries and fees. *Capital* expenditure is generally not allowable as a revenue deduction in computing taxable profits. Some *capital* expenditure qualifies for capital allowances e.g. equipment purchase qualifies for relief under "plant and machinery" capital allowances rules.[9]

Non taxable payments or benefits for employees

Additional to the provision of occupational health services and employee assistance programmes the following health services provided to employees do not give rise to a taxable benefit in kind (or employer's National Insurance contributions):

- Equipment provided at work as a reasonable adjustment for a disability[9]
- Medical treatment met by the employer, if the condition has arisen solely from the job[9]
- Training such as first aid and health and safety at work[10]
- Up to one health screening assessment and one medical check-up / year if offered to all employees[10]
- Medical treatment for employees unfit or likely to be unfit for work for at least 28 consecutive days, due to ill health or injury of any cause which will help them return to work equal to a maximum of £500 in the tax year, provided that the recommendation was made by the employer's occupational health service or by Fit for Work.[10]

Value added tax

Different occupational health interventions attract different treatment for value added tax (VAT) purposes, but the following are exempt from VAT:[11]

Post-employment medicals – where these are to: ensure a person is medically fit to undertake the job offered; assess whether proposed work could adversely affect their health and to make recommendations to minimise any risk accordingly; determine whether early retirement on ill-health grounds is appropriate – then the purpose is to protect the employee's health.

In-service health assessments – including employee request and management referrals aimed at protecting, restoring and maintaining the health of the individual and related incidental reports.

Statutory health surveillance – assessments required by statute.

Immunizations to protect employees whose work presents an occupational risk of a specific infection is exempt protection of an individual's health.

Health presentations – with the primary purpose of promoting and protecting people's health.

Training and advice – as part of occupational health's role in promoting and advising on health issues for the purposes of maintaining employee health.

Welfare counselling – made available to all employees generally on similar terms.

Occupational health: the financial imperative

Key points

- Good workplaces, employee engagement, wellbeing and productivity are inter-related
- Poor employee health is associated with significant costs to employers
- Needs assessment based occupational health services can deliver significant savings to a range of employer's direct and indirect costs
- Providing more financial and especially tax incentives could encourage more employers to invest in employee health and wellbeing

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7 Occupational safety and health – the evidence

A systematic review published in 2014 by EU-OSHA identified reviews and studies evaluating the cost-effectiveness / cost–benefit ratio of interventions aimed at improving the health or safety of workers.[1] The reviewers discovered that all case studies which met the inclusion criteria were included in three other reviews of business case studies / economic evaluations of occupational safety and health interventions,[2,3,4] many of them in more than one review. Therefore, they examined the literature mainly through existing reviews. The reviews reported flaws in study design, lack of assumption soundness, insufficient provisions for uncertainty, poor application of economic evaluation (depreciation, etc.), overall poor research quality, heterogeneity of studies, the lack of a common methodological framework and other factors i.e. publication bias and quality of research; concluding that it wasn't feasible to draw sound conclusions.

The EU-OSHA report also developed and included 13 new case studies of health and safety interventions in European small and medium sized enterprises.[1] These identified that most economic costs and benefits related either to absenteeism, or to improved productivity. Most of the case studies (11/13) demonstrated profitability after 5 years; and all interventions were profitable after 7–10 years. Interventions involving training and organisational change were more profitable than interventions based on technical changes e.g. new equipment.

Of the reviews identified by EU-OSHA one reported that around three-quarters of interventions were profitable and the payback period was less than six months; the main benefit being avoided sick leave.[3] Another included review found evidence to support the economic benefits of ergonomic programmes and other interventions to prevent musculoskeletal disorders in:

- manufacturing and warehousing (strong evidence)
- health care, transportation, and administrative and support services (moderate evidence).[2]

The third included review mainly assessed quality and concluded that the overall methodological quality of the economic evaluations was poor; only 44% of studies met more than 50% of the quality criteria.[4] This conclusion was substantiated by another review which concluded that workplace-based intervention studies which undertake economic analyses were a mixed bag in terms of methodological approaches and quality.[5]

Of all occupational safety and health interventions ergonomic interventions are most common in the literature and are the most profitable, in terms of improved health or efficiency.[1,2,3] They also have short payback periods of up to two years because of the low cost of interventions i.e. training, simple equipment and changes to work organisation and the high prevalence of musculoskeletal disorders.[1]

A survey in 16 countries asked companies to subjectively rate qualitative and quantitative costs and monetary benefits of occupational safety and health.[6] The strongest impact occurred in production, transport and warehousing. Most employers (75%) considered that additional investment in occupational safety and health will lead to company costs remaining the same or decreasing over the long term. Expenditure on occupational safety and health is an investment that "pays off" for companies according to the interviewed companies – added value generated by increased employee motivation and satisfaction, added value generated by better corporate image and cost savings through the prevention of disruptions.

Key points

- Most surveyed employers believe that investment in occupational safety and health pays off
- The main benefit of occupational safety and health interventions is avoided sick leave
- Ergonomic interventions are the most profitable and have short payback periods of up to two years

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8 Workplace health promotion – the evidence

Workplace health promotion ought to follow from an organisation's values i.e. many organisations state that employees are their most important asset. However, in recent years the emphasis has shifted from being values-driven to demonstrating return on investment. The extent of the biomedical and grey literature which reports a positive return on investment from workplace health promotion / wellbeing programmes is overwhelming. However, the quality of such economic evaluation studies is generally low. The diverse and often dubious evidence base for workplace health promotion requires careful consideration. Hence this chapter seeks to synthesise the evidence from reviews of systematic reviews plus high quality systematic reviews published subsequently. Consequently some well known reports or narrative reviews which merely cite prior research without fully appraising the quality of individual studies are omitted.

Poor quality primary studies

Many flawed studies have been taken as fact and are reported favourably in narrative reviews. Even most systematic reviews published up to 2006 did not meet Cochrane Collaboration standards.[1] Presented with the literature reporting return on investment many people will assume that the economic benefit of workplace health promotion is indisputable. However, most studies have methodological weaknesses.[1-3] Two recent systematic reviews identified a risk of bias in over two-thirds of studies due to selection and attrition bias[2]; performance bias attributable to uncertain presenteeism measures[4] and possible publication bias.[2] Other criticisms include a lack of control groups and randomisation and poor or insufficient description of interventions and study design.[3] This makes it difficult to summarize the main outcomes.[5] Many interventions have only been assessed in a few settings and much of the evidence on long-term costs and benefits relies on estimates.[6] Observational studies are more likely to report positive effects compared to randomised-controlled trials[3,7] and high-quality trials report smaller effects than low-quality trials; randomisation, blinding, control for confounders, and longer follow-up are associated with lower effect sizes.[8] Appendix A describes the broad problems with the majority of published studies and narrative reviews.

Why workplace health promotion?

In spite of these weaknesses there is continued interest in workplace health promotion to improve health behaviours (diet, activity, tobacco, alcohol and obesity) and promote workforce productivity and overall business performance.[5]

Overall the evidence indicates that workplace health promotion programmes yield a small positive effect.[8] The mixed results from various studies and insufficient evidence for effects on absenteeism is in stark contrast to the widespread use of such programmes.[7] However, such programmes are generally low cost and could very easily pay off if they save a few days of sickness absence. However, the lack of analyses and a uniform methodology as well as the low quality of studies make if difficult to quantify the economic benefit.[1] While it is difficult to measure presenteeism there is preliminary evidence that some programmes can positively affect presenteeism.[4]

Which workplace health promotion programmes?

Cost-effectiveness will be influenced by the components of workplace health promotion programmes and the target audiences. Differentiated analysis of different types of interventions reveal more convincing evidence of effectiveness for some interventions than for others.[1] There is some consensus regarding the workplace health promotion and prevention interventions which contribute to preserving employee health from two reviews of systematic reviews[1,3] and high quality systematic reviews published subsequently:

Physical activity

Workplace physical activity programmes can increase employees' exercise levels to a limited[1,3] or moderate extent[9]; interventions with less rigorous design being more likely to report a positive effect.[10] Overall there is:

- inconclusive / equivocal evidence of effect[11,12]
- inconclusive evidence for improving cardio-respiratory fitness[1,3]
- no convincing evidence for an improvement in health-related outcomes except for fatigue[1]
- no evidence for reduced levels of sick leave[13]
- inconsistent evidence of the impact on worker productivity[13]

Dietary interventions

The quality of studies to date has been frequently sub-optimal[14,15] providing limited to moderate evidence of a positive effect from healthy eating programmes.[2,14-16] Where improved diet is observed it occurs for both individual (e.g. nutrition education) and organisational interventions (e.g. healthy canteen food, information posters).[1]

Weight management

For workplace interventions the evidence for the effectiveness of interventions for weight reduction is unclear.[1] There is:

- no or low quality evidence that workplace physical activity interventions reduce body weight[9,17]
- limited evidence that combined individual and organisational strategies prevent adult weight gain[18]
- moderate quality evidence that workplace physical activity and dietary behaviour interventions produce modest short improvements in body weight (e.g. 6–12-months)[17,19,20]
- strong evidence for a positive effect on body weight among those "at risk of cardiovascular disease"[21]
- a lack of evidence for long-term data on health and economic outcomes[20]

Smoking cessation

Individual workplace smoking cessation interventions:

- can be effective – for smokers who are willing to quit[1] and among those who participate; but the absolute numbers who quit are low[22] and the strength of evidence is low[2]
- have some initial effectiveness; but the effect decreases over time[3]
- should employ a range of different interventions to meet the different needs of employees at differents stages of readiness to change[23]
- are more likely to lead to cessation when interventions are directed towards individual smokers[22]
- may have less impact than smoke-free workplace policies[3]

Mental health interventions

There is moderate evidence for the effectiveness of workplace mental health interventions; certain programmes having a greater level of evidence to support their effectiveness.[24]

For stress:

- cognitive behavioural interventions for stress management are useful both for symptom-free, employees at high risk for mental illness and employees who already have symptoms[1,3,25]
- educational interventions and stress management trainings do not prevent sickness absences[1]
- there is limited evidence that organisational-level interventions reduce stress, psychological symptoms, or absenteeism in the workplace[26]

For anxiety and depression:

- a range of health promotion interventions appear to be effective in reducing symptoms of depression and anxiety, although the effect is small[27]
- effective interventions in male-dominated industries include: improving mental health literacy and knowledge, increasing social support, improving access to treatment, providing education for managers and addressing workload issues[28]

Alcohol interventions

There are few high quality studies of workplace alcohol interventions. One limitation is that research is focused on self-reported behaviour change.[29] A systematic review reported that brief interventions, interventions contained within health and lifestyle checks and psychosocial skills training may produce beneficial results;[30] however, evidence for effects on absenteeism is insufficient.[7] Two later RCTs reported that nurse-delivered brief intervention performed alongside workplace health and lifestyle assessments can reduce alcohol intake.[31,32] Further research is needed for online screening and brief interventions.[33]

Current and future focus

There is need to improve the methodological quality of workplace studies.[34] The state of knowledge should benefit from an upcoming review of the effectiveness of workplace interventions implementation strategies on health behaviour outcomes (nutrition, physical activity, obesity, alcohol use and smoking); and the cost-effectiveness of these strategies.[35] Meanwhile employers should invest where it makes sense – in health interventions that are known to be effective. The most important issue for employers to address isn't whether or not health promotion programmes should be implemented, but rather how they should be designed, implemented and evaluated to achieve optimal results.[4]

Key points

- The workplace can be an effective setting for health promotion and prevention
- While health promotion programmes have a small positive effect, they are low cost and can pay off
- Employers should invest in health interventions that are known to be effective
- Health promotion programmes should be expertly designed, implemented and evaluated

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Workplace health promotion – the evidence

9 Occupational health services – the evidence

Occupational health intervention studies are difficult to locate in electronic literature databases because of diverse study types, low numbers of cost-effectiveness or cost–benefit analyses and poor methodologies.[1-5] Nonetheless, while rigorous study designs are not always applicable or feasible there are some high quality occupational health evaluation studies; however, more are needed and the quality and methodology of evaluation studies should be improved to develop evidence-based occupational health care.[6,7]

Measuring benefits from occupational health services is inherently difficult; however it is possible to demonstrate that some occupational health interventions are more 'profitable' than others. It is suggested that active occupational health care aimed at prevention and rehabilitation is more profitable than a focus on treatment.[2] A systematic review of different types of intervention identified musculoskeletal interventions (in certain sectors) and return to work / disability management interventions as usually worth making from an economic point of view.[3] The evidence for effectiveness is published separately,[8,9] while for other interventions more studies are needed. The conclusions are summarised in Table 3.

Table 3: Occupational health interventions worth undertaking for economic reasons

	Multiple sectors	Manufacturing & warehousing	Administration & support	Transport	Healthcare
Return to work and disability management programmes	Strong evidence				
Musculoskeletal interventions		Strong evidence	Moderate evidence	Moderate evidence	Moderate evidence [a]
Occupational disease prevention interventions					Moderate to limited evidence[b]

a. Most studies evaluated mechanical ceiling lifts. Some investigated lifting teams, manual handling training, or exercise programmes
b. Two interventions – needle-stick injury prevention programmes, and substitution of powdered latex gloves with powder-free gloves

A report commissioned by the HSE confirmed the relatively robust evidence on improved outcomes from interventions to prevent and manage musculoskeletal disorders. The authors considered that this may be attributable to the small number of studies in this area using relatively robust methodologies and because it may be easier to measure effect on current health status compared to interventions intended to lower future risks.[10]

Another systematic review attempted to quantify the economic benefits of occupational safety and health interventions.[11] It reported that no studies mentioned intangible benefits and in most studies productivity losses were only measured as sickness absence. In fact productivity losses are rarely considered, even though they are generally acknowledged as being important outcomes.[12] Interventions proved profitable in 19 cases, however, it is not possible to generalise the results to other occupational health interventions since most included studies (19/22) considered ergonomic interventions e.g. automation and ceiling lifts; and unfavourable business cases would not be published.[11] The three studies which focussed on an occupational health intervention related to musculoskeletal and back problems.

Musculoskeletal disorder interventions

The high prevalence of musculoskeletal disorders, including back problems, may account for the relative abundance of studies which inform us of the interventions that are worth undertaking from an economic perspective. Since a small group of patients with severe, chronic low back pain generate the majority of costs[13] successful intervention in a few cases can generate substantial cost savings.

Prevention

The evidence from syntheses of reviews indicates that:

- Only physical activity programmes reduce the prevalence of and sickness absence attributable to musculoskeletal disorders.[14,15]
- Other interventions i.e. educational interventions, theoretical trainings, stress management trainings, back schools and lumbar supports/back belts are generally ineffective.[14-17]

Management

For workers suffering from back pain:

- Back schools appear to be useful[14,15]
- Temporarily modified work (transitional work arrangements) can facilitate early return to work.[11,15,18]
- Cognitive behavioural approaches are effective in reducing sickness absence duration for back and neck pain.[15]
- A new RCT indicates that providing booklets to workers with mild low back pain reduces sickness absence and is cost-effective.[19]

Return to work

The following return to work interventions have been shown to be effective and provide a net cost-saving (avoided sickness absence savings minus intervention costs) and pay back very quickly i.e. in 1-5 months:[11]

- Graded activity intervention for non-specific low back pain.[11]
- Early assessment and early rehabilitation, including work and / or workplace adjustments[11,15,20]

Overall multi-component programmes appear to be the most successful and cost-effective interventions.[15,18,21] Employer support is key to providing access to modified work. Early and good communication between the worker, employer and occupational health professionals is more effective and cost-effective at helping employees with musculoskeletal conditions on sick leave return to work compared with other non-collaborative workplace interventions.[18,21] Interventions aimed at the individual without recourse to changes in work organisation and the working environment are likely at best to deliver small benefits.[22] Of work-related factors there is strong evidence that the physical demands of the job, job satisfaction and the offer of modified work predict the likelihood and timing of return to work and moderate evidence of an effect from the workplace psychosocial environment (i.e. factors related to work pace, control and social support.[23]

Stress and mental health interventions

Common mental disorders i.e. depression and anxiety account for the majority of costs related to mental ill-health;[24] however, evidence for the effectiveness of workplace interventions is limited particularly with respect to occupational outcomes.[15] Furthermore there are few economic evaluations, of which most are of low methodological quality, or evidence on effectiveness is lacking, consequently only tentative conclusions can be drawn.[25]

Prevention

Reviews report mixed results for the effects of workplace mental health interventions on mental health and work productivity.[25] Stress interventions which focus on employees only – without addressing organisational causes of stress i.e. management style or culture will have a limited effect.[14] However there are few studies examining organisational interventions.[25]

- Employee-focussed interventions are effective, especially in employees at risk of developing common mental health problems and in those who have high control over their work.[14,15]
- Work and work organisation interventions are important.[14]
- A combined approach of interventions aimed at individuals and the organisation is more effective.[14]
- Preventive mental health activities can reduce sickness absence[15] and might be cost-effective.[25]

A recent cost-benefit evaluation conducted alongside a cluster-randomised trial was performed in nurses as an occupational group whose work is stressful. Participants were screened for functional impairments and mental health complaints. Absenteeism and presenteeism were reduced significantly in the intervention group who received personal feedback and occupational physician referral and advice (return on investment 11:1 in the short-term). The cost of the intervention was recouped within half a year.[26]

Management
Cognitive behavioural therapy is effective in reducing psychological ill-health and sickness absence among employees absent from work and for employees more generally.[15]

Return to work
Generally there are few RCTs to draw any conclusions for mental health problems,[25] which may account for the lack of consensus between reviews. For depression, while one systematic review rated the level of evidence to be too low to form conclusions[27] another reports that, while more studies are needed, there is moderate quality evidence that:

- adding a work-directed intervention to a clinical intervention reduces the number of days on sick leave compared to a clinical intervention alone.[28]
- enhancing primary or occupational care with cognitive behavioural therapy reduces sick leave compared to the usual care.[28]

And limited evidence that:

- combined interventions that include work-related problem-solving skills are effective in return to work outcomes.[29]

However, return to work interventions do not seem to be cost beneficial on the basis of studies that include an economic evaluation,[25] although this may reflect the lack of relevant studies. A subsequent cross-sectional survey of 11 major Japanese companies reported that 7/11 achieved a net benefit from comprehensive workplace mental health programmes. Companies that achieved a return on investment >1 used full-time occupational health nurses; had significantly higher disease management and rehabilitation programme implementation rates; and substantially lower total costs. This study suggests that the engagement of occupational health nurses to manage the tertiary prevention programmes may lead to reduced absenteeism and increased return on investment.[30]

Occupational health interventions for other health issues

There is much less direct evidence for other occupational health interventions because of a relevant lack of studies. Where programmes are legally-mandated e.g. health surveillance there may be no perceived need to justify the programmes or to examine their effectiveness. For return to work interventions most studies included in broad systematic reviews involve musculoskeletal problems, hence the evidence is strongest for those disorders and is less direct for other health issues.

Prevention
In an occupational setting, the purpose of health assessments is to detect any effect of health on work (e.g. fitness for specific duties) or work on health (e.g. health surveillance of those exposed to a hazard).

The *Equality Act 2010* generally prohibits enquiries about a job applicant's health and ability prior to job offer. Additionally any **post-offer health assessments** must be justified and relevant. Where undertaken it is usually to ensure that a health condition is not a risk to the individual or to others; or it may be to identify any adjustments that an individual may require in the workplace in order to accommodate a disability.

Two systematic reviews found little[31] or no or inconsistent evidence[32] that health questions asked before employment are effective in determining future health or occupational outcomes for prospective employees. There is very low quality evidence that examination-based recommended risk mitigation i.e. work accommodation or training may be effective in reducing an increased risk for occupational injuries.[32] However, large numbers of fit people must be screened to identify few at risk. An audit at one hospital trust revealed that almost 3,000 pre-placement assessments were undertaken in a year at a minimum estimated cost of £13,500 (2005/6 prices) – 98.5% were passed fit, 1.5% were passed 'fit with comments', and no-one was unfit for work.[33]

Evidence supports restricting post-offer health assessments to only job-specific examinations.[32] However, they must be valid; studies examining the effectiveness[34] and cost-effectiveness[35] of nerve conduction studies as part of post-offer screening for new hires at risk of developing carpal tunnel syndrome note that abnormal test results at hire increase the

risk of future carpal tunnel syndrome, but the positive predictive validity is low and therefore neither appropriate nor cost-effective for most employers.[34,35,36]

Health surveillance is usually legally mandated and so it is rarely evaluated economically. Health surveillance offers the potential to detect occupational disease at an early stage to prevent further deterioration and improve the chances of recovery. The case for heath surveillance is made in a systematic review of occupational asthma (where there are valid tests) on the grounds that outcome is better in workers who have shorter duration of symptoms prior to diagnosis, relatively normal lung function at diagnosis, and no further exposure to the causative agent after diagnosis.[37] Other than that cost-effectiveness of surveillance for occupational asthma has only been demonstrated in mathematical simulation models using estimates; and then mostly at the societal level.[38,39]

Management
Among surveyed UK employers, and in all sectors, referral to occupational health is the top-ranking method for most effectively **managing long-term sickness absence.** [40] Its effectiveness has been demonstrated repeatedly. Earlier and more consistent referral of absent employees at one organisation reduced average lengths of sickness absence, shortened delays in making medical retirement decisions, and return to work was reduced from 40 weeks to 25 weeks saving an estimated £760,000 in the first year (1993 prices).[41] Elsewhere a new service which entailed intensive case management for staff absent sick for over 4 weeks and a bio-psychosocial approach was associated with a 10.7% reduction 2 years later compared to a control site. The intervention was effective and cost-effective.[42] The grey literature has many examples e.g. in a multi-site trial of an integrated service that included physiotherapy, occupational therapy and mental health support almost three quarters of staff treated through the scheme returned to work. It was estimated that the cost of the service would be paid for if all participating staff avoided an average of 4 days of sickness absence; and that every £1 spent on service delivery avoided £1.66 of absence costs.[43] Elsewhere reducing the average time before an absent employee was referred to occupational health from 15 weeks to 4-5 weeks reduced sickness absence from over 6% to 1.5%.[44] One employer geared up the management of sickness absence through multidisciplinary team working and saw total sickness absence fall from 5.5% to 3% with direct savings in pay costs of almost £1.2 million per year and additional savings from the reduced need for replacement staff.[45] Another employer implemented a new sickness absence management service which included referral to occupational health at day 10 (previously day 28) – sickness absence rates decreased from 6.84% to 3.70%.[45]

Return to work
Given the empirical evidence above and the conclusions of other systematic reviews it may be surprising that one systematic review reported limited evidence that active workplace interventions were *not* generally effective in reducing sickness absence.[46] Its search terms focussed on sickness absence but included 'return to work'; the review also included educational interventions. A subsequent review used a wider search strategy (terms included – disability management, vocational rehabilitation, work accommodation, etc) and excluded educational interventions.[47] These two reviews only had two studies in common. Overall, there is:

- Strong evidence supporting disability management interventions[3]
- Strong evidence that workplace interventions reduce duration of sickness absence[47]
- Strong evidence that work disability duration is significantly reduced:
  > by work accommodation offers
  > contact between healthcare provider and workplace[48]
- Moderate evidence that early contact between the worker and their workplace reduced work disability duration[48]
- Moderate evidence that graded activity interventions reduce sickness absence[46]
- Moderate evidence that interventions which include vocational counselling enhance return to work in patients with cancer.[49,50]
- Limited evidence that multidisciplinary intervention and cognitive behavioural therapy reduce absence[46]
- Limited evidence to support sustainability beyond one year.[48]

Improving cost-effectiveness

Occupational health staffing costs are a major consideration;[12] and employers rank them as one of the top three most significant costs when implementing occupational safety and health programmes.[51] Occupational health programmes can, but do not have to, involve significant resources and costs – the evidence shows they can be devised and delivered in cost-effective ways.[18] Targeting programmes at all employees, as opposed to groups at risk, is unlikely to make optimal use of occupational health resources[52]; return to work efforts should be reserved for individuals who are experiencing difficulty returning to work;[18] whilst health surveillance should be offered after suitable and sufficient risk assessments of workplace exposures.

Since occupational health services are a scarce commodity, interventions should be not only effective but also efficient in terms of allocating available resources to their best use.[53] Expensive interventions should be implemented only with rigorous cost-benefit evaluation planned from the outset.[22]

Key points

- Several occupational health interventions have been shown to be cost-effective and have short payback periods
- The cost-effectiveness of occupational health interventions depends on suitable and sufficient risk assessments to identify those to be included in the programmes (and the use of valid and easily applied procedures)
- Occupational health disability case management interventions that include early contact with workers on leave and specific agreements around work modifications result in faster returns to work and are cost saving
- Expert / skilled consideration is necessary to design and deliver effective and cost-effective services

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Appendix A

Economic evaluations can help to improve the efficiency of health services by comparing alternative interventions in terms of costs and benefits. While economic analyses are useful for informing public policy, they do not provide a sound rationale for individual employers to invest in occupational health.[1]

Quality of the evidence base

We know from the many economic evaluations of occupational health and safety and of workplace wellbeing programmes that the quality of studies and reports is generally low; and is corrupted by poor design, assumptions, estimates, indirectness and bias. Additionally many 'expert reviews' which summarise the body of evidence have taken primary studies at face value without appraising quality. More recent properly conducted systematic reviews and meta-analyses have highlighted the problems.[2-6] Three systematic reviews of the methodological quality of economic evaluations of occupational health and safety interventions reported that only around 10% of studies (1/13, 2/19 and 3/34) were of high rigour.[4,7,8] Other recent and reliable systematic reviews and meta-analysis have detected that the effectiveness of workplace health promotion programmes (including return to work and workplace injury prevention) is inversely related to study quality; high-quality studies report smaller effects than low-quality studies.[9-11] Some centres appraise the quality of systematic reviews and meta-analyses i.e. the Health Evidence™ site of McMaster University and the Centre for Reviews and Dissemination at the University of York which summarise the best evidence.

Publication bias

A bias against reporting and/or publishing null or negative results means that the vast majority of cost-benefit studies will report a net benefit outcome, thereby providing an apparent business case for the intervention.[3,5] A flurry of posters, lectures and papers have professed that workplace wellness programmes deliver high return on investment (ROI) e.g. reporting 4:1 ROI whilst often providing little detail as to what exactly was done in the interventions. Reverting to the original papers reveals that, additional to the methodological flaws described above, interventions are wide-ranging from single-focus activities such as a smoking cessation programme, to more comprehensive programmes e.g. involving organisational change.[2,5,12,13] This makes it unwise to arrive at general conclusions; it being prudent to treat reports of ROI with caution.[6,12]

Sources of error

Applicability

Applicability (external validity or generalisability) is the extent to which study results provide a sound basis for generalisation to other circumstances. Economic analyses undertaken in one country may not be generalisable elsewhere owing to differences in legally-mandated occupational health programmes and health and social care, insurance systems and other factors.[14] For results to be generalised the intervention, resources, health care system and the allocation of costs must be described in full. Many studies which report a ROI were conducted in the USA where, in the absence of a National Health Service, employers are wholly or partly responsible for employee and retiree healthcare costs. Unsurprisingly a systematic review of 11 European randomised-controlled trials identified that the economic impact of workplace health promotion programmes was mostly negative; contradicting previous meta-analyses of mostly US studies.[5]

Validity

Internal validity is the extent to which the study design, conduct and analysis are likely to prevent systematic errors or bias. It implies that the differences observed between comparison groups may, apart from random error, be attributed to the intervention under investigation, and not to any other cause. **Randomisation** in experimental studies minimises differences between groups by allocating matched subjects randomly to exposed and non-exposed groups. However, economic evaluations are usually observational studies and do not include control groups; consequently any changes may have occurred anyway.[12,15] It is difficult to attribute effect to occupational health interventions e.g. health surveillance when implemented as part of a wider preventive programme of **confounding** multimodal interventions e.g. exposure reductions, worker education and training, etc. Research design makes it difficult to distinguish the effectiveness of the

interventions independently. Even when there is a control group employees in the intervention and control groups may work in the same location leading to **diffusion** of health information and benefit to the control group – reducing differences between the groups. Although the validity of **attention bias (the Hawthorne Effect)** has been challenged, there is some evidence that people being observed change their behaviour simply because of being observed or studied.[12] Chance findings are caused by *random* variation but bias is caused by *systematic* variation – a risk with observational studies which do not allocate individuals by chance.

Selection bias where the subjects studied are not representative of the target population. Those who volunteer to participate may be a highly motivated subset of the population and already interested in the outcome of the intervention. This means that the results will overestimate the effects.[12]

Performance bias attributable to confounders, modifying effects or the methods to calculate costs and benefits. Measurements of health effect are subject to measurement error due to variability in measurements of the same quantity on the same individual. Many studies which make bold claims about productivity and performance improvements rely on self-reported and **subjective measures** of productivity.[15] Many jobs do not have easily measurable output[16] whilst methods to measure productivity vary widely thus hindering analysis,[4] hence estimates of productivity loss vary widely[17]. Many economic evaluations have too short a **duration of follow up**.[14] For some interventions costs are incurred immediately but the cost benefit may arrive much later.[3,12] Conversely one should not assume that health promoting interventions lead to long-term behaviour change since employees may only adopt new health behaviours temporarily.[18]

Attrition bias relates to the extent that all subjects in a study are accounted for in the results. The differential timing of costs and benefits must be considered in any evaluation. The effects of health interventions are incurred today but the benefit may not arrive immediately.[3] In the case of diseases of long-latency e.g. occupational cancers, benefits may not be apparent for two to three decades. Inevitably some subjects drop out, change groups or are lost to follow-up during the study. Those lost to follow-up may differ in some characteristic from those who are followed up in terms of the association under study. For example, those who drop out often have a worse prognosis. Participants who do not change behaviour and who drop out of the intervention group will cause the impact as measured among surviving study participants to be overestimated.[12]

Key points

- While economic analyses are useful for informing public policy, they do not provide a sound rationale for individual employers to invest in occupational health
- The body of evidence indicates that the quality of economic evaluations and reports is generally low; and is corrupted by assumptions, estimates, indirectness, bias, etc
- The lack of analyses and a uniform methodology as well as the poor evaluation quality make the determination of the health-related and economic benefit in all more difficult
- We should be cautious about assumptions relating to the persistence of effect of health promoting interventions, e.g. the likelihood of long-term behaviour change

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Appendix A

Appendix B

Systematic literature search

Systematic reviews were identified using the Cochrane Library, the Centre for Research Dissemination York and the Institute for Work and Health Evidence databases. Additionally for the evidence relating to occupational health services (chapter 9) the biomedical literature was searched using MEDLINE with the following search strategy:

Article type: Clinical Trial, Comparative Study, Controlled Clinical Trial, Evaluation Studies, Government Publications, Guideline, Meta-Analysis, Multicenter Study, Observational Study, Practice Guideline, Randomised Controlled Trial.

Publication date: from -1/11/1996 to 31/10/2016

Subjects: Humans; Ages 19-44 and 45-64 years

Language: English

Search terms: Searches were performed for each of the following terms: "occupational health", "occupational health services", "workplace", "occupational disease", "occupational cancer", "health surveillance", "occupational", "pre employment", "ill health retirement", "disability retirement" and "medical retirement" combined with:

AND "return on investment" OR "cost effectiveness" OR "cost benefit" OR "value" OR "economic evaluation" OR "business case"

Titles and, where necessary, abstracts were reviewed to determine relevance to the scope of the review and to screen out duplicate finds, irrelevant items and papers cited in included systematic reviews.

Grey literature

This includes published material that is not found in peer reviewed scientific journals, but may include e.g. reports, surveys, statistics and publication of "best practice". For the grey literature Google was searched using the term "occupational health" with each of the following: "return on investment", "cost effectiveness", "cost benefit", "value", "economic evaluation" and "business case". The search produced a large number of irrelevant items. Of those that may have been relevant reviews which did not appraise the quality of the content were excluded.

The sources of evidence used within this report are summarised in Table 4.

Table 4: Sources of evidence

Data source	Publication type	Number of references used
Cochrane Collaboration	Systematic reviews	8
Institute for Work & Health	Systematic reviews	6
MEDLINE & CRD York	Systematic reviews (and their syntheses), meta-analyses	36
	Other studies	37
Google	Scientific reviews / research reports	17
	Other publications	42
Total		146

Evidence synthesis

After identifying the relevant evidence from the structured search of relevant academic databases and grey literature evidence was evaluated using a narrative synthesis approach. The report cites the most recent comprehensive sources of evidence; where possible to a systematic review, which includes all earlier original studies in that area. Direct reference to original studies is made where there is no systematic review, where they are not included in the original review(s), have been published subsequently, or where necessary to support an important point. The level of quality is reported according to the ratings within the systematic reviews cited. Primary studies were not graded for quality of evidence since there is insufficient body of evidence e.g. they may be the only study to report a finding.

Appendix C

Occupational health services which are comprised of specially-trained health professionals improve employee health and increase workforce productivity and organisational performance. The services offered will depend on the type of organisation supported and any particular hazards and risk at work; hence the examples listed below are only illustrative.

What occupational health offers employees

Who	What we do	Outcome
Person offered a job	Health assessment	Workers who can perform their job safely considering any health issues or disabilities they may have for e.g. drivers, healthcare workers, pilots, etc
		People with a disability or a health condition can perform the offered work effectively through suitable work and / or workplace adjustments
Employees exposed to hazards at work e.g. chemicals, noise radiation, etc.	Education & training	Employees who understand health hazards & risks & personal measures to protect their health
	Health surveillance	Early identification of any health changes to ensure the cause is investigated & improvements made in the workplace to prevent progression to disease & permanent ill health – in that worker & among co-workers
Employees exposed to infection risks	Immunization & medicines	At risk groups of employees e.g. business travellers, healthcare workers, etc. are better protected against exposure to infectious diseases
Employees with a work-related health concern	Consultation	Employees are supported to address work-related health concerns e.g. stress at work or to cope with work when they have stresses outside of work
Employees with a health condition	Health assessment	Maintained employment and earnings through workplace adjustments; or suitable alternate work where a worker cannot perform their normal job, either temporarily or on a permanent basis.
Employees on long term sick leave	Case management	Earliest return of functional capacity and return to work by working with the employee's doctors and employers e.g. by offering changes to the job and /or work schedule
	Health assessment	Ill health retirement when that is in the employee's best interest & if they meet the medical criteria within the pension fund rules
All employees	Health promotion	Employees who are in optimal health through leading healthier lifestyles

What occupational health offers employers

Occupational health professionals work with a range of colleagues in the organisation, and workers representatives in their efforts to protect and promote employee health by ensuring that employer health programmes align with the organisation's values and needs.

What we do	Key business partners	Outcome
Health risk assessment	Health & safety, occupational hygienists	Required statutory and appropriate employer health surveillance programmes implemented properly
Health needs assessment	HRs	Health programmes are designed and resourced to address the main lifestyle health risks; top causes of sickness absence, etc
Professional advice	Managers, HR	Advice and support for matters relating to health and work
Policy development	HR, Legal	Policies, practices & cultures that maintain & promote employee health & compliance with relevant health and safety legislation
Change management	Managers, HR, toxicologists	Assess significant changes e.g. in shift patterns; the development or introduction of a new chemical, etc
Business continuity planning	HR, health & safety	Ensure contingency plans are in place to deal with health risks e.g. emergency medical response for disasters, pandemics, etc

Appendix C

What occupational health offers the economy

Healthy employees at work	→	↑ income tax & NI revenue ↓ NHS treatment costs ↓ state benefit costs
More profitable businesses	→	↑ corporation tax and employer's NI revenue

"The UK needs a productive and healthy workforce and this report provides an important overview of the value of occupational health in achieving this. The BMA occupational medicine committee believe it is vital that investment in the occupational health and medicine workforce occurs so all employers and employees can benefit."

Nigel Wilson, Chair, BMA Occupational Medicine Committee

"…There is a growing evidence base for what constitutes good work and for the benefits that accrue to businesses and their workers when wellbeing is prioritised. Organisations that have access to specialists who can help them apply that evidence are likely to prosper and make a valuable contribution to society."

Paul Litchfield OBE, Chair of the What Works Centre for Wellbeing

"RoSPA believes that proactive partnership working is at the hub of reducing the burden of work-related ill health on workers and their families. We are pleased to endorse the content of this report and to work with SOM towards a reduction in the burden of injury, because accidents and cases of work-related ill health don't need to happen."

The Royal Society for the Prevention of Accidents

Occupational health: the value proposition

A report from the Society of Occupational Medicine

"The health of people of working age has consequences far beyond themselves – touching their families, workplaces and wider communities. The economic costs of ill-health and its impact on work are measurable; but the human costs are often hidden. Working for a healthier tomorrow recommended an expanded role for occupational health that should be available to all. I welcome the new SOM report which distils the evidence to support investment in occupational health services and the benefits provided to people of working age, employers and society."

Professor Dame Carol Black

"Given the huge number of workers who are being injured or made ill at work we need to work towards every employee having access to an occupational health service. This report makes an important contribution by summarising the available evidence to persuade employers and policy makers that there is an indisputable case to provide workers with access to good quality occupational health services."

Ian Lavery, MP
Chair – All Party Parliamentary Group on
Occupational Safety and Health