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Supporting occupational health and wellbeing professionals

Occupational Health: **The Value Proposition**

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March 2022

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

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FOREWORD

As a registered charity, the Society of Occupational Medicine (SOM) is committed to the prevention and management of work-related ill health and supporting the employment of people with long-term health conditions. It achieves these aims by advancing education and research in the field of occupational health. The first edition of this report set a benchmark for several subsequent SOM reports.

Occupational health: the value proposition was first published in 2017 - a critical time for the policy agenda for work and health, and the challenge of the productivity gap. This extensively updated edition includes and reflects on emerging evidence from the last five years. It is published at another critical time in light of the publication of the Government's response to *Health is Everyone's Business*. It continues to be essential reading for employers, managers, employee representatives, clinicians and policy makers. It provides a comprehensive analysis and evidence review to help to ensure that a wide range of stakeholders consider occupational health services to be investments that add broad value rather than a cost or financial burden that diminishes operating income. As Government recognises, employers who invest in employee health and wellbeing stand to reap many benefits such as from reduced sickness absence, increased productivity and recruitment and retention. However, not all workers have access to occupational health services and people with disabilities and long-term health conditions continue to be disadvantaged with regard to gaining and maintaining employment.

Competent occupational health services support employers to comply with their legal requirements and help employers to promote the health of their people which ultimately pays dividends for employers. As this report proposes: occupational health services **enhance employee health, workforce productivity, business performance and the economy**.

The Rt Hon Lord Blunkett
Patron
The Society of Occupational Medicine

EXECUTIVE SUMMARY

This report synthesises the evidence from the scientific and wider literature to demonstrate that there is a rounded business case for investment in occupational health services based on wide-ranging and sometimes intangible factors. Well-integrated evidence-based workplace health initiatives are associated with improved 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. Consequently, this report aims to define the value proposition of occupational health beyond the mere financial return on investment.

The business case for occupational health should reflect the three key factors that motivate employers to provide access to occupational health services:

- *Legal* – to comply with health and safety laws and regulations
- *Moral* – it is the right / ethical / socially responsible thing to do
- *Financial* – to reduce costs or add value to the business

Occupational health professionals have unique training and expertise to understand the relationships between health and work and how to help injured, ill, disabled and ageing workers remain productive and at work. These uniquely competent professionals provide health services for employees and professional support to management.

Occupational health professionals help employers deliver 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. Good employee health and wellbeing contributes to 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 being inter-dependent of one another.

Work-related ill health and health problems related to unhealthy lifestyles are a significant burden for individuals, employers and the national economy. Therefore, 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; off-the-shelf one-size-fits-all solutions should be avoided. Bespoke services should be provided following suitable and sufficient needs and risk assessments to design, develop and deliver occupational health services that provide safe, quality care that are both effective and cost-effective.

Several occupational health interventions have been shown to have short payback periods; such services delivering significant tangible and intangible benefits at several levels **(Table 1).**

Table 1: Key benefits provided by occupational health services

Occupational health services	Employees	Workforces	Employers	Economy
	Improve health Maintain workability Maintain earnings	Reduce absenteeism Reduce presenteeism Improve productivity	Improve performance Lower costs Increase profits	Reduce costs of healthcare & benefits Increase tax / NI revenues Improve GDP

1. INTRODUCTION

This report summarises the evidence for the value of occupational health to individual employees, workforces, employers and the economy. The report is aimed at:

- Policy makers and commissioners of services
- Employers and workers and their representatives
- Health and safety professionals
- Occupational health providers; and
- Other health professionals

For several reasons, there has never been a greater need to make the business case for occupational health:

- Ageing workforces
- Emerging patterns of non-standard and precarious work
- Remote work
- Emerging public health risks
- Lack of universal access by workers to quality occupational health services
- The prevalence and costs to business of sickness absence and occupational illnesses (Chapter 3)

Ageing workforces

The ageing of workforces is attributable to low birth rates and the increase in state pension ages. Ageing of the working population is associated with an increase in the prevalence of long-term health conditions and, as workers get older, they are more likely to have multiple long-term health conditions[1]. In the UK, around 60% of people of working age have long-term health conditions[2]; a group that would benefit from occupational health support and workplace accommodations to help keep them at and return them to work after periods of long-term sickness absence[3]. Meanwhile, technical advances in healthcare have led to increased healthcare costs and health insurance premiums; costs which may be borne by employers in some countries.

Emerging patterns of non-standard and precarious work

Fragmentation of the workforce is attributable to an increase in job contracts that differ from the traditional relationship of permanent, full-time and secure employment. The trend is for more 'gig work' that is either casual, seasonal, part-time, or is performed on fixed-term, temporary, self-employed or agency contracts[4].

Such work arrangements offer flexibility to employers and workers alike; however, workers have less formal or less effective protection such as access to occupational health support[5,6]; concurrently, these precarious jobs are significantly associated with job stress[7]. Currently, there is little evidence regarding interventions to address the effects of precarious employment on worker health and wellbeing[6].

Remote work

Remote working is a challenge for employers and employees[8]; especially following the COVID-19 pandemic when home or hybrid working becomes a new norm. Many high-profile internet companies have stated their intention to permit employees to work from home indefinitely[5]. Working from home blurs the boundary between home and work; employees often like the increased flexibility but it can create an 'always-on' work culture[9]. There is a lack of high-quality scientific studies examining the effects of telework on health[7]. Within the grey literature, a European survey reported that more than 20% of teleworkers reported working during their free time (leaveism), compared with 6% of those who worked only at their employer's premises[5]. In another survey the biggest challenges were inability to switch-off outside of work hours (87%); prolonged sitting/looking at a screen (58%) and poor sleep quality (42%)[10].

Emerging public health risks

The COVID-19 pandemic should prompt governments and employers to be better prepared for the next emerging health risks and/or risks of disaster and to build into their resilience plans measures to protect and promote employee heath. Sectors that employed workers in high people contact roles were particularly affected by the COVID-19 pandemic[5]. There is opportunity to learn from the pandemic; however, so far, studies evaluating the impact of COVID-19 policies have not been of sufficient rigour to constitute policy-actionable evidence[11]. Among employers worldwide, the combination of a pandemic and a rapidly changing economy has elevated the importance of employee wellbeing[12]. Climate change is another public health risk and greening of the economy will bring about significant changes to the world of work[13].

Occupational health services

The proportion of the UK workforce that can access occupational health services is unknown; estimates vary widely owing to different methodologies that rely on

varying definitions of occupational health services, small sample sizes and projections to match sample results to the labour market. It is also the case that the number of occupational health professionals has fallen[14]. Recent data from the UK indicates that among private occupational health providers 44% were unable to fill occupational health nurse or occupational physician vacancies because of falling numbers of experienced clinicians; consequently, 53% had been forced to decline work[8]. At the same time, employers faced with operating lean businesses may consider occupational health services to be a cost that can be avoided leading to 'a perfect storm' situation[14]. However, occupational health services are cost-effective provided that there is an effective skills mix; people work to their distinctive competencies and perform work that is evidence-based and adds value. That said, employers should look beyond cost to assess value and look upon occupational health services as an investment to be leveraged rather than a cost to be justified[15].

Recent research indicates that increasingly occupational health professionals are having to prove their value to customers and make the business case for their services[16,17]. In the USA, about two-thirds of occupational health nurses have been asked to demonstrate value or justify a service; while more than three-quarters perceived the need regardless of whether they had been asked[17]. In the UK, occupational health professionals consider cost benefit analyses of their services to be a very important area for future research[17].

KEY POINTS

- *Longer working lives increase the need for access to occupational health services*
- *A range of social, political, economic, technological and environmental factors create new and as yet unclear risks to employee health and wellbeing*
- *The COVID-19 pandemic has demonstrated employers' vulnerability to employee illness*
- *At the same time, many workers have no access to quality occupational health services and service providers have difficulty recruiting competent clinicians*
- *Measures should be taken to improve worker access to quality occupational health services*
- *Stakeholders should look beyond cost and assess the broad value of occupational health services*

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2. OCCUPATIONAL HEALTH SERVICES

Occupational health services staffed by specially-trained health professionals help employers to protect and improve employee health, prevent cases of occupational disease and increase workforce productivity and organisational performance. Consequently, occupational health professionals play a major part in protecting and revitalising the country's economy[1].

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. Together, they support employers to meet their responsibilities and needs to:

- Provide healthy workplaces and work to protect people from harm
- Provide early intervention to help manage sickness absence
- 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].

The services offered by an occupational health professional or service will depend on the type of organisation supported and any particular hazards and risk at work; hence, the examples below are only illustrative.

Occupational health services for 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 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 and training	Employees who understand health hazards and risks and personal measures to protect their health.
	Health surveillance	Early identification of any health changes to ensure the cause is investigated and improvements made in the workplace to prevent progression to disease and permanent ill health – in that worker and co-workers.
Employees exposed to infection risks	Immunisation and 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 and 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.

Occupational health services for 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	Managers, HR	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 and cultures that maintain and promote employee health and compliance with relevant health and safety legislation; improve engagement and reduce staff turnover
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.

Worker access to occupational health services

The International Labour Organization adopted Occupational Health Services Convention 161 in 1985; this required signatory countries to develop adequate and appropriate occupational health services for all workers in all undertakings[3]; it was ratified by 35 countries, but not by the UK or Ireland. Worldwide, there are gaps in occupational health capacity (a lack of qualified professionals) and coverage; with only one in four of the worlds' workers being able to access occupational health services[4]. Coverage is low in emerging economies with large working populations; and high (above 75%) in countries such as Croatia, Finland, France, Italy, Japan, Macedonia, and the Netherlands[4]. The same survey reported 45% access for Australia and Germany and about 37% for Ireland and the USA.

In the UK, studies that attempt to estimate employer provision of and employee access to occupational health services vary in design, sample size, methods, projections and the definition of occupational health; making attempts to synthesise the evidence unworkable. Using data from a voluntary occupational physician reporting scheme it was estimated that ~34% of the UK workforce could access specialised occupational health care[5]. Albeit lower than other estimates this may still be an overestimate because it relied partly on the number of members of the Faculty of Occupational Medicine rather than full-time equivalent working members. Nonetheless, there is good cause to consider this estimate closer to the truth than higher estimates.

In a telephone survey of 2,250 British employers 13% reported providing access to occupational health services; the researchers projected that 59% of British workers could access an occupational health service[6]. The term occupational health service was not defined in this and a subsequent survey of 2,019 employees; 38% of whom reported having access[7]. A later survey in this series introduced the definition 'an occupational health service provides advice and practical support about how to stay healthy in the workplace and how to manage health conditions'; 51% of employees reported having access; however, among those who had been off work for more two weeks only 37% advised they would not use the former government-provided Fit for Work service because their employer had an occupational health service[8].

The problem of definitions used in studies is demonstrated by a telephone survey of 4,950 UK employers. 44% of participating companies provided occupational health support when defined broadly (hazard identification, risk management, and provision of information); but only 19% using a stringent definition (as above plus modifying work activities, providing occupational health-related training, measuring workplace hazards and monitoring health trends)[9]. As further indication of the lack of understanding of what occupational health support is employers reported that it was provided by employees with health and safety training (48%), no health and safety training (23%) or first aiders (7%)[9]. These are likely sources of error in other estimates.

KEY POINTS

- *Occupational health services help to improve employee health, increase workforce productivity, organisational performance and the national economy*
- *The range of services offered by an occupational health professional or service will depend on the type of organisation supported and any particular hazards and risk at work*
- *Data regarding worker access to occupational health services is unreliable, particularly in the UK, due to small sample size and varying definitions of occupational health*
- *Further research is needed to estimate reliably worker access to occupational health services*
- *Measures need to be taken to close the widening coverage gap*

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3. WORK, HEALTH, WELLBEING AND PRODUCTIVITY

The interaction between work and health

Trained occupational health professionals have expert knowledge regarding the interaction between work and health and:

- The effects of health on ability to work (safely); and
- The effects of work on health

The effects of health on work consider any health condition that an employee has or might develop and which might affect their fitness for certain jobs either because of increased risk from exposure; or if they present a risk to others from performing safety critical work. Ill health may mean that a person's ability to work becomes impaired requiring workplace adjustments. People are more likely to develop at least one long-term health condition as they get older[1] and this can lead to sickness absenteeism and/or presenteeism (people attending work when they are not at their most productive).

The effects of work on health arise from employee exposures to biological, chemical, mechanical, physical and psychological hazards at work. These can lead to work-related ill health that can be:

- Caused wholly by work (occupational disease)
- Caused partly by work
- Aggravated by work (work-aggravated disease)

Some conditions such as stress are often multifactorial; where there may be coincidental stressors at home and at work. Conditions such as asthma can arise from exposure to a known cause of asthma at work; in others, non-specific exposures i.e., cold air might aggravate an employee's asthma. The investigation of a potential case of occupational disease requires the expertise of a competent occupational health specialist with input from other medical specialists such as chest physicians or dermatologists with expertise in occupational lung and skin diseases respectively.

Health and productivity losses

Health problems among the working population have a significant detrimental impact on business performance through diminished productivity and on societal costs such as healthcare. In the UK, some 12.7 million working-age people live with a long-term health condition; 7.6 million of those having a disability which affects their daily activities[2].

Estimating the costs associated with poor health is challenging; a new systematic review of economic evaluations and validation studies of 42 instruments for measuring productivity loss confirmed the findings from earlier reviews. Not all instruments assess both absenteeism and presenteeism costs; the latter being especially problematic[3]. Additionally, most tools do not capture societal costs[4].

The burden of sickness absence

Sickness absence is divided broadly into two categories:

- Short-term sickness absence; and
- Long-term sickness absence

depending, somewhat arbitrarily, on whether one episode of absence has lasted for a specific duration; commonly more than 14 calendar days. Both affect workplace productivity; however, the increased prevalence of long-term health conditions among the ageing workforce makes long-term sickness absence a growing issue. This increases the need for the effective occupational health management of workers with ill health and/or disabilty[4].

In the UK, an estimated 118.6 million working days (3.6 days per worker) were lost due to sickness absence in 2020; increases in absence attributable to COVID-19 being offset by measures such as furloughing and homeworking[5]. The commonest reasons were minor illness (26.1%), other various illnesses (17.1%), musculoskeletal problems (15.4%) and mental health problems (11.6%)[5]. Employers' surveys report similar findings[6,7] and that mental health problems were reported more frequently during the pandemic[7]. Depending on how absence is covered it is reported that absence may account for 2-16% of payroll[8]. Because of their frequency and longer duration musculoskeletal disorders account for the greatest employer healthcare expenditure in countries such as the USA[9].

The burden of presenteeism

Presenteeism is defined variously but most commonly refers to people who continue to work while feeling unwell and who are not functioning at their full capacity[9]. There is growing evidence that presenteeism costs exceed absenteeism costs[10]. However, there are difficulties and uncertainties in measuring presenteeism and its costs [11-13] since many jobs do not have easily measurable outputs; and methods for measuring productivity vary between instruments[11,14]. Self-reported data suggests that 40% of

European workers work while ill for at least one day in the course of a year[9]. In the USA it is estimated that 540 million work days are lost annually to presenteeism[15] the highest presenteeism costs arising from common ailments such as allergies, migraines and headaches[11]. In the UK it is estimated that poor mental health alone costs UK employers up to £45 billion each year; comprised of absence costs of ~ £7bn; presenteeism costs of £27-29 billion; and turnover costs of ~ £9bn[16].

The burden of work-related ill health

The World Health Organization has estimated conservatively that globally 2.7% of deaths and disability are attributable to work[17]. These place heavy financial burdens on individuals, employers, governments and society[18]. Even refined methods to calculate the burden underestimate the costs because some work-related illnesses are omitted and cost estimates are only derived from lost productivity; omitting other costs such as healthcare, early retirement and presenteeism[11,19]. The true societal and economic burden of work injuries and diseases remains unknown[20]; but it is estimated to be 3.9% of global GDP and 3.3% of European GDP[18]. These estimates are comparable with previous estimates for Australia (4.8%) and Singapore (3.2%) but higher than estimates for the USA (1.8%) and Great Britain (1%)[20]. Indirect costs are the largest part of the economic burden, followed by direct costs and then intangible costs[20]. Intangible costs comprise between 20 and 50% of the total[20].

About 1.7 million people who worked in Great Britain during 2021 were suffering from an illness they believed was caused or made worse by their work, of which 850,000 were new conditions that started during the year[21]. The number of new cases was increased on previous years because of the COVID-19 pandemic; 645,000 workers believed that their work-related illness was caused or aggravated by the pandemic; 70% of such cases being stress, depression or anxiety[21].

Of the 1.7 million workers who suffered from a work-related illness:

- 822,000 workers reported suffering work-related stress, depression or anxiety
- 470,000 workers reported suffering from a work-related musculoskeletal disorder
- 93,000 workers reported suffering from COVID-19 which they attributed to occupational exposures

Pre-pandemic data for 2018-19 estimated the annual cost to Great Britain at £5.6 billion for injuries and £10.6 billion for new cases of illness[22]. The amount of sickness absence attributable to occupational causes has not been updated since 2015-16. Then, an estimated 25.9 million working days were lost due to work-related illness and 4.5 million due to workplace injury[23].

Wellbeing

Wellbeing (or wellness) is a people and performance strategy; 82% of surveyed global organisations believed that wellbeing is important to their company[24]. A body of literature argues there is a connection between employee wellbeing and outcomes as diverse as job satisfaction, employee engagement, retention and improved business performance, etc[25-27]. 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[28]. This highlights that 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[29]. 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[30]. Consequently, wellbeing strategies must extend beyond health and treatment of illness or injury to encompass prevention, the working environment and social determinants such as culture, values and interpersonal relationships[24,31]. While there is little high-quality research there is a clear case for employers to invest in employee wellbeing on the basis of likely performance benefits[29]. Many employer organisations 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 their employee value proposition.
- Improve work performance and productivity

- Reduce costs associated with absenteeism, presenteeism and disability
- Reduce healthcare or insurance costs, especially in the USA
- Improve the culture of the organisation and retain existing employees
- Improve the organisation's image, attract talented employees and fulfil corporate social responsibility obligations[24,26]

Leading companies that 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[31]. It should be acknowledged that the employers who introduce such programmes are likely to be the type of enlightened employers who utilise a range of practices that affect productivity and competitiveness; and those organisations that are already profitable may be more likely to afford such programmes.

KEY POINTS

- *Sickness absence and presenteeism are significant burdens for organisations and society*
- *Occupational illnesses significantly exceed occupational injuries in both number and cost to individuals, employers and society*
- *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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4. MAKING THE BUSINESS CASE FOR OCCUPATIONAL HEALTH

Since employee health contributes to the profitability, productivity, and safety outcomes of organisations there is, in principle, a strong business case to integrate preventative health care into business planning[1]. However, many organisations require persuading through business cases i.e., data-driven arguments to secure management commitment and approval for investment in an intervention or service[2]. Employers may need to be convinced that occupational health services significantly reduce work-related illnesses and improve health so as to lower associated costs such as sickness absence and lost productivity. Evidence suggests that cost-benefit messages are not getting through to employers and that cost-benefit messages need to be more accessible[4]. However, organisations that value employee health and wellbeing gain through improvements to their profile as well as to their bottom line; factors which are important but difficult to quantify. Nevertheless, highly effective companies articulate a "culture of health" and emphasise the importance of employee health and its impact on the business by including employee health and wellbeing in their goals and values statements and by ensuring leadership and co-worker support[4,5]. For some organisations this is a formal element of their corporate social responsibility programmes.

Employers' reasons for investing in occupational health

The business case for occupational health should present stakeholders with compelling and transparent reasons to invest in occupational health services and demonstrate that the investment delivers benefits at organisational and individual levels. However, employers' reasons for providing access to occupational health services are not confined to financial reasons and include reasons such as:

- Legal obligations (health and safety at work, disability and reasonable adjustments)
- Moral duty of care to employees
- Assisting recruitment and retention
- Employee expectations
- Reduce sickness absence
- Maximise productivity
- Improve employee health and wellbeing[6-8]

In the context of health and safety at work and/or wellbeing initiatives additional reasons include: brand image/reputation, customer satisfaction, business conduct, to secure contracts and employee performance, morale, engagement and motivation[9-12]. In turn, these influence productivity and company performance.

Attributing exact costs and benefits to occupational health services can be quite difficult, not least because the costs are immediate while benefits usually accrue over time. Also, some of the benefits, e.g., increased employee motivation or improved company image, may be difficult to quantify in monetary terms. Hence, the business case should reflect all of the key drivers[13]. This report considers the business case in terms of the broad 'value' including legal, moral and financial imperatives. At the same time, it recognises that demonstrating economic value is problematic especially concerning the indirect costs of health-related productivity[14]. The many sources of bias and error in economic evaluations are discussed in Appendix A.

Individual business cases

It is important to recognise that data should not be generalised to all occupational health services and all employers. In the absence of other data, it is informative but cannot substitute data that relates to the service provided to an individual employer.

There appears to be growing awareness of the need to justify services and demonstrate value; all occupational health nurses who responded to a survey in the USA considered this essential to the profession and for ensuring the quality of occupational health services[15]. In the UK, about two-thirds of surveyed occupational health providers capture outcome data in all or many cases and most of those found it useful in demonstrating the effectiveness of specific services or products[8].

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, moral and financial imperatives encourage employers to provide access to occupational health services*
- *Key outcomes for employers include legal compliance, improved employee health and wellbeing, reduced sickness absence and increased productivity*
- *The business case should reflect value in the broadest sense and not focus simply on financial value*
- *A value proposition should communicate occupational health's points of difference and how they add value to the employer's business*

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5. OCCUPATIONAL HEALTH: THE LEGAL IMPERATIVE

Directors and managers of companies are accountable for the successes and the failures of their organisations. They cannot have expertise in all areas of the business and will appoint competent people to act as company secretary or to look after finances, etc. Fewer employers consider whether they need occupational health support or undertake an occupational health needs assessment. Yet the consequences of not providing workers with competent occupational health support can have profound impact when things can and do go wrong particularly when there are breaches of health and safety legislation.

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 regulators) 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., risks from 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 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 for health and safety, taking into account the size of the undertaking and the risks at the workplaces.

Statutory medical examinations

For certain hazardous work activities, specific regulations exist to ensure that employers provide their employees with 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 2012
- The Control of Lead at Work Regulations 2002
- The Diving at Work Regulations 1997
- The Ionising Radiations Regulations 2017
- 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 Regulations such as:

- 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

Some Regulations require employers to offer health assessments to employees. Examples include The Working Time Regulations 1998 (as amended) that require employers to offer night shift workers health assessments and The Health and Safety (Display Screen Equipment) Regulations 1992 that 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. It is important that the doctor can take an effective occupational history and be competent to identify whether work has caused the disease, with confirmation provided in writing.

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[1]. Employers who have a large workforce may wish to consider having a competent occupational health professional appointed or 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 medically examine employees[1]. Occupational health technicians may perform lung function tests and hearing tests, under the supervision of occupational health doctors or nurses[1].

Corporate Governance

Many organisations consider health and safety to be a corporate governance issue[2]. Their operational and compliance controls are not confined to financial risks but extend to risks relating to the environment, business reputation and health and safety[2].

Directors' responsibilities

Directors can be personally liable when health and safety laws and regulations are breached. Board members have collective and individual responsibility for health and safety. Large public and private sector organisations must also have formal procedures for auditing and reporting health and safety performance[3].

Individual directors are may also be liable for other related offences i.e., gross negligence manslaughter, which is punishable by an unlimited fine and a maximum of life imprisonment[3].

Enforcement and prosecution

Inspectors enforce health and safety standards by providing advice; by ordering improvements, prohibition and, where appropriate, prosecution of companies and/or individuals for breaches of health and safety law. If a health and safety offence is committed with consent, connivance or neglect on the part of a director or manager, then that person and/or the organisation can be prosecuted under section 37 of the Health and Safety at Work etc Act 1974 or article 34A of the Health and Safety at Work (Northern Ireland) Order 1978[4]. Those convicted are liable to be fined and may be imprisoned. The courts may also, without further investigation or evidence, disqualify an individual convicted of a health and safety offence under section 2(1) of The Company Directors Disqualification Act 1986 or article 3(1) of the Company Directors Disqualification (Northern Ireland) Order 2002[4].

Directors may be liable for the common law offence of gross negligence manslaughter if their own grossly negligent behaviour causes death; an offence subject to a maximum of life imprisonment[3].

The Corporate Manslaughter and Corporate Homicide Act 2007 makes it an offence where failings by senior management are a substantial element in any gross breach of the duty of care owed to employees or members of the public, which results in death. The maximum penalty is an unlimited fine[4]. The Sentencing Council for England and Wales reviews sentencing guidelines regularly; following the update in 2016, fine amounts for organisations and individuals sentenced for health and safety offences have increased; and fewer appeals have been successful[5].

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 that may lead to lost business.

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 work-related symptoms and assess an employee's fitness for work*
- *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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6. OCCUPATIONAL HEALTH: THE MORAL IMPERATIVE

Protecting and promoting employee health 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 (ROI).

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]. For almost two decades, the Health and Safety Executive (HSE) has expected employers 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].

More and more, employers and governments recognise that improving employee health and wellbeing reduces business costs and healthcare costs[3]. However, most health interventions come at a cost; there being little evidence that most medical procedures save money[4]. Employer expectations for a return on investment may need to be tempered. What matters most is to determine the most cost-effective ways of improving employee health and thus improve business outcomes such as productivity, safety, morale and retention[4].

Employers' reasons for providing access to occupational health services continue to be for three core and usually interlinked reasons: legal, moral and financial[5]. Generally, moral reasons i.e., a duty of care to employees is the strongest motivation for supporting and improving employee health and wellbeing initiatives. This duty of care extends beyond protecting employees' health and safety; many employers implementing programmes focused on enhancing employee health and wellbeing. Employers who use occupational health services to promote employee health do so mostly because they consider it to be the right thing to do, and they care about their wellbeing[5]. Employers recognise that occupational health provision boosts morale making employees feel valued and that this increases workplace productivity and improves retention[5]. Here, financial return remains a consideration because many employers believe that employees who are supported and valued are more productive[5].

Societal impact of work-related ill health

Work-related ill health contributes to a greater proportion of total organisational and national costs, despite injuries accounting for a greater proportion of cases, as ill health cases result in more time off work on average, which drives higher costs[5]. 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 21% of the cost is borne by the government, 59% by the individual and his/her family and 20% by the employer[6]. These costs include:

- Individuals: lost income, prescription costs; reduced 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 (~ 81%), NHS treatment (~19%)[6].

HSE's latest (pre-COVID) estimates of the annual cost of work-related ill health produce a total of £10.6 billion i.e., £19,000 per individual case. Using HSE modelling for accidents and ill health the total cost of £16.2 billion is borne as follows: individuals - £9.6 billion; government - £3.5 billion; employers - £3.2 billion[6]. The cost of prevention and the benefits delivered may not occur at the same level[7]. Despite the costs of occupational ill health being greater to society, there are few external financial incentives to drive employer investment in workplace prevention. 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[8]. 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. Other interventions might reduce health care utilization 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*
- *Employers use occupational health services to promote employee health mostly because they consider it to be the right thing to do*
- *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)*
- *Employer expectations for a return on investment may need to be tempered*

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7. 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]. 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 impacted by 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.

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. It has been suggested 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 reported that many studies have examined a range of economic incentives and provide evidence that incentives can be effective in ensuring occupational safety and health compliance[5]. However, further research is recommended to improve the quality of what is known about the role of economic incentives, how they can be made more effective and the effects of insurance-based incentive schemes[5].

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

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

Providing more financial and especially tax incentives could encourage more employers to invest in employee health and wellbeing[6]. While economic incentives may be feasible and reasonably effective there is scarce high-quality analysis of their efficiency; however, a few studies demonstrate positive results for large samples[7].

Deductions and allowances for employer's expenditure

Because employers need healthy workers and safe workplaces, they can obtain a reduction in their tax liability by deducting from their profits everyday revenue expenditure for occupational health services that are wholly and exclusively for the purposes of business. Capital expenditure e.g., equipment purchase is not deductible but may qualify for capital allowances[8].

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)[9]:

- Equipment provided at work as a reasonable adjustment for a disability
- Training such as first aid and health and safety at work
- Up to one health screening assessment and one medical check-up / year if offered to all employees
- Medical treatment for employees who are unfit or likely to be unfit for work for at least 28 consecutive days due to any ill health or injury which will help them return to work (up to £500 in the tax year) provided it was recommended by a healthcare professional within the employer's occupational health service
- Welfare counselling.

Value added tax

Different occupational health interventions attract different treatment for value added tax (VAT) purposes, but the following are exempt from VAT[10]:

Post-offer 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 laws and regulations.

Immunisations to protect employees whose work presents an occupational risk of a specific infection is exempt; being protection of an individual'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.

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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8. OCCUPATIONAL SAFETY AND HEALTH: THE EVIDENCE

There is low to moderate-quality evidence that health and safety legislation and inspections improve occupational safety and health performance[1,2]. However, regulation alone is not effective in reducing non-fatal and fatal injuries especially in hazardous workplaces; company-oriented interventions being required to reduce injuries in the longer term[2]. This is particularly noticeable in the case of work-related musculoskeletal disorders; despite legislation requiring employers to control workplace risks, there is limited evidence that this is happening[3]. Yet, work-related injuries and ill health are a significant cost for employers and substantial economic savings can be made by better investment in occupational safety and health measures[4]. Research identifies specific interventions that are cost-effective; however, for many organisations financial reasons are not the only reasons why organisations invest in occupational safety and health[3,4].

A systematic review published by the European Agency for Safety and Health at Work (EU-OSHA) identified reviews and studies that evaluated the cost-effectiveness / cost–benefit ratio of interventions aimed at improving the health or safety of workers[5]. 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[6,7,8]; 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; concluding that it wasn't feasible to draw sound conclusions. Subsequent reviewers have expressed similar concerns; especially regarding the failure to assess important and relevant costs such as the indirect costs of productivity loss, absenteeism and presenteeism; areas in which the greatest savings may be made[9,10].

The EU-OSHA report also developed and included 13 case studies of health and safety interventions in European small and medium-sized enterprises[5]. 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 sickness absence[7]. 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)[6].

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[8]. 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[11].

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[5,6,7]. 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 disorders5.

A survey in 16 countries asked companies to subjectively rate qualitative and quantitative costs and monetary benefits of occupational safety and health[12]. The strongest impact occurred in production, transport and warehousing. Most employers (75%) considered that additional investment in occupational safety and health would 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 and better corporate image; and cost savings through the prevention of disruptions.

KEY POINTS

- *Most employers surveyed 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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9. WORKPLACE HEALTH PROMOTION: THE EVIDENCE

Why workplace health promotion?

Workplace health promotion programmes often focus on modifiable risk factors for disease such as diet, physical activity, alcohol and tobacco use. Increasingly, employers offer such programmes in order to improve employee health and with expectations for increased productivity and, where they are responsible for co-funding it, reduced health care costs[1-3]. Workplace health promotion programmes were made popular in the USA by the Affordable Care Act 2009 which allowed insurers to charge lower premiums to workers participating in such programmes[1,4]. However, the popularity and commercial interest in workplace health promotion is not backed by good quality evidence for efficacy, effectiveness or cost effectiveness[2-4]. Since most economic evaluations were performed in the USA; the results are not necessarily generalizable to countries that provide publicly-funded health care[5]. For example, a systematic review of 11 randomized controlled trials established that in Europe the economic impact of most of the workplace wellbeing programmes was negative[6].

Commercialisation of wellness

The intangible benefits of workplace health promotion in terms of making employees feel valued and the consequent impact on engagement and productivity risk becoming overshadowed. There is some concern that 'the term wellness has been highjacked by commercial entrepreneurs'[7]. Understandably so, since market analysts estimate the global corporate wellness market to be worth about US$57 billion in 2020; being projected to be worth between US$83 to 87 billion by 2026[8,9]. Public Health England commissioned a survey to examine the impact of workplace health programmes among employers and providers in England[10]. The majority of submissions were from providers of wellbeing interventions; respondents that would be disinclined to report negative findings. Of equal concern, rigorous methods of data collection or evaluation were not being used to evaluate effectiveness[10].

Poor quality primary studies

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 are of low to moderate-quality, often lack sufficient description of interventions and valid control groups; and suffer from selection and attrition bias, small sample sizes and short follow-up[2,4,11-16]. Systematic reviews have identified a risk of various biases sometimes in more than two-thirds of studies[12,17]. The propensity to report positive outcomes is inversely-related to study quality; observational studies are more likely to report positive effects compared to randomized controlled trials[13,18] and high-quality trials report smaller effects than low-quality trials[19]. Recent systematic reviews have reported that only around one in four studies are of high quality[20-22]. These limitations, the heterogeneity of interventions studied[22] and reliance on estimates to calculate long-term costs and benefits[23] make it difficult to summarise the main outcomes and limit the extent to which the findings can be trusted[16]. Appendix A describes in further detail the broad problems with the majority of published research.

Variable quality systematic reviews

Randomized controlled trials with low risk of bias are the most trustworthy source of evidence for systematic reviews of health interventions because they protect against confounding and other biases[24]. Sometimes non-randomized studies can provide valuable information; insofar as complementary evidence[24]; or where the question of interest cannot be answered by randomized trials[25]. Systematic reviews investigating workplace health promotion do not always meet the Cochrane Collaboration quality criteria for systematic reviews[11,14] and so, often reach different conclusions depending on the methodologies for selecting and grading the quality of studies. Meta-analyses too produce mixed results for benefits relative to costs[3,4]. Two recent systematic reviews of systematic reviews of workplace health promotion interventions reported that only 22%[14] and 39%[26] of included reviews were of high quality. Those that report positive effects usually have caveats to alert readers to the small number and/or low quality of included studies[27].

The diverse and often dubious evidence base for the effectiveness and return on investment from workplace health promotion programmes requires careful consideration because the quality of economic evaluation studies is generally low. Unfortunately, published research is often taken as fact and reported favourably and extensively by others without any attempt to appraise its quality. The first edition of this report stated 'some well-known reports or narrative reviews which merely cite prior research without fully appraising the quality of individual studies are omitted'. Two notable such reports continue to be cited regularly and are described here; they continue to be omitted from the list of references.

Building the Case for Wellness. London. PricewaterhouseCoopers. 2008.

This report was commissioned by the UK Department for Work and Pensions; whose Health Work and Wellbeing Unit provided 55 UK case studies. PwC noted that few case studies attempted to estimate return on investment (ROI). Of the seven that did, ROI (as benefit-cost ratio) was wide ranging (1:1 to 34:1) and studies were heterogeneous with regard to follow-up duration and interventions studied (ergonomic improvements or support, influenza immunisation, physiotherapy, health and safety awareness and physical wellbeing).

The report continues to be cited in conference presentations e.g., Utility Week 2018; and websites e.g., for the self-employed and small business and commercial providers of training e.g., for high-performance and corporate yoga. One training organisation's website cites the report as follows 'A review of seven wellbeing programmes suggested the average benefit-cost ratio was £4.17 for every £1 spent'. In fact, that figure was not an average, but one of seven examples; albeit used in the executive summary to illustrate how return on expenditure worked. More importantly, this non-peer reviewed case study related to 'perceived costs and benefits' of an ergonomics intervention (redesigning and then introducing new manual handling training). However, that ratio is commonly attributed to workplace wellbeing interventions; without any understanding of how that figure was derived.

'The Harvard Study' Baicker K, Cutler D, Song Z. Workplace wellness programs can generate savings. Health Aff (Millwood) 2010; 29: 304–311.

Like the PwC report, this study is reported widely in the grey literature; as a meta-analysis, it is also cited extensively in the biomedical literature. At the time of writing this report there were 915 Semantic Scholar citations, 537 Crossref citations and 828 Mendeley readers.

The report was and inappropriately continues to be cited as providing evidence that 'every dollar spent on workplace wellbeing programmes saves about $3.27 in medical costs and about $2.73 in absenteeism costs'; even though the authors emphasised that their 'findings may not be generalisable' because of factors such as publication bias. The data has been misappropriated further; being attributed by at least one organisation to savings made by occupational health services. Subsequent researchers criticised the study for methodological weaknesses i.e., including programmes that operated in the 1980s and selection bias (more favourable participants in reviewed studies)[1,7,28,29]. Other issues include that only 9/22 studies had randomized controls; costs were assumed for 7/22 studies; they excluded other available studies choosing only one example of a study for each intervention; and 40% of interventions included self-help – a cheap intervention that will produce a high ROI.

The Harvard Study authors have since conducted a large multi-site cluster-randomized trial. This found no significant differences in health care spending or absenteeism at 18 months[4] and 3 years[30] follow-up; the authors concluding that 'these findings may temper expectations about the financial ROI that wellness programmes can deliver in the short term'[4]. The only improvement was in some self-reported health behaviours (physical activity and weight management). The authors acknowledged that most prior studies were based on observational designs that had methodological shortcomings such as potential selection bias and that randomized studies are likely more reliable[4]. Writing an article in The Washington Post in June 2021, Baicker and Song made it clear 'if the goal [of workplace wellness programmes] is to save money by reducing health-care costs and absenteeism, or to improve chronic physical health conditions, the evidence so far is underwhelming'.

Return on investment

Employers are usually interested to understand whether their workplace health promotion investments are cost saving i.e., the financial benefits exceed investment costs generating a positive ROI[31]. Researchers continue to caution employers to be realistic about the outcomes they should expect[32]; the ability of workplace wellness programmes to generate ROI being debated increasingly[33]. A review of empirical research indicates that whilst most studies observed short-term improvements in some healthy behaviours; they more rarely achieved ROI, savings and reduced costs from absenteeism and presenteeism[34]. At best, the economic value of worksite health promotion remains uncertain[21]; and it must be recognised that high-quality studies, of which there are fewer, are more likely to demonstrate negative ROI[21,35]. A 2019 review of 37 European research studies rated nine studies as strong, 15 as moderate and 15 as weak; only six satisfied the minimum standard for health economic evaluations[21]. Effects on health outcomes were small and uncertain – only 9/21 cost–benefit analyses, 10/23 cost–effectiveness and 2/8 cost–utility analyses produced encouraging results[21]. A review of 51 workplace health promotion studies reported that ROI became increasingly positive as methodological quality fell; with ROIs of -0.22 for randomized controlled trials; +1.12 for quasi-experimental studies; 1.61 for non-experimental studies; and + 2.15 for modelled studies[35].

As with the multi-site cluster-randomized trial performed by researchers from Harvard[3,30], a large 30-month randomized controlled trial published in 2019 (the Illinois Workplace Wellness Study) reported null effects of workplace wellness interventions on total medical expenditures, employee productivity, or self-reported health status after more than two years[36]. The researchers also analysed the data as if the study were an observational trial. This approach could have demonstrated an association between participation and reduced healthcare spending consistent with earlier research from low-quality studies; whereas the higher quality analysis demonstrated that interventions 'appeared to cause none of those things'[36]. The authors concluded that 84% of medical expenditure and absenteeism estimates from the prior literature could be ruled out - including the ROIs in the Harvard meta-analysis - selection bias being the likely reason[36].

Cost-effectiveness and effectiveness

The lack of a uniform methodology as well as the low quality of studies make it difficult to quantify the economic benefit of workplace health promotion[11]. Rather than trying to demonstrate ROI; it would be more realistic to consider cost-effectiveness i.e., whether interventions provide good value for money[10]. Such focus might help to ensure the best value for health promotion expenditure[10]; especially since no individual intervention emerges as a 'gold standard'[37]. Cost-effectiveness and effectiveness depend not only on the intervention but also on those who participate in workplace health promotion; and specifically, whether participants are either personally motivated or incentivised to make a change[37]. In the Illinois Workplace Wellness Study employees who volunteered to take part already had healthier behaviours and lower healthcare spending than non-participants prior to the intervention; suggesting that those who stand to benefit most decline to participate[36]. Others too report that employees in better health and physically active at baseline have a greater likelihood of success; and that it is challenging to achieve successful results among employees at high risk of poor health outcomes[38].

Meta-analyses have noted that even though limited health behaviour improvements e.g., fruit consumption, can be found among participants with high compliance; the effects are small[15,19], such that overall, workplace health promotion interventions are rarely effective[15]; however, it is difficult to draw firm conclusions because of the poor quality of the evidence base[19]. Possibly, workplace health promotion may be more effective and cost-effective if targeted toward and recruiting those employees at higher risk for developing long-term health conditions[39]. As yet, the evidence is that health promotion implementation strategies may make little to no difference[40].

There are further challenges when trying to calculate cost-effectiveness. Studies that assess the impact of health promotion on performance may rely on cross-sectional studies and self-rated assessments; these tend to demonstrate an association between interventions and improved performance; whereas objective ratings and longitudinal studies report no significant differences in employee well-being and organisational performance[41]. Additional research is necessary to evaluate the efficiency and cost-effectiveness of workplace health promotion interventions[41].

Which workplace health promotion programmes work?

Most of the evidence is derived from heterogeneous studies performed in the USA; only about half as many being conducted in Europe[43]. Most studies address physical activity, followed by interventions to promote mental health and stress management[43]. Overall, there is not enough evidence from the scientific literature to recommend any specific interventions or programmes[14]; however, there is continued desire from stakeholders for workplace health promotion. Therefore, it is appropriate to consider the evidence for what works (will achieve positive health outcomes) from systematic reviews. These reach different conclusions; as demonstrated by the number of references supporting each statement in the following lists for different types of programmes and interventions.

Physical activity

Workplace physical activity and/or sedentary behaviour programmes can increase employee exercise levels to a limited[11,13,44] or moderate extent[45]; interventions with less rigorous design being more likely to report a positive effect[46]. Further studies are recommended because of heterogeneity and short duration of studies[44] and low to very-low certainty of economic evidence[44,45]. Overall, there is:

- Inconclusive / equivocal evidence of effect[47,48]
- Inconclusive evidence for improving cardiorespiratory fitness[11,13]
- Inconsistent evidence of the impact on worker productivity[49]
- Some evidence for decreases in waist circumference and total body fat[50]
- No convincing evidence for other health-related outcomes[11]; such as blood pressure and blood lipids[51]
- Very low-quality evidence of no effect on mental wellbeing, job stress, job satisfaction and quality of life[52]
- No evidence for reduced levels of sickness absence[13]

There is preliminary evidence that mHealth (mobile-delivered) interventions are effective in improving physical activity, but not in helping workers to lose weight; higher quality and longer-term studies are needed[53].

Dietary interventions

Studies are very heterogenous[54-56]; most have methodological limitations (short duration, high or unknown risk of bias; poor reporting of interventions); and about one half of studies were performed in North America[54,55]. Most systematic reviews are of moderate quality[57]. Better quality and longer-term studies are needed as are assessments of the costs and cost-effectiveness of different approaches[54,55]. Where improved diet is observed it occurs for both individual (e.g., nutrition education) and organisational interventions (e.g., healthy canteen food, information posters)[11], with better outcomes being related to combined interventions[55,56.] Overall, there is:

- Limited to moderate-quality evidence of a positive effect from healthy eating programmes[12,59-62]
- Stronger evidence for small increases in vegetable and especially fruit intake[15,55,59]

Multi-component workplace interventions

There is some evidence that multi-component workplace interventions are more effective and can improve specific anthropometric, dietary and cardiometabolic risk factors i.e., body weight and waist circumference[52,55,57,63-70]; but the evidence for long-term effectiveness is more limited[64,68]. Inconsistent conclusions between reviews for the statistical significance of effects on other parameters i.e., blood pressure, serum cholesterol, fat intake, fasting blood glucose, etc[47,55,67] may be due to a lack of large high-quality studies[24]. There is need for better quality and longer-term studies and examination of economic outcomes[66,70]. Overall, it appears that:

- Multi-component health promotion interventions appear to be more effective
- Success depends on participants' motivation[15], provider's expertise and the nature of the interventions[62]
- Effective components include coaching techniques and those promoting physical activity[69]
- There is strong evidence for a positive effect among those at risk of cardiovascular disease[71]

Smoking cessation

Individual workplace smoking cessation interventions:

- Can be effective for smokers who are willing to quit[11] and among those who participate; but the absolute numbers who quit are small[72] and the strength of evidence is low[12]
- Effectiveness decreases over time[13]
- Should employ a range of different interventions to meet the different needs of employees at different stages of readiness to change[73]
- Are more likely to lead to cessation when interventions are directed towards individual smokers[72]
- May have less impact than smoke-free workplace policies[3]

Substance use interventions

It is only recently that systematic reviews have examined substance use interventions in the workplace. These reviews have limitations because the included studies are heterogeneous and of low to medium-quality[28,74] making it challenging to synthesise the evidence[28]. Overall, studies provide mixed results; with no intervention showing effectiveness in more than half of studies[74]. Interventions examining impact on workplace injuries or accidents more commonly report effectiveness[74]. Higher quality studies are needed.

Alcohol use interventions

There is limited evidence that alcohol use prevention and treatment programmes are cost-saving and cost-effective[28]. There are few high-quality studies; one limitation being that research is focused on self-reported behaviour change[29,74]. Screening for alcohol misuse is not recommended; there being no suitable test for population screening and no evidence that screening is effective in reducing long-term harm[75].

While brief interventions can lead to reduced alcohol intake in the short to medium-term the findings do not relate to a screening or a population context[75]. eHealth interventions have small and non-significant effects on alcohol intake[76].

Mental health interventions

As with other interventions studies are generally of low quality[28]; evidence for the effectiveness of different interventions depending on the quality of the underlying research[24]. A range of health promotion interventions have been reported to be effective in reducing symptoms of depression and anxiety; however, the effect is small[77] and rarely reaches statistical significance[14]. Considering the variability in the interventions available and small number of studies examining any one intervention it is challenging to draw conclusions[78] and neither possible, nor judicious, to provide 'generalised' results[79]. Some programmes have better evidence to demonstrate effectiveness i.e.; those incorporating multicomponent interventions (mental health and/or physical health and/or psychosocial interventions)[80,81].

For cognitive behavioural therapy (CBT) there is:

- Moderate-quality evidence for improved job satisfaction[82]
- Moderate-quality evidence of no effect on employee turnover[82]
- Moderate-quality evidence for reduced presenteeism among those at risk of developing mental health symptoms[52]
- Low-quality evidence of no effect on absenteeism and productivity[52,82]
- Low-quality evidence of effectiveness in improving mental wellbeing in those at risk of developing mental health symptoms[52]

For stress management training there is:

- Low to moderate-quality evidence of a positive effect on job stress[52,82]
- Low-quality evidence of no effect on sickness absence[11,52,82]
- Low-quality evidence of no effect on mental wellbeing, mental health symptoms and productivity[52,82]
- Moderate-quality evidence for improving job satisfaction and quality of life among employees at risk of developing common mental disorders[52]

In light of the lack of effect of CBT and stress management training across most outcomes for the general workforce, NICE only recommends CBT and stress management as options for employees with poor mental health[52].

There is preliminary evidence that eHealth-delivered CBT and stress management training may reduce mental health and stress symptoms, at least in the short-term[83]. eHealth and mHealth interventions can be more cost-effective and reach a wider audience[84]; however, products must be chosen carefully since they vary in quality and many lack evidence[83].

KEY POINTS

- *The workplace can be an effective setting for health promotion and prevention*
- *While health promotion programmes may only have a small positive effect, they are low cost*
- *Results of studies should not be taken at face value or generalised beyond the specific context of the study*
- *There is need for longer-term and better-quality workplace studies that use objective outcomes and/or quality assured questionnaires*
- *More research is needed to determine the ideal interventions for specific employee groups*
- *Employers should invest in health interventions that are evidence based, customized for target populations and known to be effective*
- *Occupational health professionals can design, implement and evaluate health promotion programmes and strategies to meet the needs of the organisation and offer value*
- *Work organisation / environment interventions may produce more sustainable employee health benefits than interventions focused on individual behaviours*[84]

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10. OCCUPATIONAL HEALTH SERVICES: THE EVIDENCE

In common with other workplace health, wellbeing and safety interventions, while it may be possible to demonstrate those interventions which are effective there is very little evidence on whether these interventions are cost effective; even for musculoskeletal disorders which have the largest evidence base[1]. The reasons are the same i.e., heterogenous studies, poor methodologies, low numbers of reliable cost-effectiveness or cost–benefit analyses and reliance on cost estimations and assumptions[2-6]. However, it is possible to demonstrate that some occupational health interventions offer more value 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[7,8]; the conclusions being summarised in Table 3.

Whether occupational health interventions are effective and cost-effective in a particular workplace will almost always depend on whether the health needs of the workforce have been assessed properly by a competent person and whether the interventions that are offered reflect the identified needs and the best evidence. Success also depends on organisational support for occupational health interventions. This is apparent for return-to-work interventions where effectiveness depends on support from managers, supervisors and co-workers to provide access to modified work and facilitate a sustained return[9-12].

Table 3: Occupational health interventions worth undertaking for economic reasons

	Multiple sectors	Manufacturing & warehousing	Administration & support	Transport	Healthcare
Return to work / 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 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

Long term sickness absence management

Among surveyed UK employers, and in all sectors, a flexible and inclusive working culture and referral to occupational health are the top-ranking methods for most effectively supporting employees with disabilities and long-term health conditions[13]. Conversely, lack of access to occupational health is cited consistently as a barrier to effective sickness absence management[14]. An independent review of sickness absence in Great Britain gave examples of hospital trusts that achieved large savings in salary, overtime and temporary staff costs by enhanced management of sickness absence and early referral to occupational health[15]. There is similar evidence from scientific studies. A large Canadian healthcare employer that strengthened its disability management programme (emphasis on early contact, supervisor training and involving union representatives in return-to-work planning) achieved larger reductions in disability durations compared to the comparison group over the 6-year observation period[15]. Two years after an English hospital introduced a new service (intensive case management for staff absent sick beyond 4 weeks and a bio-psychosocial approach) there was a 10.7% difference in reduction of absences beyond 8 weeks compared to a control site; the intervention was reported to be effective and cost-effective[16]. A similar intervention followed up for four years in Scottish hospitals and with referral to occupational health at day 10 of absence (previously day 28) was associated with 12% greater reduction of sickness absence compared to control sites[17]. Accommodating for start-up costs the predicted long-term return on investment was estimated to be 1.56:1[17].

When facilitating return to work it must be recognised that cost savings attributable to reduced absenteeism may be offset by increased presenteeism costs. Return to work interventions do not appear to be cost effective on the basis of studies that include an economic evaluation[18,19]; although this may reflect the lack of relevant studies. A 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[20].

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.

The interventions that are effective in facilitating return to work may depend on the nature of the underlying illness or injury and on factors that lie outside the control of an occupational health service. Overall, there is:

- Strong evidence supporting disability management interventions[3]
- Strong evidence that workplace interventions reduce duration of sickness absence[21]
- Consistent evidence that line manager, supervisor and co-worker support is effective[9]
- Moderate evidence that graded activity interventions reduce sickness absence[22] especially for absences that exceed 6 months[23]
- Limited evidence that multidisciplinary interventions and cognitive behavioural therapy reduce absence[21]
- Limited evidence to support sustainability beyond one year
- Insufficient evidence to assess the general effectiveness of eHealth interventions[24,25]

Considering that musculoskeletal disorders (especially back pain) and thereafter common mental disorders are highly prevalent and account for a large proportion of sickness absence and health-related costs it is unsurprising that more studies have been undertaken to examine interventions designed to prevent and manage these conditions.

Musculoskeletal disorder interventions

Prevention

The evidence from syntheses of reviews indicates that:

- Physical activity programmes reduce the prevalence of and sickness absence attributable to musculoskeletal disorders[26,27]
- Other interventions i.e., educational interventions, theoretical trainings, back schools and lumbar supports/back belts are generally ineffective[26-29]

Management

For workers suffering from back pain:

- Back schools appear to be useful[26,27,30]
- Temporarily modified work (transitional work arrangements) can facilitate early return to work[26,31,32]
- Cognitive behavioural approaches are effective in reducing sickness absence duration[26]

Return to work

There is insufficient evidence to support the sustainability of effects beyond one year[31]; however, the following return to work interventions are reported to be effective and likely to provide a net cost-saving (avoided sickness absence savings minus intervention costs):

- Graded activity intervention/phased return to work[23,32,34]
- Early assessment and early rehabilitation, including work and/or workplace adjustments[27,33,35]
- Multi-component programmes[27,32,36,37]
- Early and good communication between the worker, employer and occupational health[31,34]
- Simple, feasible, inexpensive interventions are more likely to be cost-effective[38]

The National Institute for Health and Care Excellence (NICE) concluded that multi-component programmes were ineffective but that this was likely due to population and comparison group heterogeneity in the studies reviewed, considering that other studies demonstrated benefits[37]. Interventions aimed at the individual without recourse to changes in work organisation and the working environment are likely at best to deliver small benefits[38]. 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[39]. NICE recommends considering the use of interventions focused on reducing potential workplace barriers and interventions aimed to strengthen individuals' physical and mental health resources in those who are absent from work with musculoskeletal conditions[37].

Stress and mental health interventions

Mental health issues account for increasing proportions of long-term sickness absence; this is reflected by the quantity of new studies, albeit study quality remains low[37]. Compared with musculoskeletal disorders there is greater heterogeneity between studies investigating mental health interventions[36]. There are few economic evaluations; these too are heterogenous and of low quality, or evidence on effectiveness is lacking[18,40]. Consequently only tentative conclusions can be drawn[18] and it is unwise to generalise findings[40]. Nonetheless, there appears to be evidence that; while the primary focus ought to be on organisational interventions to prevent mental ill health[22], 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[26,27].

Prevention

Reviews report mixed results for the effects of workplace mental health interventions on mental health and work productivity[18]. Stress interventions which focus on employees only – without addressing organisational causes of stress i.e., management style or culture – will have limited effect[27]. While few studies have examined organisational interventions[18]; research indicates that:

- Multi-component interventions aimed at both individuals and the organisation are more effective[27]
- Preventive mental health activities can reduce sickness absence[26] and might be cost-effective[18]
- Mental health awareness training improves identification of employees at risk, uptake of support, discussion of mental health problems and de-stigmatisation (moderate-quality evidence)[41]
- Screening has no effect on mental health symptoms, uptake of support, or productivity (low-quality evidence)[42]

Management

- Cognitive behavioural therapy is effective in reducing psychological ill-health and sickness absence among employees absent from work[26]
- Cognitive behavioural therapy is cost-saving (and in some cases cost-effective) to address depression[19]
- Cognitive behavioural therapy for insomnia significantly improves sleep quality[45,46] and may improve presenteeism[45]

Return to work

Return to work interventions reviewed by NICE did not show evidence of effectiveness; the authors noted that it was unclear to what degree this reflected a failure of the interventions studied, or a failure of their implementation[37]. Studies are generally too heterogeneous to synthesise[19] and more high-quality studies are needed[36,37,45]. However, some systematic reviews report:

- High-quality evidence for maintaining contact with the workplace[46]
- Strong evidence that regular and active involvement of occupational health professionals is cost-saving and cost-effective in reducing sick leave related to mental health and in encouraging return to work[19]
- Moderate-quality evidence for gradual return to work; especially for stress-related disorders[46]
- Moderate-quality evidence that adding a work-directed intervention reduces sickness absence duration in the first year of follow-up for those suffering from depression[45]

More research is needed on combining work-directed interventions with clinical interventions to establish which type and combination of interventions are the most effective[29]. For example, while cognitive behavioural therapy can improve symptoms it is only effective in helping employees return to work when it focuses on work-related solutions and is implemented alongside any necessary workplace modifications such as modified duties or working hours[36].

Return to work interventions for other health conditions

Most studies included in systematic reviews involve musculoskeletal problems and common mental disorders; there is less direct evidence for the occupational health management of other health conditions and a lack of high-quality studies[36]. There is no conclusive evidence to support any specific return to work intervention for workers suffering from conditions such as subjective health complaints[47] or chronic pain[48], or to improve work participation for older workers generally[49]. Nonetheless multidisciplinary interventions are recommended[36,48,49]. There is moderate evidence that interventions which include vocational counselling enhance return to work in patients with cancer[50,51]; however, more research is needed particularly to follow up individuals over several years[52].

Occupational health assessments

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).

In the UK, the Equality Act 2010 generally prohibits enquiries about a job applicant's health and capability 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.

Post-offer health assessments

Two systematic reviews found little[53] or no or inconsistent evidence[54] that health questions asked before employment are effective in determining future health or occupational outcomes for prospective employees. Another systematic review reported that pre-employment or post-offer personality assessments appeared to be of low utility in predicting common mental disorders among emergency workers and that further high-quality longitudinal research was required[55]. A subsequent prospective study demonstrated no association between validated pre-employment measures of personality and psychopathology with mental health outcomes among Australian police officers in their first seven years of employment[56]. There is very low-quality evidence that examination-based recommendations for work accommodation or training may be effective in mitigating increased risk for occupational injuries[54]. 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. Of those assessed, 98.5% were passed fit, 1.5% were passed 'fit with comments', and no-one was considered unfit for work[56].

Evidence supports restricting post-offer health assessments to only job-specific examinations[54]. However, they must be valid; studies examining the effectiveness[58] and cost-effectiveness[57] 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[58,59].

Health surveillance

Health surveillance is usually legally mandated and so it is rarely evaluated for effectiveness or cost-effectiveness. 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[60]. 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[60,61].

Improving cost-effectiveness

Occupational health staffing costs are a major consideration[62]; and employers rank them as one of the top three most significant costs when implementing occupational safety and health programmes[63]. Some employers perceive the costs of providing an occupational health service to be prohibitive in spite of recognising the benefits[64]; these costs may be a particular barrier for small and medium-sized employers[65]. 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[31]. Including all employees in occupational health programmes, as opposed to targeting programmes towards groups at risk, does not make optimal use of occupational health resources. Return-to-work efforts should be reserved for individuals who are experiencing difficulty returning to work[19]; whilst health surveillance should be offered to those employees who have been identified to be at risk of exposure by suitable and sufficient risk assessments.

Since occupational health services are a scarce commodity, interventions should be both effective and efficient in terms of allocating available resources to their best use[66]. Expensive interventions should be implemented only with rigorous cost-benefit evaluation planned from the outset[38].

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 sick 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*
- *Evidence supports restricting post-offer health assessments to only job-specific examinations*
- *Heath surveillance can detect some cases of occupational disease early and lead to improved long-term clinical outcomes*

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APPENDIX A. THE CHALLENGES OF ECONOMIC EVALUATIONS

While economic analyses are useful for informing public policy, they do not provide a sound rationale for individual employers to decide whether or not to invest in providing occupational health services[1]. However, economic evaluations can help employers to improve the efficiency of occupational health services by comparing alternative interventions in terms of costs and benefits. There is no gold standard economic evaluation instrument and many of those available for measuring productivity loss fail to measure the impact of presenteeism, neither do they assess the full costs to society[2,3]. Better quality instruments and economic evaluation studies that incorporate the broad societal perspective would potentially strengthen the business case for occupational health services to both employers and Government[4].

Quality of the evidence base

Systematic reviews continue to confirm what was reported previously i.e.; there are few high-quality primary studies[5-11]. Some systematic reviews and meta-analysis have detected that the effectiveness of workplace health interventions (including return to work and workplace injury prevention) is inversely related to study quality; high-quality studies reporting smaller effects than low-quality studies[12-15]. The first edition of this report noted that few systematic reviews of the methodological quality of economic evaluations of occupational health and safety interventions were of high rigour. Since then, the overall rating of economic evaluations has not improved and remains of low to moderate quality[3].

Several factors are responsible for the poor quality of research; the principal ones are discussed here.

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[6,8,9]. Posters, lectures and papers which profess that workplace wellness programmes deliver high return on investment (ROI) often provide 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[5,8,15,16]. This makes it unwise to arrive at general conclusions; it being prudent to treat reports of ROI with caution[15].

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 delivery, insurance systems and other factors[17]. 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 randomized-controlled trials identified that the economic impact of workplace health promotion programmes was mostly negative; contradicting previous meta-analyses of mostly US studies[8].

Validity

Internal validity is the extent to which 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[15,18]. 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[15]. 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[15]. A retrospective study of more than 10,000 employees followed up for 3-years observed that those who participated most in workplace wellness promotion had better scores for job satisfaction and intention to stay; effects which disappeared when controlling for pre-intervention levels of satisfaction and intention to stay[19].

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 make bold claims about productivity and performance improvements; however, since many jobs do not have easily measurable output they rely on self-reported and subjective measures of productivity[18,20]. Workers may overrate their productivity[20] and retrospective studies rely on workers' recall[2]. Methods to measure productivity vary widely and not all instruments assess both absenteeism and presenteeism[2]; and this hinders analysis[7], hence estimates of productivity loss vary widely[20]. Many economic evaluations have too short a duration of follow up[2,17]; hence, there is limited evidence to support sustainability of economic findings beyond one year[9]. For some interventions costs are incurred immediately but the cost benefit may arrive much later[6,15]. Conversely one should not assume that health promoting interventions lead to long-term behaviour change since employees may only adopt new health behaviours temporarily[22].

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[15].

KEY POINTS

- *Economic analyses alone do not provide a sound rationale for individual employers to decide whether to provide occupational health services*
- *The quality of economic evaluations is generally low*
- *The lack of a uniform methodology and lack of high-quality economic evaluations quality make it difficult to determine the economic benefit*
- *It would be helpful to develop a gold standard approach to economic evaluations*
- *Greater consideration should be given to including presenteeism costs and ways to measure this in economic evaluations*

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APPENDIX B. METHODOLOGY

Systematic literature search

Systematic reviews were identified using MEDLINE, the Cochrane Library, Heath EvidenceTM and the Institute for Work and Health website. Additionally for the evidence relating to occupational health services 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, Multi-centre Study, Observational Study, Practice Guideline, Randomized Controlled Trial, Reviews.

Publication date: from 01/01/2017 to 31/10/2021; and subsequently to 28/02/2022

(The first edition searched from 1/11/1996 to 31/10/2016; and subsequently to 29/02/2017).

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", "medical retirement" and "workplace AND wellbeing" 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.

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 and incorporated into the original report. Obsolete references were deleted or replaced with updated references. 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 was avoided because of substantial variability in the interventions available; and because the evidence base was addressed by systematic reviews. However, some large randomized trials and other large studies were included where they supported important points. 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 an insufficient body of evidence e.g., they may be the only study to report a finding.

The first edition of this report was based on146 references. This edition includes 224 references; of these, 130 references are new (published in the last five years); as are 63/106 systematic reviews, meta-analyses and reviews thereof.

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