



REVIEW OF EVIDENCE OF INTERVENTIONS TO REDUCE MENTAL ILL-HEALTH IN THE WORKPLACE

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Review of Evidence of Interventions to Reduce Mental Ill-health in the Workplace

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This Literature Review provides a high-level summary of the strength of the evidence for interventions designed to reduce workplace mental ill-health, and issues arising when appraising and implementing these interventions. It also suggests a model within which interventions can be designed, implemented and evaluated using an integrated approach. This review is intended to be read in conjunction with the review of risks which defines each of the risks in this paper and provides evidence for the impact of such risks on mental ill-health.

Table of Contents

Introduction and summary	4
Method	5
Levels of evidence.....	6
Background and conceptual framework	7
Levels of intervention.....	8
Strategies for intervention:.....	9
Primary prevention evidence.....	10
Strategy 1: Designing and managing work to minimise harm	10
Employee participation ★★	10
Flexible working conditions ★★	10
Addressing macro-level risks for individual outcomes (e.g. Organisational culture, Psychosocial Safety Climate (PSC))?	10
Strategy 2: Building organisational resilience through good management	11
Manager and leadership training ★★★	11
Team/workgroup support interventions ★	11
Change management interventions?	11
Mental health education – anti-stigma programs ★★★	11
Anti-bullying programs ★★★	12
Strategy 3. Enhancing personal resilience.....	12
Workplace health promotion ★★	12
Cognitive Behavioural Therapy (CBT)-based stress management programs ★★★	12
Mindfulness based interventions ★★★	13
Secondary prevention evidence.....	14
Strategy 3. Enhancing personal resilience.....	14
CBT based resilience training for high risk occupations ★★★	14
Coaching ★.....	14
Workplace physical activity programs ★★★	14
Strategy 4. Promoting and facilitating early help-seeking	14

Well-being checks / health screening ★★	14
Mental Health First Aid (MHFA) ★★★	15
Peer support schemes ★	15
Workplace counselling ★★	15
Tertiary prevention evidence	16
Strategy 5. Supporting recovery and return to work	16
Facilitating return to work through support ★	16
Work focussed psychological therapy ★★★	16
Clinical interventions ★★	17
Policy and Regulatory Interventions	18
Guidelines for employers to detect, prevent, and manage mental ill-health in the workplace	18
Regulatory interventions	18
References	19

Introduction and summary

There is a disconnection between the evidence base of interventions designed to reduce workplace mental ill-health and our knowledge of the main risk factors for workplace mental ill-health. Almost all of the high-quality evidence arises from the evaluation of specific interventions, mostly designed to enhance individual resilience, wellbeing, detection and help seeking, or manage those who are unwell. Evidence based interventions designing work to minimise harm tend to focus on improving control and autonomy, with limited evidence for interventions tackling other individual risk factors for workplace mental ill-health such as excess demands, or managing organisational change. The evidence for effective interventions tackling one of the strongest workplace risks, bullying and harassment, is disappointing. There are limited systematic estimates of the strength of the effects of many interventions from controlled trials, and where available, the effects seem to be of small to moderate strength.

Conversely there is widespread acceptance that to reduce mental ill-health in employees in the complex systems that are organisations, integrated, multilevel interventions need to be developed, implemented, and evaluated, and those that are effectively scaled up or tailored for different organisations. Interventions that create mentally healthy workplaces may not be the same as those that reduce symptoms and consequently mental ill-health.

Note on Terminology. Throughout this review we use the term 'mental ill-health' to capture the range of outcomes including high levels of stress, depressive or anxiety symptoms, common mental disorder, and the diagnostic categories of depression and anxiety used in the original papers. Where the outcomes are of burnout, other specific disorders (e.g. Post-Traumatic Stress Disorder), or consequences (e.g. sickness), this is made explicit.

Method

We conducted a review of meta-reviews for workplace mental-health in the literature. These meta-reviews systematically collate and grade the evidence acquired through other reviews. As such they are subject to the same biases inherent in the underlying reviews. We further updated the literature searches of the most recent meta-review (Joyce, Modini et al. 2016) by conducting the same search strategy in the same databases with the end date of June 2017 to establish whether there were further published reviews. This was supplemented by searches of the Cochrane Collaboration database, citations of the meta-reviews through PubMed, abstract searches of the major public health mental and occupational health journals and further requests to key informants in the subject area. We augmented these meta-reviews by searching for systematic reviews of specific 'workplace interventions' not considered in previous reviews: workplace anti-stigma interventions, mindfulness based programs, anti-bullying programs, guidelines for employers and legislative changes. The information was transcribed from the reviews into tables 1-3, within our conceptual model (figure 2) and the evidence grading used by Joyce et al. applied to any new or updated information.

Levels of evidence

As previously (Joyce, Modini et al. 2016), we have adopted the UK Royal College of General Practitioners (RCGP) framework for evaluating the strength of the evidence.

Figure 1 Description of the strength of evidence adapted from the modified United Kingdom Royal College of General Practitioners (RCGP) clinical guidelines

Level of evidence	Star rating	Definition
Strong evidence	★★★	Consistent findings provided by a body of multiple high quality scientific studies, or provided by high or moderate quality systematic review/meta-analyses demonstrating consistent results from multiple well-designed studies/RCTs
Moderate evidence	★★	Generally consistent findings in fewer, smaller scale or lower quality scientific studies; or provided by high or moderate quality systematic review/meta-analyses demonstrating generally consistent evidence from well-designed studies
Limited or contradictory evidence	★	Limited evidence provided by one scientific study or inconsistent findings in multiple scientific studies; high quality evidence lacking
Research evidence unknown	?	Inconclusive research evidence at present, but some theoretical support

NOTE: The star rating system is commonly misinterpreted. The star does not reflect whether a type of intervention is effective but the strength of the evidence behind the classification. An intervention can have a three star rating that if there is strong evidence for it having no effect, and equally one star may reflect a very effective intervention with only one study.

Background and conceptual framework

Over the past few years the disconnection between the evidence of the risk factors for workplace mental ill-health, and the approaches to reducing mental ill-health and promoting psychological wellbeing in the workplace has become more evident. In general, interventions have been focussed on individual employees either managing their stressors and becoming more mentally literate, and manager training. The current optimal approach involves integrated interventions that operate at different levels of the complex systems that are organisations taking into account their context. La Montagne et al. proposed a three pronged approach that systematically integrates harm prevention by reducing work related risks to mental health, promoting the positive aspects of work and organisations, and responding effectively to mental ill-health (LaMontagne, Martin et al. 2014).

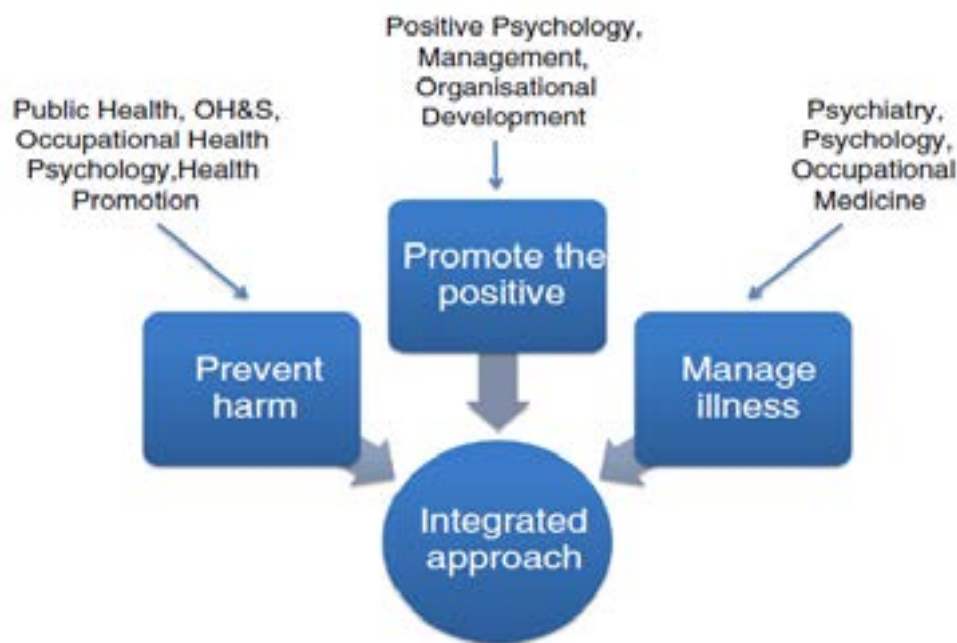


Figure 2: The three threads of the integrated approach to workplace mental health

(LaMontagne, Martin et al. 2014)

Preventing harm is focussed upon 'job stress prevention and control' and is distinguished by its emphasis on primary or universal prevention, and the need to intervene at the level of work organisation as well as the individual.

Promoting the positive is not just attempting to reduce negative aspects of mental health but takes a strengths-based or positive approach to enhancing wellbeing. Whilst superficially attractive (and there is reasonable evidence for the use of such interventions in general with moderate immediate effects and a small long term effect demonstrated), in the latest review (Weiss, Westerhof et al. 2016), there were only two trials in employees, only one of which had a positive effect.

Managing Illness. The final thread encompasses 'secondary and tertiary level' workplace interventions 'that aim to address mental health problems or disorders in the workplace, commonly use psycho-education and aim to improve mental health literacy, or develop skills for early intervention and the promotion of help-seeking'. (LaMontagne, Martin et al. 2014)

Although now endorsed by a range of organisations e.g. (University of Tasmania's Work 2017) and umbrella groups such as Superfriend, the impact of this integrated approach has not yet been assessed, and case studies show few organisations have adopted and evaluated it.

Over the past two decades we have developed a framework (Petrie 2017) that considers the interaction of employees with their organisational context over time that we believe provides an easier framework within which organisations can design, implement and evaluate strategies to create mentally healthy workplaces, and will assess the evidence for interventions at each of these levels.

Levels of intervention

Universal interventions aim to prevent disease or injury by reducing exposures to hazards that cause disease or injury, altering unhealthy or unsafe behaviours that can lead to disease or injury. They are 'delivered' to all employees in a work setting without regard to individual risk factors. NB Many interventions may be accessible to all but are aimed at one of the specific groups below.

Secondary prevention

Selective prevention strategies target subgroups of employees that are determined to be at risk e.g. because of high levels of risk factors such as exposure to trauma or violence.

Indicated preventions identify individuals who are experiencing early signs of mental ill-health and other related problem behaviours and target them with special programs.

Tertiary prevention aims to treat and reduce the impact of an ongoing illness or injury that has lasting effects. This is done by helping people manage long-term, often-complex health problems and injuries (e.g. chronic diseases, permanent impairments) in order to improve as much as possible their ability to function, their quality of life and their life expectancy.

Strategies for intervention:

- 1) Designing work to minimise harm
- 2) Building organisational resilience through good management
- 3) Enhancing personal resilience
- 4) Promoting and facilitating early help seeking
- 5) Supporting recovery and return to work

The strategies are presented in an employee's mental health 'journey' showing the potential transition from a healthy worker to an ill worker requiring a period of sickness absence (Henderson, Harvey et al. 2011) and return to healthier states. The framework spans the levels of intervention, with mental health strategies that can be delivered on an individual, team and/or organisational level. As with LaMontagne's model the framework proposes that optimal workplace mental health is best facilitated by the implementation of an integrated approach at individual, team and organisational level.

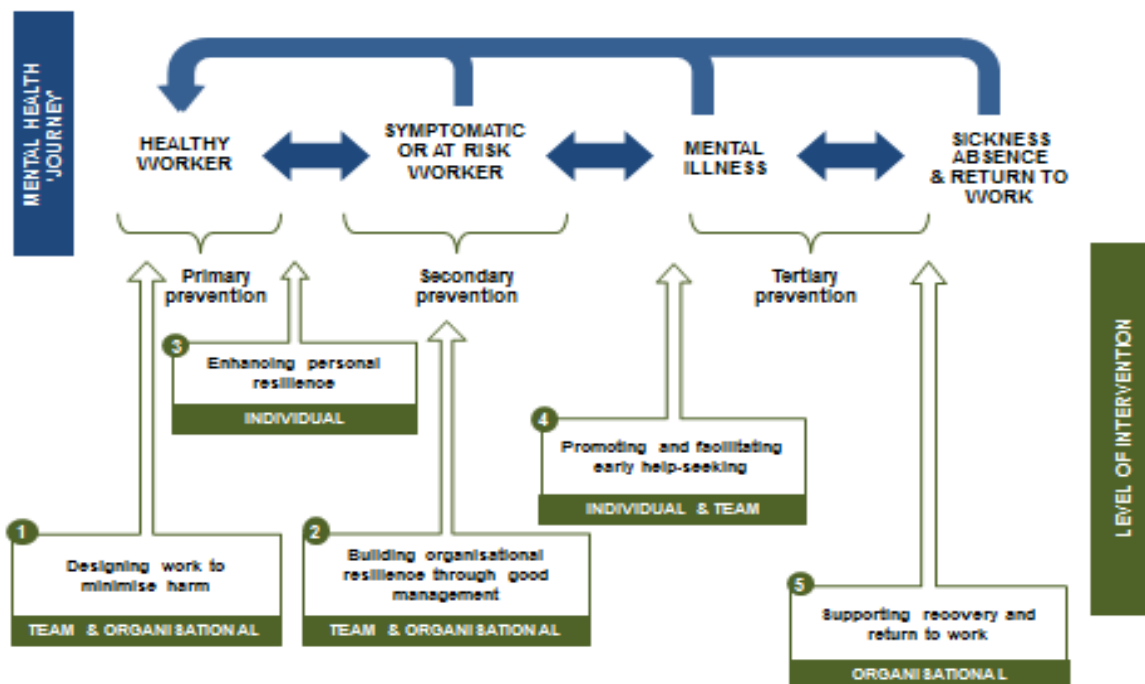


Figure 3. Diagram of the mental health 'journey' of an employee, workplace mental health strategies and level of intervention

Primary prevention evidence

Primary interventions are those that are delivered 'universally' i.e. available to all employees regardless of risks or health. The results and effects are summarised in Table 1.

Strategy 1: Designing and managing work to minimise harm

As identified in the accompanying risk evidence paper several individual factors have been consistently identified as risks for mental ill-health in prospective studies and reviews, including limited job control or decision latitude, excessive demands, an imbalance between effort and reward, workplace trauma, bullying, long hours and role conflict. There is less compelling, but emerging, evidence that perceptions of the organisation in terms of its social climate, culture and justice in the workplace have an effect. Although we identified over a dozen evidence based risk factors, the interventions that have been undertaken and tested seem to focus primarily on increasing control, decision making and autonomy rather than addressing the other identified risks explicitly. This may reflect a difficulty in designing interventions to address the other risk factors.

Employee participation ★★

A review by Egan et al. of controlled and comparison group interventions suggested consistent findings that employee participatory strategies designed to improve (the perception of) employee control over work such as problem solving committees, education workshops and stress management committees reduced symptoms of mental ill-health, although no Randomised Controlled Trials (RCTs) were identified (Egan, Bambra et al. 2007). One RCT published since showed no improvement in mental health in the intervention group, but a decline in the health of the control group, associated with increase absence (Tsutsumi, Nagami et al. 2009).

Flexible working conditions ★★

The Cochrane review by Joyce et al. found that interventions designed to increase employee control and choice over their work patterns and shift schedules had a positive effect on mental health (Joyce, Pabayo et al. 2010), with one study finding reduced sickness absence (Bond and Bunce 2001). Again there were no RCTs identified.

Addressing macro-level risks for individual outcomes (e.g. Organisational culture, Psychosocial Safety Climate (PSC))?

There have been no intervention studies that show whether initiatives specifically designed to change organisational culture, the perception of justice, or the psychosocial safety climate prevents or reduces mental ill-health. There are analyses from Australian observational studies showing that the PSC moderates or mediates some associations e.g. of bullying or demands upon mental ill-health, but prospective data from interventions is not yet available. We are unaware of any planned interventions

testing these theoretically attractive approaches, or if it is even possible given the concepts are an appraisal of many aspects of the team/organisation.

Strategy 2: Building organisational resilience through good management

Resilience is commonly conceptualised as the ability to negotiate, manage and adapt to significant sources of stress, change, adversity or trauma (Windle, Bennett et al. 2011). Although a 'buzzword' of modern workplaces it is usually conceived as an individual ability and something that needs to be developed by employees. We extend this to include leadership and manager training, and delivery of organization-level education programs, which aim to increase resilience of a team or organisation.

Manager and leadership training ★★★

A large body of cross sectional research shows leadership style or training is associated with aspects of employee mental health. An early review (Tsutsumi 2011) showed some impact on employee mental health in two of the seven studies reviewed. A systematic review of nine published trials, currently being undertaken by our group and not yet published, shows that manager training in workplace mental health can improve managers' mental health literacy, reduce stigmatising attitudes towards mental illness in the workplace and promote their levels of confidence in supporting employees who are experiencing mental ill-health, although there were several null studies. However there was no demonstrated positive effect on the levels of perceived support, mental health or sickness absence of the direct reports of the managers receiving this training compared to those of the control group managers (including no negative effect).

Team/workgroup support interventions ★

Despite evidence that social support in a range of settings, not just the workplace, can influence mental (and physical) health, there has been only one published randomised controlled trial designed to improve support at work (Ahola, Vuori et al. 2012). This Finnish study showed a week-long workplace support intervention led to an improvement in depressive symptoms in the intervention group.

Change management interventions?

Although there are supporting prospective data from opportunistic studies of organisational change showing, for instance, that employees who reported receiving open and realistic communication about their organisation's merger have lower levels of stress and uncertainty than those reporting limited communication (Schweiger 1991), no review has found any studies showing that an intervention designed to improve the management of organisational change can improve mental health.

Mental health education – anti-stigma programs ★★★

Anti-stigma programs aim to improve knowledge about mental ill-health and reduce stigmatising attitudes and discriminatory behaviours. Hanisch et al. reviewed 16 studies, five of which were RCTs

and seven others had some form of control; almost all were in the public sector (Hanisch, Twomey et al. 2016). Some of these studies were of Mental Health First Aid (see below). Diversity in interventions apparently precluded meta-analysis but the majority showed a small effect of increasing employees' mental-health knowledge. Results related to attitudinal change were mixed, but positive overall; nine studies reported improvements in participants' stigmatising attitudes. All types of anti-stigma interventions reported consistent significant positive impact on employees' supportive behaviour (affirmative behaviour, reduced discriminatory behaviour), self-efficacy to deal with someone with mental illness, and likelihood of advising people to seek professional help, and readiness to help, which would seem likely to be beneficial. However there is minimal evidence that any changes were sustained and none of the studies reported any impact upon other employees or colleagues in the workplace.

Anti-bullying programs ★★★

A very recent Cochrane review (Gillen, Sinclair et al. 2017) assessed the evidence for workplace anti-bullying interventions such as Civility, Respect, and Engagement in the Workforce (CREW). Five RCTs were identified. The two CREW RCTs showed a small increase in civility (defined as unacceptable workplace behaviours, based primarily on interactions with work colleagues) in the workplace (mean difference (MD) 0.17; 95% CI 0.07 to 0.28) 6-12 months later, but this appeared confined to supervisor incivility with no change in co-worker incivility. A large five-site cluster-RCT conducted in the UK public sector (NHS and Police) with over a thousand participants compared the effectiveness of combinations of policy communication, stress management training, and negative behaviour awareness training and found no significant reduction in bullying or victimisation, although there were some positive trends (Hoel H 2006).

Strategy 3. Enhancing personal resilience

Workplace health promotion ★★

Two reviews of a wide range of workplace health promotion programs (including some components of other intervention types in this paper) showed small improvements in depression and anxiety (standardised mean differences of 0.28 and 0.29 respectively) (Martin, Sanderson et al. 2009) and a 39% increase in the likelihood of good mental health outcomes (Kuoppala, Lamminpää et al. 2008). There was a high degree of variability in the studies and the more effective components were hard to identify.

Cognitive Behavioural Therapy (CBT)-based stress management programs ★★★

There have been many evaluations of such programs which show a strong pre-post effect on depression and burnout, more so than relaxation approaches (Bhui, Dinos et al. 2012). Those based upon CBT principles had larger pre-post effects. The strength of the effect of such programs (i.e. comparing the program to some form of control) is reduced when only RCTs are evaluated (Tan, Wang

et al. 2014), with a very small effect on preventing depressive symptoms (SMD 0.12 (0.02- 0.22), quite possibly reflecting the limited improvement that those in good mental health could show.

Mindfulness based interventions ★★★

There is very strong interest in this area currently and reviews of intervention studies, including RCTs (Ravalier, Wegrzynek et al. 2016, Lomas, Medina et al. 2017), suggest consistent short term positive effects on a range of mental health outcomes, possibly stronger for 'stress' than anxiety or depressive symptoms. The overall effect has not been assessed through meta-analysis. As is commonly seen with popular new interventions, the initial large promise and effect of such interventions in the early studies has appeared to wane over time (Eberth J 2012). This may reflect dilution of the interventions (the majority of studies being of 'adaptations' of the original Mindfulness Based Stress Reduction (MBSR), Mindfulness Based Cognitive Therapy (MBCT) or Mindfulness Meditation interventions) or the tendency to publish small effective studies early, with larger better conducted studies generally having smaller effects.

Secondary prevention evidence

Secondary prevention interventions are those targeted at specific risk factors or employees with specific risk factors, such as those in high risk occupations (e.g. emergency services), to improve wellbeing and prevent mental ill-health through enhanced coping and resilience.

Strategy 3. Enhancing personal resilience

CBT based resilience training for high risk occupations ★★★

Given that an individual's level of resilience predicts future mental health problems in first responders (Wild 2016) enhancing resilience would seem a good target for indicated interventions. These have generally been conducted in high-risk occupations, such as the military or emergency services. Beneficial effects of resilience training such as pre-stress inoculation training (SIT) (Hourani 2011) have been shown. The majority of studies demonstrate an ability to shift levels of resilience using either cognitive behavioural therapy or mindfulness techniques, with preliminary evidence that approaches incorporating both cognitive behavioural therapy and mindfulness, may produce greater effects (Sood, Sharma et al. 2014). Luken showed that such approaches can reduce burnout in employees, predominantly health care workers. (Luken M 2016).

Coaching ★

Some small randomised controlled studies of workplace coaching have demonstrated improvements in well-being, and reductions in depression and stress (Grant 2009). However it has yet to be determined which type of coaching is most effective, and no systematic review of these interventions has been conducted.

Workplace physical activity programs ★★★

A review by Brown et al. found four RCTs (and more controlled trials) of physical activity interventions in the workplace (Brown, Gilson et al. 2011). Although there were consistent positive effects on mental ill-health and wellbeing, only one of the five trials that reported effects on presenteeism or absenteeism showed any effect.

Strategy 4. Promoting and facilitating early help-seeking

Well-being checks / health screening ★★

Screening followed by an outreach and care management program resulted in lower depression, significantly higher job retention rates, and increased number of hours worked in a US RCT (Wang, Simon et al. 2007). An Australia study has been found to be cost-effective with increased employee well-being (Whiteford, Sheridan et al. 2005). However a mandated screening process is not without risks, especially when false positive rates (identifying well people as unwell) are high, and may lead to

stigma, discrimination or labelling, temporary distress, or unnecessary intervention and there have been few published studies of such processes.

Mental Health First Aid (MHFA) ★★★

Originally developed and implemented in Australia, MHFA is a standardised educational program developed to combat mental health problems and suicide in the general public by increasing mental health literacy, improving attitudes / reducing stigma, and stimulating helping behaviours (Kitchener and Jorm 2002). The program is based on scientific evidence and/or expert consensus. A meta-analysis estimating the effects of the MHFA programme on mental health literacy, attitudes towards people suffering from mental health problems, and help-related behaviours exhibited by participants of the MHFA programme identified 15 papers (4 RCTs), 12 from Australia. There were moderate to large effects on improving knowledge (Glass's $d = 0.56$; 0.38-0.74) and small effects on improving attitudes (Glass's $d = 0.28$; 0.22-0.35) and stimulating help seeking behaviours (Glass's $d = 0.25$; 0.12-0.38) (Hadlaczky, Hökby et al. 2014). There is no evidence regarding its effect on the mental health of employees.

Peer support schemes ★

Peer support schemes provide additional mental health training to a small group of employees who are expected to provide general support to other employees and to help identify those who might require professional assistance, rather than engage in counselling themselves. To date, peer support schemes have mainly been implemented in high-risk occupations such as emergency services, but there is increasing interest in their use in other work situations such as construction (Gullestrup 2011). Early RCTs found no impact of peer support on reduced symptom levels (Whybrow 2015). However non-randomised studies have shown potential benefits, including increased perceived support, reduced barriers to help seeking and possible reductions in sickness absence.

Workplace counselling ★★

There is very widespread provision of workplace counselling services, often through Employee Assistance programs. The most recent systematic review of the effectiveness of workplace counselling found some evidence for improving mental ill-health (McLeod 2008) although it is again largely limited by low quality studies and weak assessment methods, with the best evidence coming from provision of highly trained clinical psychologists.

Tertiary prevention evidence

Confusingly termed, these tertiary 'prevention' interventions are those aimed at people who are already unwell, either at work or off sick. The focus of much policy, regulation, insurance, rehabilitation and clinical treatment is the successful return to the workplace of people who have taken sickness absence due to their mental ill-health, or keeping those who are unwell functioning. The need to have work focussed interventions is now widely recognised in the field of serious mental illness (Harvey, Modini et al. 2013), although possibly less so for those with more common conditions such as depression and anxiety.

Strategy 5. Supporting recovery and return to work

Facilitating return to work through support ★

Whilst there are no reviews of quantitative studies in this area, a meta-synthesis of qualitative research suggested that support from supervisors and colleagues, as well as working time adjustments like partial sickness absence may facilitate the return to work of people with mental ill-health (Andersen 2012). Australian guidelines based on a Delphi consensus study have been developed to provide workplaces with assistance in supporting the return to work of mentally unwell employees (Reavley 2012). What is missing is evidence from controlled studies. The limited evidence that is available shows that although interventions such as supervisory support for those off sick may increase return to work rates generally (Nieuwenhuijsen, Bültmann et al. 2008), such interventions can have a negative effect on those absent for mental ill-health (Nieuwenhuijsen 2004).

Work focussed psychological therapy ★★★

A Cochrane review (Nieuwenhuijsen K 2014) assessing interventions aimed at improving the return to work of people with depression suggested that adding a work-directed psychological intervention (i.e. treatment focussed specifically on an aspect of work or returning to work) to clinical care reduced the number of days on sick leave, as did enhancing primary or occupational care with cognitive behavioural therapy or a structured telephone outreach and care management program that included medication. In a similar review for those with adjustment disorders by Arends et al. (Arends, Bruinvels et al. 2012), problem solving therapy (PST) helped people achieve an earlier part time return to work, but did not achieve faster return to full time and sustained work. CBT also did not improve the return to work rates. Improving primary care through quality improvement programs for general practitioners did not reduce sickness absence in three studies. There is promising evidence that work focused psychological interventions can be effective at improving occupational outcomes for individuals with PTSD (Noordik, van der Klink et al. 2010) (Stergiopoulos, Cimo et al. 2011), and obsessive compulsive disorder (OCD) (Noordik, van der Klink et al. 2010) although establishing how to do this outside of the Dutch occupational health system where the majority of studies have been conducted has yet to be done and published.

Clinical interventions ★★

Whilst we know medication reduces symptoms in people with mental health problems off sick it has not been shown to systematically improve return to work in the three studies that evaluated this. Telephone or online CBT, and structured telephone and care management programs did reduce sickness absence but there were few studies (Nieuwenhuijsen K 2014).

Policy and Regulatory Interventions

Guidelines for employers to detect, prevent, and manage mental ill-health in the workplace

This year an Australian group (Memish, Martin et al. 2017) systematically reviewed 20 international guidelines and found that the poorer quality guidelines lacked a focus on prevention (or only focussed on individual prevention), concentrated on the detection and treatment of mental health problems in the workplace, and did not include practical tools or advice for implementation. They made some interesting and novel observations of common failings including: *'An inconsistency in language, lack of consultation with relevant population groups in the development process and a failure to outline and differentiate between the legal/minimum requirements of a region'* and made several recommendations for how to establish useful guidelines in the future.

Regulatory interventions

Some years ago Guthrie et al (Guthrie R 2010) reviewed the impact of regulatory interventions and legislative formulations, in Australia across jurisdictions, which they proposed were designed to 'exclude work-related stress claims'. A consistent finding was that compensable stress-related claims rose generally in the States and Territories over the period of 1988-2005, regardless of legislative amendments being implemented, with the exception of the Commonwealth. Any decreases in compensable stress-related claims after a legislative change were small and short term, not continuing for more than two consecutive financial years. They suggested a number of new approaches integrating beyond the organisation itself to the wider context. This included funding non-adversarial compensation responses and adopting of *'a corporate citizenship approach to the prevention and management of stress in the workplace....that extends beyond compliance with OH&S risk reduction requirements'*. Their data is now over a decade old and as legislation, the contractual landscape and many other contextual factors have changed and a further similar review would be enlightening.

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Table 1. Primary Prevention Interventions

Intervention	Systematic reviews and meta-analysis	Types of studies included in review	K studies	N	Symptom reduction	Occupational outcomes	Effect size
DESIGNING AND MANAGING WORK TO MINIMISE HARM							
Increasing employee control via participatory interventions	Egan et al 2007	12 prospective with non-randomised comparison groups; No RCTs identified	18		Limited Psychosocial health improvements when employee control improved	Remains unclear	N/A
Increasing employee control via flexible working conditions	Joyce et al 2010	Controlled before and after studies; No RCTs identified 6 flexible working conditions: 4 Self-scheduling; 1 Overtime; 2 Gradual retirement; 1 Involuntary PT; 1 Flexitime; 1 Fixed-term contract	10	16 603	Limited Likely positive effect for interventions oriented towards the worker and increasing worker control over working conditions	Limited to one study reported; remains unclear	Equivalent or negative effects for interventions motivated by organisational interests (fixed term contract, involuntary PT employment) No effect of flexitime. Heterogeneity: no meta-analysis
BUILDING ORGANISATIONAL RESILIENCE THROUGH GOOD MANAGEMENT							
Manager and leadership training	Tsutsumi 2011	Controlled studies	7 Supervisor training		Moderate Evidence for supervisor training on mental health; no evidence of long-term effect	Overall effect on organisation may be limited without a certain extent of participation by supervisors	N/A
	Gayed et al	9 total Manager level outcomes	6 manager knowledge of MH issues;		Strong positive effects		In prep

			their role				
			6 manager attitudes				In prep
			5 manager confidence to support mentally unwell				In prep
		Employee level outcomes	Perceived level of supervisor support		No effect		In prep
			Psychological distress				In prep
			Sickness absence				In prep
Team/workgroup support interventions	Ahola et al 2012	1 prospective, within-organisation randomly assigned field experimental study	1 study (17 organisations)	566	Few interventions developed and tested		OR=0.40; 0.19-0.84 (reduced depression at T2 in intervention v control) OR=0.15; 0.03-0.81 (depression among those with job strain at baseline lower after intervention)
Mental health education: Anti-stigma interventions	Hanisch et al 2016	Total 16 5 RCTs; 11 quasi-experimental; 7 incl control	11 Increased knowledge	3854	10 effective 2 mod-high quality studies reported positive impact on mental health; some reported sustained changes over time	Evidence inconclusive and must be interpreted with caution	N/A
			14 Changing attitudes		Mixed effectiveness, 9 reported improvement 4/6 low-mod bias reported sig positive effects		
			11 Supportive behaviour		3 high quality All 11 studies sig positive impact		
Bullying interventions	Gillen et al 2017		5	4116	Multi-level interventions: no	One study found decrease in	Very low quality evidence

					change in bullying victimisation, 2 studies small increase in civility (SMD) 0.17; 95% CI 0.07 to 0.28).	number of days absent during the previous month (SMD -0.63; 95% CI -0.92 to -0.34) at 6-month follow-up.	
ENHANCING PERSONAL RESILIENCE							
Workplace health promotion (WHP)	Kuoppala et al 2008	14 RCTs; 22 cohort	46		Weak association with improved mental health	Moderate May have effect on absenteeism	RR 0.78; 0.10-1.57 sickness absence; RR 1.38; 1.15-1.66 work ability. RR 1.39; 0.98-1.91 mental wellbeing but not physical. No evidence on disability pension.
	Martin et al 2009		22	3632 (2640 included pooled analysis)	Small, positive effect	Limited evidence available	SMD 0.28 (0.12-0.44) (depression) SMD 0.29 (0.06-0.51) (anxiety) No effect on composite mental health measures.
CBT-based stress management programs	Seymour & Grove, 2005	1 RCT	5		Moderate		N/A
	Bhui et al 2012	11 Meta-analyses; 12 narrative reviews	23	499 primary studies	Produced larger effects at the individual level (reduced stress and symptoms) compared with other interventions (e.g. relaxation)	No influence	N/A
	Richardson & Rothstein, 2008	Treatment and control	36 Represented 55 interventions	2847	Significant change	No notable improvements CBT for absenteeism d=0.213?	d=0.526 (0.364, 0.687) (weighted av) CBT interventions: d=1.164; yielded largest effect size Q-value highly sig.
	Tan et al 2014	RCTs of CBT based stress management	6		Positive effect on depression		SMD 0.12; 0.02-0.22, P=0.01 No heterogeneity
Mindfulness programs	Lomas et al,	Inclusive review	64	Only high	Anxiety 4/6 studies		N/A

(MBSR, MBCT, mindfulness meditation and variants)	(2017)			quality study results reported	positive effect Stress 8/11 studies positive Depression 4/7 studies positive Burnout 1/8 studies positive		
	Ravalier	10 studies	5 RCTs - 3 mindfulness 2 meditation		Positive results in most studies both RCT and pre-post		N/A

Table 2. Secondary Prevention Interventions

Intervention	Systematic reviews and meta-analysis	Types of studies included in review	K studies	N	Symptom reduction	Occupational outcomes	Effect size
ENHANCING PERSONAL RESILIENCE							
CBT-based resilience training for high-risk occupations	Luken & Sammons 2016	RCTs	8		6/8 studies showed evidence for reduced job burnout		N/A
Coaching	No reviews				Limited empirical evaluation Some small RCTs have demonstrated reductions in stress and depression but considerable variation in the type of intervention and which type of coaching is most effective		N/A
Workplace physical activity programs	Brown et al 2011	RCTs, comparison trials, observational	4 RCTS		All four RCTs showed positive effects on mental health outcomes	Most studies no effect on presenteesim or absenteeism	N/A
	Bhui et al 2012	11 meta-analyses; 12 narrative reviews	23	499 primary studies		Mixed evidence of any benefit for absenteeism	N/A
PROMOTING AND FACILITATING EARLY HELP-SEEKING							
Wellbeing checks / health screening	No review				Limited	Limited	Low quality - Screening followed by intervention associated with benefit in symptom reduction and occupational outcomes in some settings. But risk associated with regular screening: false positives, distress, stigma, focus on symptoms etc. (only effective

							strategy if post-screening procedures are in place)
Mental health first aid	Hadlaczky et al 2014	Total 15 9 single-group pre-post; 6 controlled trials (4 RCTs)	15 Increased knowledge	3807	The effect is highly robust		Glass's d=0.56; 0.38-0.74; p<0.001
			14 Decreased negative attitudes	3929			Glass's d=0.28; 0.22-0.35; p<0.001
			9 Increased supportive/helping behaviour	2502			Glass's d=0.25; 0.12-0.38; p<0.001
Peer support schemes	Whybrow et al 2015	3 reviews, 8 quant, 3 qual	13			TRiM may have a positive effect on organisational functioning and may reduce organisational sickness absence rates after traumatic events.	N/A
Workplace counselling	McLeod, 2010	Systematic review; incl wide range of research designs	128		Limited, generally effective alleviating psychological symptoms	Sig impact on sickness absence Mod effect on attitudes to work	Av ES of 0.90, pre to post counselling

Table 3. Tertiary Prevention Strategies

Intervention	Systematic reviews and meta-analysis	Types of studies included in review	K studies	N	Symptom reduction	Occupational outcomes	Effect size
SUPPORTING RECOVERY AND RETURN TO WORK							
Facilitating return to work through support	Van Oostrom et al 2009	RCTs	1 Mental health	749 workers on sick leave	No evidence Lack of studies made it impossible to investigate effectiveness among workers with mental health problems		N/A
	Nieuwenhuijsen et al 2008	3 RCTs	Work focused intervention in addition to regular care	251		Reduced sickness absence	(SMD -0.40; 95% CI -0.66 to -0.14)
Work-focused psychological therapy	Nieuwenhuijsen et al 2014	3 RCTs	Telephone or online CBT			More effective in reducing sick leave than usual primary or occupational care	(SMD -0.23; 95% CI -0.45 to -0.01)
			Enhanced primary care			No effect	(SMD -0.02; 95% CI -0.15 to 0.12)
			Structured telephone outreach and care management program			Effective	(SMD - 0.21; 95% CI -0.37 to -0.05)
	Arends et al	7 RCTs; 2 cluster RCTs	9, reporting on 10 psychological interventions (5 CBT, 5 PST)	1546		Reduced time to first return to work with PST. No effect on return to full time work with either intervention	CBT (MD) -8.78, 95% CI -23.6 to 5.71) (partial RTW) PST (MD -17.00, 95% CI -26.48 to -7.52)
Noordik et al 2010	4 RCTs; 3 controlled studies	7; 11 interventions		Sig. positive effects (OCD)	Moderate (OCD, PTSD)	0.72 (0.28, 1.15)	

	Stergiopoulos et al 2011	3 pre-post design; 3 RCTs (only 1 review)	7				
Clinical interventions: Medication	Nieuwenhuijsen et al 2014	3 RCTs	11	2556	Strong evidence for reduced symptoms	No effect or inconclusive	SMD 0.09; 95%CI - 0.05-0.23

