



Work and Health: Evidence on the Pathways to Implementing Total Worker Health

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Work matters for health



Just released findings – NPR, RWJF, Harvard Chan School Survey (July 11, 2016)

- 4 in 10 working adults say their job has an impact on their health (good: 28%; bad: 16%)
- Workers most likely to say that work has a bad impact were those --
 - With disabilities (35%)
 - In dangerous jobs (27%)
 - In low paying jobs (26%)
 - Working in retail ((26%)
 - Working ≥ 50 hours per week (25%)

NPR/RWJF Survey findings continued

- Negative impact related to:
 - Stress level (43%)
 - Eating habits (28%)
 - Sleeping habits (27%)
 - Weight (22%)
- Top health concerns include:
 - Contaminants (30%)
 - Unhealthy air (13%)
 - Accidents/injuries (12%)
 - Stress (11%)

Session Objectives

- *What is it?*
 - Describe what is meant by an integrated approach to worker health
- *Why do it?*
 - Describe the rationale for this approach
- *Will it work?*
 - Describe the evidence for this approach
- *How to make it work?*
 - Recommendations for practice

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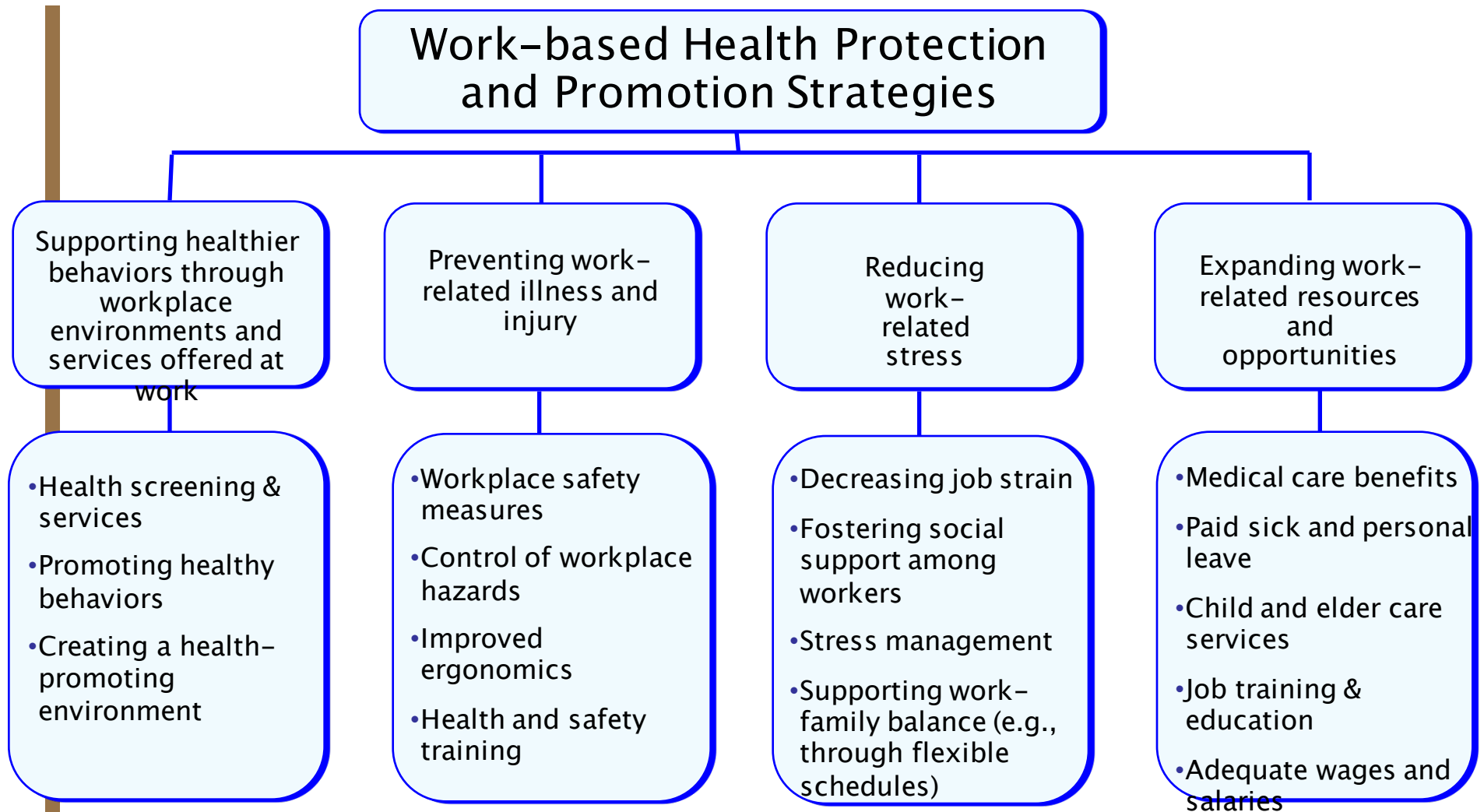
NIOSH Total Worker Health®

Total Worker Health® is defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being. (<http://www.cdc.gov/niosh/twh/>)

- Funds 4 Centers for Excellence, including the Harvard Center



Work-based Strategies to Improve Health



Egerter et al., Commissionhealth.org, RWJF, 2008.

Comparison of worksite intervention models

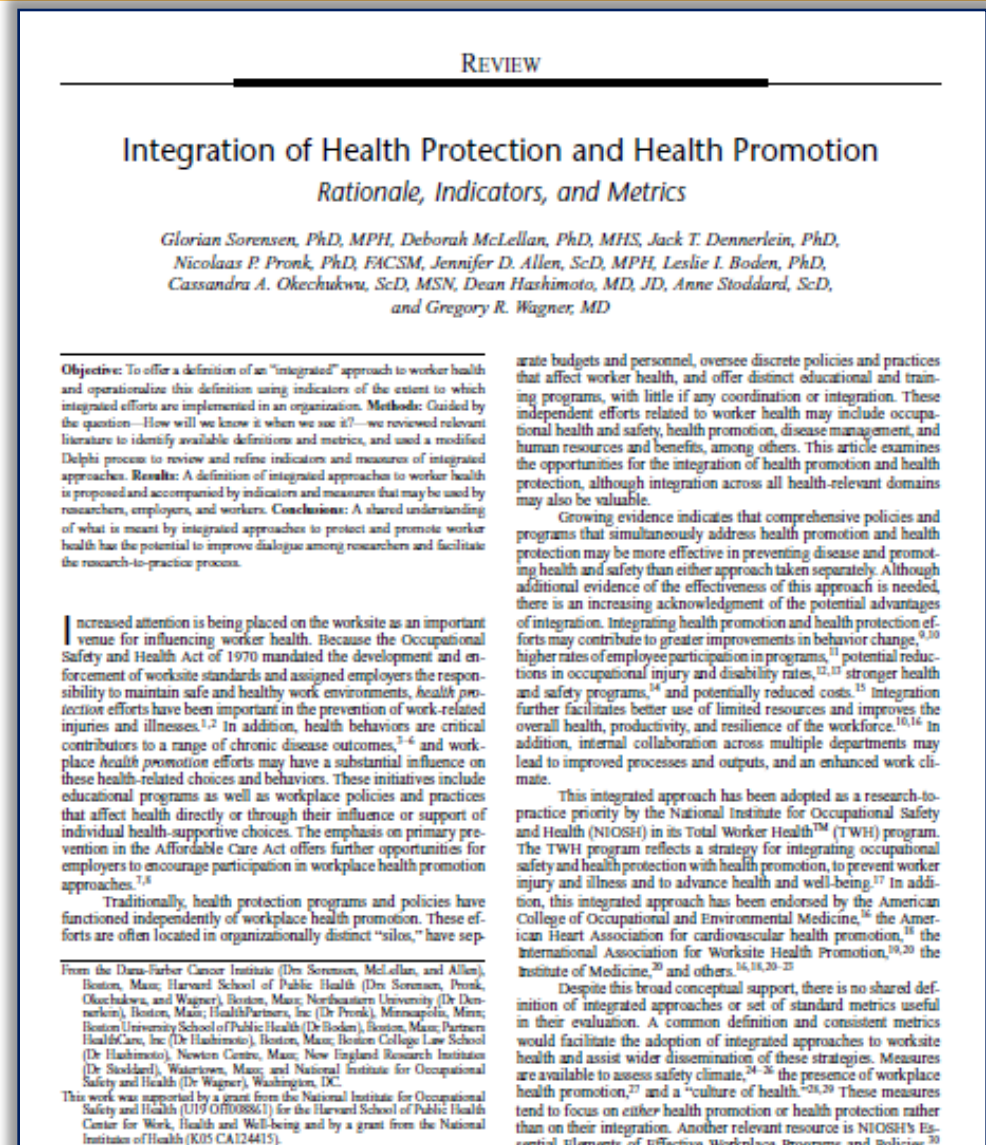
	Traditional Health Promotion Programs (Silo)	Health Protection Programs (Silo)	Integrated Approaches (Systems Approach)
Intervention Target	Individual Behaviors	Work Environment	Work Environment to effect Individual Behaviors
Assumptions about Responsibility for Worker Health	Individual Worker	Organization	Shared Between Management And Worker
Audience	Workers	Management and Occupational Safety and Health Professionals	Management, Workers, Union
Program Planning	Outside Experts	Managers and Occupational Safety and Health Professionals	Collaboration among Different Committees and Programs

Defining integrated approaches to worker health

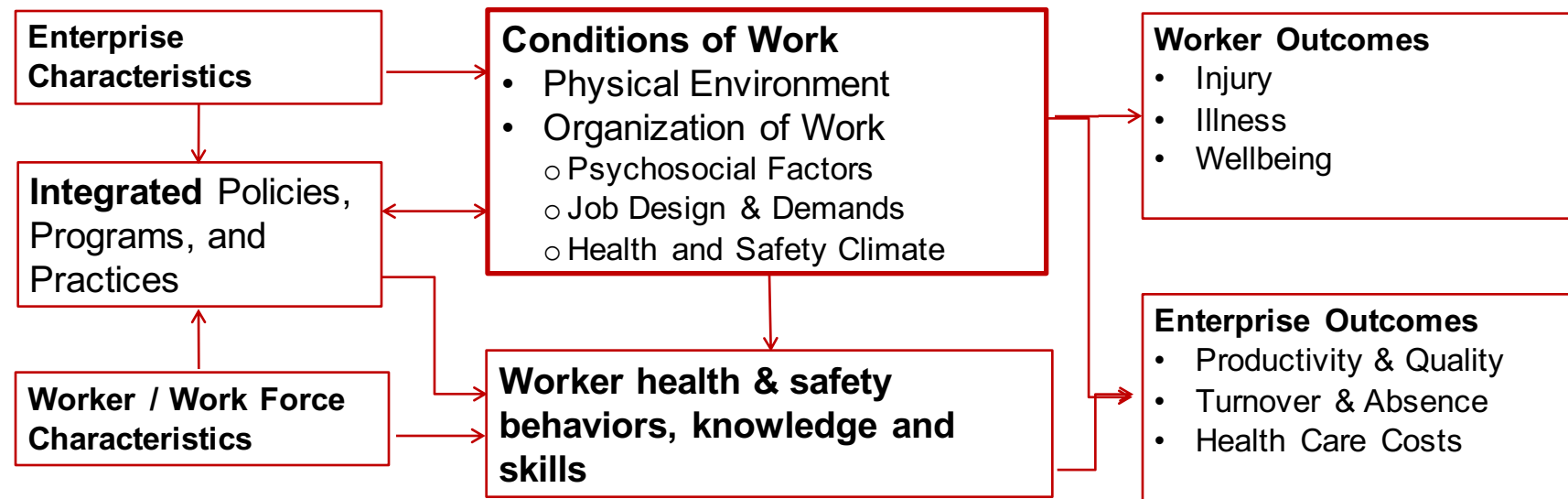
“A strategic and operational coordination of policies, programs & practices designed to simultaneously prevent work-related injuries & illnesses & enhance overall workforce health & well-being”

- Coordination and linkage of separate policies, practices & programs
- Continuum of approaches exists

Sorensen, et al, JOEM 2013



Center for Work, Health and Well-being Conceptual Model



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- *How?*
 - Recommendations for practice

Why do it?

Worker health is influenced by exposures to occupational hazards, risk-related behaviors, and other factors.

Worksite environment

- 4,821 occupational fatalities in 2014
- 3 million non-fatal injuries and illnesses in the private sector in 2014
- Estimated direct cost for occupational injuries and illnesses reached \$50.1 billion in 2011
- Between 21% and 49% of people reporting disability cite work as the cause

Source: Census of Fatal occupational Injuries, BLS; 2014 Annual survey of Occupational Injuries and Illnesses, BLS; the Liberty Mutual Workplace Safety Index, 2011; Reville 2001

Worker health behaviors: A couple examples

- 440,000 premature deaths annually associated with cigarette smoking and exposure to tobacco smoke -- \$97 billion in productivity losses, and \$96 billion in health-care costs annually
- 19.6% of working age adults are current smokers (age adjusted) -
- highest among those in construction (39%), mining (30%), food service (30%)
- One in every three adults is obese. Obesity also has been linked with reduced worker productivity and chronic absence from work.
- An estimated 112,000 deaths are contributed to obesity each year.

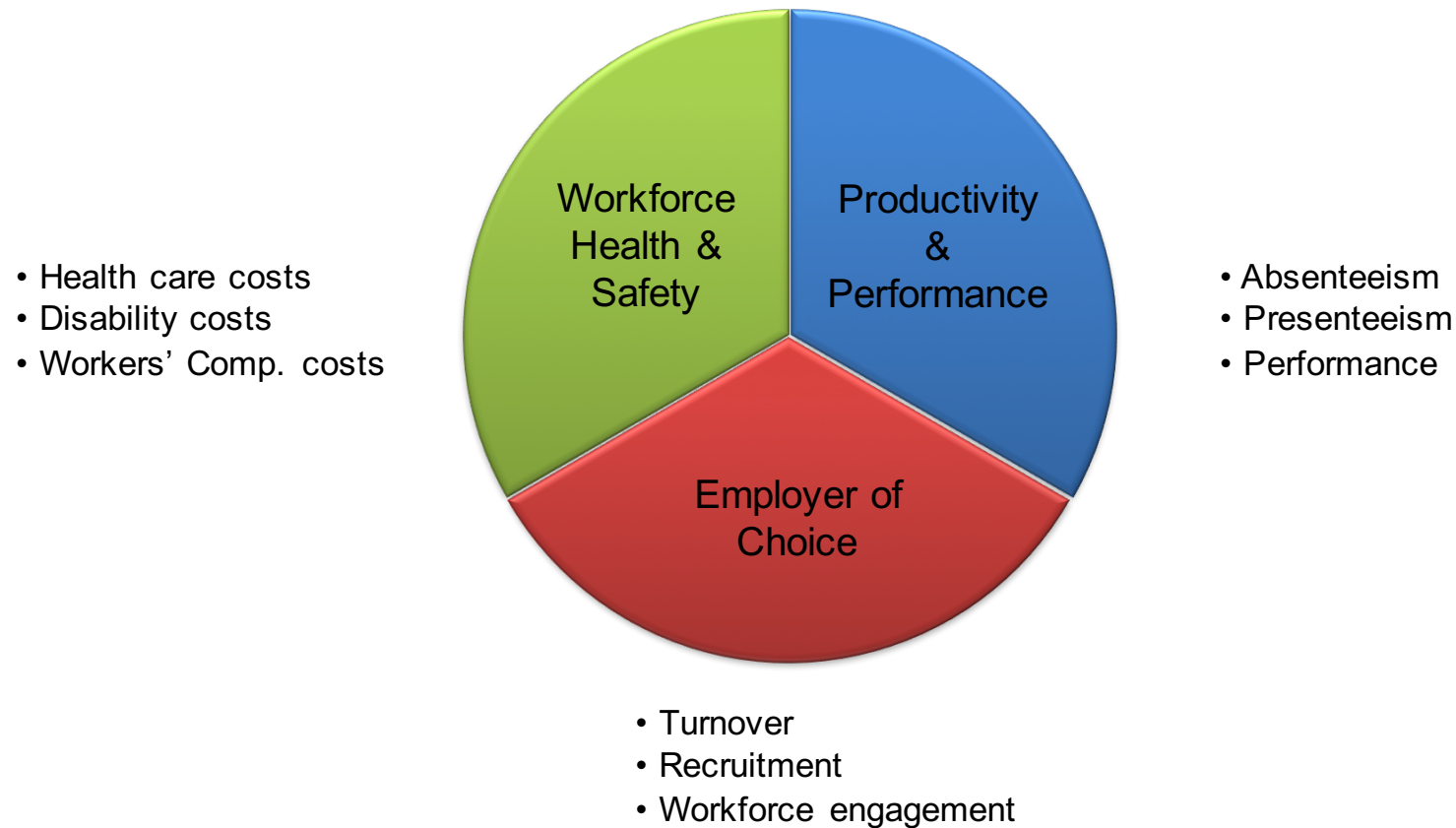
CDC Targeting the Nation's Leading Killer At A Glance 2013, CDC MMWR September 30th 2011, CDC MMWR Nov. 14 2008 Obesity Halting the Epidemic by Making Health Easier At A Glance 2011

Risks may be additive and sometimes synergistic

A few examples – Tobacco and work-related exposures

- Additive: Benzene in tobacco smoke and as hazard at work
- Synergistic: Tobacco smoke and exposure to asbestos at work (50 fold increased risk of lung cancer among smokers with asbestos exposure)

Business Outcomes



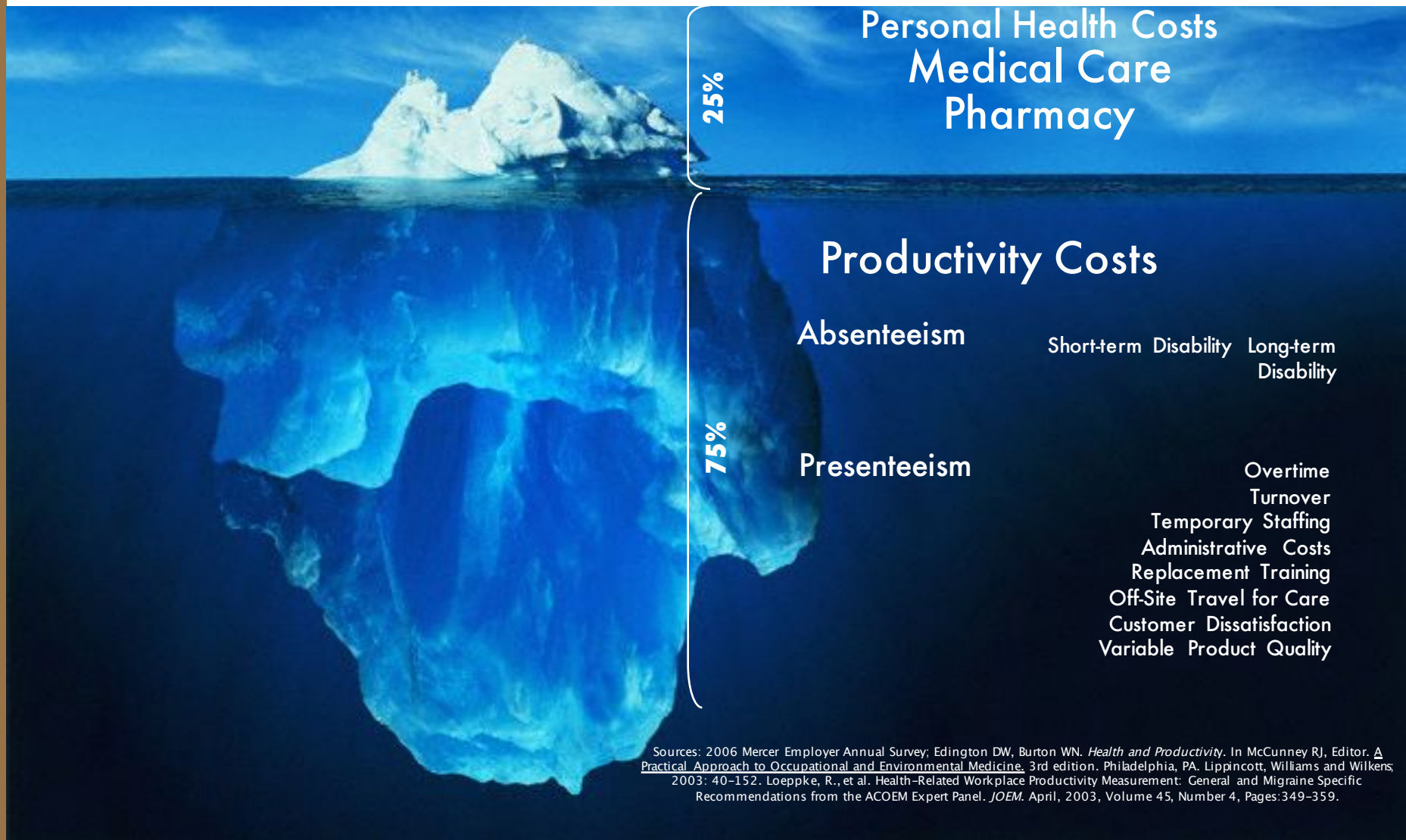
Source: NBGH

Some Evidence for Employer Benefits

- Literature review and meta analysis on health promotion efforts
- Worksite Health Promotion programs can generate positive ROI for medical- and absenteeism-related savings:
 - Medical: 3.27 : 1
 - Absenteeism: 2.73 : 1

Baicker et al, Health Aff, 2010; Soler et al. Am J Prev Med 2010

The Full Cost of Employee Poor Health



Disparities in risk

The workers at highest risk for exposure to hazardous working conditions are also those most likely to engage in risk-related health behaviors

Examples of disparities in risk: Blue collar vs. white collar worker

Blue collar workers are --

- More likely to be exposed to job hazards.
- At higher risk for disease because of exposure to job hazards and risk-related behaviors
- Eight times more likely to be at risk for all types of cancer due to occupational exposures
- Less likely to participate in health promotion activities

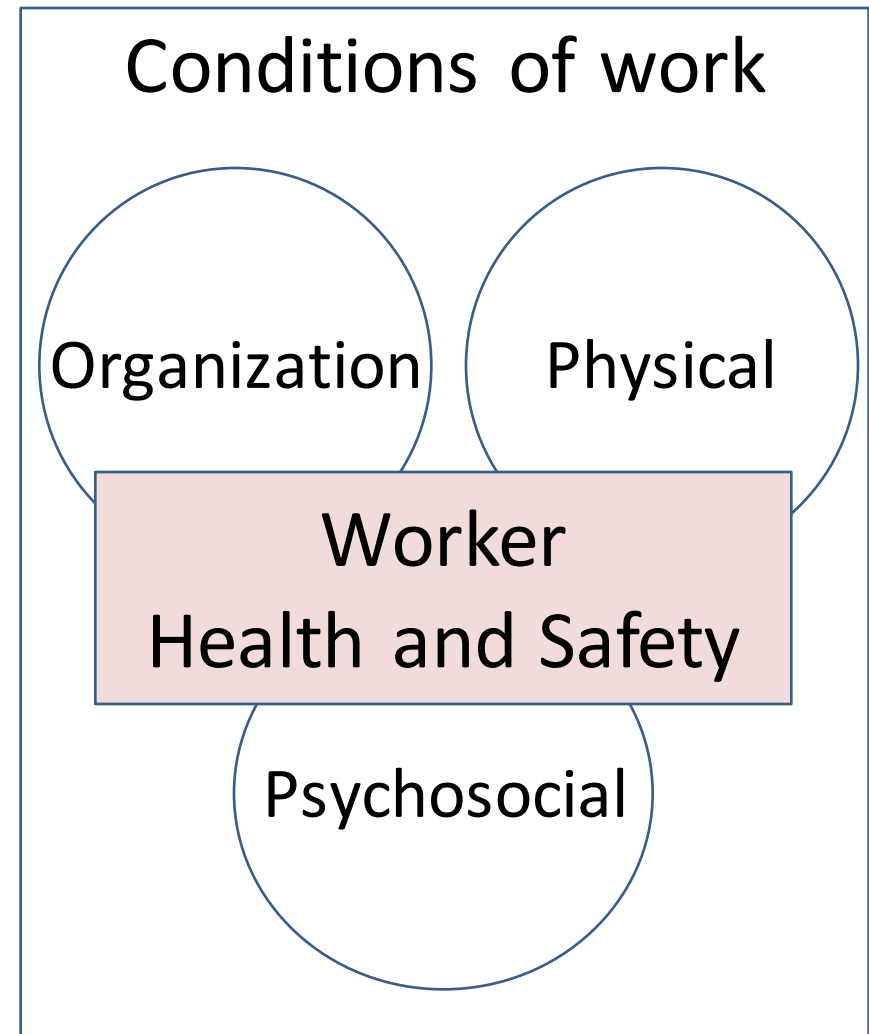
Quintiliani et al. WHO/WEF 2007, Baron and Dorsey, in Levy et al, Occup & Environ Health, 2006; International Labour Office, 2007; Kauppinen et al., Occup & Environ Med, 2000, Krieger et al. Social Science and Medicine 2008. Choi et al. Int'l Archives of Occ. & Env. Health 2011

Just released findings – NPR, RWJF, Harvard Chan School Survey (July 11, 2106)

- Low-wage workers face worse conditions than other workers, including
 - Dangerous conditions at work (45% vs 33% other)
 - Report job has a bad impact of stress levels (51% vs 41% other)
 - Go to work when they are sick (65%)
- Workers in dangerous jobs (40% of working adults)
 - 52% say the job has a bad impact on stress levels, 38% on sleeping habits, 35% on eating habits
 - 25% say their workplace is not working to reduce dangerous conditions

Work matters for health and safety

- Potential exposures to safety and health hazards
- Hours worked
- Workload and pace of work
- Job stress
- Supervisor support
- Co-worker social norms
- Wages
- Access to resources on the job
- Culture of health and safety at work



Attending to the Conditions of Work: Summary Findings for Healthcare



CONDITIONS OF WORK

Physical Environment

- **Job Demands**

Organization of Work

- **Ergonomic Practices**
- **Job Flexibility**
- **Inadequate staffing**
- **Shift schedule/control**

Psychosocial Factors

- **Low decision latitude**
- **Coworker/supervisor support**
- **Work-family conflict**
- **Harassment**

WORKER OUTCOMES

- **Pain**
- **Work interferences**
- **Cardiometabolic risk**

WORKER PROXIMAL OUTCOMES

- **Sleep deficiency**
- **Fatigue**
- **Physical Activity**
- **Psychological distress**
- **BMI**

Sorensen et al, JOEM 2011; Nelson et al, AJPM 2014; Sabbath et al, AJIM 2013; Kim et al, AJIM 2012; Buxton et al, JOEM 2012; Reme et al, J Occup Rehabil 2012; Dennerlein et al, AJIM 2012; Umukoro et al, JOEM 2013; Nelson et al, Am J Prev Med 2014; Jacobsen et al, Am J Ind Med 2014; Hopcia et al, Workplace Health Saf 2012; Hurtado et al, Work & Fam 2015.

Summary – *Why do it?*

- Additive and synergistic effects related to occupational and chronic disease outcomes
- Impact on employer outcomes (e.g., cost, turnover)
- Disparities in health and safety outcomes
- Work matters for health and safety
- What else?

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Benefits of integrated approaches

- Greater improvements in behavior change *(Sorensen et al., Cancer Cause Control 2002; Sorensen et al., Am J Public Health 2005)*
- Higher rates of employee participation in programs *(Hunt et al., Health Educ Behav 2005)*
- Potential reductions in occupational injury and disability rates *(Shaw et al., Work 2006; Shaw et al., J Occup Rehabil 2003)*
- Stronger health and safety programs *(LaMontagne et al., Occup Environ Med 2004)*
- Potentially reduced costs *(Goetzel et al., J Occup Environ Med 2001)*
- Improved market performance *(Fabius et al, J Occup Environ Med 2016)*

Examples in Two Industries

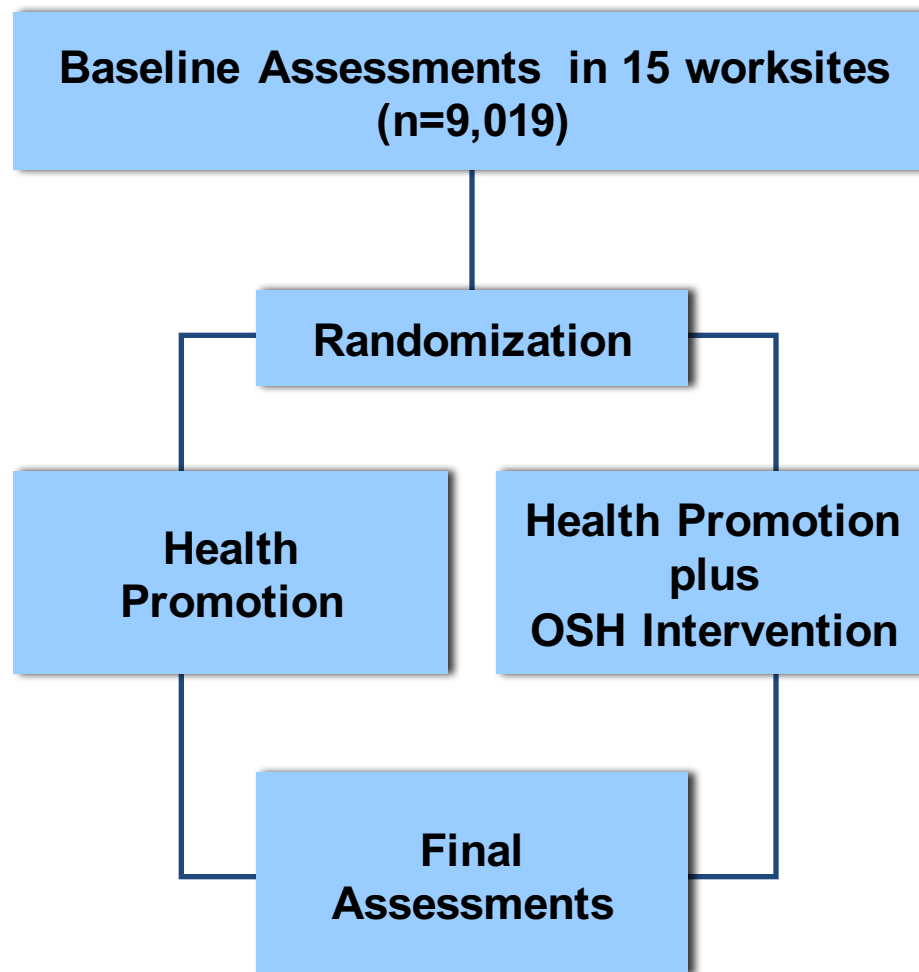
- Manufacturing: WellWorks-2
- Healthcare: Two examples from our recent work

WellWorks-2: Study hypothesis

The integration of health protection with health promotion will enhance the intervention impact on behavior change over and above health promotion alone.

Integrated prevention approaches needed

WellWorks-2: Manufacturing

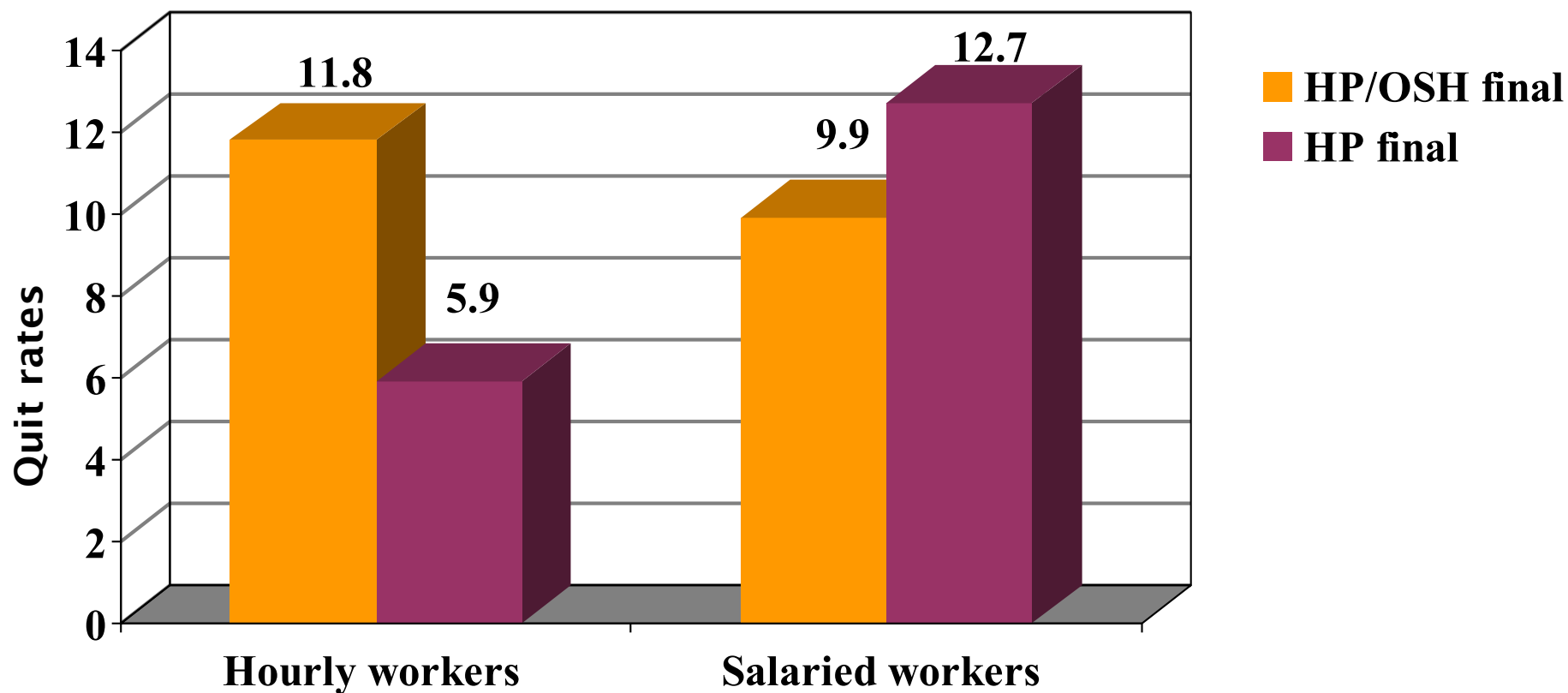


- Labor - management participation in program planning
- Management consultation for changes in the work environment
- Group and individual education for workers

Sorensen et al, *Cancer Causes Control* 2002;13:493–502

Adjusted six-month quit rates at final by intervention and job type

(cohort of smokers at baseline: n=880)



Sorensen et al, Cancer Causes and Control, 2002

WellWorks-2 OSH Results Summary

- Improvements in exposure protection (NS)
 - HP/OSH: Source focused
 - HP Only: Worker focused
 - Increase duration/intensity of intervention
- Significant improvements in management commitment and employee participation

LaMontagne, et al, Am J Indust Med 2005
LaMontagne, et al, Occup Environ Med 2004

Example: Health Care Workers

- 2nd highest number of nonfatal injuries and illnesses
- Risk of musculoskeletal disorders (MSDs) associated with:
 - inadequate physical activity,
 - overweight and obesity and associated dietary patterns,
 - night or rotating shifts and related sleep deficiencies
- Risks in the work environment impact both MSDs and health behaviors:
 - high work demands
 - low co-worker and supervisor support
 - long work hours

Proof-of-Concept Trial: Be Well Work Well

- 8 in-patient units randomly assigned to intervention/control
- 12 month intervention (Jan 2013 - Jan 2014)
 - Unit- level for managers
 - Ergo walkthrough and organizational assessment
 - Integrated feedback report
 - Action plan + Leadership consultations
 - Individual –level for staff
 - 8 on-unit events
 - Off-unit opportunities
- No significant effects for outcomes (pain, safety practices, dietary patterns, physical activity, sleep)

Sorensen, et al, *JOEM* 2016 Feb;58(2):185-94

Process Evaluation & Qualitative Results



- Limited intervention time on the units
- Barriers to worker participation
 - Patient care responsibilities and competing priorities
 - Physical demands
- Cultural commitment to putting patients first
- Few changes made in policies/practices at unit level
- Need for system-wide norms /policies and infrastructure supports can then be translated to the unit level.



Sorensen, et al, *JOEM* 2016 Feb;58(2):185-94

Hospital-Wide Safe Patient Handling and Mobilization Program (SPH&M)



- Program Evaluation of SPH&M aimed at increasing work practices within the context of increasing patient mobility
 - Instilled worker safety into hospital processes by integrating equipment use and procedures into each patient's plan of care.
- 8-month intervention
 - Engage multiple departments with upper management support
 - Enforce hospital-wide SPH policy
 - Hospital-wide communications by upper management
 - Training mandated by upper management
 - Coordination of efforts across departments
 - Investment in equipment
- Significant reductions in recordable lifting and exertion injuries



Dennerlein, et. al, *OEM* Revision under review

Need for leadership commitment and support

- *These studies point to need for embedding unit level efforts into system-wide initiative responding to working conditions*
- Upper and middle level managers can create:
 - Climate for policy implementation
 - Support for workforce development & training
 - Necessary resources
- Coordination and communication

Integrated approaches are recommended by:

- International Association of Worksite Health Promotion
- World Health Organization
- American College of Occupational and Environmental Medicine
- American Heart Association
- Institute of Medicine
- National Institute of Occupational Safety & Health



IAWHP, 2012; WHO, 1997; ACOEM, 2011; AHA, 2009; IOM, 2005; NIOSH, 2014

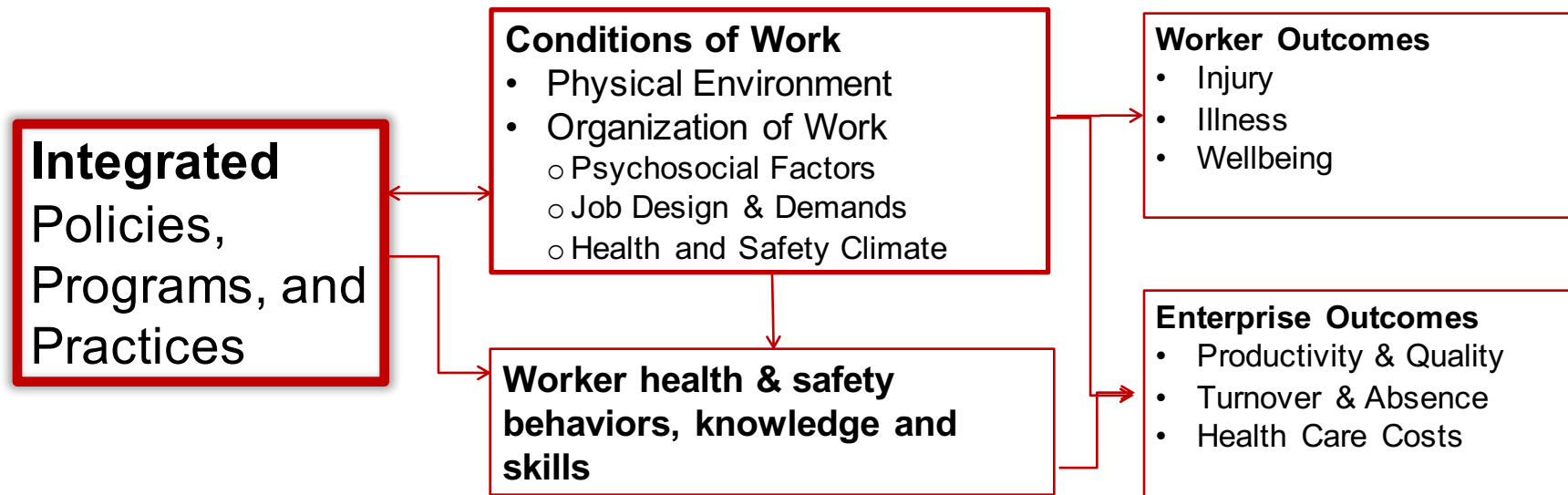
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What is included in an integrated approach?

- Starting point: Safe working environment for all employees.
- Systems-wide strategies to prevent work-related injuries and illnesses and enhance employee health & safety.
- Improving conditions of work that contribute to employee safety and health
- Involving employees across all levels.
- Communication with all organizational stakeholders and transparency to building trust and successful efforts

Center for Work, Health and Well-being Conceptual Model



Integrated policies, programs and practices



Leadership commitment

- Developing and communicating a **vision**
- Committing adequate human and financial **resources**
- **Management engagement**
- **Involving employees** and their representatives in the vision-setting process

Supportive Organizational Policies And Practices

- Training and accountability
- Management and employee involvement
- Benefits and incentives to support a culture of safety and health
- Integrated data and surveillance

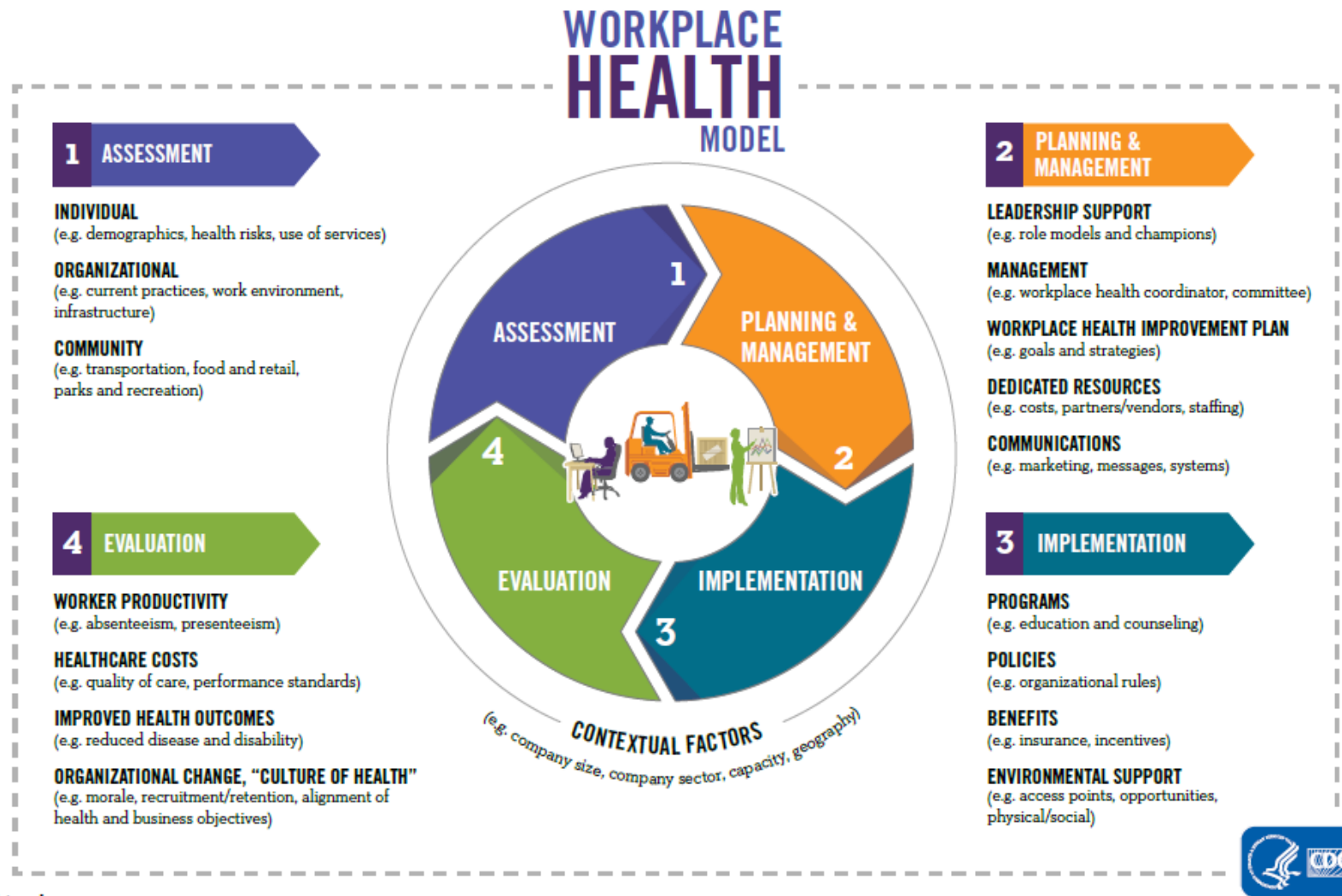
Collaboration To Protect And Promote Safety And Health

- Across departments that collaborate and coordinate on efforts to protect and promote the safety, health, and well-being of employees
- Focus on upstream organizational and environmental aspects of work

Integrating Program Content System-wide

- Comprehensive content addressing occupational hazards and chronic disease risk.
- Integration of programs for employees with supportive policies and practices.
- Linking health and safety messages to employee's experiences on the job.

Workplace Health Model



<http://www.cdc.gov/workplacehealthpromotion/model/>

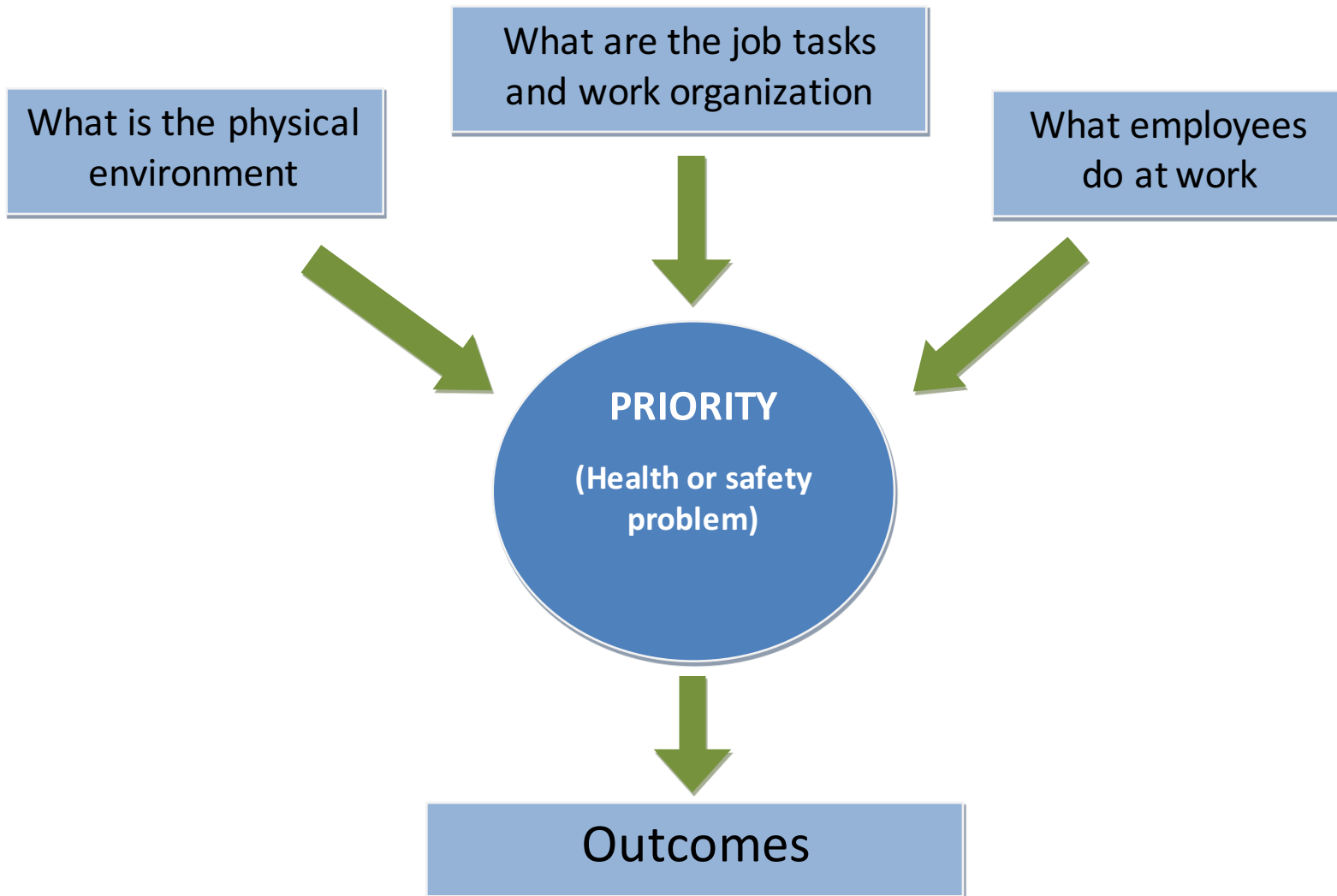
www.centerforworkhealth.sph.harvard.edu



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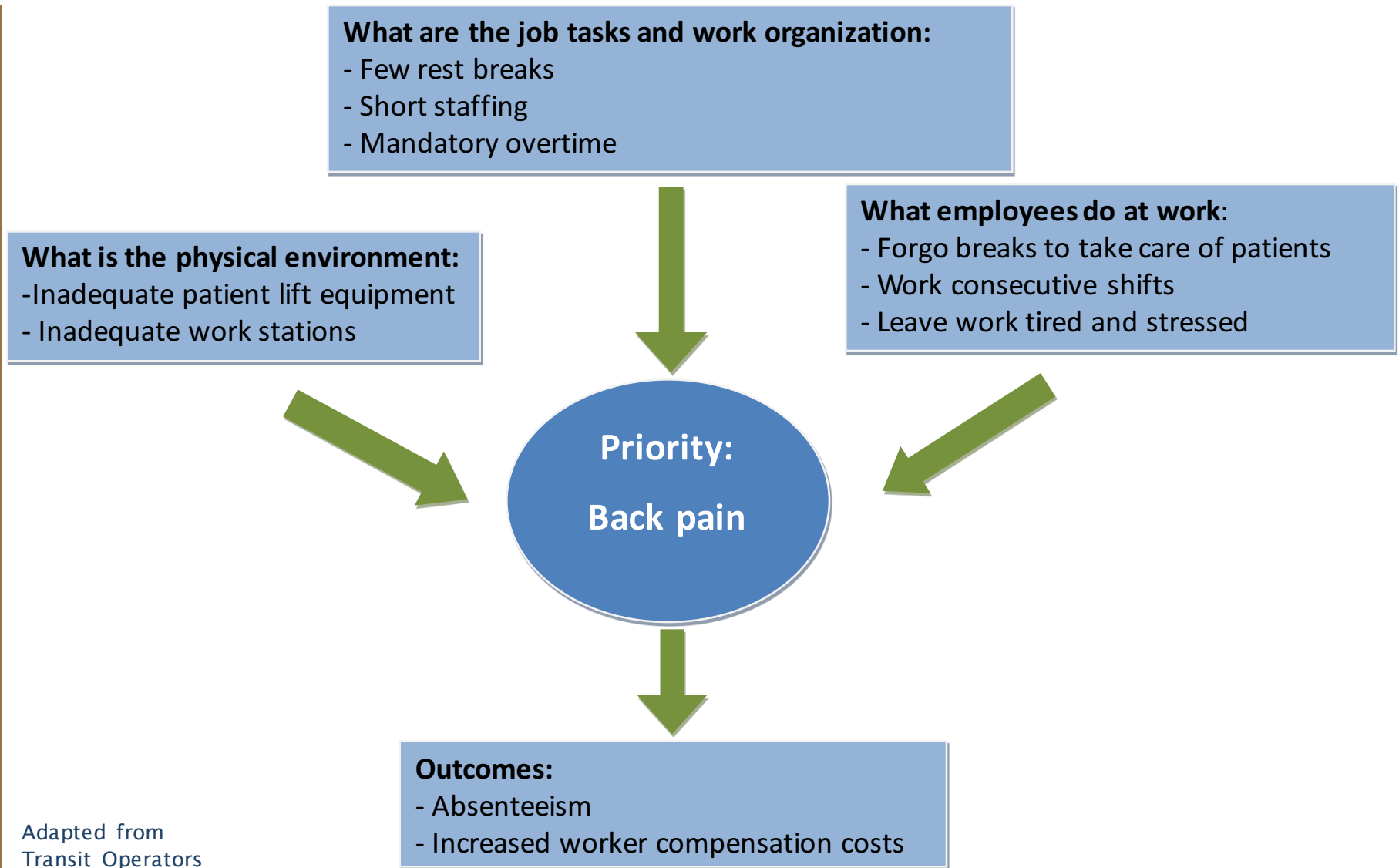
CENTER FOR WORK,
HEALTH, & WELL-BEING

Setting Priorities



Gillespie et al., Transit Cooperative Research Program Report 169, Transportation Research Board, 2014.

Setting Priorities



Adapted from
Transit Operators
Manual

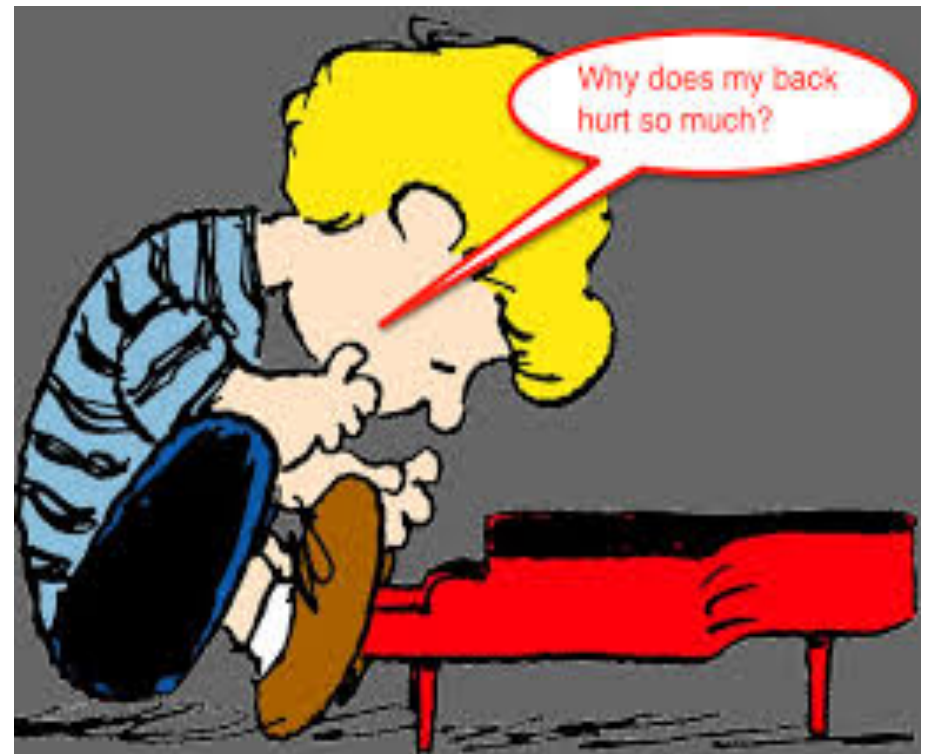
Example: Using integrated approaches to address back pain--*Contributors*

Conditions of Work

- Workstation design
- Sedentary work
- Repetitive motions
- Worksite clutter

Worker Outcomes

- Inactivity
- Stress
- Low back pain
- Depression
- Obesity

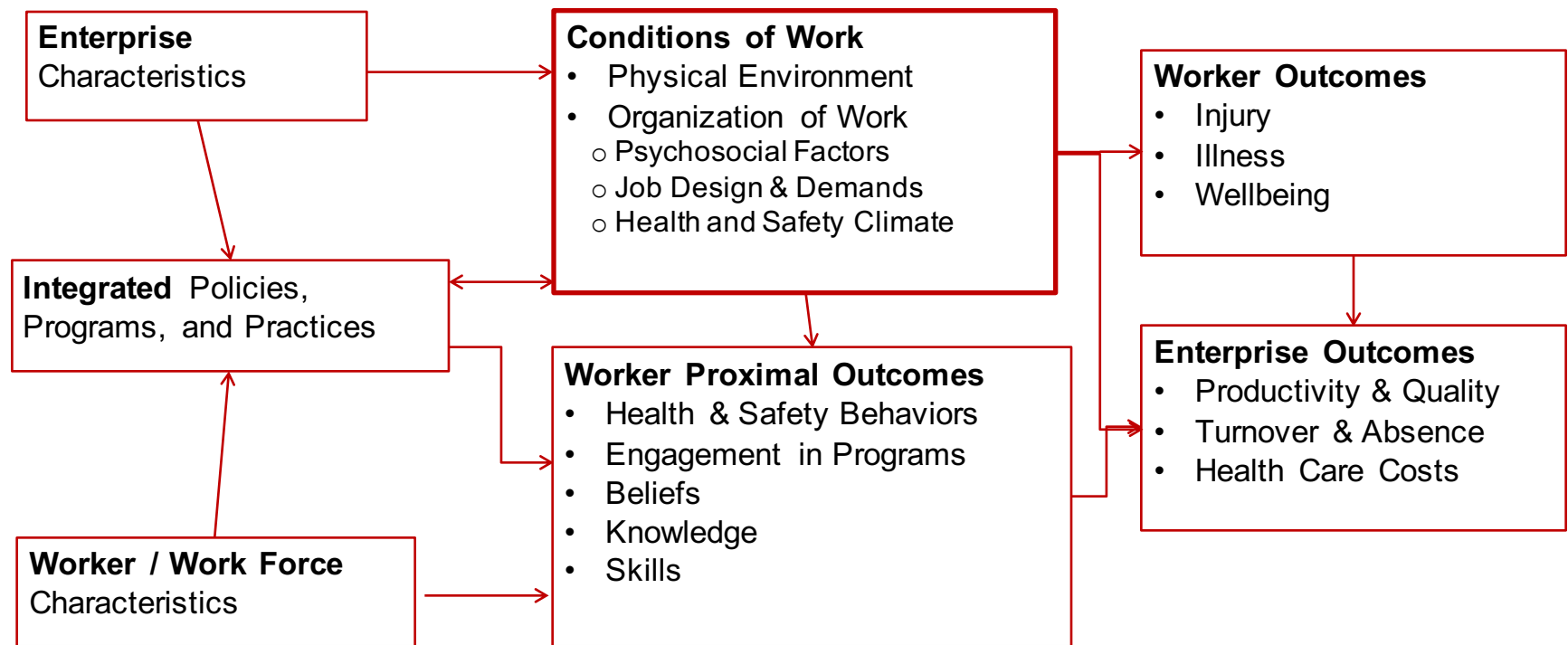


Example: using integrated approaches to address back pain--*Solutions*



- TWH solutions
- Leadership, management, and employee engagement
- Trans-departmental initiative (OSH, WHP, HR)
- Supportive health benefits
- Reduce the hazards
- Changes to worksite environment
- Changes to scheduling
- Appropriate training

Center for Work, Health and Well-being Conceptual Model



Sorensen et al Prev Med Submitted

Adapting to the Setting

- Organizational, job and worker characteristics
- Risks related to the job and setting
 - Nature of work/job
 - Work environment/organization
- Existing resources— budget, staff, prior programs, leadership support
- Key priorities as gatekeepers to TWH
 - Examples: Safe patient handling in health care; project planning in construction; continuous improvement processes in manufacturing

Other Considerations?

- What has worked in your organization?
- Where have you encountered barriers?
- What adaptations needed?

Research gaps: Epidemiological research

- Understanding pathways of systems-level approaches to improving working conditions
- Synergies across pathways
 - Do factors in the work organization interact with the physical work environment?
- Relationships over time
- Disparities in health effects
 - By worker or workplace characteristics
- Shared impact of working conditions on multiple worker and enterprise outcomes

Research gaps: Intervention Research

- Assess efficacy of integrated approaches in an expanded range of work settings
- Determine strategies to improve the conditions of work
- Define best practices and processes for diverse settings and types of workers
- Assess cost and related factors to support the business case
- Assess strategies to improve sustainability and institutionalization for systems-level changes
- Determine best processes to support dissemination and knowledge transfer



The Center's vision:

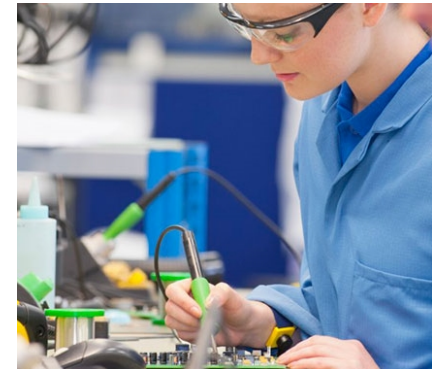
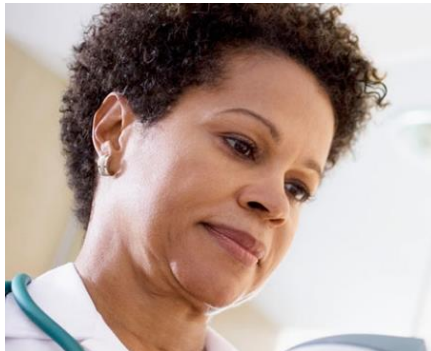
- *Optimal employee safety and health and employer outcomes through policies and practices focusing on the conditions of work -- integrating protection from work-related hazards with promotion of health and prevention.*



The Center's Priorities



Glorian Sorensen: Director
Jack Dennerlein: Associate Director



Research: Expand the scientific evidence base for protecting and promoting worker safety, health and well-being through system-level approaches

Practice: Develop and disseminate resources and best practices

Policy: Explore the policy implications

Capacity-building: Workforce development and training

SafeWell Practice Guidelines



- ***SafeWell Practice Guidelines: An Integrated Approach to Worker Health***
- available at:
<http://centerforworkhealth.sph.harvard.edu>
- Purpose: To provide a real-world model of evidence-based guidelines and tools for TWH programs

McLellan et al, 2012

<http://centerforworkhealth.sph.harvard.edu/>



News

Construction workers working while in pain

1st International Symposium to Advance Total Worker Health

 **Access**
research findings

 **Use** implementation
resources

- [SafeWell Guidelines](#)

 **Participate**
in events

Work, Health, and Well-being: Executive Continuing and Professional Education --February 6-8, 2017 • Boston, MA

- Hands-on, applied program
- Provides the knowledge and skills needed to improve workplace health and safety programs
- Ideal for anyone with direct responsibility for employee health, safety, or wellness



For more information or to register, visit:

<https://ecpe.sph.harvard.edu/WHW>

Thank you!

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- Nico Pronk
- Erika Sabbath
- Emily Sparer
- Anne Stoddard
- Greg Wagner
- Lorraine Wallace



How might this work in your world?

- What opportunities do you see for improving employer adoption of TWH approaches?
- Where to start? What are vanguard employers already doing, and how can that be leveraged?
- What processes have you seen work well? Where?
- Will a more broad and integrated approach stimulate economic and public/population health improvements?