How Far Have We Come with Worker Safety and Health?

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With thanks to

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• Just a shameless plug
• We hope to announce a new, part-time graduate certificate program in Occupational and Environmental Health
• Contact Phil Hagan at haganp@georgetown.edu for additional information.
Work trends

• Globalization
  • Changes in work characteristics
  • Changes in workforce
• The Recession and Recovery
  • Long-term unemployment
  • Increasing disparities
• Green Jobs
• OSHA’s response
• Work as health promoting?
Downsizing, outsourcing, lean production

- Globalization of industry
- Increasingly diffuse supply chains
- Diffusion of responsibility
- Lowest common denominator
- Smaller enterprises
- Lack of OSH expertise (management, union, industrial hygiene, safety, medical)
- Poor oversight, emergency preparations not specific
What was going on back in summer, 2008?
Saturday Overtime Repackaging Operation

- Midwest U.S. warehouse imported para-nitroanaline, usually in 3,000 lb. bags from China, and supplied an east coast rubber manufacturer.
- Summer Olympics interrupted the usual supply, previously stored 55 gal. drums from India available.
- Purchaser wanted the product in 3,000 bags.
- The warehouse operations director decided to repackage by rigging drums on a forklift to dump into bags.
- The Crew included the operations director, his future son-in-law, the leadman, the manager, the VP, and the warehouseman and his two sons (ages 23 and 29).
Haz-Mat team investigates warehouse

Bright yellow dust spilled everywhere

- Drums and sacks clearly labeled.
- Potentially lethal by oral, dermal or inhalational routes of exposure.
- All were poisoned with Methemoglobin levels ranging from 13.1% to 72.2%
ED’s, homes contaminated
Three Vehicles Contaminated
Immigrant workers

More than half of the growth in the workforce over the past two decades has been from immigration.

Prior to the recession, foreign-born Latino workers had one third higher mortality rates than U.S. born workers. During the recession this mortality rate increased to one half higher than U.S. born workers (although the absolute number declined).
Workers’ rights, workers’ centers

• Immigrant workers developed community centers, some with hiring halls
• Some are loosely formed into national networks through the Interfaith Workers’ Justice network and the National Day Laborers’ Organizing Network
• Focus on wage and hour violations but include workplace safety and health
• Education, action, policy
Adjusted Odds Ratios from the logistic regression model for identifying fall hazards (n=63) Sokas et al Public Health Reports 2009

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Odds Ratio and 95% Confidence Interval</th>
<th>P-value</th>
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<tr>
<td>US-born Non-Hispanic</td>
<td>1.00 (Referent)</td>
<td>NA</td>
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<tr>
<td>US-born Hispanic</td>
<td>0.18 (0.03-1.2)</td>
<td>0.10</td>
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<tr>
<td>Foreign-born Hispanic</td>
<td>0.81 (0.17-3.93)</td>
<td>0.44</td>
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<tr>
<td>Age</td>
<td>1.04 (0.99-1.10)</td>
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<tr>
<td>Previous training</td>
<td>5.97 (1.68-21.2)</td>
<td>0.01</td>
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The Cumulative Effect of Unemployment on Risks for Acute Myocardial Infarction Dupre et al Arch Int Med 2012

- Health and Retirement Study NIA: prospective cohorts begun in 1992 with new cohort baselines 1998 and 2004 and re-interviewed every 2 years
- Study included 13451 who reported ever having worked
- 1061 acute myocardial infarctions reported in follow-up
- AMI significantly higher among unemployed, HR 1.35 [CI 1.10-1.66]
- Risk increases from one job loss, HR 1.22 [1.04 – 1.42], to four or more cumulative losses, HR 1.63 [1.29 – 2.07]
- Risk is highest in first year of unemployment, HR 1.27 [1.01 – 1.60]
Proportion of long-term unemployed

Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research (NBER). Data online at http://data.bls.gov/timeseries/LNS13025703.

Unemployment as a health hazard

- 30,000 Swedes followed for 10 – 17 years
- Unemployment increases mortality risk at follow-up from 5.36 to 7.83%, controlling for initial health status.
- Mortality risk decreases with higher income.
- Male peak all-cause HR 1.6 at 5 years unemployment
- Female peak all-cause HR 1.13
Coordinated market economies require high degree of firm or industry-specific skills; liberal market economies specialize in goods and services that readily transfer across firms and industries (also differences in welfare systems).

Unemployed Germans have 2/3 income of employed; for unemployed Americans the income is ½ of employed.

Additional part time work or training counted as “employed”

3 waves of data, age 18 – 64 at start, 879 and 876 deaths German/US

Overall mortality RR for unemployed compared to employed Americans 2.4 [CI 1.7,3.4], ns for Germans at 1.4 [CI 1.0,2.0]

Stratification showed significant increases among East Germans with high skills and among Americans with medium or minimum skills

Race in U.S. matters because of unemployment risk, but RR not different between races
Involuntary part time work (BLS)
Contingent/insecure work

Assessing the Contribution of Unstable Employment to Mortality in Post-transition Russia: Prospective Individual-Level Analyses From the Russian Longitudinal Monitoring Survey Perlman and Bobak, AJPH 2009

- 4465 men and 4158 women followed from 1994 to 2003
- Education, occupation, unemployment and insecure employment and mortality
- Among men, mortality associated with payment in consumer goods HR 1.46 (CI 1.03, 2.07) (unemployment also)
- Among women, compulsory unpaid leave HR 3.79 (CI 1.82, 7.88)
Associations between temporary work and occupational injury

Benavedes FG, Benach J, Muntaner C, Delclos GL, Catot N, Amable M. OEM 2006

- Non-fatal (n=1,806,532) and fatal (n=1500) work related injuries in Spain, 2000- 2001
- Temporary workers showed RR of 3.13 for “Clearly work-related” nonfatal injuries, CI 2.50 – 3.91; reduced to non-significant when controlled for gender, age, occupation, duration of employment.
- For fatal injuries, crude RR= 3.14, CI 2.28 – 4.32, reduced to 1.30, CI 1.08 – 1.57 when controlled.
Forest plot of individual studies investigating the association between job insecurity and incident CHD events among men and women, adjusted for age.

Virtanen M et al. BMJ 2013;347:bmj.f4746
Hazards of full employment

- Mortality from several causes rise when labor markets strengthen.
- Total mortality, CVD, influenza/pneumonia, liver disease, MVA and other accidents
- Income reduces but doesn’t eliminate effect.
- Are recessions really good for your health? Ariizumi, Schirle. Social Science and Medicine, 2012
- Canadian provincial level data 1976 - 2009
- Reduced mortality during recessions found among young adults, 30 - 35.
- Reduced mortality in those over age 75 (non-significant in certain models).
Possible explanations

• Increased work-related injuries and illnesses
• Hours of work?
  • Sleep?
  • Stress?
• Increased driving, alcohol (in younger workers)?
• Increased pollution (older inhabitants)?
BP Refinery Explosion and Fire, Texas City, TX, 3/23/05
U.S. Chemical Safety Board Report

http://www.csb.gov/investigations/detail.aspx?SID=20&Type=2&pg=1&F_InvestigationId=20&F_State=TX

• 15 dead, 180 injured.
• 43,000 people sheltered in place; homes damaged up to 3/4 mile away.
• Occurred during start-up of an isomerization unit when tower overfilled: release from stack not equipped with flare, spraying flammables.
• MANY root causes, including chronic use of overtime (27% regularly for operators and maintenance, several up to 68%)
• Day Board Operator had been on 12 hour days for 29 straight days, averaging 5 – 6 hours sleep/night.

- 6014 British civil servants followed an average of 11 years
- 369 events (incident fatal CHD, clinically verified non-fatal MI or angina)
- Adjusted for 21 cardiovascular risk factors
- Working 3 – 4 h of overtime daily HR 1.56, CI 1.11-2.19
- Restricted to fatal CHD or MI: HR 1.67, CI 1.02 – 2.76
Intense Labor-management collaboration for systems change
- Workforce-wide education on cleaning practices and HAI reduction
- Job development, engagement, empowerment
Illness and Injury Prevention Programs = Safety Management Systems

- Management Commitment
- Worker Participation
- Hazard Identification
- Hazard Remediation
- Training [and education for enriched work roles]
- [Medical Surveillance]
- [Health Promotion]
- [Supervisory Support]
- Multiemployer Settings
- Program Evaluation
Silica standard setting process
OSHA’s Temporary Worker Initiative

• Launched by OSHA on April 29, 2014 (Worker Memorial Day).
• Following engagement with advocates and national workers’ rights organizations
• Guidance to OSHA compliance safety and health officers regarding enforcement approaches
• Outreach information to employers and to workers
• Temporary workers are entitled to safety and health protections:
  • Staffing agency and host employer have joint responsibilities
  • Each bear responsibility for compliance with regulations
  • In general, host employer responsible for record-keeping
  • Both have communication requirements with each other and with worker
Resources

• National Staffing Workers’ Alliance
  http://nationalstaffingworkersalliance.wordpress.com/

• National COSH Recommendations for How OSHA Can Improve Health and Safety for Temporary Workers

• OSHA Temporary Worker Initiative

• OSHA/NIOSH “Recommended Practices Protecting Temporary Workers”
  https://www.osha.gov/Publications/OSHA3735.pdf

• Policy Background on the Temporary Worker Initiative
  https://www.osha.gov/temp_workers/Policy_Background_on_the_Temporary_Worker_Initiative.html
California legislation AB 1897

- Host employer shares liability with labor contractor for wage payment, required workers’ compensation coverage, other labor laws.
- Authorizes Dept. of Labor, Division of Occupational Safety and Health, and Employment Development Dept. to issue regulations.
- Whistleblower protection
- Excludes businesses with fewer than 25 total employees or those hiring 5 or fewer subcontracted workers.
- Other exemptions include non-profits and motion picture industry.
Work should promote health

Prevention aiming at improving health and reducing inequality in health should focus on the dimensions of active and developmental work: influence at work, possibilities for development, degrees of freedom, and meaning of work. Furthermore, job insecurity should be reduced.

Job Resources

• Intrinsic motivation
  • Foster employee growth, learning, development
  • Decision latitude fosters autonomy,
  • Supervisory feedback fosters competence,
  • Social support - relatedness

• Extrinsic motivation
  • Help achieve work goals
The importance of the supervisor for the mental health and work attitudes of Australian aged care nurses  

Rodwell and Martin Int Psychogeriatrics 2012

- Mailed survey to 490 Australian aged care nurses working for medium to large healthcare facilities
- 267 responses (55% response rate)
- Predominantly female, over age 40, part time
- Supervisor support and interpersonal fairness were related to well-being
- Informational fairness was related to organizational commitment
Supervisory Support and Return to Work

• Modifies work
• Facilitates access to corporate and medical resources
• Monitors health and function
• Communicates concern and support
• Major determinant in return to work decisions
  • Reduces disability from chronic pain
  • Reduces disability from mental health disorders
Supervisory fairness

- Coded on a 4 point scale
- Do you ever get criticized unfairly (reverse coded)?
- Do you get consistent information from your supervisor?
- Do you get sufficient information from your supervisor?
- How often is your superior willing to listen to your problems?
- Do you ever get praised for your work?

- Whitehall II study
- 6442 male British civil servants 35 – 55 years old
- No CHD baseline
- Mean follow up 8.7 years
- CHD death, first non-fatal MI, new angina
- High justice hazard ratio 0.65 (95%CI 0.47 – 0.89) for incident CHD
- Remained significant when fully adjusted for cholesterol, BMI, alcohol, smoking, hypertension, physical activity, demand-control and effort-reward imbalance
- Found at all job grades
Organisational justice and markers of inflammation: the Whitehall II study. Elovainio et al OEM 2012

- 3205 men and 1204 women
- 35 – 55 y.o. at baseline (1985-1988)
- Perceptions measured during phases 1&2
- CRP and IL-6 measured in phases 3&7 (2003-2004)
- 6 – 7% decline in both/ 1 SD increase org justice (men only)
- Independent of age, BMI, depression and employment grade
Justice at Work and Metabolic Syndrome: the Whitehall II Study Gimeno et al, Occ Env Med 2010

- 6123 British civil servants, 4398 men; 1923 women
- Followed for 18 years
- Measured organizational justice at baseline
- Adjusted for age, ethnicity, job grade
- 3 or more at follow up: large waist circumference, elevated triglycerides, reduced HDL cholesterol, elevated BP, elevated fasting glucose
- For men, high vs. low level of justice reduced HR to 0.75 (CI 0.63-0.89)
- Results not significant for women (HR 0.88, CI 0.67 – 1.17) except for decreased waist circumference
Organisational justice and cognitive function in middle-aged employees: the Whitehall II study  

- Final sample 4531 men and women
- Perceived justice measures phase 1 & 2
- Assessments of cognitive function at phases 5 and 7 (2003-4)
- Scores treated as continuous variables for linear regression
- Lower mean scores at phase 1 & 2 were significantly associated with worse cognitive function (memory, inductive reasoning vocabulary and verbal fluency) at phases 5 & 7, independent of age, occupational grade, depression, hypertension, job strain and behavioral risks.

- Prospective cohort of 8298 British civil servants followed up for mean of 109 years.
- Responded at baseline to statement “I often have the feeling that I am being treated unfairly” with 6 point likert scale (strongly disagree to strongly agree) subsequently collapsed to “null”, “low”, “moderate” and “high”
- Unfairness associated with low employment grade, female gender, smoking, obesity, abstention from alcohol
- After adjusting for age and gender, high/moderate unfairness vs. low/null associated with subsequent incident CHD HR 1.55 (CI 1.11 – 2.17)
- Also associated with poorer physical and mental functioning at follow up as measured by SF-36

- Two national questionnaire surveys using COPSOQ, N =1062 and N = 3517
- Demonstrated increased mean rating of both leadership (52.6% to 55.3%, p = 0.0011) and social support from supervisors (64.1% to 69.6%, p < 0.001)
- True across all SES levels
- However, 11 other metrics of work declined significantly, including work pace, job control/influence, possibilities for development, meaning of work, role clarity, role conflicts, social support from colleagues, sense of community, conflicts at work, threats of violence and slander/gossip.
Does Total Worker Health include decent work?

- Minimum wage
- Job security
- Developmental work
- Workplace safety and health
- Worker’s voice
- Minimum benefits
  - Paid sick leave, parental leave
  - Pension
- Social determinants of health
  - Housing
  - Education
  - Transportation
Healthcare Support Occupations – Employment Characteristics

- National employment: 3.9 million; 5.1 million (30% growth) by 2018
- Mean hourly wage: $12.94
- Predominately (>70%) female
- Industries with highest employment:
  - Nursing care facilities (686k)
  - General medical and surgical hospitals (635k)
  - Home healthcare services (402k)
  - Offices of physicians (387k)
  - Community care facilities for the elderly (318k)
- Industries with highest concentration of employment:
  - Community care facilities for the elderly (43%)
  - Residential mental retardation, mental health and substance abuse facilities (42%)
  - Nursing care facilities (41%)
  - Home healthcare services (37%)
  - Offices of dentists (34%)

Sharps Safety

Used lancets, needles, and syringes may pose a health risk to you and your community, so please remember to:

**ALWAYS** throw away your used lancets, needles and syringes in a PROPER CONTAINER.

A PROPER CONTAINER is a red sharps container, but if you do not have a red sharps container use a puncture proof container such as a bleach bottle after every use.

**DO NOT** dispose of lancets, needles and syringes in the household trash, coffee cans or thin plastic containers.

For sharps disposal options, you may contact your health care provider or pharmacist.

If home waste disposal is the only option, seal, put duct tape over the cover and label the container “Do not recycle.”

*If you are in need of a red sharps container, contact your local pharmacy and ask if a free sharps container is available.*
Hospital Workers’ Voices Sokas et al New Solutions 2013

- Facilitated questions developed through tri-partite review to explore worker safety, patient safety, and potential relationship between the two.
- Twenty-nine self-selected participants in 3 groups of 9 – 11, all but one members of a union, all minorities, 18 women and 11 men.
- Job tenure ranged from 7 months to 28 years.
- Environmental service workers, food and nutrition workers, a ward secretary, linen workers, materials management workers, clinical technicians and a patient registration clerk.
- Grounded theory, line by line review.
- Report back: Did we get it right? Did we get it all?
A good day at work vs. a bad day

- Adequate staffing, everyone shows up ready to work
- Adequate supplies
- Everyone treats each other with respect and courtesy
- Well organized and good work flow
- Busy
- Patients doing well

- Insufficient staff/high absences/others not doing their jobs
- Inadequate supplies
- Poor supervision, unfriendly, untrained
- Lack of training
- Lack of communication
- Irritable supervisors, co-workers, doctors, nurses, patients
- Not able to fully utilize skills
Work is related to patient care

- Keep rooms free of clutter, trip hazards
- Make sure patients get correct food tray, healthy food
- Provide direct care, monitor vital signs, personal care, start IV’s
- “We feed, transport, clothe, clean, do everything, order everything for them”
- Clean hospital, clean spills
- Correct patient identification, information in charts
Conclusions

• Connection between worker and patient safety is evident to all; deep concern for patients and co-workers and appreciation for how each job is important to safe patient care

• **What’s important**: good communication, respect, have what you need to do the job, have your ideas valued

• Programs addressing patient safety have made real changes

• Communication efforts are appreciated

• Teamwork is important, but not always in place: contractors and temporary workers make it difficult

• Feel undervalued: no participation in decision making until its contract negotiation time, skills not used to capacity
Low cost interventions

• Be respectful
  • Respect each other, common courtesy includes greeting people
  • Respect belongings (theft in hospital)
  • Do what you are supposed to do (maintain privacy, wash hands, etc)

• Get everybody to the table
  • Workers have information, also need information
  • Problem-solving requires everyone to participate
    • Workers
    • Administration
    • Supervisors
    • Doctors and nurses
    • ALL departments involved
Next Steps for Frontline Workers

• Explore Role Expansion
  • Peer safety coaches
  • Career ladders
  • Incorporation into the team
• Union participation
• Labor-management training and education funds
• Enhancing institutional cultural competency
• Evaluate Interventions