The Aging Workforce: Occupational Safety, Health, Hygiene and Wellness

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Changes to the Future of Work

• Workforce
  – Age
  – Gender
  – Culture

• Employment
  – Precarious
  – Benefits
  – Global & Virtual

• Hazards
  – New Technologies
  – Organization of Work
  – Stress
The Changing U.S. 21st Century Workforce

- Chronologically older
- Limited availability
- Key skills lacking
- Global & Virtual
- Diverse
  - Race
  - Gender
  - Age Generations
  - Culture

Source: Testimony by Tamara J. Erickson to the U.S. Senate Committee on Health, Education, Labor and Pensions, May 2005

Screeching to a Halt: Growth in the Working-Age Population


Dramatically Different Patterns of Growth by Age

Percent Growth in U.S. Population by Age: 2000-2010

Age of Workers

Source: U.S. Census Bureau


... Continuing Into the Future

Percent Growth in U.S. Workforce by Age: 2000-2020

Age of Workers

Source: U.S. Census Bureau

In 2000, A Fairly “Young” World . . .

Percent of Population Age 60+ in 2000


. . . Rapidly Aging by 2025

Percent of Population Age 60+ in 2025

“Sudden” Boom in Life Expectancy

Life Expectancy at Birth: 1000 – 2000


Age-Adjusted Prevalence of Obesity and Diagnosed Diabetes Among U.S. Adults Aged 18 years or older

Obesity (BMI ≥30 kg/m²)

Diabetes

Average Retirement Age of Males

Source: Center for Strategic and International Studies

Proportion of 50+ yr olds Still Employed at Subsequent Ages by Age Attained and Class (U.S.)

National Research Council Study
Commissioned by NIOSH, 2004

- Characterize the older adult workforce over next 20-30 years
- Identify the key policy and research issues
- Address retirement patterns and characteristics of the older adult workforce and their jobs
- Conduct workshop on differential effects of environmental hazards

NRC Study (2004), (cont’d)

- Life course perspective emphasizes *aging* productively versus *age*
- Beginning clearly to detect age-related changes
- Can address disease risk factors to extend years of healthy living
- Promote research to capture precursors of age-related changes
Age and Chronic Conditions: How healthy are older workers?

Key Health Issues for 21st Century Workers

- Hypertension
- Cardiovascular Disease (Stroke, MI, PAD)
- Insufficient Sleep
- Fatigue
- Arthritis/Musculoskeletal Disorders
- Diabetes
- Chronic Pain
- Kidney Disease
- Multiple Medication Usage
Key Health Issues for the 21st Century

- Obesity/Overweight
- Dementia
- Depression
- Decreased Cognition
- Cancer
- Visual Difficulties
- Hearing Loss
- Decreased Pulmonary Capacity
- Chronic Obstructive Pulmonary Disease
- Decreased Strength, Coordination, Reaction Time

Potential Effects of Obesity

- Increased asthma severity (Taylor et al, 2008)
- GERD (Choi et al, 2008; El – Sorag et al, 2007)
  - High correlation with IPF (Raghu et al, 2006; Salviolo et al, 2006)
  - Highly related to asthma, chronic cough, hoarseness (Multiple References)
- Musculoskeletal disorders (the “worn out employee”)

Disease Interactions

- Obesity → Diabetes → CV, PN, GERD, Arthritis
- GERD → Asthma, IPF

Workers with >1 Chronic Condition

HRS 1998
Prevalence of Chronic Conditions in the Workforce

- Stroke
- Diabetes
- Any Cancer
- Coronary Heart Disease
- Arthritis
- High Blood Pressure

Percentage of Fire Fighters in Each Age Group Exceeding Selected Clinical Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Age Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20-25</td>
</tr>
<tr>
<td>&gt;25% Body Fat</td>
<td>0</td>
</tr>
<tr>
<td>Borderline to moderate hypertension</td>
<td>20</td>
</tr>
<tr>
<td>Positive exercise stress test</td>
<td>0</td>
</tr>
<tr>
<td>Mid to moderate pulmonary impairment</td>
<td>10</td>
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What is Osteoarthritis (OA)?

Osteoarthritis is a disease affecting the joints which is very treatable. It is rarely deforming or crippling, although it can be painful if not treated. Osteoarthritis is very common and affects almost everybody as they get older. The older you get, the more likely you are to have it, and around eight out of ten people over the age 50 are affected. In the hand, it typically affects the base of the thumb first, then the finger joints. Women are affected more than men.

Distal and Proximal Interphalangeal Joints
Carpometacarpal Joint

- Radiograph shows severe changes
- Most common location in hand
- May cause significant loss of function

Secondary OA: Diabetic Neuropathy

- MTPs 2 to 5 involved in addition to the 1st bilaterally
- Destructive changes on x-ray far in excess of those seen in primary OA
- Midfoot involvement also common
Potential Etiologic and Risk Factors for OA

Breakdown of Dynamic Cartilagenous Physiology Through:

• Aging
• Obesity (Local OA v OA Generalized)
• Gender
• Systemic Disease (DM, Gout, Other Arthropathies)
• Smoking
• Mechanical Loading (“Wear & Tear”)
• Acute Trauma
• Muscular Dysfunction
• Genetic Propensity


Respiratory/Allergic Disorders of Older Workers in the Workplace

- Allergic Rhinitis (AR), Reactive Airways Disease/Asthma (RAD), Allergic Dermatitis
- Workplace Allergens – flour dust, metal salts, isocyanates, animal (large-molecular weight) allergens, aldehydes, anhydrides, chromates
- Common General Environmental Allergens – Dust mites, foods, animals, molds, pollens/grasses/trees

Range of Occupational Respiratory Concerns

- Irritation
- Bronchiolitis Obliterans
- Chemical Pneumonitis
- COPD
- RAD (e.g. Asthma)
- Reactive Airway Dysfunction Syndrome (RADS)
- Interstitial Pulmonary Fibrosis (IPF)
- Lung Cancer
- Hypersensitivity Pneumonitis
- Allergic Disorders
Prevalence of Some Respiratory/Allergic Disorders in the Workplace

- Prevalence of Allergic Disease
  - AR – 20 – 40%
  - RAD – 8%
  - Atopy – 10 – 30%
  - Sinusitis – 30 million in US

Symptom or Exposure Approaches?

- **Sxs** versus **PELs**
- CALOSHA Sensitizer Standard
- Allergic sensitization resulting in disease
- Non-specific irritant triggers/response
Recent Scientific Reports Re: The Aging Workforce

• Older Workers who work > 59 hours/week Most Likely to Gain Weight as compared to Older Workers who work <59 hours/week (Mercan, 2014)

• “Great Recession” Increased Markedly Early Retirements for Those with Defined Benefit Packages Especially Pensions (Szing-Vacz et al, 2014)

• High Prevalence of Depression Among Elderly (Kim et al, 2014)

• Age Differences in Feedback Reactions – Older Workers had Higher Levels of Feedback Orientation on Social Awareness; Lower Levels of Feedback on Utility Than Younger Workers (Wang et al, 2014)

• Middle-aged and Older Production Workers Have Poorer Overall Physical Conditioning Than Same-Aged, Office Workers (Yoo et al, 2014)

• Increased Representation of Alzheimer’s Disease Raises Burnout in Certain Jobs (Social Workers, Nurses), (Shinan-Alltman et al, 2015)
Enhancing Successful Worker Placement: A Balance of Factors

• Possible Limitations
  – Mental Capacity
  – Chronic Conditions
  – Physical Capacity

• Compensating Factors?
  – Attitude
  – Judgment
  – Flexibility
  – Interest in learning new things

Avoid Non-Predictive Testing

• Laboratory Tests
  – Cognition speed
    • Information retrieval slower, unless material is familiar
  – Learning and recall slower, but equally successful in the end
  – Greater retention, higher learning achievement and more likely to complete a new field of study than younger workers
Avoid Non-Predictive Testing (cont’d)

- Lab tests do not translate well to actual work settings
- Factors other than *psychometric* cognitive abilities appear important to perform well at work
  - How well worker gets along with co-workers
  - Desire to perform well
- Individual measures are quite sensitive to occupational class

Physical Capacity Considerations

- **Physiology**
  - Maximal strength at 20-30 years
  - $O_2$ uptake reduced to 70% (max) by 65 years
  - Older adults work closer to capacity
- **Match Ability to Job Requirements**
  - Change in industry from manufacturing to services
  - Change in job duties from physical to mental
Work Settings: Employing “Chronologically Gifted” Workers

• Decreased performance
  – For physically demanding work only
• Work *uncommonly* demands maximal effort
• Non-physical advantages that older workers bring to a job are rarely measured
• Workers abilities matched to the job results in less morbidity
  – Accommodation thinking rare in industry\(^1\)
    • May change with ADA Amendments Act of 2008
    • Workers are changing (aging) and jobs are changing

\(^1\) Eur J App Phys 2003 89:536

Aging Productively

• Injury risk and its consequences differ in older workers.
• Medical costs rise with age.
  – Estimated 25% increase from age 40 to 50 to 35% from age 50 to 60
• BUT, age is less a factor in health care costs than the presence of such risk factors as smoking, obesity, lack of exercise, and diabetes!
• There is such a thing as “aging productively” or “healthy aging”!
Do Aging Workers Need Special Accommodations?

• A well-designed workplace benefits everyone.
• Work stations and job tasks need to be matched to the capacity of each worker.
• There should be no conflict between ergonomic principles vs. reasonable accommodations.

Are There Any Specific Health and Safety Concerns Related to Aging Workers?

• Older workers have fewer injuries, but when one occurs, that injury tends to be more severe and it takes worker longer to get better.
• Injuries differ in older workers—there are more musculoskeletal injuries (especially involving the low back).
• No consistent relationship between aging and work performance!
What Should Your Company be Doing?

• Understanding changes in your workforce
  – Better accommodate your changing needs
• Cost Analysis by injury, illness, age, type of claim
• Implementing/Updating Medical Standards and Fitness for Duty Medical Determinations
• Expanding Range of Reasonable Job Accommodations
• Health Promotion Activities
• Disease/Case Management
• Special Exposure Considerations
• Utilize Enhanced Medical Expertise/Services

Would You Hire or RTW and Employee…

• 68 year old
• BMI – 35
• 40 Pack-Year Smoking History
• History of DM, OA, HD, RAD, COPD, Spinal Fusion, BCTS Release, Partial Rotator Cuff Tear
• Rx – Percocet, Prozac, Ambien, Statin, Anti-Hypertensive, Allopurinol
For a Job With…

- Moderate Physical Demands
- Dusty Environment, Solvent Cleaning
- Occasional Stooping, Bending, Squating, Climbing, Twisting, Reaching
- Overtime
- Rotating Shifts
- Equipment Operator Requirements

Medical Standards and Fitness for Duty Evaluations

- Medical and Physical Characteristics to Perform Essential Job Elements With/Without Reasonable Accommodations to Address Significant, Near-Term Risk of Injury/Disease
- Define Job Characteristics/Jobs/Placement
- MS for Initial Hire, RTW, MMS, Respiratory Protection, Fitness for Duty Issues
Medical Examinations/Evaluations

- Functional Job Screening
- Exam Components
- Medical Restrictions/Accommodations
- Medical Standards – Medical Criteria
- Decisions, Decisions, Decisions
- “Rejection” Rates
Case Identification, Evaluation and Resolution (CIER)

- Establish a Flow Process By Issue/Regulatory Type (ADA, OSH, WC, FMLA)
- Design Case Selection Criteria
- Record Peer Review/Discussion
- CIER Action Plan With “Tracker” Approach
Medical Case Management (MCM)

- Cost
- Lost time duration
- Specific practitioner
- Practitioner type
- Suspected fraud, malingering
- Diagnostic type (Silicosis, CTS, RSD, FM, Cancer)
- Failure to progress (Strength, ROM, Sxs)

Medical Case Management (MCM) (cont’d)

- Extended modified duty
- Psychosocial factors
- Inadequate rehabilitation PLAN
- Unclear/Inappropriate restrictions
- Unusual treatments
- Failed RTW
Benefits of Worksite Wellness Programs

Companies receive many benefits after implementing a worksite wellness program in addition to reducing costs. They include increases in employee morale, improved employee health, reduction in workers' compensation claims, reductions in absenteeism, and increases in productivity.

Wellness Program Savings

A three year study conducted at a health system in Minneapolis found that health risks decreased after the implementation of a comprehensive worksite wellness program. This led to increased savings due to reduced health care costs, absenteeism, and workers' compensation claims each year of the program.
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