



Emerging Ergonomic Concerns in the Healthcare Industry

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Why Are We Here

The Problem Statement

Healthcare workers encounter unique risks that are uncommon in other industries.

Work in healthcare is dynamic and unpredictable. A worker must be prepared to respond or react to various situations with split-second decisions.

According to the CDC (Centers for Disease Control and Prevention) and the NIOSH (The National Institute for Occupational Safety and Health), **healthcare is the fastest-growing sector of the U.S. economy.**

In particular:

- Healthcare workers lift, reposition, and transfer patients who have limited mobility.
- Healthcare workers serve patients with physical or mental health challenges, some of which increase the likelihood of violent outbursts and difficult work.
- Larger patients can pose particular challenges for safe handling.



Learning Objectives

This presentation will help to:

- Define (or re-define) Ergonomics
- Understand Ergonomic risk factors and the development of Musculoskeletal Disorders (MSDs)
- Understand the relationship between Ergonomics, Lean and Six Sigma
- Outline four (4) emerging ergonomic concerns
- Demonstrate 3 approaches to improve the healthcare workplace



What Is Ergonomics?

- Ergonomics is derived from Greek words that translate to:

“Why the heck would they put that valve way up there?”



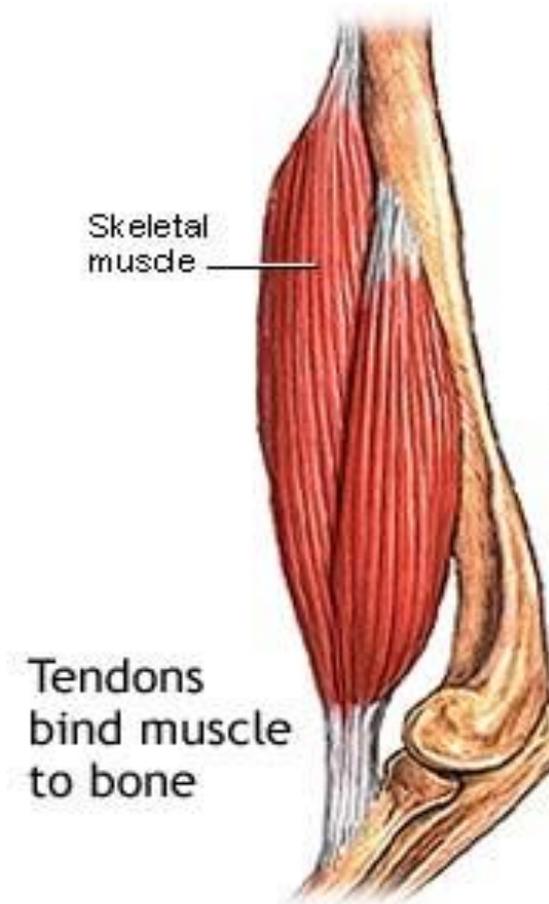
What Is Ergonomics?

- There are things we can do and certain things we cannot do. When the two are confused, ergonomic issues result.
- **Poorly designed work** creates accelerated wear and tear on the body.
- Ergonomics is focused on “**fitting the job to the person**”, reducing risk & improving productivity in your operations.



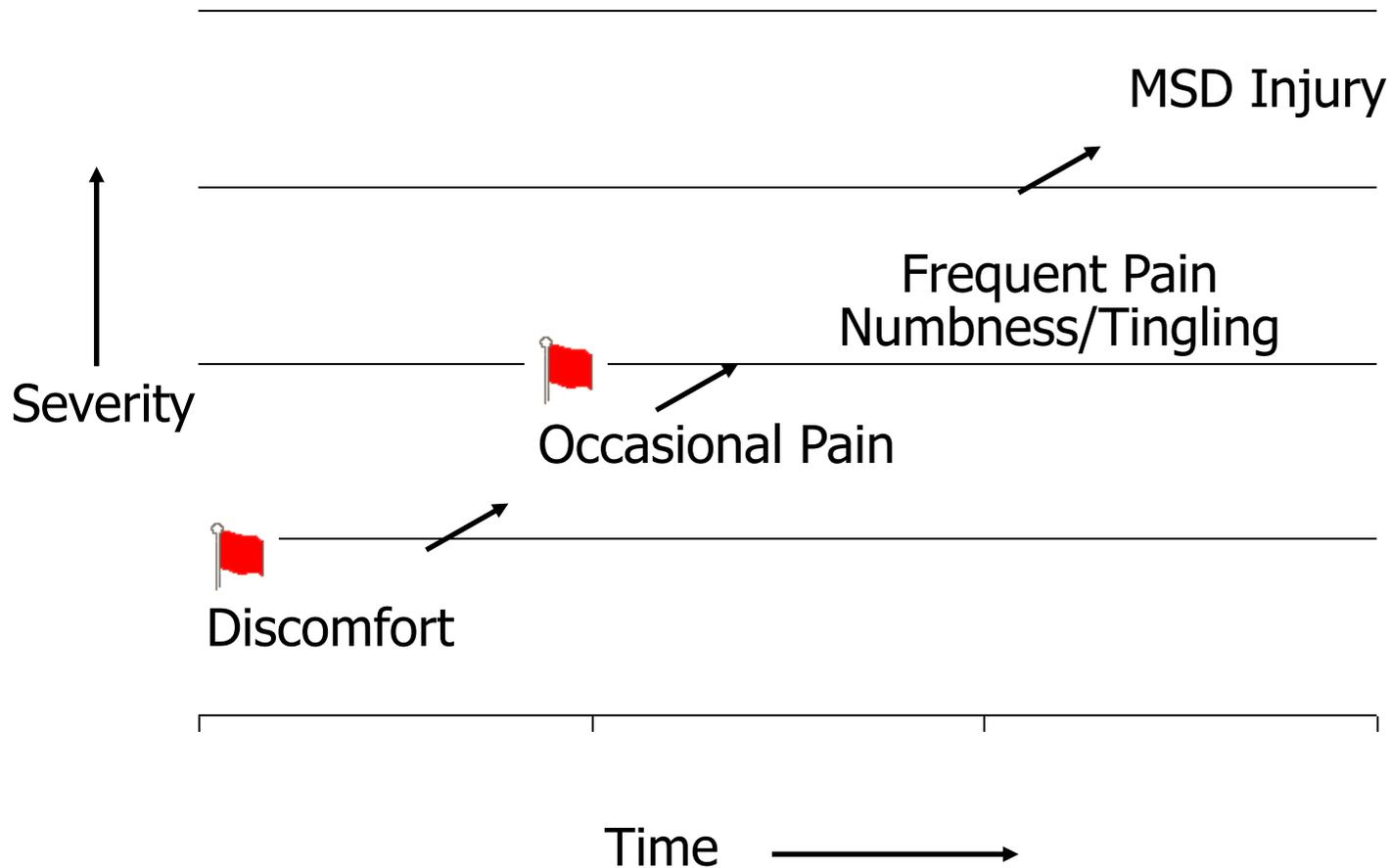
MSDs: Body Wear and Tear

- **Musculoskeletal Disorders (MSD):** Injury or illness caused by excessive wear and tear on the muscles, nerves, tendons, joints, cartilage, and spinal discs
- MSDs are also called:
 - Repetitive Strain Injuries (RSI)
 - Repetitive Motion Injuries (RMI)
 - Cumulative Trauma Disorders (CTDs)
- MSDs are a problem due to:
 - Increased work pace
 - Longer work shifts
 - Less rest and recovery time
 - Segmented work which increases repetition



Musculoskeletal Disorders (MSD)

Progression of a MSD



Primary Ergonomic Risk Factors

Risk factors increase the probability of developing an Ergonomics injury/illness.

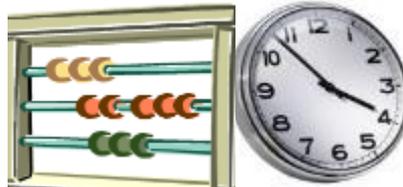
FORCE



Force is the amount of effort to perform a job.

Generally, the more force, the greater the risk.

FREQUENCY



Frequency is performing the same motions repeatedly or for a long interval without proper rest and recovery.

POSTURE



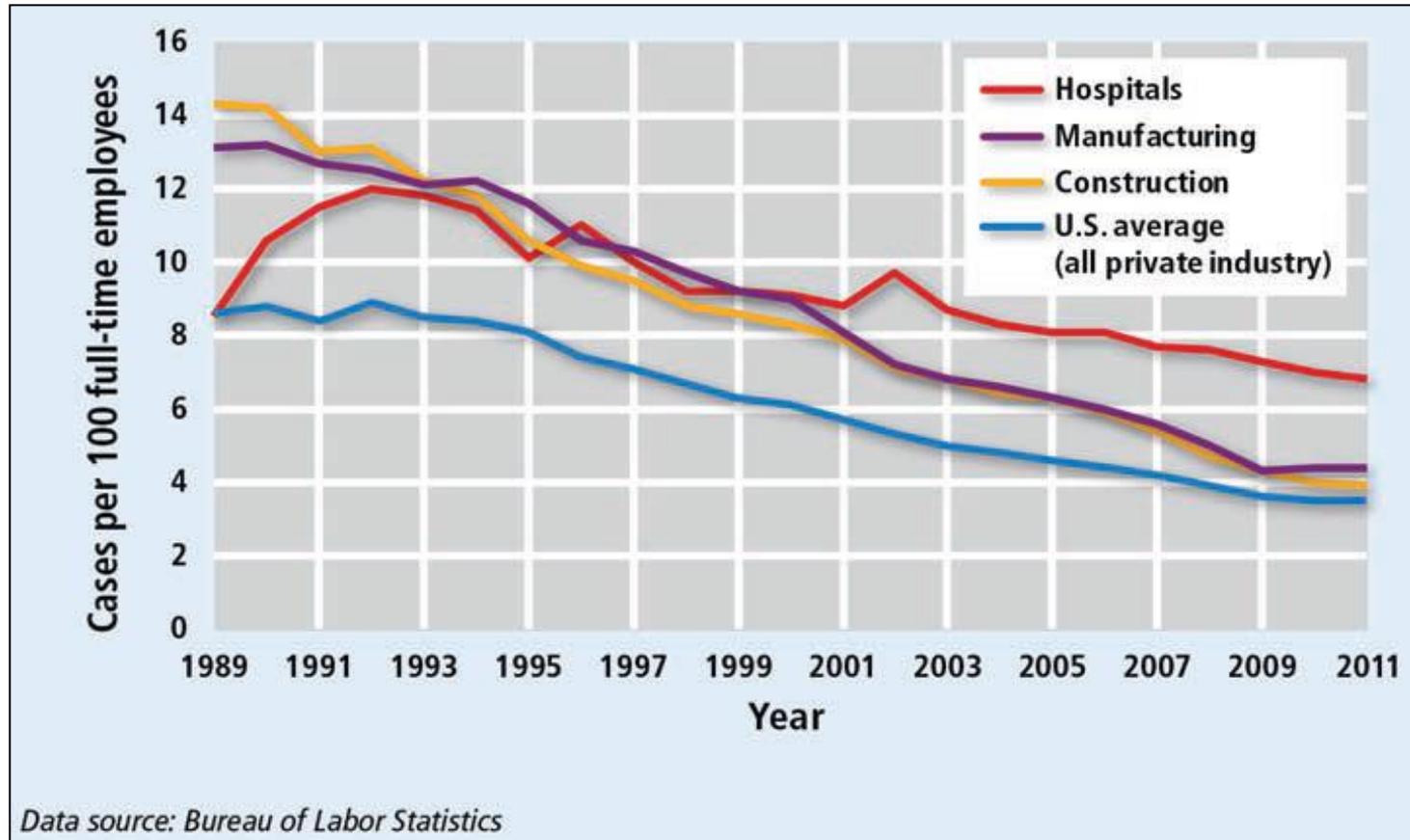
Posture is the position of the body while working.

Working in extreme postures increases the difficulty of performing a job.

People are expensive.

Healthcare Injury & Illness Rates

Total Case Incidence Rate (TCIR) – 1989 to 2011

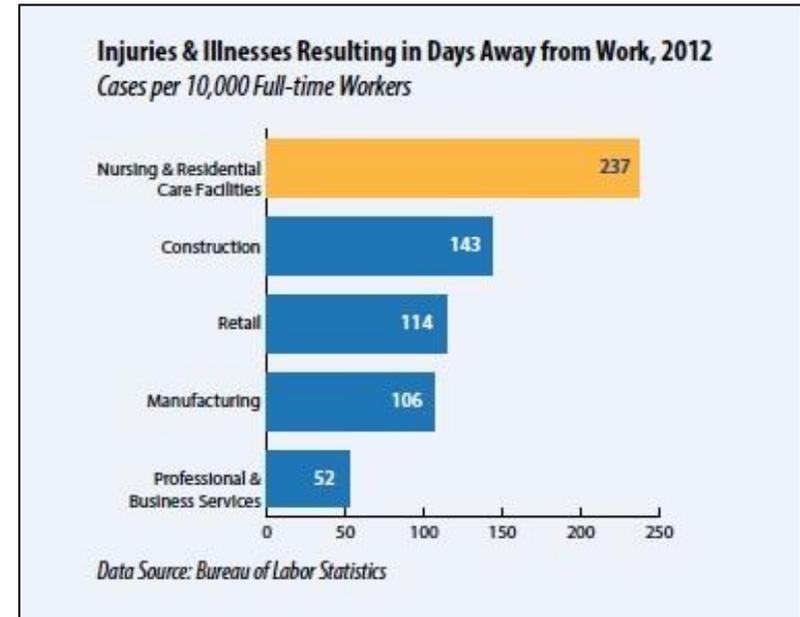


The increase in hospital injuries and illnesses in 2002 is believed to reflect more complete reporting of sharps injuries in conjunction with OSHA's expanded Blood borne Pathogens Standard. This figure includes data for all OSHA-recordable injuries and illnesses, regardless of whether they resulted in days away from work or modified duty assignments. "Days away" injuries, workers' compensation claims, and other analyses show a similar pattern of consistently elevated injury rates for hospitals

Health & Safety Impact

Healthcare Stats

- According to the CDC and NIOSH, healthcare is the fastest-growing sector of the U.S. economy.
- **Cases of MSD-related injury and illness to health care workers are among the highest of any industry sector.**
 - Nursing aides, orderlies, and attendants had the highest rates of musculoskeletal disorders of all occupations in 2010.
- By contrast, two of the most hazardous industries, agriculture and construction, are safer today than they were a decade ago.
- The single greatest risk factor for overexertion injuries in health care workers is the manual lifting, moving and repositioning of patients.



Health & Safety Example

Who Benefits – the Employee, the Employer or the Patient/Resident?



Problem

- ✓ Patient handling is a leading cause of ergonomic injuries in hospitals
- ✓ High-risk of back injury
- ✓ Aging nursing workforce

Solution

- ✓ Range of patient handling devices to reduce ergonomic risk exposure to health care professionals
- ✓ Reduces ergonomic risk to the back by 85%

Hospital Activities With Significant MSD Risks

Luckily, MSD risks are limited to patient moving/handling – right?

Well, not exactly. Consider these areas:

- Dietary/Kitchens
- Environmental/Housekeeping
- Laboratories
- Laundry operations
- Maintenance/Engineering
- Radiology
- Security
- Sonography
- Surgery
- Even office operations



How Can Ergonomics Affect Healthcare?

There are many reasons to incorporate ergonomics into healthcare.

Four primary drivers are often cited:

- Health and safety
- **Productivity and efficiency**
- Quality of service delivery
- Compliance



People are the primary source of productivity.

What Is Lean?

Applying Lean to Healthcare



- A belief that operating costs can always be lower through the identification and elimination of waste. Overall, lean improves productivity and operational efficiency.
- Lean is based on the concepts of Toyota Production System (TPS) which has been around for more than 60 years
- Applying the principles of lean to health care brings to light what adds value from the patient's perspective and what does not.
- Any task or activity that is not a value-added step from the perspective of the patient is deemed wasteful, and eliminated.
- This immediately improves flow in the health care setting, relieves staff of the unnecessary burden of wasteful work and helps to optimize the patient's experience.

Lean Healthcare Ergonomics & The Relationship With Motion Waste

- Motion Time:
 - A full arms' reach experiences ergonomic risk and takes approximately 0.8 seconds of motion time per roundtrip.
 - Every full back bend to the floor involves ergonomic risk and takes approximately 0.8 seconds of motion time per roundtrip.
 - Every 10 walking steps may experience ergonomic risk and costs about 7 seconds.



Productivity Example

Who Benefits – the Employee, the Employer or the Patient/Resident?



Problem

- ✓ No handle creates awkward wrist postures
- ✓ Facility damage in door ways due to “out of control” conditions while pushing



Solution

- ✓ Installed handles to promote more user-friendly postures (40% less wrist extension).
- ✓ Drop in facility damage
- ✓ Cost: \$35
- ✓ Saves an average of 3.2 seconds per transport

How Can Ergonomics Affect Healthcare?

There are many reasons to incorporate ergonomics into healthcare.

Four primary drivers are often cited:

- Health and safety
- Productivity and efficiency
- **Quality of service delivery**
- Compliance



People are at the heart of the
quality agenda.

Quality Service Delivery

Removing Variability from a Process

- Quality service delivery requires eliminating variances in work practices
 - If people are involved in your process, then poor visual access, awkward postures, excessive force, and repetition can all contribute to fatigue.
 - Fatigue contributes to variability.
 - Excessive force, frequency, and posture introduce fatigue.



How Can Ergonomics Affect Healthcare?

There are many reasons to incorporate ergonomics into healthcare, including:

- Health and safety
- Productivity and efficiency
- Six Sigma
- **Compliance**



Compliance

- The emphasis on safe patient handling is increasing in the United States. Currently, there are eleven states with specific laws to protect workers.
- The drive behind this legislation is to prevent musculoskeletal disorders for direct-care registered nurses and all other health care workers by putting required controls in place to minimize risk of injury to health care workers.
- Thus, safe patient handling and the toll it takes on health care workers is receiving national attention.

The screenshot shows the OSHA website header with the United States Department of Labor logo, social media icons, and a search bar. The main navigation menu includes links for ABOUT OSHA, WORKERS, EMPLOYERS, REGULATIONS, ENFORCEMENT, TOPICS, NEWS & PUBLICATIONS, DATA, and TRAINING. The page title is "Worker Safety in Hospitals" with the subtitle "Caring for our Caregivers". A navigation sidebar on the left lists "Worker Safety in Hospitals Home", "Understanding the Problem" (highlighted), "Safety & Health Management Systems", and "Safe Patient Handling". The main content area features a section titled "Understanding the Problem" with text describing hospital hazards and a statistic: "Hospital work can be surprisingly dangerous. According to the Bureau of Labor Statistics, the likelihood of injury or illness resulting in days away from work is higher in hospitals than in any other industry." A callout box on the right states: "Nationwide, workers' compensation losses result in a total annual expense of \$2 billion for hospitals!"

The Importance Of Ergonomics To Staff Members

It can make their jobs easier.

- fewer employee complaints and injuries
- less paperwork
- fewer injured employees to replace
- increased productivity / improved quality
- satisfied patients/residents
- improved healthcare

It improves their quality of life.

- overall health and well-being`



When talking to staff members, sometimes we forget to cover the WIIFM – “what’s in it for me”

EMERGING WORKPLACE CONCERNS

AGING

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The Aging Workforce

Consider the numbers:

- There are about **319 million** people in the US (2014 US census estimate).
- **45 million** people are over the age of 65.
 - **9 million** (3%) are still working.
 - The number and percentage is **expected to double** over the next 10 years.
- What does this mean?
 - There are more older people in the workforce due to extended careers, second careers, and longer life expectancy.
 - Aging affects the workplace. Period.

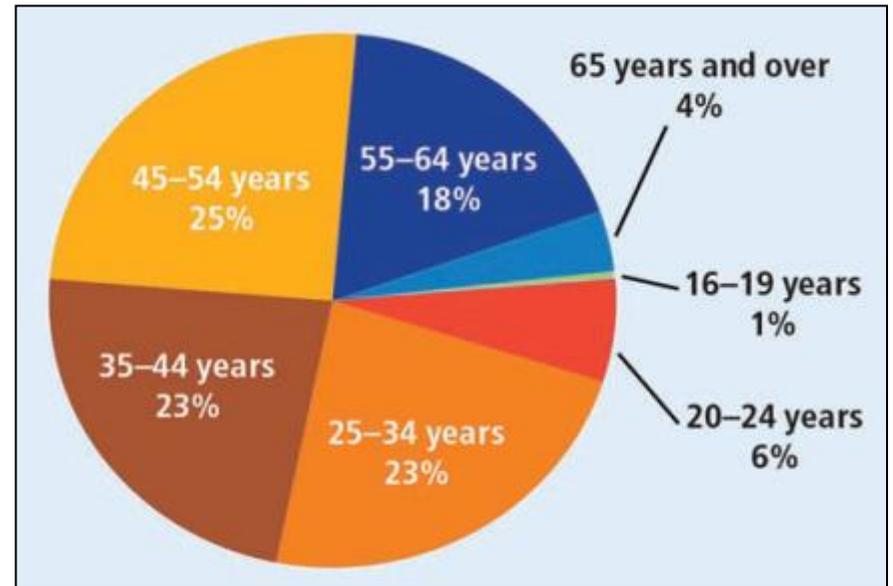


The Aging Workforce in Healthcare

Healthcare Stats

- Fifty-three percent of working nurses are over the age of 50.
- The average medical cost of employees aged 51 and older is \$4,300 and the total average cost of the claim is \$8,200.
- For workers over 50 years old, these injuries are 29% more costly than those 50 and under.
- As health care workers age, complications occur as their bodies cannot handle the same tasks, which may reduce the length of employment for the worker.

Age Distribution of Healthcare Workers



Source: Bureau of Labor Statistics

Capabilities Change With Aging

8 Major Changes



1. Effects on Joint Movement

- Loss of joint movement:
 - Structural changes in the joints.
 - Loss of muscle elasticity and flexibility.
- What does this mean?
 - Limits overall trunk movement by an average of 32%.
 - Back flexion is impaired the most.
 - Limits reaches by an average of 20%.
 - Vertical reach is impacted more than horizontal reach.
 - Increases time to perform work activity due to reaction and motion time delay.



2. Effects on Physical Mobility

- Loss of physical mobility:
 - Gross motor functions to be performed less accurately
 - Walk, push/pull, carry, climb, and lift/lower.
- What does this mean?
 - More missteps, slips, trips, and falls, especially with stairs and ladders
 - Slower pace and shorter gait increases time to perform work activity, ranging from 25% to 150%



3. Effects on Force Generation

- Loss of force generation:
 - Overall strength reduction up to 60% (30 years old → 60 years old).
 - Accelerates at the age of 60.
 - Most dramatic after age 65.
 - Muscular and tendon strength decreases.
 - Mostly with arms and legs.
- What does this mean?
 - More difficult to perform high force work activities.
 - More difficult to grasp and hold objects.
 - Fatigue onset is quicker and recovery is slower.

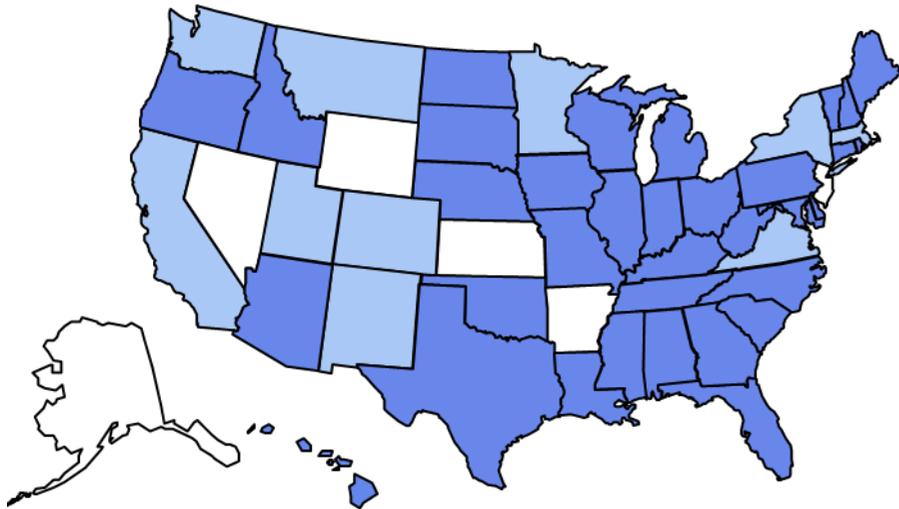


EMERGING WORKPLACE CONCERNS

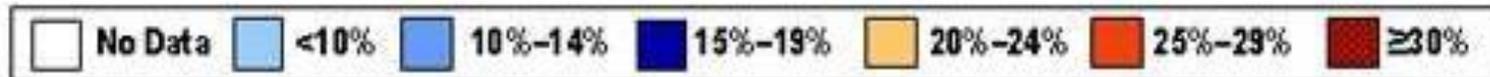
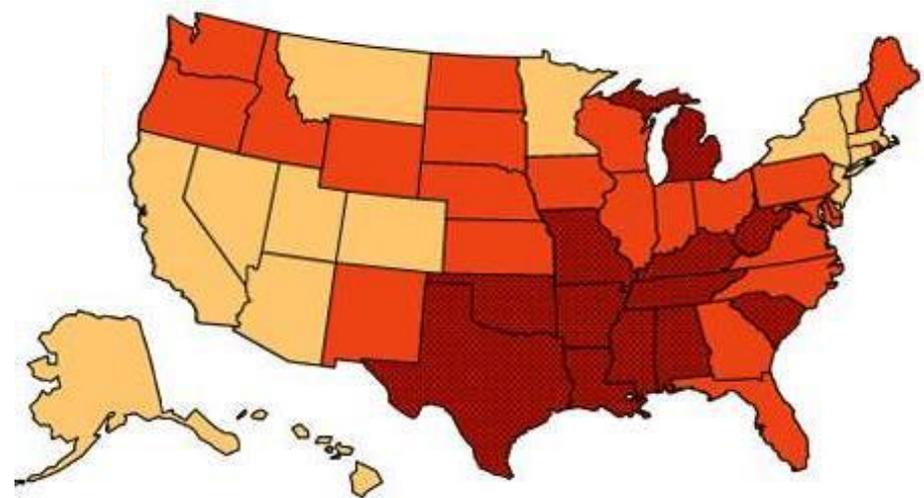
OBESITY

Percent of Obese US Adults

1990



2010



Obesity

- Impact of obesity:
 - Obese workers file 2x to 3x more workers' compensation claims as healthy weight workers.
 - Obese workers have 13x more lost workdays than healthy weight workers.
 - Workers' compensation medical claims costs are about 7x higher for the most obese workers.
- What does this mean?
 - Increases in physical limitations and abilities, medical concerns (e.g., diabetes, heart problems), and elevates energy expenditures.



EMERGING WORKPLACE CONCERNS GENERATIONS X, Y, & Z

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The Millennial Generations

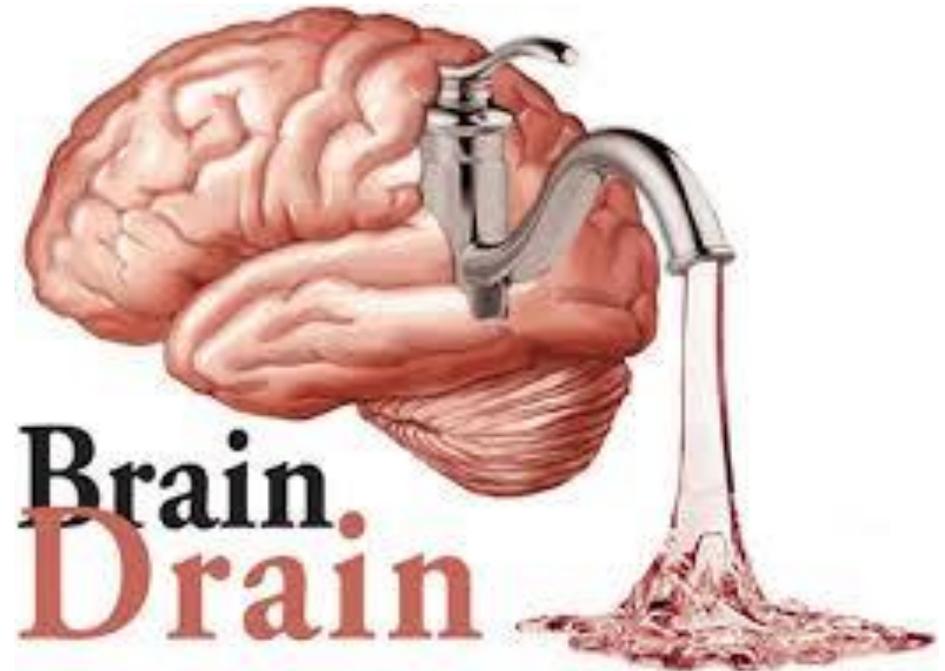
Understanding the Next Generations

- The Millennial Impact:
 - Most researchers use birth years ranging from the early 1980s to the early 2000s
 - includes Gen X's & Y's
 - The number of U.S. Millennials in 2015 is 75.4 million people. (Pew Research Center, 2016).
- What does this mean?
 - Attracting millennials to healthcare is more difficult.
 - More frequent job changes.
 - Gen X's will have 10-12 jobs over their working life, and
 - Gen Y change jobs every 1-2 years.
 - Willing to take a 60% pay cut to pursue a career path aligned with their passions.



Millennial Generation

- More Millennial Impact:
 - By 2020, 25 million Baby Boomers, who make up more than 40% of the U.S. labor force, will be exiting the workforce in large numbers and leaving many jobs to be filled by millennials
- What does this mean?
 - Baby Boomers will take decades of knowledge with them, and this “brain drain” could result in the loss of key information that could be devastating to organizations (Jason Dorsey, 2014).
 - Processes need to be documented, especially key functions that are performed periodically



Don't lose critical “tribal knowledge” due to retirements of long-term workers

Millennial Generation

Growth with a whole new generation of younger workers

Hospital employment is growing, which puts an increasing number of workers at risk.

Healthcare is one of the fastest-growing sectors of the U.S. economy. Hospitals employed a total of 6.3 million people as

of 2011, which represents an increase of more than 1 million since the year 2000.¹ According to the Bureau of Labor Statistics, the healthcare industry as a whole is projected to add 5.6 million jobs during the current decade, including roughly 900,000 new jobs in private hospitals (Figure 9). (Detailed projections are not readily available for publicly owned hospitals.)

Figure 9. Projected Change in Employment by Major Industry, 2010–2020²

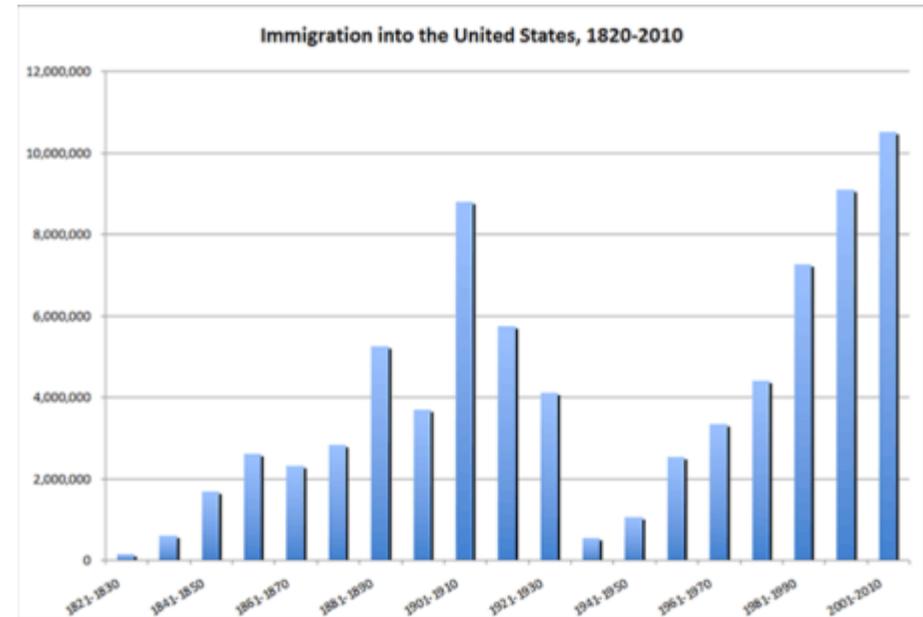


EMERGING WORKPLACE CONCERNS IMMIGRANTS

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Immigrant Workers

- Impact of immigration:
 - Immigrants make up 12.5% of the US population.
 - One million immigrants come to the US annually.
 - U.S. Immigration
 - Mexico (29.8%),
 - Philippines (4.5%),
 - India (4.3%), and
 - China (3.7%)
 - This comprises over 40% of the immigrant population.



Immigrant Workers

- What does this mean?
 - Construction, transportation, food, and material handling occupations show some of the biggest increases over the past decade in MSDs
 - 4% increase in healthcare jobs
 - Generally smaller-statured
 - Information processing and communications may be impacted

Consider the impact of immigrant workers in the meatpacking industry



IMPROVING THE WORKPLACE HEALTHCARE

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Three Approaches To Ergonomics In Healthcare

- Traditional
Develop & implement an ergonomics process
- Targeted
Develop & implement a safe patient handling & mobility process
- Focused
Performing Ergo Kaizen events



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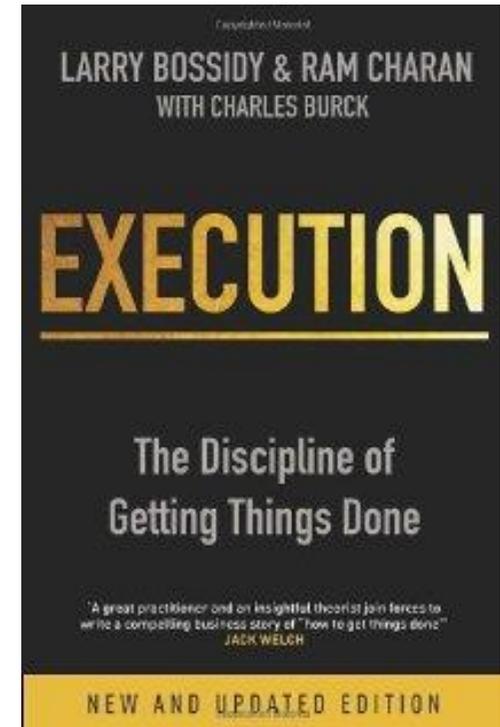
Traditional Approach – A Formal Ergonomics Process

- Provides a structured approach to managing risk in the workplace
- Focuses on actions required to **achieve and sustain** your success
- Can be applied across the broad range of hospital risks
- Establishes timelines to hold all staff members accountable for sustaining effort and action
- Offers the tools that you need succeed

Provides a framework for effective **execution of your action plans**

Warning: Most Ergonomics Processes Fail

- Lack of a reasonable action plan
- Ineffective application of resources
- Focus on the wrong metrics
- Limited oversight
- No accountability
- Failure to execute plans effectively



Ergonomics Process Objectives

- Develop action plans to focus on meaningful activities and to manage the process
- Objectively assess & prioritize ergonomics risk
- Analyze high-risk jobs & implement **sustainable** solutions
- Share successes to leverage our impact
- Apply meaningful metrics
- Build ergonomics into how we do business

Components of the Ergonomics Process

- Action-oriented teams
- Risk assessment & prioritization
- Job/task analysis
- Solution development, selection, implementation, & validation
- Measurement of impact
- Early symptom identification & effective treatment
- Training at all levels
- Action planning & communication
- Effective metrics
- Process evaluation & improvement

The Ergonomics Process Includes . . .

- Clear roles & responsibilities
- Requirements for action planning & tracking
- Standard processes for risk assessment, **prioritization**, & job analysis
- Processes for developing, **selling, implementing, and validating** ergonomics solutions
- Action-oriented metrics for measuring effectiveness
- Plans for staff training & frequent communication
- The tools required to implement the process

Targeted Approach – A Safe Patient Handling & Mobility Process

- Provides a structured approach to managing risks related to the highest frequency cause of MSDs in the workplace
- Provides strategies for evaluating patient handling risks
- Increases utilization of lift tools and equipment
- **Has been shown to reduce the average cost of MSDs by 23%**
- Offers the tools that you need succeed

A Safe Patient Handling & Mobility Process

- Offers a structured system for reducing risks related to patient movement and transfers
- Provides a ergonomic design guidelines to manage risk
- Includes education and training protocols
- Requires the use of patient assessment system to evaluate risk
- Encourages management to invest in lifting aids and equipment
- Should include patient education modules



Focused Approach – Ergo Kaizen Event

Continuous Improvement

Kaizen

- Japanese word for continuous and incremental improvement
- Kai = **change**, Zen = **good**

改善

PHILOSOPHY

Developing a culture where all employees are actively engaged in improving the company

ACTION PLAN

Organizing events focused on improving specific areas within the company

What is a Kaizen Event?

Small Changes Create a Large Impact

- Focused “action plan” with emphasis on making simple, impactful and sustainable changes to many areas of the facility that affect quality, efficiency, and safety.



Problem

- ✓ Prolonged sitting with an unsupported back and occasional back twisting
- ✓ High back injury rates

Solution

- ✓ Mobile workstation promotes improved working postures.
- ✓ Able to adjust keyboard and monitor heights
- ✓ Preferred by nurses

Healthcare Example



Problem

- ✓ Prolonged neck bending during microscope use
- ✓ Shoulder and neck discomfort

Solution

- ✓ Adjustable height bellows promotes improved neck postures or view monitor
- ✓ Less reported neck discomfort
- ✓ Less reported shoulder discomfort with armrests
- ✓ Greater time on task

Questions?



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