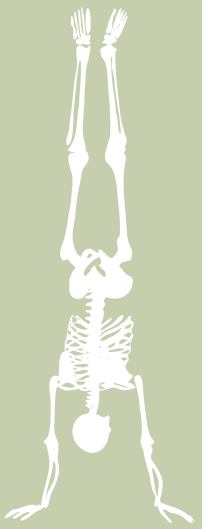


Preventing and Treating Musculoskeletal Disorders:

New Strategies for Employers

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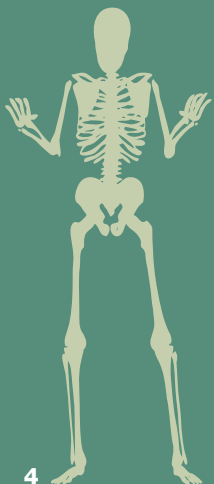
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Background

Employers spend more on musculoskeletal disorders (MSD) than on any other condition or chronic disease, including diabetes, obesity, cardiovascular disease and respiratory illness. These direct costs — approximately \$20 billion/year¹ — include medical claims for diagnostic imaging, physical therapy, and both surgical and non-surgical interventions. What's more, some of these procedures have questionable long-term benefit. Indirect costs to employers may be five times direct costs, or \$100 billion/year², and include absenteeism and presenteeism, disability claims, overuse and misuse of pharmaceuticals, and behavioral health treatments.

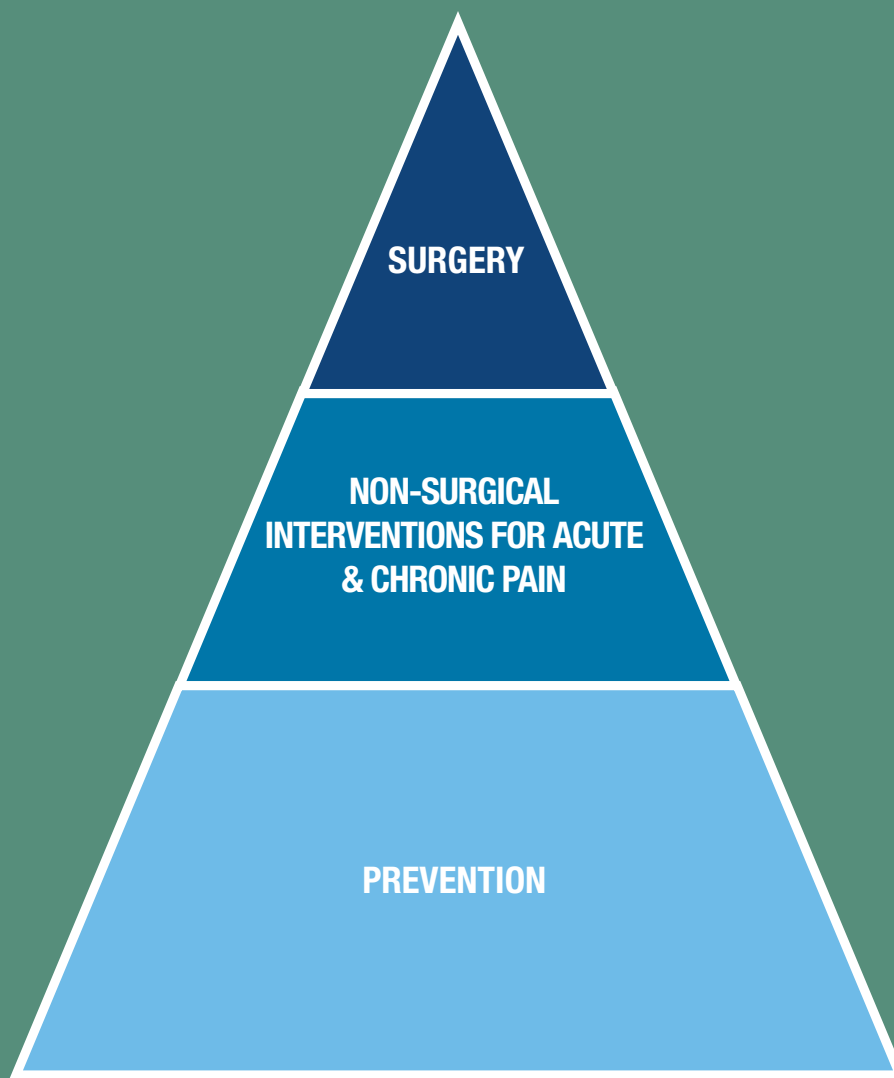
Northeast Business Group on Health (NEBGH) in March convened a roundtable of benefits managers from 20 national and global self-insured employers and other stakeholders to explore new strategies for musculoskeletal disorder prevention and treatment, including ergonomics, joint-friendly workplace design, onsite physical therapy and value-based surgical approaches designed to maximize outcomes at lower cost. NEBGH first introduced a framework that would enable employers to consider such strategies in the context of different segments of their employee populations.

Employers were keenly interested in the potential value of ergonomics and new thinking on workplace design and culture, as well as in the shift toward an understanding of pain that takes into account emotional factors in addition to physical symptoms. They also were interested in rapid access to high-value surgical interventions through direct contracts with hospital systems and centers of excellence, but were somewhat skeptical about their ability to craft such contracts and overcome challenges in contracting locally, due to widely dispersed workforces.

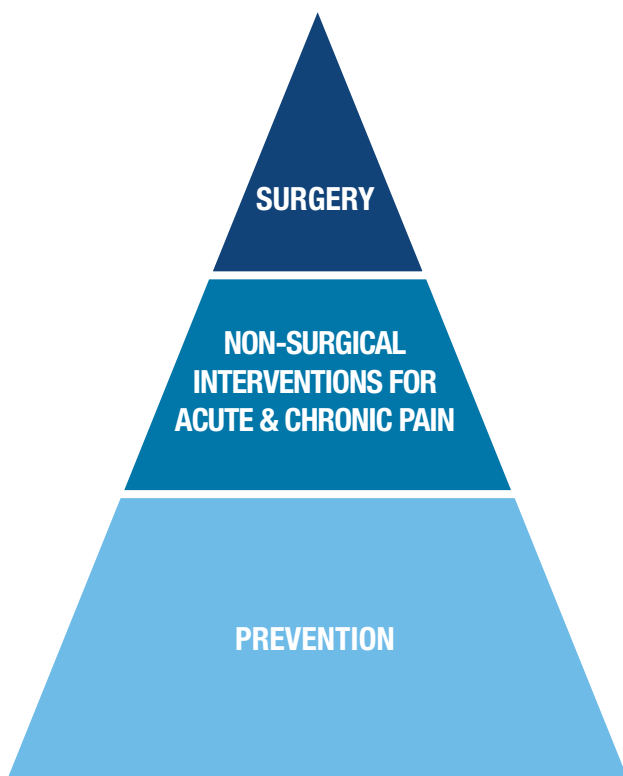


The Pyramid as Framework: MSD in Employee Populations

The pyramid is a useful framework for understanding the prevalence of MSD issues across segments of employee populations, varying intensities of treatment needed for these populations, and the cost of such treatments.



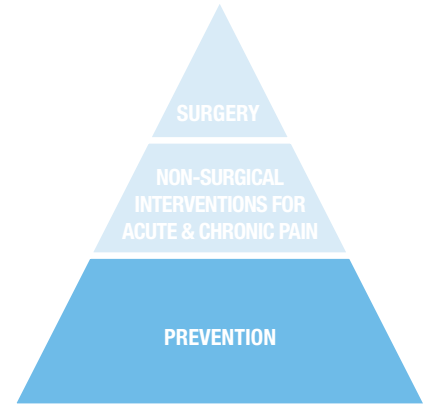
The base of the pyramid represents prevention, which applies to the greatest number — if not all — of employees within an organization. It is estimated that one in two people will develop MSD at some point in their working lives³. Programs and activities aimed at preventing MSD include ergonomics programs, online ergonomics training, workplace design that encompasses tools such as standing desks and chairs designed to accommodate a variety of working postures, and various exercise programs.



The middle tier of the pyramid represents employees for whom MSD and the resulting pain and/or diminishment of function has become an issue that requires medical attention. These employees (or their dependents) might be suffering from neck or back pain, have sustained an injury from working out, or may be experiencing diminished joint mobility resulting from arthritis, to name just a few examples. Treatments aimed at this segment of the population include medications (often opioid-based treatments that are prescribed erroneously and increase risk of substance abuse and addiction), physical therapy, chiropractic care, acupuncture and transcutaneous electrical nerve stimulation, and techniques such as trigger-point injections and hyaluronic acid injections. Employers should keep in mind that costs can accumulate rapidly for employees for whom MSD becomes chronic and who therefore cycle through a variety of treatment modalities over a period of years. Focusing on prevention, therefore, can really pay off.

The pyramid's top tier represents the smallest segment of an employer's population — those who need surgical intervention. Given the cost of MSD surgery, this segment can also represent the highest expense for employers.

A closer look at each tier of the pyramid, with examples of innovative solutions



Prevention

Musculoskeletal disorders of all kinds have been a common feature of life and work over decades, but the prevalence of workplace-generated MSD is increasing, especially among millennials⁴. Clearly, preventative programs can have a significant impact on workplace health and productivity as well as employers' bottom lines.

We work differently today than we have in the past in a few key ways:

- Millennials are now in the workplace in great numbers, and with them, changing approaches to working. Technology was already revolutionizing the workplace but millennials, having been on screen since the age of five (or four, or three), have hastened the change. Employees across all industries now spend long work hours (in addition to many hours at home) in front of a multitude of screens — desktops, laptops and mobile devices of all kinds — increasing the likelihood for neck and back pain.
- Workplaces have been redesigned to save space, foster collaboration and achieve greater equity among employees at all levels. Open designs often include lounge areas and common spaces with different types of seating in which employees deviate from traditional postures in ways that are not always joint-friendly.
- Working remotely has become commonplace, with employees racking up long hours sitting in one place with a screen and a phone. These employees are often difficult to engage in workplace well-being programs designed to encourage movement and exercise.

The key challenge with programs and services designed to prevent MSD — engagement — is no different than the challenge employers face with prevention activities for conditions such as diabetes and cancer. The effectiveness of prevention programs is a direct function of employees' willingness to engage, which can be fostered by employee trust, perception of need and utility, intrinsic program appeal, ease of access, and ease of use. As a result, employers at NEBGH's roundtable were excited about the potential of user-friendly offerings such as onsite ergonomics training, online ergonomics courses, and workplace redesign to decrease the incidence and prevalence of MSD and control healthcare costs. Such prevention programs often are not expensive, and vendors that employers have already engaged with may be able to offer ergonomics programs that integrate well with other wellness and well-being offerings.

Employers can learn from other employers' experiences about how to implement effective ergonomics programs and develop a culture that supports success.

Ergonomics Training: Cardinus and Health Enhancement Company at Adventist Health

Adventist Health is a hospital system that covers California, Hawaii, Oregon, and Washington, and includes 20 hospitals with nearly 20,000 employees. Its Workers Compensation and Safety Department implemented the Cardinus ergonomic online assessment and training program for its desk-bound workforce. Cardinus is a health, safety and risk management company that works closely with Health Enhancement Company to implement workplace solutions.



THE PROBLEM

Due to an increase in carpal tunnel syndrome (CT) and related repetitive movement injuries in office workers, the Workers Compensation and Safety Department faced increasing costs in complying with California's occupational health and safety requirements. For each CT-related injury claim filed, Adventist bore the expense of a job analysis and investigator in addition to the cost of paid disability leave, plus the risk of losing insurance from an existing carrier due to excessive claims.



THE INTERVENTION

Initially, Adventist deployed two full-time ergonomists to work with offices in the field, but demand exceeded capacity. Thus, Cardinus' online self-guided ergonomic assessment and training program was deemed a better fit for Adventist's dispersed workforce. Cardinus, in collaboration with Health Enhancement Co., provided online education, training and assessment to shift thinking around pain and MSD, trained employees in proper postures for their workstations, and emphasized habits such as moving around the office, all of which helped foster better musculoskeletal health.



BARRIERS

Senior leadership at Adventist was easily convinced to invest in the Cardinus implementation due to its relatively low cost, especially compared with the toll and cost of an increasing number of CT injuries. However, managerial buy-in was more difficult once implementation began, an outcome that is not unusual given unfamiliarity with the program, difficulties among most organizations in rolling out new programs, and the need for effective communications for sustained employee engagement. The Workers Compensation and Safety Department visited all Adventist sites to familiarize managers with the program, encourage their own engagement, and foster promotion to line staff. These in-person visits, combined with a robust communications plan and new hire training, resulted in increased buy-in and engagement.



OUTCOMES

Of the 1,300 Adventist employees eligible to participate in the Cardinus program, the initial engagement rate was a strong 75%. Since implementing Cardinus in 2014, Adventist has experienced a decrease in the number of reported CT-related injuries each year, and the workers comp team expects positive returns to continue. Using Cardinus' proprietary risk score, the number of individuals at Adventist deemed to be at high risk for MSD has been cut in half over two years.

Now we're experts [in workplace ergonomics]. We've gained the respect of employees who appreciate the program and now trust the workers compensation department.

— Ashley Clabeaux, Workers Compensation, Safety, Certified Ergonomics Evaluation Specialist, Adventist Health

A Holistic Approach to Combating Musculoskeletal Disorders in the Knowledge Worker: Steelcase

In addition to a number of vendors that provide ergonomics programs for employers, companies such as Steelcase specialize in creating movement-friendly workplaces, joint-friendly furniture and environments that foster well-being in general.



THE PROBLEM

For knowledge workers who interact with many forms of technology each day, sedentary behaviors, long workdays, stress, and poor diet can result in a workforce that is less than healthy, and vulnerable to MSDs.

According to OSHA, work-related MSDs are among the most frequently reported causes of lost or restricted work time, accounting for 33% of all worker injury and illness causes in 2013⁵. Additionally, MSDs were responsible for up to 34% of all lost workdays reported to the Bureau of Labor Statistics in 2013⁶. Direct costs of MSDs are approximately \$20 billion a year, with indirect costs (lost productivity, absenteeism, errors, etc.) equaling approximately five times the direct cost, or \$100 billion per year⁷.



THE INTERVENTION

Steelcase takes a holistic, three-pronged approach to addressing individual and organizational well-being through research, product and environmental design that encourages movement and healthy postures, and training and educational programming. For example, the *Steelcase Global Posture Study*⁸, which studied the behaviors of 2,000 people in 11 countries, uncovered nine new postures fostered by today's technology that can lead to potential future injuries. Insights gleaned from the study directly informed the design of new seating that helps hinder the progression of injuries resulting from traditional seating that does not support those postures. Similarly, a *Stand Up to Work Study*⁹ in which Steelcase participated supports the idea that active workstations can reduce sedentary behaviors, increase productivity, and reduce pain.

In working with clients to design workspaces, Steelcase leverages a core design strategy that optimizes an employee's choice and control over where and how they work, resulting in an ecosystem that includes a palette of places for employees to work, postures that empower them to sit, stand or walk while working without sacrificing support or comfort, and proximity-based meeting spaces that support collaboration.

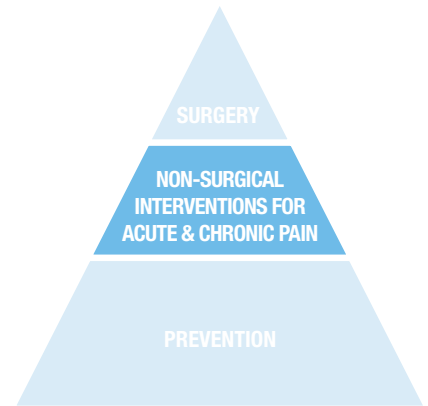


BARRIERS

Despite a wealth of research, insights, and informed product design, failure to engage employees means interventions will not be widely adopted, mitigating efforts to combat MSDs and other health risks. Understanding this missing component, Steelcase invests in programming such as ergonomic trainings and move-in experiences that help populations understand how to interact with their new furniture and spaces, unlocking their benefits and elevating individual and organizational well-being.



Non-Surgical Interventions for Acute and Chronic Pain



Employees experience back, neck and joint pain at different levels of intensity, often triggered by a variety of factors that can include anything from sitting in one position too long, to sleeping wrong or twisting an ankle or straining a knee from physical activity. There is also increasing recognition of the role fear, anxiety, depression, and other emotional factors can play in the experience of pain: Two people with the same injury or chronic MSD ailment can have vastly different pain responses. Addressing employees in the middle tier of the MSD pyramid therefore requires taking emotional factors into account along with traditional care and new treatment approaches.

New approaches to treatment can create significant value for employees and employers alike in the form of shorter recovery time, improved productivity, and cost savings as a result of decreased use of unnecessary diagnostic imaging, overuse or misuse of medications, and the prevention of invasive surgeries.

Such new approaches include:

- **Online pain education:** When people understand the phenomenon of pain, they are often more likely to deal with it successfully without turning to invasive surgery. Many employers offer extensive benefits for physical therapy visits and/or have successfully implemented onsite physical therapy in their workplaces, but have not yet considered the potential benefits of offering pain education as a stand-alone program or as a factor when evaluating onsite physical therapy vendors. Online pain education programs are low cost and can be highly effective. In addition, the availability of pain education combined with more traditional MSD treatments is helpful for employers to consider when choosing providers.
- **Encouraging rapid access to physical therapy:** Most states now allow patients to seek care from a physical therapist without a physician referral. Employers should make sure their benefit design encourages direct access to physical therapy and that they communicate this availability to employees and relevant vendors such as short-term disability services, to support utilization.
- **Advanced primary care:** Employers can support value-based payment reform that emphasizes comprehensive, patient-centric primary care as the foundation for improved population health and can steer employees toward providers that practice such care via benefit design. Primary care providers can often reduce the use of unnecessary diagnostic imaging and expensive visits to specialists by directing patients to evidence-based treatments such as those they can perform at home (e.g., rest, ice, compression, elevation, or RICE), inexpensive over-the-counter medications, and/or recommended physical therapists who can both educate and treat.

Onsite Physical Therapy: H&D Physical Therapy at White & Case

White & Case is a global law firm based in New York City with more than 5,000 employees, including 2,000-plus attorneys. In 2015, the New York headquarters partnered with H&D Physical Therapy to bring physical therapy onsite.



THE PROBLEM

Like other employers, White & Case identified MSD as a key driver of high healthcare costs. Additionally, any time out of the office for an attorney — even for routine appointments and meetings — is incredibly costly since attorneys and the firms they work for charge clients by the hour. One claims analysis quantified the magnitude of the problem for White & Case as totalling \$470,000 annually on physical therapy visits.



THE INTERVENTION

White & Case contracted with H&D Physical Therapy to provide onsite physical therapy on a full-time basis to its employees.



BARRIERS

One of the barriers to implementation was buy-in from the C-suite. But in addition to presenting the case for potential healthcare cost savings and increased billable hours, the White & Case benefits team successfully encouraged the CFO to agree to one treatment session and thereby better understand the value of H&D Physical Therapy's treatment. Once available, non-attorney employees were more likely than attorneys to use H&D's onsite services, but word of mouth quickly changed this pattern.



OUTCOMES

The most stunning outcome of H&D Physical Therapy at White & Case was the recovery of over \$1 million in billable hours from attorneys who would have otherwise spent time out of the office traveling to physical therapy appointments. H&D's physical therapy reduced time away from a desk to 6.5 hours per case from 25.5 hours per case by reducing the number of necessary physical therapy sessions to 13 from 17 and all but eliminating travel time. Furthermore, White & Case cut its direct costs for physical therapy. Compared with the \$470,000 in claims through the traditional health plan for 1,400 visits, H&D administered the same number of visits onsite for just \$93,000.

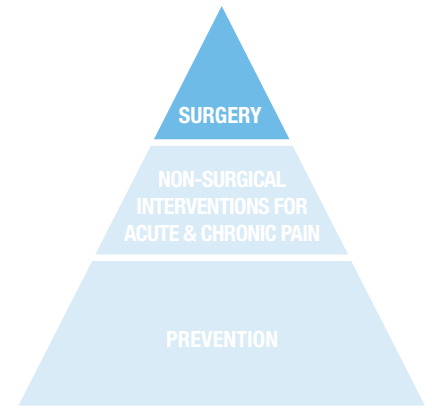
The convenience is definitely a plus...I would need to leave as early as 2:30 p.m. to get to my appointment [offsite] on time (and this would be their last appointment). Having it at this facility at 7:45 a.m. is extremely convenient and less stressful.

— White & Case Employee



High-Value Surgery

The rising cost of MSDs over the past two decades is often attributed to expensive surgical procedures and unnecessary diagnostic imaging. The top segment of the MSD pyramid encompasses the smallest employee population but contains the greatest cost drivers. As a result, hospital systems, health plans and employers are all examining various ways of ensuring that employees and others in need of MSD surgery receive high-quality surgery, performed in the most efficient and cost-effective manner. Approaches include bundled payments for all services related to a surgery including post-operative care, direct contracting, in which hospitals offer employers cost efficiencies in exchange for volume, and reference pricing that rewards employees with lower out-of-pocket costs for obtaining surgeries from institutions that charge less than top-of-the-market prices.

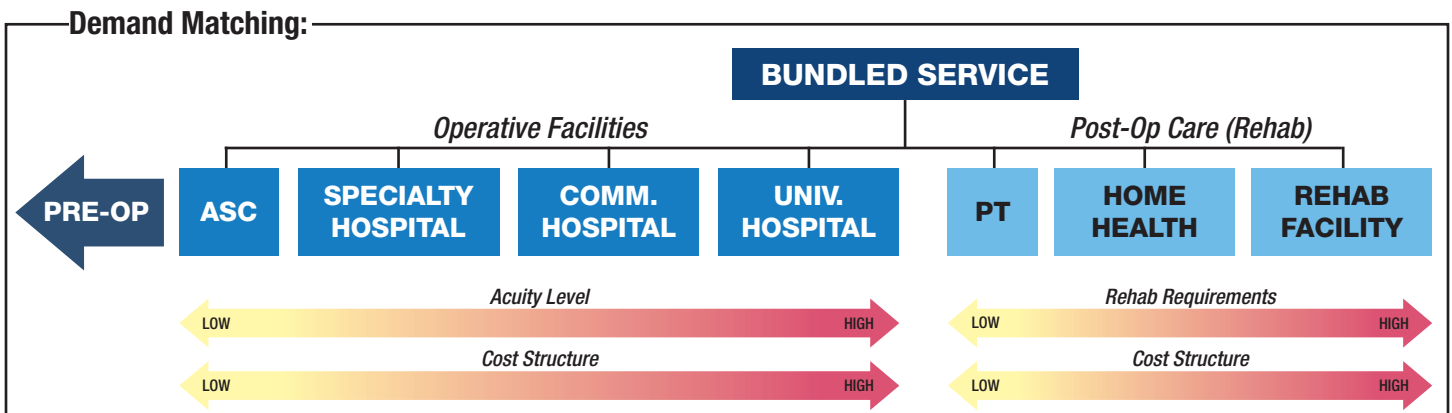


Demand Matching: Rothman Institute

Bundled payments for MSD surgeries, especially discrete surgeries such as hip and knee replacements, have become more commonplace as a cost-saving strategy for employers as well as for delivery systems willing to experiment with assuming outcomes-based risk.

The Rothman Institute in Philadelphia — a long-established orthopedic practice affiliated with Thomas Jefferson University Hospital — has identified a bundled strategy to create more value for patients and purchasers. This strategy, known as “demand matching,” addresses a major cost driver of soaring MSD services — the potential mismatch of both sites of service and post-acute care for patients. When an employee participates in the Rothman orthopedic bundle, both social and clinical risk assessment is conducted to determine appropriate operative and post-operative sites of care. Through demand matching, each patient receives exactly the care he or she needs in the most efficient setting. Demand matching allows Rothman to price its bundle competitively by minimizing exposure to hospital-acquired infections and other serious complications, as well as reducing the instance of repeat surgeries and other unanticipated post-acute care.

Rothman wraps its demand matching in a bundle with care coordination included in each direct contracting agreement, assignment of each patient to a nurse navigator, and the promise to eliminate wasteful spend by directly contracting with employers.



Direct Contracting for Bundled Services: Mount Sinai and 32BJ

32BJ is the largest property services union in the country and represents more than 100,000 workers (180,000 participants including dependents) spanning eight states and Washington, D.C. To curb healthcare cost trends for MSD, the 32BJ Health Fund partnered with New York City's Mount Sinai Health System to develop a total joint replacement bundle through a direct contract.



THE PROBLEM

Like many purchasers, 32BJ saw little correlation between increasing costs and improved quality in the healthcare purchased for union members. But for a union such as 32BJ, increasing healthcare spend has a particularly direct impact on wage earnings.

32BJ specifically observed high cost variations among providers for joint surgery.



THE INTERVENTION

32BJ partnered with Mount Sinai to develop a bundled price for all services associated with total joint replacements, including those of the hospital, surgeon, anesthesia, and physical therapy. In addition to establishing the bundle price, 32BJ also redesigned benefits for total joint replacement to eliminate out-of-pocket costs for members' surgeries at any hospital below a reference price. The union also launched a major communications campaign to its members on the benefits of receiving joint replacement at Mount Sinai. Anthem, 32BJ's third-party administrator, worked with Mount Sinai to administer the product.

THE CHALLENGE	32BJ HEALTH FUND/MOUNT SINAI SOLUTION
Huge price variation	<ul style="list-style-type: none">• Bundled price with upside/downside risk• Reference pricing benefit modification
Disjointed patient care across episode of care	<ul style="list-style-type: none">• End-to-end care pathways• Embedded patient navigators
Inconsistent patient experience	<ul style="list-style-type: none">• Preferred SNF/HHA for high-touch care• Outpatient PT services• Patient support amenities



BARRIERS

Mount Sinai faced challenges such as identifying and performing targeted outreach to 32BJ member-patients. Its care team also found some patients preferred being discharged to skilled nursing facilities (SNFs) rather than home, when home was the most appropriate and cost-effective site for recovery and rehabilitation. Mount Sinai addressed these barriers by working with 32BJ and Anthem to identify members who might be interested in the program, educating patients prior to admission about expectations (and benefits) of home discharge, and introducing inpatient hospital staff to 32BJ members early on in their treatment.



OUTCOMES

32BJ experienced immediate savings and higher quality care for union members. Members experienced a reduced average length of stay, no out-of-pocket costs and greater likelihood of being able to recover from the comforts of home. Members also indicated higher patient satisfaction that may be attributable to no out-of-pocket costs for care and continuity of care within the Mount Sinai system.

As a response to the initial success of this bundle, 32BJ is exploring expansion from a total joint replacement bundle to a mobility bundle that includes a broader range of treatment for additional MSDs.

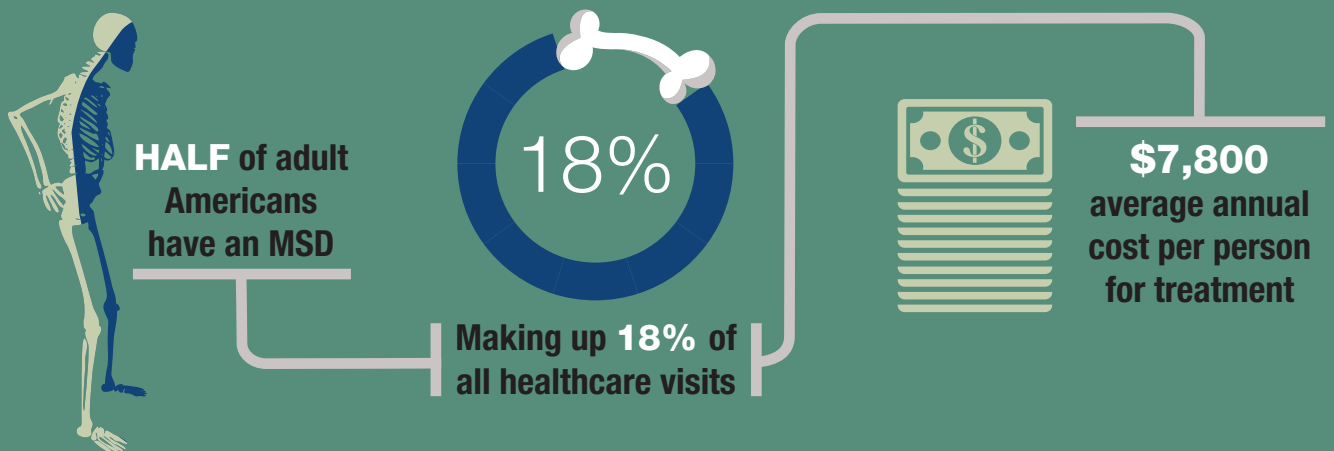
Where Do Employers Go From Here?

High-value strategies can be implemented for all types of employees. When considering where to begin in better managing MSDs, employers can look to their own experiences with claims, disability, workers compensation and HRA data to best prioritize program selection and implementation.

No matter where employers focus first, the success of any initiative is significantly increased when accompanied by effective employee communications and outreach, coordination with other programs and services, defined success metrics, and attention from senior executives.

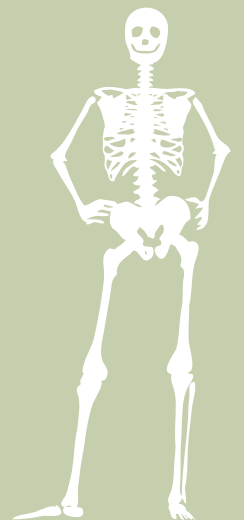
NEBGH may continue its work in the area of MSDs, depending on the demands of employer members. Potential areas of further exploration include the impact of advanced primary care, behavioral health integration, ergonomics interventions and direct contracting models on both MSD outcomes and cost.

Employers Must Act!



Source: US Bone and Joint Initiative, March 2, 2016; <https://www.usbj.org/news/releases/one-two-americans-have-musculoskeletal-condition-costing-estimated-213-billion-each>

Acknowledgements & References



About NEBGH

Northeast Business Group on Health (NEBGH) is an employer-led coalition of healthcare leaders and other stakeholders that empowers its members to drive excellence in health and achieve the highest value in healthcare delivery and the consumer experience.

About NEBGH's Solutions Center

The Solutions Center is NEBGH's unique data gathering and discovery platform for developing initiatives that can move the needle when it comes to critical healthcare issues. Focused on employers as catalysts for change, the Solutions Center's mission is to identify promising, innovative opportunities for improving health outcomes and create a framework with the potential for transforming results and changing the national dialogue.

Acknowledgements

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The authors are solely responsible for the research, analyses and content of the manuscript.

References

1. United States Department of Labor, Occupational Safety and Health Administration. Retrieved from https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=UNIFIED_AGENDA&p_id=4481
2. Ibid
3. Ibid
4. Wegner, C. (2016). *Millennial Employees - The Ergonomic Tsunami*. Retrieved from <http://www.safetymatters.com.au/millennial-employees-the-ergonomic-tsunami/>
5. United States Department of Labor, Occupational Safety and Health Administration. *Ergonomics*. Retrieved from <https://www.osha.gov/SLTC/ergonomics/>
6. United States Department of Labor, Occupational Safety and Health Administration: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=UNIFIED_AGENDA&p_id=4481
7. Ibid
8. Steelcase. *Global Posture Study*. (2015). Retrieved from <https://www.steelcase.com/content/uploads/2015/01/global-posture-study.pdf>
9. Center for Active Design. *Stand Up to Work Study*. Retrieved from <https://centerforactivedesign.org/standuptoworkstudy>

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