



Workers Compensation Conference
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Workers Compensation in the Age of Technology

I. Innovation

A. Looking Ahead

Innovation, a new idea or a more effective process, can also be synonymous with risk taking, and is slowly moving into the Workers' Compensation space. As technological advances and automation are on the rise on a global scale never before seen, the Workers' Compensation domain is void of many innovations that benefit other industries. The Workers' Compensation industry comfortably relies on approaches and processes that are quickly becoming outdated as today's workforce, locations where work may be performed and types of work that are performed are changing. Changing Workers' Compensation outcomes can be achieved by integrating relevant and meaningful claims information with clinical data (for the first time in healthcare) to really track "fee for performance" value from the chosen providers. By using this approach, we also have the ability to intervene during the treatment program to optimize the care based on the data. To effectively accomplish these goals on a national basis, we need a cloud based technology which can be scaled and connect otherwise disparate providers and a willingness among the provider community to "do things differently" and be evaluated by how they heal the patient and not how they bill for the patient. Now is the time for a Technological Revolution- or Innovative Disruption.

1. Implications of demographic shift in the workplace

Demographic shift in the workforce will necessitate change in the way the Workers' Compensation industry protects, educates and engages injured workers. As the dominant proportion of injured workers shifts towards Generation Y

(millennials) and Generation Z, technology-based solutions play a greater role than ever before:

- Mobile apps are the norm
- Text instead of email
- Personalized health data on-demand
- Integration with health (Fitbit, etc.) and social media platforms
- Cloud based technology to share information between stakeholders in near real time
- Develop a portal that allows providers, giving direct care, to see the impact on clients

2. Lessons that can be learned from other industries that have flourished in the Information Age

The keys to successfully innovating include identifying and utilizing new concepts and technologies to promote more efficient processes, thus delivering more advantageous results. Innovations in industries such as banking, logistics, mobile telecommunications and many other industries have flourished in the Information Age due in large part to their acceptance of interoperability and data sharing. Interoperability or data sharing refers to the extent to which systems and devices have the ability to exchange and interpret shared data and is vital to innovative flourishing. The next level of care for Workers' Compensation will be achieved when we collect "clean" data, or data using consistent naming conventions, from all providers. Then, this data can be used in real time to ensure patients return to full duty with the same financial stability as before the injury.

3. Managing risk to protect patient data while enabling new innovations

The Workers' Compensation industry as a whole is risk adverse and values stability and predictability. Stakeholders must re-think how we assess and apply risk in order to both protect patient data while enabling new innovations. It's a delicate balance, but we can learn from how other industries have succeeded and apply those principles to move our industry forward. In the treatment of injured workers, we must focus on a "patient centric data" approach which allows successful aggregation of data and utilization of actionable data sets which can be scaled nationally.

B. Mobile Applications Such as GBGO

Mobile apps are frequently utilized in many aspects of daily living, and the Workers' Compensation space is no exception. One example is GBGO mygbclaim.[®]

Key features of the app include personalized reminders, accessible digital versions of medical and pharmacy cards, access to key claim contacts (such as medical providers, pharmacies and claim Resolution Manager), ability to enroll in and monitor payments via Direct Deposit and ability to electronically submit reimbursement requests. With the dawn of electronic data exchange and automated billing technologies and their adoption into the Workers' Compensation segment, our industry must catch up with the efficiencies of FHIR and other EDI technologies that have already been adopted by other health care segments. Most importantly, the unique set of advantages within Workers' Compensation to leverage clinical data for use with predictive modeling and other AI technologies has to catapult in front of all other segments in the ability to use this clinical to optimize care.

1. Benefits for injured workers and claims professionals

Such apps truly support the worker advocacy model by taking on an injured worker centric approach. Benefits include helping injured workers stay connected, informed and in control of their claims, anytime and anywhere without cost. Additional benefits include allowing the claims professionals to save valuable time searching and locating key claim information and remain updated in order to assist the injured worker with his/her claim needs. By developing enhanced portals for adjustors and case managers, we can enable them to really use data to improve care and better manage the distribution of referrals to align with employer goals AND create a feedback loop with the provider to clearly define payer goals and compare/contrast patient outcomes in light of comorbidities and barriers to rehabilitation.

2. Challenges for injured workers and claims professionals

While the key features of such an app can be extremely helpful to injured workers, one of the biggest challenges to date is the lack of interoperability and data sharing between all Stakeholders in the claim. A second challenge is that such an app is focused on the injured worker- not all workers to potentially serve as a health and productivity resource that can further encourage better outcomes

and possibly encourage safety and injury prevention. We have built many of the operational foundations for our industry on a lack of knowledge/familiarity of the technology that is now accessible. Going forward we need to do things differently to actually improve care, use new tools, access different data sets, and respond accordingly. We can't continue to do the same things the same way and expect different results.

C. Innovative Documentation Software Such as bNOTES®

Another important aspect to technological innovation within the Workers' Compensation industry innovative documentation software such as Bardavon Health Innovations' bNOTES® to encourage data-driven best practices within the industry. The Bardavon patented software bNOTES® enables clinicians to track data from each patient visit and provided side-by-side data to create customized therapy plans to ensure a full return-to-work program. By ensuring the worker is healthy when returning to work, the employee feels supported and the firm communicates it is intent on providing a strong employee-centered culture.

1. Benefits for injured workers and claims professionals

The bNOTES® innovative documentation software provides employers, carriers and administrators with near-real-time data to measure the quality of care, streamline workflows, and processes. The software applies data analytics to optimize clinical pathways for musculoskeletal care and provides side-by-side comparisons of patient progress. Such an approach supports clinics in achieving quality outcomes for injured workers. In addition, it allows payers in the Workers' Compensation industry to reduce consumption while concurrently improving the quality of the medical treatment.

2. Challenges for injured workers and claims professionals

While innovative documentation allows the Stakeholders to collaborate and access important aspects concerning the treatment, a key to its success is appropriate and timely utilization and information input. Ensuring injured workers return to full duty can also reduce future injuries.

II. Wearable Technology and Social Media: Considerations for Claims Management and Litigation

Wearable technology and Social Media are two forms of technology that continue to evolve and be utilized by people across the world. Both allow

technology access to various forms of personal information such as heart rate, physical activity, location, thoughts/feelings and pictures. As a result, there is the possibility for independent verification or support for an injured workers' location at the time of a work accident and pre-injury versus post-injury activity level. As technology continues to evolve, so does the law and Discovery and admissibility considerations.

A. Wearable Technology

Today's wearable technology is capable of tracking its wearer's activity level, food intake, heart rate, and sleep patterns. They monitor and record this information, syncing the data to the cloud for interpretation by their programs.

1. Types

Types of wearable technology include Fitbits and smart watches (such as Apple, Samsung and Garmin).

The Fitbit is a wearable computing device that is worn on the wrist and designed to track physical activity, number of steps walked, health markers and sleep frequency and quality.

Smart Watches such as Apple, Samsung and Garmin are also worn on the wrist and track physical activity, health markers and sleep, they also have the ability to download emails and store text messages.

2. Benefits and Shortcomings

The primary benefit to Fitbits and smart watches is the encouragement to stay active. The device allows the user to track physical progress and to receive encouragement when goals are met. While this information may also be tracked on the user's cell phone, such devices allow the information to be gathered and reviewed without requiring access to the cell phone.

In addition to privacy concerns that arise when such significant amounts of personal information may be collected and retained, shortfalls include the ability for the data to be manipulated if the intended wearer intentionally chooses not to wear the device or has another individual wear the device, accuracy concerns

when considering discrepancy among devices and the potential for the data to be misinterpreted by third-party analytic companies.

B. Social Media

Social media are interactive technologies that encourage the creation and sharing of information, pictures, interests and ideas. The International Telecommunication Union estimates that over 1 billion people worldwide use social media.

1. Types



Currently, the most popular types of social media include Facebook, Twitter, LinkedIn, Instagram, YouTube and SnapChat.

Facebook allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends and family. Twitter allows registered members to broadcast short posts called *tweets*. LinkedIn is a social networking site designed specifically for the business community, with the goal to allow registered members to establish and document networks of people they know and trust professionally. Instagram an online photo sharing social Web service that allows the user to share his/her life with friends through a series of pictures captured with a mobile device. YouTube is a video sharing website that makes it easy to watch online videos. SnapChat is a mobile messaging application that allows users to share photos, videos, text and drawings that expire and automatically delete themselves after a set time, ranging from a few seconds up to 24 hours.

2. Benefits and Shortcomings

Social media allows previously unprecedented access to the lives, actions and activities of injured workers. Through access to social media, industry representatives can secure evidence to investigate workers' compensation claims and to verify the activities and activity levels of injured workers.

For instance, industry professionals may be interested in collecting evidence to verify or contradict that an alleged accident actually occurred if there are questionable circumstances that suggest further investigation may be beneficial. Such circumstances may include the following:

- Unwitnessed accident;
- Late reporting;
- Friday afternoon/Monday morning injuries;
- Injuries allegedly occurred around holidays or anticipated layoff or termination;
- Injuries allegedly occurred after the employee has been reprimanded or disciplined.

In addition, industry professionals may be concerned the injured worker is misrepresenting his/her abilities. This may occur when the injured worker is repeatedly turning in out of work notes for a seemingly minor injury. This may also occur if there is concern of exaggerated pain behavior. Using clearly defined job analysis and completing post offer employment testing ensures employees are well suited to specific positions and may eliminate these issues.

However, shortcomings to social media in workers' compensation claims involve understanding and implementing appropriate ethical considerations and Rules of Evidence to ensure that the social media evidence is collected and utilized permissibly.

C. Considerations for Claims Management and Litigation

As discussed above, while wearable technology and social media may serve as cutting edge tools to allow access into the activities, locations, physical levels and sometimes thoughts and admissions of injured workers, it is vital to ensure the implementation of such tools is done so only after careful consideration and pursuant to well-designed strategy.

1. Case Studies

The first known litigation involving use of wearable technology as comes from Calgary, Canada in a 2014 personal injury case. The law firm representing the Plaintiff used Fitbit activity data in support of the Plaintiff's claims that the accident had impacted her physical activity level. Specifically, while the Plaintiff's accident occurred in 2012, before the FitBit, the Plaintiff used Fitbit activity data run through Vivametrica, an analytics platform that uses public research to compare someone's activity data with the general public, to show that her activity level was well below the baseline of a person her age and profession, that of a Personal Trainer.

In a 2013 personal injury case before the Southern District of Indiana, Plaintiffs sued a theme park for physical injuries they allegedly sustained on a ride. During discovery, the theme park asked for the Plaintiffs' social media postings. The Plaintiffs refused, and the Defendants filed a Motion to Compel, which was granted. The Plaintiffs had alleged that their injuries severely impacted their abilities to enjoy life, engage in outdoor activities and find jobs. (Higgins v. Koch Development Corporation, No. 3:11-cv-81-RLY-WGH, 2013 WL 3366278).

The article *Einstein's Theory on Work Comp Outcomes* which appeared on August 27, 2015, on "Insurance Thought Leaderships.com" discusses that traditional Workers' Compensation has been using the "theory of outcomes" as the relationship between cost and clinical performance. This equation is incomplete and inaccurate. A more accurate formula is $\text{Outcomes} = \text{Price} \times \text{times Utilization} \div \text{Functional Improvement}$. This revised formula evaluates outcomes based on improved functionality and a full return to work.

2. Discovery considerations

When contemplating investigating either an injured worker's potential use of wearable technology or social media, one tool available is formal Discovery, which is governed by Rule 26 of the Federal Rules of Civil Procedure. Rule 26(b) of the Federal Rules of Civil Procedure governs the scope and limits of Discovery and allows the parties to obtain Discovery regarding any non-privileged matter that is relevant to the claim or defense. However, there are limitations on such as

whether the burden or expense of the proposed Discovery outweighs its likely benefit.

3. Admissibility

When contemplating utilizing wearable technology or social media evidence before a Commission or Court, the Rules of Evidence must be considered. Judge Grimm set out analysis in the 2007 decision, *Lorraine v. Markel Am. Ins. Co.*, which sets out a helpful framework for preparing an admissibility argument for electronically stored information (ESI) that can be found in wearable technology or social media evidence is as follows: "Whenever ESI is offered as evidence, either at trial or in summary judgment, the following evidence rules must be considered:

- (1) is the ESI relevant as determined by Rule 401 (does it have any tendency to make some fact that is of consequence to the litigation more or less probable than it otherwise would be);
- (2) if relevant under 401, is it authentic as required by Rule 901(a) (can the proponent show that the ESI is what it purports to be);
- (3) if the ESI is offered for its substantive truth, is it hearsay as defined by Rule 801, and if so, is it covered by an applicable exception (Rules 803, 804 and 807);
- (4) is the form of the ESI that is being offered as evidence an original or duplicate under the original writing rule, or if not, is there admissible secondary evidence to prove the content of the ESI (Rules 1001-1008); and (5) is the probative value of the ESI substantially outweighed by the danger of unfair prejudice or one of the other factors identified by Rule 403, such that it should be

excluded despite its relevance.” *Lorraine v. Markel American Ins. Co.*, 241 F.R.D. 534 (2007)

III. Artificial Intelligence, Machine Learning and Stimulators in Workers’ Compensation Claims

A. Understanding The Role of Artificial Intelligence

AI. It’s no longer a buzz word. It’s more than a market strategy. It’s a core competency that nearly every company in the world is striving to obtain. And it’s becoming a commodity.

Artificial Intelligence is the capability of a machine to imitate intelligent human behavior. It involves machines using information to create data that can be acted upon.

1. Benefits and challenges in today’s workers’ compensation claims

A clear benefit to AI is the ability to take advantage of the following:

- *rational governance (employer influence);

- *the HIPAA Waiver (directs the provider to report otherwise protected information if they reasonably believe it may impact the cost/duration of the claim);

- *the defined/quantified functional requirement to return to work; and

- *the payer’s exposure to both the cost (claim) and quality (indemnity) of the total claim.

In addition, automation of drug approvals (or denials) at point-of-sales can greatly streamline the workflow process. In addition, this automation can save money by keeping drugs in the pharmacy network versus paper billing.

However, with AI comes fear and ethical challenges. This is the inherent nature of risk in Workers’ Compensation. This could be because the nature of so

many risk managers who have grown with the company. HIPPA (and PHI) rules play a large role in the risk as well. But a predictive model could be wrong-leading to complex legal and ethical issues. For AI solutions to be adopted, risk has to be mitigated and rules have define that govern the safe and ethical "application" of AI.

Additional challenges include overhyping and misconceptions. Although they are not issues specific to Workers' Compensation, they do play a major role in AI acceptance. There are many who have adopted a very unhealthy view of AI. This leads a restrictive approach to adoption. Equally as dangerous is the belief that AI will solve all problems. It's important for organizations to adopt grounded AI initiatives with clear goals and expectations.

2. Predictions of future role of Artificial Intelligence in workers' compensation claims

Prescriptive analytics can be utilized to tailor customized treatment plans by patient based on several factors including medical history, age, injury type, age of injury, body part, etc. Importantly, this methodology can be used to predict outcomes as well.

Workers' Compensation will be the segment of healthcare where we use actionable/clean data to improve care and serve as the foundation to improve all musculoskeletal care in healthcare...and then iterate toward the rest of the \$3.5 trillion spent in the commercial healthcare marketplace. It is anticipated that spending on AI and machine learning will grow from \$12 billion in 2017 to \$57.6 billion by 2021. It is also predicted that healthcare's AI market will reach \$6.6 billion by 2021, from \$600 million in 2014.

B. Capabilities of Machine Learning

Machine learning patents grew at a 34% Compound Annual Growth Rate (CAGR) between 2013 and 2017, the third-fastest growing category of all patents granted

International Data Corporation (IDC) forecasts that spending on AI and ML will grow from \$12B in 2017 to \$57.6B by 2021.

Deloitte Global predicts the number of machine learning pilots and implementations will double in 2018 compared to 2017, and double again by 2020.

Companies like Cigna are using machine learning to predict opioid abuse. The Duke Forge consortium is using machine learning to predict critical illness and intervening to prevent potential hospitalization.

1. Benefits and challenges in today's workers' compensation claims

A clear benefit is the ability to take advantage of employer influence and government regulations (the HIPAA Waiver). By defining functional quality outcomes, we can ensure workers' return to fully duty with a shorter duration and reduced costs.

In addition, machine learning can benefit this workflow and provide more real-time analysis for claims examiners. Models can be developed (and currently are) to determine risk of overdose or other health issues. These models can be particularly useful when the use of concurrent drugs are utilized across both Workers' Compensation and commercial health segments by a single patient.

However, one of the biggest challenges of machine learning is data. In the Workers' Compensation domain, the acquisition of uniform and complete data is a monumental challenge. Data is not shared as it in other industries and interoperability standards are nearly non-existent. Adding to this problem are all

the various entities that rarely share data: Carriers, PBM's, Managed Care, Employers, Pharmacies, Physicians etc. Data is crucial to building accurate predictive models and machine learning algorithms.

2. Predictions of future role of machine learning in workers' compensation claims

Workers' Compensation should be the segment of healthcare where we use actionable/clean data to improve care and serve as the foundation to improve all musculoskeletal care in healthcare.

C. Uses for Stimulators

Stimulators are technological durable medical equipment that can be used to treat injuries and pain.

1. Muscle stimulators



Amrex® MS322 Muscle Stimulator



Amrex® MS324A Dual Channel Muscle Stimulator



Amrex® MS324C Low Volt AC Muscle Stimulator



Intellect® Legend XT 2 Channel Muscle Stimulator

2. Spinal Stimulators



3. Nerve gloves

