

# *The Catastrophic Reserving Challenge*

## *Addressing Inadequate Medical Reserve Setting for Spinal Cord and Other Catastrophic Injuries within the Workers' Compensation Industry*

Medical costs for catastrophic injuries have long been under-reserved within the workers' compensation industry. Spinal cord injuries, in particular, are among the principal injury types in which medical costs are underestimated.

In the absence of adequate reserves, claims adjusters are forced to "ladder up" and recalibrate their reserves whenever expenses exceed the initially set amounts. While this may serve as a "just in time" financial solution, the laddering up practice has numerous setbacks from a clinical and expense management point of view. Among the setbacks is the forfeiture of a lifetime budget, a key medical and claims expense management tool.

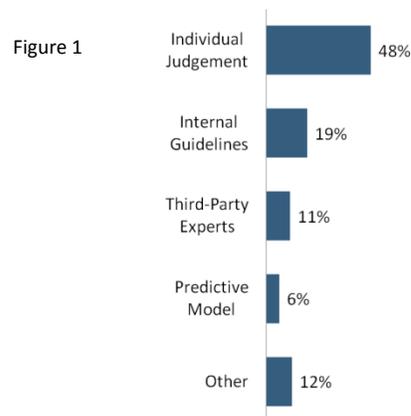
By contrast, setting a realistic upfront reserve can provide a guidepost for claims management. Paradigm's own medical expense estimation process and connected medical management practice uses initial medical expense estimates as a tool to monitor performance, a practice which yields much higher outcomes than the standard industry practice.

Specifically, Paradigm's process yields results which are five times better than the industry average in delivering medical results and 36% less expensive in lifetime medical costs.<sup>i</sup> At the heart of Paradigm's approach is a comprehensive recovery plan and cost estimates that anticipate and calculate the likelihood of high probability risks. The plan is prepared by Paradigm's Medical Directors, Nurse Case Managers and internal clinical teams. The team then aggressively manages the plan.

This paper outlines many of the reasons we believe the industry continues to underestimate the true cost of catastrophic cases and offers five important practices for estimating and managing the life of a claim to yield better medical and financial outcomes.

### **Common Reasons for Inadequate Reserving**

In a recent industry survey<sup>ii</sup>, when asked what tools were used to estimate reserves for catastrophic cases, the following responses were given:



These results explain a great deal about why so many catastrophic cases are under-reserved. The predominant use of individual judgment has many limitations. The most important of which tends to be the small sample sizes of comparable cases. With catastrophic injuries, differences in a patient's age, weight and other factors make enormous differences in cost projections. Few have large enough pools of comparable cases to make these distinctions.

Other factors that are often responsible for less than adequate reserve setting are:

- Lack of access to credible data – very few external resources exist to use in benchmarking comparable cases. Moreover, executives often find it difficult to access their own data for predictive purposes due to system limitations.
- More volatility than expected – the costs associated with intensive care, multiple surgeries, the involvement of multiple specialists and high medication needs often can be highly unpredictable and require probability adjusted estimations for the complications that can occur through missed handoffs and medical treatment.
- Unrealistic durations (typically too short) – many project expenses only for the acute period of care and grossly underestimate the complications that can and do occur years later as the body ages and the prior trauma cause ongoing complications and spikes in medical costs.
- Abundance of optimism – there is often the hope and/or expectation that “this claim” will recover without complications. Yet, the statistical reality is that with catastrophic injuries the abundance of optimism principal rarely holds.
- Abundance of pessimism – conversely, one may believe that “this claim” is so severe that the patient will die and therefore not require traditional reserves. Again, statistically, the abundance of pessimism is not borne out in medical evidence.

### **Key to Adequate Reserve Setting and Medical Cost Management**

Like most catastrophic injuries, volatility is an inherent characteristic of spinal cord injuries. While the following practices are beneficial for all types of catastrophic cases, we use spinal cord injuries as an illustrative example of the principals.

### **Rx 1: Get Expert Care**

Before we prescribe the best practices for estimating reserves and planning for recovery, the first prescription for success in treating a spinal cord injury is getting the injured worker transferred to a Spinal Cord Center of Excellence as quickly as medically possible. Creating a plan and estimating reserves will follow. The most critical factor is to start optimizing care immediately.

Using a Center of Excellence is important because spinal cord injuries involve multiple body systems (spine, respiratory, skin, bladder, bowel, etc.) and require the attention of multiple specialists. At a Center of Excellence the injured worker will have direct access to specialists that see thousands of like cases and have cutting edge experience in new technologies and procedures.

Moreover, Centers of Excellence typically have all the services—acute care, post-acute, occupational, etc. — in one location and will make transitions and hand-offs less complicated.

Additionally, although the primary spinal cord damage (direct injury from trauma) is immediate, the secondary damage (later secondary trauma and biochemical alterations leading to further spinal nerve cell death) evolve within one to two days. Thus, the right treatment early in the secondary injury can result in less cord damage.

When it is impossible to get the injured worker to the Center of Excellence, the next best option is to bring the spinal cord expertise to the injured worker. Key to bringing the Center of Excellence to the patient is ensuring that care management is overseen by a spinal cord specialist physician and a deeply skilled catastrophic nurse case manager working onsite.

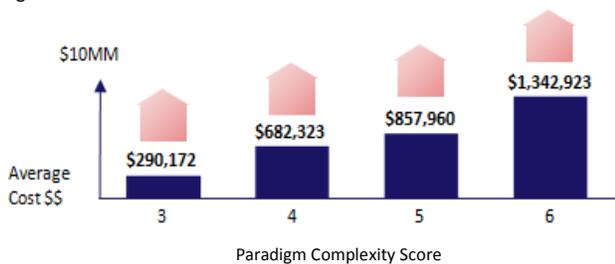
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## Rx 2: Estimate Realistic Acute Care Costs

The acute period of care typically ranges from 18 to 24 months terminating in a state of medical and functional stability. During this period the average cost of medical care varies significantly.

The primary factor influencing costs is the degree of complexity present:

Figure 2<sup>iii</sup>



Paradigm Management Services assigns a proprietary complexity scale after a multivariate analysis containing more than 30 variables. Figure 3 provides a brief description of clinical complexity.

Figure 3

Complexity Score	Description
1	Minimal treatment – few treatments with clearly defined endpoints
2	Routine – multiple treatments, but not extensive, clearly defined endpoints
3	Low intensity – complex injury requiring full medical, surgical and rehabilitative treatment, with few risk indicators for delayed recovery
4	High intensity – complex injury requiring full medical, surgical and rehabilitative treatment, with risk elements indicating delayed recovery
5	Severe – unusually complicated with extraordinary treatment required. Treatment endpoints unclear
6	Extremely severe – among the most complex; requires the highest amount and duration of treatment. Treatment endpoints are highly unpredictable, problematic and at risk of non-achievement

## Rx 3: Address Complications Immediately

In addition to the average base costs (shown in Figure 2), the potential for additional costs resulting from complications must also be anticipated in the reserve calculation and then aggressively managed in order to avoid occurrence.

In calculating reserve amounts it is important to apply medical judgment to arrive at the statistical probability that a complication will occur. There is no need to “throw in the kitchen sink” and calculate remote risk. Rather, sticking to those with 40% or greater probability will typically suffice.

The objective of closely managing the case is to minimize the likelihood that a risk will become a significant problem. However it is unrealistic to think that all risks can be avoided and statistically some complications will occur. Therefore, probability adjustments are the best means of predicting risk, for estimating early in a case which ones will occur is next to impossible. The smart strategy is to weight risks by probability.

Common complications associated with spinal cord injuries (and their typical cost ranges) include<sup>iv</sup>:

- Skin breakdown  
Average cost range \$290,000 - \$580,000
- Adhesive capsulitis  
Average cost range \$55,000 - \$105,000
- Heterotopic ossification  
Average cost range \$50,000 – \$100,000
- Chronic pain, medication abuse  
Average cost range \$100,000 – \$205,000
- Surgical procedures with suboptimal results  
Average cost range \$115,000 - \$215,000
- Spasticity, contracture  
Average cost range \$100,000 - \$205,000
- Acute respiratory distress syndrome (ARDS), long-term ventilator dependency, and pneumonia  
Average cost range \$310,000 – 600,000

- Psychological maladjustment and depression  
Average cost range \$49,000 - \$95,000
- Infection and sepsis  
Average cost range \$140,000 - \$276,000
- Intensive adaptive equipment needs  
Average cost range \$143,000 - \$250,000

It is important to note that Paradigm observed these complications even in its cases which were well managed. Lack of expert management would very likely have led to even high end costs that would have increased the upper range of the stated averages. For more accurate ranges it is important to have the cases professionally evaluated and subjected to a predictive algorithm such as that used by Paradigm.

#### **Rx 4: Plan and Manage a Lifetime of Care**

In considering spinal cord injuries it is easy to focus on the acute period of care. The reality with spinal cord injuries, however, is that one must plan for a lifetime of care (note, this is different than a “life care plan”).

Spinal cord injuries require years of inpatient and outpatient rehabilitation to maximize medical stability, functional independence and support system stability. Throughout the patient’s lifetime, care will take place in both residential and community settings. Additionally, most patients will require extensive personal care attendant services to assist with self-care and activities of daily living, as well as intermittent nursing services for bowel and bladder management, the monitoring of skin integrity, and wound care as indicated.

A typical care path should include plans and medical expense projections for the following:

- Emergency response team (medical, transportation, etc.)
- Emergency trauma unit (surgeries, medications, anesthesia, etc.)
- Intensive care unit (medical, specialists, pharmaceuticals, etc.)
- Center of Excellence, inpatient rehabilitation (transportation to and care within for all acute and post-acute needs)

- Center of Excellence or other expert outpatient rehabilitation, medical care and life-time follow up
- Home with outpatient services
- Extended nursing care
- Stability and independence (durable medical equipment, maintenance drugs and care)
- Residential living (personal attendant care, etc.)
- Re-hospitalization for complications of respiratory, skin, bowel, bladder, etc.

#### **Rx 5: Build in Monitoring**

Throughout the lifetime of the worker, there are numerous re-evaluations that are needed in order to help avert medical complications. These include:

- Overall physical evaluations (bladder, bowel, medications, skin, etc.)
- Continued urologic testing (urinalysis, renogram, cystogram, cystoscopy analysis)
- Blood work analysis
- Pharmaceutical management
- Physical and occupational therapy (motor/sensory, posture, transfers, daily living functions, equipment evaluations)
- Radiological studies (CT, MRI, etc.)
- Psychological evaluations and counseling

Keeping track and ahead of complications leads to both better medical and financial outcomes.

#### **Why It Matters**

In the end, there are multiple reasons that spinal cord injuries are particularly complex and require a lifetime of care and care management. While each attending doctor may only be involved with one or two of the needed medical interventions, the entire range of services must be managed collectively to achieve a quality outcome.

The right medical attention up front provides for a greater quality of life and is less painful and expensive over time.

<sup>i</sup> Milliman, Inc., 2009 review of Paradigm cases

<sup>ii</sup> Wilson Associates, “Catastrophic Injury Management in the Workers’ Compensation Industry,” May 2009

<sup>iii</sup> Paradigm mean values for 2002-2008 adjusted for inflation

<sup>iv</sup> Ibid.