The Six Million Dollar Man

Methods for incorporating catastrophic claims

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Agenda

- Characteristics of “large” and “catastrophic” claims
- Case reserving large and catastrophic claims
- Medical costs for complex claims
- Early identification of large claims using analytics
- Actuarial considerations


GAME OF THRONES
SEASONS 1-4
SEASON 5
SEASON 6
SEASONS 7&8
STARECAT.COM

Reasons to Analyze Large Claims Separately

- Gross reserves
- Commutations, loss portfolio transfers
- Run-off
- Pricing for excess

Claim Reserving and Handling

Large vs Catastrophic Claims

	Large	Catastrophic
Body Part	Shoulder, Back	Spinal Cord, Traumatic Brain, Amputations
Nature	Strain, Slip/Trip/Fall	Motor Vehicle Accidents, Heavy Equipment, Fall
Reporting Lag	Varies, can be delayed	Fast, typically same day
Exposure Period	Varies, can build into lifetime	Lifetime, particularly medical
Reserving Practice	Set for anticipated recovery, probable outcome	Everyone is aware the claim is significant, but challenge is how big is the exposure
Medical Costs	Tend to be set for short duration to meet recovery	Most important and drive a large portion of the uncertainty of the overall claim costs
Indemnity Costs	Less significant portion of costs, shorter duration in most states	Less significant portion of cost, but still can be large in some states

Case Reserving – Typical Approach

- How are case reserves set in the industry?
  - Injury Recovery Phase – Pre MMI
    - Period after injury out to 24 or 36 months
    - Short term medical projections
    - TTD for 1-2 years and some permanency
    - Often optimistic recovery times (not taking into account co-morbidities)
  - Maintenance Medical Phase – Post MMI
    - Based on average past three years medical or sometimes adjusted life care plan
    - No consideration for change in prescriptions, future assisted living, increased hospitalizations, etc
    - No medical escalation or cost of living adjustments
    - 10 years of medical or truncated life expectancy
- Timing of case reserves
  - Catastrophic claims vs other large claims
    - Pre MMI phase very similar case reserving practices
    - Post MMI phase handled very differently

Causes of Adverse Development

- Can involve significant adverse development (e.g., failed back with multiple surgeries)
  - Late reported claims tend to be higher severity (especially if lack immediate crucial medical treatment)
  - Complexities with the individual medical recovery lead to lifetime exposures
- Treatment cost or utilization increases over time
- Optimism in recovery and treatment cost estimates

Case Reserving – State Specific Considerations

- California – large claim
  - Male, 2016 injury 40 years old at time of injury
    - High wage earner, max PPD rate; multiple back surgeries; no settlement
    - 750k paid to date; lifetime exposure potential – estimated 65-75% IR
    - Cost inflation considerations – medical and indemnity
  - Medical annual costs around $15k/yr (Rx, Ov, Injections)
    - Depending on approach creates wide reserve variance ($200k-$1M)
    - Anticipate reduction in treatment and meds over short term
    - Based on current payment trends $525k (if we escalate at 3%/yr is $1.015 M)
  - Indemnity – PPD range from $113k-$149k
    - Any rating 70% and greater receives LP after PPD award
    - 70%-75% LP adds another $105k-$155k (no inflation); with 2% COLA $180k-$260k
- Georgia – same facts and annual medical
  - More certainty around exposure potential
  - Medical capped to 400 weeks only $115k-130k
  - Indemnity capped as well to only $134k

Case Reserving – Best Practice Approach

- **Estimate each medical component separately**
  - Current needs (prescriptions, doctor visits, diagnostic, therapies, DME)
  - Future needs (hospitalizations, attendant care or facilities)
  - Apply different assumptions to each (e.g., frequency; benefit variability)
- **Apply appropriate mortality table**
  - Use of life annuities, not average life expectancies
  - Incorporate co-morbidities
- **Input interest rate assumptions for cost inflation**

Claims Handling - Best Practices

- Large Claims
  - Assign senior adjuster
  - Communication
  - Cost containment (NCM, RTW, etc.)
- Catastrophic Claims
  - Alternative cost structures
  - Communication
  - Consider specialized medical facilities / care
  - Specialized claim adjuster

Medical Costs

Medical Cost Trends

- Key considerations with catastrophic and complex claims
- How costly can medical get

Importance of Specialized Medical Care

- Centers of excellence
- Early and specialized care impact on costs

Hallmarks of a Center of Excellence

VOLUME	**RESEARCH**	**TEACHING FACILITY**	**ACCREDITATIONS**
PUBLISHED	**INPUT**	**SATISFACTION**	

Gaining access to Centers of Excellence for workers' comp patients

- Resource burden
- Different billing structure
- Extra documentation
- Processes outside normal operation
- Competing priorities of clinicians

Strategies to gain access

Identify a member of your organization who can approach and partner with Centers of Excellence to ensure the following objectives are achieved:

- Fully authorized patient
- Educated patients who are ready to participate in treatment
- Case management structure that addresses barriers to treatment
  (e.g. transportation, housing)

Identifying claims

Identify claims that will benefit from this treatment

PREDICTIVE ANALYTICS

ICD-10 CODES

CLINICAL REVIEW

ENCOURAGE RECOMMENDATIONS BY ALL CONSTITUENTS

Case study: Nicole

Nicole, MID-50s
Factory worker

BACK STRAIN, 2007
Lifting and moving a
30 LB Box

DIAGNOSIS
Back Strain
Two back surgeries
Spinal stimulator
Failed Back Syndrome

OUTCOME
12 years opioid use
Unengaged support
system

Active Intervention vs. "Drifting"

- Drifting
- First report of injury, full of red flags-no action
- Early, excessive and then ongoing Opioid RX by PTP
- Referral to specialist
- Spinal Cord Stimulator(failed)
- Two back surgeries, both accepted and authorized
- (Pre-existing injury? Not investigated)

- Active Management
- First report of injury, red flag
- Assign a local nurse case manager, in person with IW and Healthcare team
- Monitor and manage Opioid RX
- Recommend or mandate a pain program that emphasizes lifestyle changes
- Second opinion on spinal stimulator, and both surgeries
- Investigate, pre-existing injury?
- Back surgeries? Second opinion

Case study: Andre

Andre, MID-30's
Rural CA
Construction Worker

INJURY, 2012
Scaffolding collapse
30 foot fall

DIAGNOSIS
C4 tetraplegic

OUTCOME
Ventilator dependent, requiring 24/7 attendant care

A tale of two outcomes

- **Early, expert care**
- Center of Excellence
- Patient should be weaned off ventilator
- Expert wheelchair seating, positioning. Preserve function
- Avoid skin breakdown
- Expert urological support
- Avoid recurrent UTI
- Patient, family training, weight shifts, turning
- Avoid skin break-down

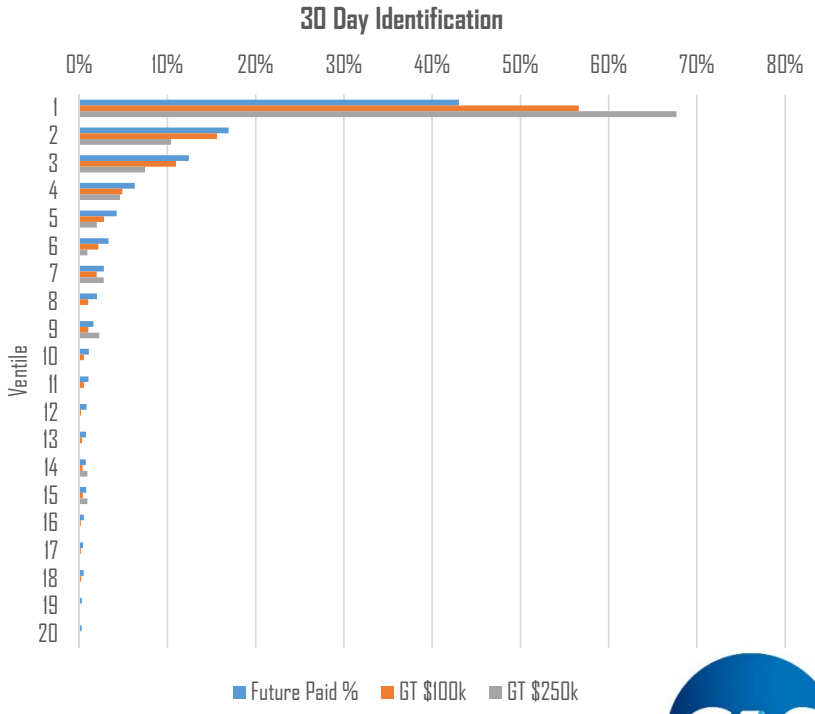
- **Non specialized medical care**
- Patient remains on a ventilator
- Patient is re-hospitalized for:
- Skin breakdown
- Pneumonia
- Autonomic dysreflexia
- Psycho-social issues
- Substance abuse
- Depression

Early Identification of Large Claims

Machine Learning to Identify Large Claims

Vast majority of large losses known within 30 days of report date.

- Large claims drive disproportionate amount of cost - 5% of claims are 70-80% of losses
- Can use predictive models to identify claims most likely to be large by leveraging adjuster notes and other unstructured data
- Importance of identifying these claims early
  - Maximize chance of best claims handling
  - Anticipation of financial impact
- Typically 55-65% of future paid identified by 30 days
- Accuracy increases using additional data after 30 days



Machine Learning to Identify Large Claims

Unstructured data to support predictive models. Body Part coding is notoriously inaccurate. The below summary shows how new body parts emerge on a claim after the claim is initially created. The initial body part only tells part of the story.

			Body Part Mined from Unstructured Data											
		# Claims	Back	Neck	Hip	Ankle	Eye	Foot	Hand	Knee	Leg	Shoulder	Thumb	Wrist
Body Part Coded at Report Date	*Multiple Body Parts*	143	27	44	21	18	4	15	32	44	9	45	12	33
	Back	80	46	12	7	4	1	6	5	8	3	9	2	4
	Ankle	88	4	4	3	80	1	23	4	13	3	4	1	4
	Eye	105	1	3	1	1	88	1	2	2	0	2	1	1
	Foot	176	9	8	4	56	2	113	7	16	5	8	2	5
	Hand	105	3	4	1	2	1	2	86	4	0	6	27	29
	Knee	122	8	7	7	12	1	13	8	115	8	8	3	7
	Lower Leg	67	4	3	8	11	1	8	3	18	36	3	1	2
	Shoulder	160	17	34	6	6	2	8	43	15	2	149	9	16
	Thumb	55	1	1	0	1	0	1	24	1	0	1	26	3
	Wrist	63	3	5	1	2	1	2	34	5	1	6	15	59

Multiple body part claims can vary, but are frequently shoulders, necks, and knees. Some of the most expensive types of claims.

Back injuries often include other body parts. Additionally, Nodal seeks out specific types of back injuries (low back is much different than upper back).

Shoulder injuries tend to add additional body parts such as back, neck, hand, and wrist

Hand injuries are often added after the report date.

Machine Learning to Identify Large Claims

Output from predictive models can be useful for consideration in reserving.

- An approach to segment claims for analysis (develop high scoring claims separately or estimate using mortality model)
- Potential early indicator of future claim development (more or less high cost in AY)
- Similarity measures can help compare a given claim to historical database
  - How long have similar claims stayed open
  - How much have similar claims cost
- Historical database can be used to quantify frequency and severity of unreported claims

Actuarial Considerations

Actuarial Challenges and Questions

- What to do with the left over triangle?
- Common approaches
- Work in progress…

Example 1a: Baseline

Year	Net Incurred	Net DFU	Net Ultimate
2014	300	1.000	300
2015	500	1.200	600
2016	400	1.500	600
2017	900	2.000	1,800 *
2018	100	8.000	800
(*) 1,800 = 900 x 2.000			

Example 1b: Adjusted

Year	Net Incurred	"Large" Incurred	Net DFU	"Large" Ultimate	Net Ultimate
2014	300		1.000		300
2015	500		1.200		600
2016	400		1.500		600
2017	900	600	2.000	500	1,100 *
2018	100		8.000		800
(*) 1,100 = [900 – 600] x 2.000 + 500					

Example 2: Sample Development – Gross vs Net

	12	24	36	48	Ultimate
Claim 1	300	600	750	800	800
Claim 2	50	100	150	190	190
Total	350	700	900	990	990
DF		**2.000**	**1.286**	**1.100**	**1.000**
DFU (Gross)		**2.829**	**1.414**	**1.100**	**1.000**
Claim 1	300	500	500	500	500
Claim 2	50	100	150	190	190
Total	350	600	650	690	690
DF		**1.714**	**1.083**	**1.062**	**1.000**
DFU (Net)		**1.971**	**1.150**	**1.062**	**1.000**

Example 2a: Net Development, Net DFs

Year	Net Incurred	Net DFU	Net Ultimate
2014	690	1.000	690
2015	690	1.000	690
2016	650	1.062	690
2017	600	1.150	690
2018	350	1.971	690

Example 2b: Net Development, Net DFs, Adjustment

Year	Net Incurred	"Large" Incurred	Net DFU	"Large" Ultimate	Net Ultimate
2014	690	500	1.000	500	690
2015	690	500	1.000	500	690
2016	650	500	1.062	500	659
2017	600	500	1.150	500	615 *
2018	350		1.971		690

(*) 615 = [600 – 500] x 1.150 + 500

Example 2c: Net Development, Gross DFs, Adjustment

Year	Net Incurred	"Large" Incurred	Net DFU	"Large" Ultimate	Net Ultimate
2014	690	500	1.000	500	690
2015	690	500	1.000	500	690
2016	650	500	1.100	500	665
2017	600	500	1.414	500	641 *
2018	300		2,829		990

(*) 641 = [600 – 500] x 1.414 + 500

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