



Catastrophic Claims Series Part 2:

Caring for a Catastrophic Injury

June 21, 2023, 2:00 pm – 3:00 pm



Presenters



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Objectives

1. Discuss general concerns for post catastrophic injury care
2. Review the care needed for the most common types of injuries
3. Define common complications within each category of major catastrophic injuries
4. Discuss rehabilitation needs including therapy, DME, medications
5. Discuss ongoing life care needs including attendant care, home modifications

Team members and their responsibilities



FIRST STEP

- Injured person
- Family/Caregivers
- Doctors
- Nurses and Nurse case managers
- Physical or Occupational therapists
- Benefits Managers
- Claims examiner



RESPONSIBILITIES

- Define the disabilities and abilities of the injured person
- Identify current and future medical needs
- List the durable medical equipment used and needed
- Determine the other residents of the home
- Discuss plans for necessary modifications

Acute Care

- Medical Stabilization
- Evaluating the extent of the injury(s)
- Identify risks
- Prevention of primary complications
- Treatment of complications when they occur
- Assessment of rehabilitation needs
- Discharge planning

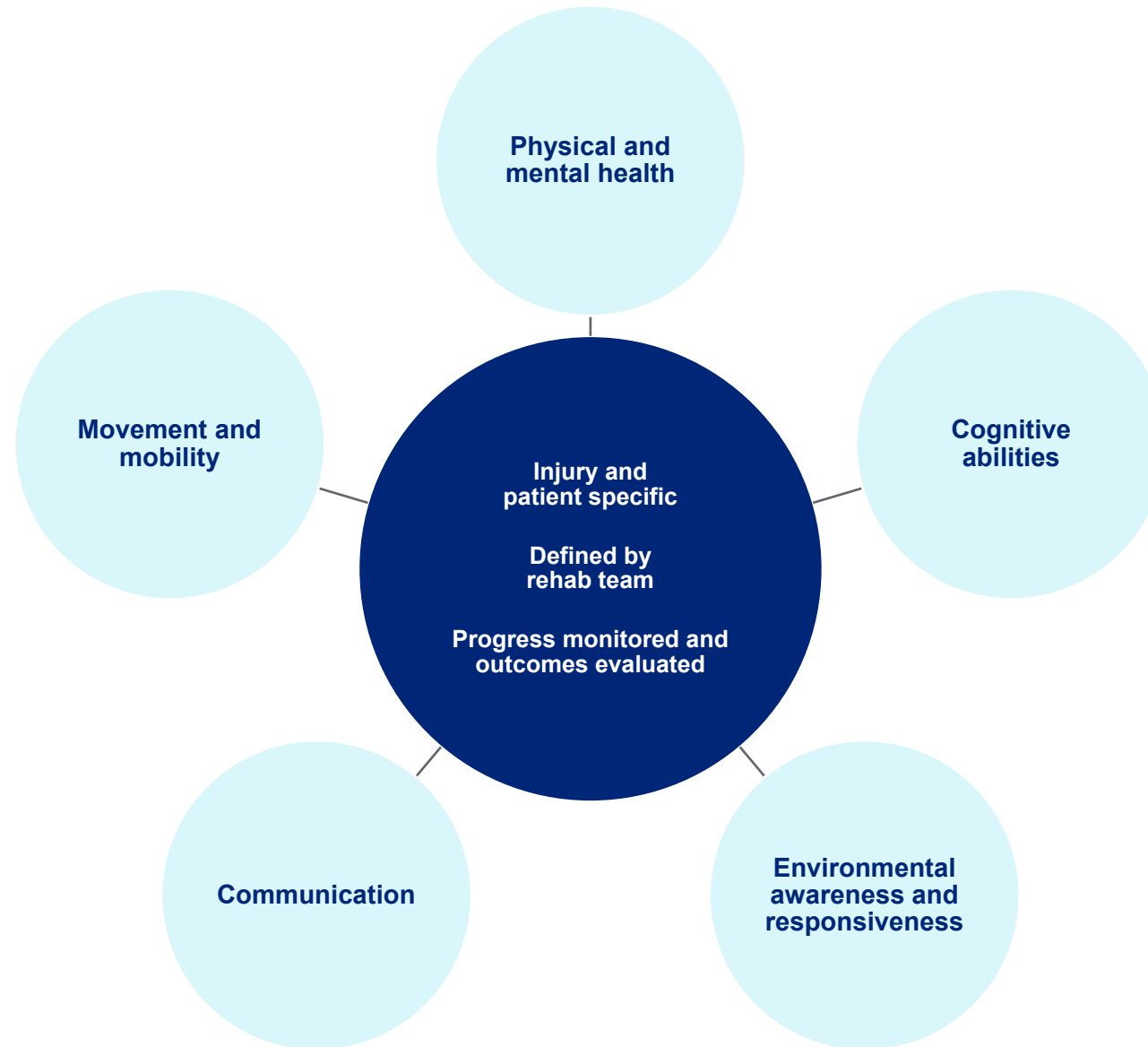


Discharge Planning

- Disposition
 - Home v Rehabilitation
- Equipment
- Medications
- Home Care
- Medical monitoring
- Transportation needs
- Home modifications



Rehabilitation goals



Catastrophic Care

- Spinal Cord Injuries
- Traumatic Brain Injuries
- Amputations
- Major Trauma
 - Burns

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Spinal cord injuries



Acute hospitalization

- Spinal stabilization
 - Surgery
 - Bracing
- Cardiopulmonary support
- Pain management
- Nutrition
- Length of stay
- Complication prevention

Year	Length of Stay – Acute-care Facilities
1975	24 Days
2005	15 Days
2009	12 Days
2020	11 Days

SCI Medical Complications

- Acuity increased by shorter hospital length of stay
- Acute
 - Pulmonary complications
 - DVT/PE
 - Orthostatic hypotension
 - Autonomic dysreflexia T6 and above
 - Bladder dysfunction
 - UTI's
 - Bowel dysfunction



Most Common Complications < 1year

- Higher incidence of medical complications
 - Urinary tract infections
 - Pressure ulcers
 - Autonomic dysreflexia
 - Bowel problems
- Impairment level significantly affected rates of complications



Other complications

- Sexual Dysfunction
- Metabolic dysfunction
 - Calcium
 - Osteoporosis
 - Hyperglycemia
 - Heterotopic Ossification
- Pain
 - Nociceptive
 - Neuropathic
- Psychological Adjustment/Dysfunction

Medical Team

- Focus on prevention of complications, examples
 - Bowel and bladder programs
 - Pressure relief timing and techniques
 - Incentive spirometers
- Individualized treatment based on level and risks
- Early identification of risks
- Education of family and care givers to recognize and treat
- Medical management when needed

Functional abilities based on level of injury

C1 – 4	Power wheelchair use with chin or “sip and puff” controls
C5	Feeding and grooming
C6	Transfer from bed and chair with slide board
C7	Manual wheelchair use in the community (not curbs)
C8	Typing, writing, using computers

Case #1

- 58-year-old male sustained gunshot injuries as a result of a mass shooting while at work.
- Patient diagnosed with quadriplegia C1-C4 complete, respiratory failure, neurogenic bowel and bladder, cervicalgia, recurrent UTI, cramps and spasms, and convulsions.
- Patient underwent multiple surgeries including C3-C6 posterior fusion.
- Patient suffered such as urinary tract infections, neurogenic bladder and bowel, seizures, dysphagia, respiratory failure, spasticity, and depression.
- Patient required a tracheostomy, gastrointestinal PEG tube placement and a suprapubic catheter placement.
- Transferred to inpatient rehabilitation and treatment continued with multiple physicians follow up, dx studies, PT, OT, ST, psychotherapy, intermittent catheterization, colectomy and colostomy, bowel program, oxygen use, and medications. HHC followed.
- Medications: baclofen, gabapentin, pantoprazole sodium, midodrine HCl, and levetiracetam.
- DME: power wheelchair, ostomy supplies, suction, nebulizer, chest percussion vest, Hoyer lift and sling, hospital bed.

Therapy Team

- Occupational Therapy (OT)
 - Self Care – Dressing, bathing, oral hygiene
 - Upper extremity function
 - Positioning and bracing
- Physical Therapy (PT)
 - Mobility focus
 - Bed mobility
 - Transfers
 - Wheelchair
 - Ambulatory w/ and w/o assistive devices
- Speech, Language Therapy (SLT)
 - Swallowing
 - Breathing techniques
- Psychologist/Psychiatrist



Extended Team

- Nutritionist
- Specialty Clinics - when needed
 - Wound
 - Seating and positioning
 - Driving
- Vocational Rehabilitation Specialist
- Members Involved in Coordination of Care
 - Claim professional, Benefits Manager, Vendors, Attorney



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Traumatic brain injuries



Medical Team

- Medical stabilization
 - Skull fractures, swelling, hematomas
- Focus on healing
 - Low stimulus setting
 - Structured environment
 - ROM
 - Positioning
- Individualized treatment based on severity and risks
 - Early identification of risks
 - If recovery is at home, education of family/care givers to recognize and treat
- Medical management when needed
 - Avoiding medications if possible due to side effects
- Prevention and treatment of complications

Medical Complications

- Seizures
 - Categorized by immediate, early, and late onset
 - Severity of TBI with seizure 1.5% mild, 3 % moderate 17% severe
 - 50-66% occur in 1st year with most in first 1-3 months
 - Approximately 50% of these will be a one-time seizure
 - Prophylaxis commonly done but lack of evidence to support
 - If >3 seizure likely require therapeutic treatment
- Post Traumatic Agitation
 - Most common days 1-14
 - Scales for measurement
 - Modify environment – ie low stim, structured, safe, floor bed...avoid restraints
 - Medications last resort
- Hypertension - incidence 11-25%
 - Usually resolves spontaneously but needs to be monitored
 - If medication needed, propranolol frequently used

Other Medical Complications

- Heterotopic Ossification
 - Incidence as high as 75% but generally 10-20% clinically relevant
 - Risks – coma >2 weeks, Immobility, spasticity, long bone fracture, pressure ulcers
 - Prophylaxis - ROM, control of spasticity
 - Treatment – bisphosphonates, NSAIDs, radiation to inhibit, surgery if needed
- Spasticity
 - Full evaluation, treatment and specialty clinics sometimes required
- Neuroendocrine
 - Examples - Hypothalamic pituitary, SIADH, Salt-wasting, Diabetes Insipidus

Case #2

- Patient fell 40 feet from a crane on 12/20/2005 and sustained traumatic brain injury, left tibia fracture, left leg crushing injury, multiple rib fractures, L1-2 Transverse process fracture, and L2-3 Burst fracture.
- Diagnoses: lumbar vertebral fractures, diffuse traumatic brain injury with loss of consciousness, post traumatic seizures, irritability and anger, major neurocognitive disorder, paralytic gait, full incontinence of feces, neurogenic bladder, and gastroesophageal reflux disease (GERD).
- Comorbid or preexisting diagnoses included: congenital hydrocephalus status post shunt placement, history of hemorrhoid surgery, hyperlipidemia and onychomycosis.
- Patient underwent surgery for external fixator placement for left leg crush injury.
- Inpatient rehabilitation stay from 2/2006 through 10/2006. And moved to different facility 2010 through 2017. It is noted that the patient currently resides at home with a family member providing care.
- Patient using wheelchair, rolling walker, depends and safety equipment.
- Patient sustained a fall and was admitted to hospital on 11/2/19. Transferred to a skilled nursing facility for inpatient therapy and plan was for discharge back home for family member to provide care.
- The patient declined and currently is residing as inpatient at skilled nursing facility pending permanent placement at an ALF.
- Treatment includes physician follow up including neurology, urology, PCP, orthopedic, OT, PT, DME, medications, skilled assistance.
- Medications: divalproex sodium, omeprazole, escitalopram oxalate, baclofen, trazodone HCl, guaifenesin, ipratropium-albuterol solution via nebulizer, metoprolol, ondansetron, Selsun blue shampoo, valproate, Xarelto.

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 - Transfers
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 - Ambulatory w and wo assistive devices
- Speech, Language Therapy (SLT)
 - Memory
 - Swallowing
- Psychologist/Psychiatrist



Extended Team

- Nutritionist
- Specialty Clinics - when needed
 - Post concussion clinic
 - Spasticity
 - Seating and positioning
 - Driving
- Vocational Rehabilitation Specialist
- Members Involved in Coordination of Care
 - Claim professional, Benefits Manager, Vendors, Attorney



Discharge Disposition After TBI

- GCS and LOS accounted for 35-44 % of variance in discharge placement
- Disparity – age, sex and race effecting discharge



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Amputations



Amputation

- Most work-related amputations involve some type of machinery
- Amputations resulted in greater days away from work with a median of 31 days vs 9 days from all other types of injuries.
- Level of amputation is determined by the location of the limb injury
- Surgeons attempt to preserve limb length for improved function
- Modifications will depend on function and mobility achieved with a prosthesis



Hospital course

Post-operative care	Discharge planning
<ul style="list-style-type: none">• Pain control• Minimize blood loss• Adequate nutrition• Control swelling• Falls prevention• Early range of motion and mobilization• Prosthetic vendor referral	<ul style="list-style-type: none">• Home• Subacute nursing facility• Acute inpatient rehabilitation• DME• Follow-up<ul style="list-style-type: none">– Providers– Physical medicine– Prosthetic vendor

Post-discharge recovery and rehabilitation

Pain control

- Postsurgical pain
- Phantom limb pain
 - Sensations
 - Pain
 - Anticonvulsants and antidepressants
 - Desensitization techniques
 - Mirror therapy
 - “Movement” of the missing limb

Wound care

- Surgical wound management
 - Compression (wrap / shrinker)
 - Precautions with elevation
 - Weight-bearing limitations
 - Nutrition and hydration
 - Scar mobilization
-

Post-discharge recovery and rehabilitation

Residual limb shaping

- Elastic bandages (ACE wrap)
- Shrinker socks

Mobilization

- Range of motion
- Strengthening of other limbs
- Ambulation
- Stair climbing

Endurance

- Cardiovascular fitness
- Energy conservation techniques
- Joint protection

Amputation site and additional energy required for walking

SINGLE BELOW-THE-KNEE	25%
BILATERAL BELOW-THE-KNEE	41%
SINGLE ABOVE-THE-KNEE	60-70%
BILATERAL ABOVE-THE-KNEE	>200%

Cuccurullo, Sara J. *Physical Medicine and Rehabilitation Board Review*. 3rd ed. New York: Demos Medical, 2015. Page 477.

Case #3

- Patient is 58-year-old male who suffered right hand amputation when his hand was caught in machinery at work on 10/25/2022.
- He underwent surgery for completion of the traumatic right below elbow amputation with later revision of right BEA stump in 2013.
- He was fitted with a myoelectric prosthetic which improved ability to perform ADLs.
- Ongoing pain developed with stellate ganglion blocks administered with some relief noted.
- Diagnoses: chronic pain syndrome, complete traumatic amputation right forearm, right arm pain, phantom limb syndrome, stump revision surgery 2013, PTSD, major depressive disorder, recurrent; generalized anxiety disorder, and attention-deficit hyperactivity disorder.
- Comorbid conditions: kidney stones, lithotripsy, oral surgery, low testosterone, pneumonia, smoker, and hypertension.
- He developed ADHD, PTSD and nightmares with depression. Sympathetic nerve pain developed, and he became unable to use current prosthesis. Compensatory issues in his left upper extremity developed because he was unable to use the prosthesis. Psychiatric issues and pain worsened with some decline; however, improved with further treatment and ongoing medications. New myoelectric prosthetic evaluation and fitting.
- Treatment: follow up with pain management, psychiatric care, urology, orthopedics, prosthetist, PT, OT, prosthetic and maintenance/replacement care.
- Medications include: dextroamphetamine-amphetamine, diclofenac, doxepin, Gralise, oxycodone/APAP, lactulose, prazosin, tadalafil, trazadone and venlafaxine.

What to watch for and ask about

POSSIBLE SERVICES

- Prosthetic evaluation
- Transfer to rehab facility
- Inpatient rehab for strengthening and mobility
- Outpatient physical therapy for prosthetic training
- Home health skilled nursing for wound care, medication management
- Home health aid for assistance with activities of daily living

POSSIBLE DME/SUPPLIES

- Compression/shrinker socks
- Walker
- Wheelchair
- Transfer bench/sliding board
- Tub bench or shower chair
- Bedside commode
- Residual limb/skin care supplies
- Bed alarm

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**Major multiple
trauma**



Types of traumatic injuries

- Traumatic brain injury
- Spinal cord injury
- Amputation
- Facial trauma
- Acoustic trauma
- Crush injury
- Concussion
- Fractures – long bones
- Jaw – broken or dislocated
- Spine or skull fractures
- Cuts and puncture wounds
- Collapsed lung
- Myocardial contusion
- **Burns**
- Electrical injury
- Subarachnoid hemorrhage
- Subdural hematoma
- Multiple fractures

Burns

Burns in the work-place

- **10-45 %** of all burns

>5,000 burn injuries in U.S. caused by work-related fires and explosions each year ¹

~10% of fatalities related to burns (Electrical most common)²

Compared to non-work-related burn patients...

- Fewer co-morbidities
- Decreased TBSA burns
- Decreased risk of inhalation injury
- Shorter time of intensive care treatment
- Shorter lengths of hospital stay
- Lower treatment cost

¹ OSHA

² National Census of Fatal Occupational Injuries



Highest risk group

Young male worker

High-risk occupations

Firefighting

Food processing

Construction

Burn Care Plan Summary

- Look for urgent issues
 - Inhalation injuries, CO, acidosis, circumferential burns, shock
- Fluids
 - Mortality increased if fluids delayed longer than two hours post burn but caution on overload
 - Formulas for calculation
- Oxygenation
 - Careful assessment, although not visible internal injury can result in critical crisis
- Wound management
 - Don't pop or uncover blisters
 - Dressing – many kinds have improved outcomes
 - Grafting may be necessary – autograft v allograft
- Nutritional support
 - Metabolic rate (MR) increased - approximately 180% above resting MR, formulas for calculation
 - High protein, high carbohydrate, low fat
 - Weight loss of greater than 10% is associated with poorer outcome
- Medication Management – control the pain
 - Higher pain levels have shown long term anxiety, PTSD and delayed healing
 - Study showed 14% delay when pain scored as a 10 on first dressing change
 - Medication options include anesthesia, opioids, ketamine, anxiolytics

Complications with Burns

- Fluid “creep”
 - Over resuscitation pulmonary and/or cerebral edema
- Multi organ involvement
- Malnutrition
- Delayed healing
- Infections
- Contractures



Burn Rehabilitation

- Acute
 - Pain control essential
 - Early intervention, start day 1
- Subacute
 - Wait until cleared for exercise, movement games, ADLs
 - Education/encouragement
 - Psychological impact (stages of grief)
- Chronic
 - Scar management - months
 - Positioning, splinting, exercise, massage, moisturizing
 - Hypertrophic scars
 - Pressure therapy

Ancillary Needs - Burns

- Home health care needs
 - Nurse
 - PT/OT
 - Home health aid
 - Respiratory therapy
 - Nutritionist
 - Other services – i.e., infusion, dialysis
- Transportation
- Equipment needs
- Psychological support
 - Return to work issues, particularly if injury occurred at work
 - Smartphone and VR studies in pediatrics



Summary - Take Aways on Direct Care

- Catastrophic Injuries come in all shapes and sizes
- Early care focused on medical stability
- Prevention of medical issues is so important!
- Treatment of complications when they occur
- Direct care with team to maximize function



Summary – Take Aways on Team Care

- Evaluation by multidisciplinary team early in the process to assess injured person's needs and identify whether simple or complex discharge
- Planning for homecoming or transfer to another care facility/rehabilitation
- Determine if caregiver training or other support is needed
- Referrals to home health care agency, physical, occupational, speech therapy
- Arrange all durable medical equipment, supplies, specialty items, home evaluations, home/vehicle modifications, transportation, education, etc.

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About Optum Workers' Comp and Auto No-fault Solutions

Optum Workers' Comp and Auto No-Fault Solutions collaborates with clients to lower costs while improving health outcomes for the injured persons we serve. Our comprehensive pharmacy, ancillary, medical services, and settlement solutions, combine data, analytics, and extensive clinical expertise with innovative technology to ensure injured persons receive safe, appropriate and cost-effective care throughout the lifecycle of a claim. For more information, email us at expectmore@optum.com.

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