A spinal cord injury (SCI) is caused by a blow, jolt, or penetrating injury to the contents of the spinal canal resulting in disruption of the neural function. It may manifest as temporary or permanent sensory deficit, motor deficit, or bowel or bladder dysfunction.

In addition, spinal cord injured individuals commonly present with secondary conditions (pressure sores, scoliosis, and spasticity), some of which are life-threatening (respiratory infections).

Overview

The spinal column comprises 31 bones called vertebrae: 7 cervical vertebrae (neck), 12 thoracic vertebrae (upper and middle back), 5 lumbar vertebrae (lower back), 5 sacral vertebrae (sacrum), and 2 fused coccygeal vertebrae (coccyx).

The spinal cord extends downward from the base of the brain; the lower end of the spinal cord stops a little above the waist. Below this region is a group of nerve roots called the cauda equina. Tracts in the spinal cord carry messages between the brain and the rest of the body. Motor tracts carry signals from the brain to control muscle movement. Sensory tracts carry signals from body parts to the brain relating to heat, cold, pressure, pain and the position of your limbs.

Most Susceptible to SCI

- Males; 2-3 times higher risk
- Ages 15-24 and 65+
- Residents of Greater Minnesota

Level of SCI

- Complete: 13%
- Incomplete/nonfunctional: 13%
- Incomplete/functional: 22%

Leading Causes

<table>
<thead>
<tr>
<th>Top Causes, overall</th>
<th>Most Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Age</td>
</tr>
<tr>
<td>Motor vehicle traffic</td>
<td>Females</td>
</tr>
<tr>
<td>Falls, unintentional</td>
<td>Females</td>
</tr>
<tr>
<td>Sports &amp; recreation</td>
<td>Males</td>
</tr>
<tr>
<td>Assaults, firearms</td>
<td>Males</td>
</tr>
</tbody>
</table>

For nonfatal, hospitalized SCI only

Minnesota Department of Health, Injury and Violence Prevention Unit, September 2011
Outcome

(Annualized average from 2000-2009)

Nonfatal
- ED-treated: 42
- In-patient: 249

Fatal, Hospital-treated
- Total: 50
- Case fatality rate: 17%

Trends

Increasing rates
- ED-treated SCI
- Non-fatal, unintentional, fall-related SCI

Decreasing rates
- Nonfatal, hospitalized SCI
- Sport & recreation-related SCI
- SCI case fatality rate

Long-term Outcomes

- About a quarter (27%) of hospitalized SCI are discharged home on self-care.
- Neurologic impairments in any body system controlled by the affected nerves, including musculoskeletal (resulting in incomplete or complete paraplegia or tetraplegia), respiratory, urinary, or gastrointestinal.
- Psychological side effects, such as depression and anxiety.

National Data

- About 200,000 people are currently living with SCI in the United States.
- Annually, 15 to 40 new cases per million people—or 12,000 to 20,000 new patients—are estimated to occur.
- Alcohol has been found to play a major factor in 25% of spinal cord injuries.
- Average annual medical cost: $15,000–$30,000 per year.
- Estimated lifetime cost: $500,000–more than $3 million, depending on injury severity.

Data source: CDC, Atlanta. Web: http://www.cdc.gov/TraumaticBrainInjury/scifacts.html

Prevention Tips

1. Use of a seatbelt can reduce the odds of a spinal cord injury by 60%.
2. Use of a seatbelt and airbag combined can reduce the odds of injury by 80%.
3. Avoid driving while sleep deprived or distracted (e.g., cell phone usage).
4. For older adults, decrease fall risk through regular physical activities and tai chi exercise that strengthen legs and improve balance.