# Next decade offers promise for treatment of spinal cord injuries

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Although new developments in the management of spinal cord injuries (SCI) are on the horizon, any eventual cure for the condition is more likely to involve a multidisciplinary approach, drawing from expertise in several fields, according to a review article published in the April 2010 issue of the *Journal of the American Academy of Orthopaedic Surgeons* (*JAAOS*).

- Each year, approximately 12,000 men and women sustain and survive spinal cord injuries, and about 259,000 Americans currently live with a long-lasting SCI.
- Although traditionally associated primarily with young adults, today the average age of SCI patients has risen to 40.2 years.
- Automobile crashes are the most common cause of SCI, and males are most often affected, comprising almost 81 percent of all SCI patients.

According to Ranjan Gupta, MD, chair of the department of orthopaedic surgery and professor of orthopaedic surgery, anatomy and neurobiology, and biomedical engineering at the University of California, Irvine, newer therapeutic approaches including stem cell therapy and novel drug formulations, hold special promise for management of SCI patients.

"Yet, spinal cord injuries are especially difficult to treat because they

involve more than a direct injury to the spine," noted Dr. Gupta. "The primary mode of an SCI involves changes to the patient's anatomy that occur as the result of the actual traumatic event. Secondary injuries may occur as a result of how the body responds to the primary injury, usually by producing scar tissue that can make treatment problematic."

Dr. Gupta added that it is in the area of these secondary injuries that there are many promising areas of research, from optimizing the acute management of the patient to pharmacologic interventions to cellular transplantation.

"Yet, to maximize the chances for recovery after SCI, early surgical intervention is essential," he stated.

With the sustained, robust attention from scientists and clinicians, as well as the continued active support from the National Institutes of Health, there should be substantial changes in the clinical management of SCI over the next decade. "As long as the field is being actively researched, there is cause for renewed and continued hope," Dr. Gupta continued.

"Patients with spinal cord injuries face possible significant neurologic problems, resulting in paralysis and other disabilities. Innovative treatment strategies such as stem cell transplantation have enjoyed renewed interest under the current administration," Dr. Gupta noted.

"Currently, the FDA has been more receptive to cellular transplantation trials, with one of the first trials being actively planned in the next two years," he said. "While there have been several animal studies showing benefits from various pharmacological interventions, the human clinical trials are still pending."

Dr. Gupta noted ongoing clinical trials -- including the Surgical

Treatment of Acute Spinal Cord Injury Study (STASCIS) -- continue to explore new approaches to the management of SCI, including multidiscplinary approaches that rely on several specialties to shape a successful treatment.

"It is extremely unlikely that SCI will respond to one single intervention, or that there will be a 'magic bullet,' " he concluded. "Rather, the treatment of SCI will undoubtedly require a multidisciplinary approach and management."

Provided by American Academy of Orthopaedic Surgeons