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# Spinal Cord Injury and Pressure Ulcers

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Spinal cord injury (SCI) is often cited as one of most devastating type of injury because it instantly creates lifelong physiologic, emotional, social, and economic alteration to the person and the family [1]. Until World War II, the health care philosophy for the SCI patient was that it was not advantageous to invest energy and time to treat them because negative outcomes could be anticipated. As a consequence of medical complications such as urinary tract infection, pressure ulcers, and sepsis, life expectancy was short. After World War II, countries were faced with large numbers of people with injuries involving the central nervous system. Rehabilitation programs specifically for SCI were developed in Great Britain and the United States.

In the 1970s in the United States, a new philosophy of care emerged, which culminated with the establishment of regional spinal cord injury centers, later designated as the Model Spinal Cord Injury System. Services required by the patient from the time of injury and throughout life were provided, including appropriate medical and surgical care, health maintenance, and crisis intervention. Even with the advances in health care and new technologies, the person with a SCI is at risk for pressure ulcer development. A pressure ulcer is seen as a frequent, costly, and life-threatening condition that results in long hospitalization and interferes with rehabilitation and community reintegration.

## Pressure ulcer statistics

According to the 1998 National Spinal Cord Injury Statistical Center Annual Report [2], 34% of individuals admitted to a Model Systems facility within 24 hours of SCI developed at least one pressure ulcer during acute care or rehabilitation. McKinley et al [3] identified pressure ulcers as the most common secondary complication in all years after injury; an increased

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prevalence was associated with greater number of years after injury. The National Pressure Ulcer Advisory Panel [4] indicated that the incidence of pressure ulcers ranged between 20% for those undergoing spinal surgery and 31% 1 year after the injury. Prevalence rates ranged from 10.2% to 30% at the first annual examination. Early studies [5] estimated that in the United States between 50% and 80% of persons with SCI developed a pressure ulcer at least once in their lives. The majority of the ulcers occurred in the first 2 years after injury, but even after 3 to 4 years, there was a reported incidence of 30%.

Pressure ulcer statistics have been examined worldwide. In the United Kingdom, 32% of patients arrived at a spinal cord injury unit with pressure ulcers, whereas a total of 56% experienced an ulcer at some stage between injury and discharge [6]. Pressure ulcers were associated with an increased length of hospital stay, complete lesion (American Spinal Injury Association, grade A), surgical stabilization of neck injury before transfer to the spinal cord unit, tracheostomy on admission, and delayed transfer to the SCI unit after injury. Noreau et al [7] in Quebec reported the prevalence of secondary impairments among individuals with long-standing SCI as urinary tract infection (56%), spasticity (40%), hypotension (33%), autonomic dysreflexia (31%) and pressure ulcers (28%). A Brazilian survey [8] of patients with SCI revealed 54% had pressure ulcers. Comparing statistics about SCI for different countries is difficult because of varying methodology used for data collection, the social, political, economic and sanitary levels of the country, and the environmental aspects.

The cost of pressure ulcers in the SCI population is difficult to obtain. In the United States, health care costs associated with SCI are estimated to be $1.5 to $2 million over the lifetime of a person [9]. After the initial medical care and rehabilitation, the majority of these costs are associated with complications and hospital readmissions for secondary impairments, including pressure ulcers [9]. Recurrence of pressure ulcers after healing has been reported as high as 35% for patients with SCI. However, pressure ulcers impact multiple aspects of function, thus there are personal costs that interfere with the rehabilitation process and are a significant deterrent to activities that contribute to independent, productive, and satisfying lives. For both the individual and the caregiver, pressure ulcers can result in time missed from work or school, delayed community reintegration, reduced quality of life, and loss of self-esteem [2].

## Evidence-based practice recommendations

It is imperative that SCI individuals develop effective strategies for self-management of skin care. They need guidance and assistance in the decisions required to restore health, independent function, and self-esteem, as well as ways to prevent and treat pressure ulcers, if they occur. The Consortium for Spinal Cord Medicine developed the guideline Pressure Ulcer Prevention and