

# Why Do You Prescribe Methylprednisolone for Acute Spinal Cord Injury? A Canadian Perspective and a Position Statement

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**ABSTRACT:** *Objective:* To determine the practice patterns for methylprednisolone administration for patients with acute spinal cord injury (SCI) within the spinal surgery community across Canada, and the reasons behind these patterns. *Methods:* Canadian neurological and orthopedic spine surgeons were surveyed at their respective annual meetings with a questionnaire asking seven questions with respect to their practice standards. *Results:* Sixty surgeons completed the survey representing approximately two-thirds of surgeons treating acute SCI within Canada. The NASCIS III dosing regimen is the most commonly prescribed steroid protocol. However, one-quarter of surgeons do not administer steroids at all. Of those who administer methylprednisolone, most do so because of peer pressure or out of fear of litigation. *Conclusions:* The vast majority of spine surgeons in Canada either do not prescribe methylprednisolone for acute SCI, or do so for what might be considered the wrong reasons. These results demonstrate the need for an evidence-based practice guideline. The Canadian Spine Society and the Canadian Neurosurgical Society fully endorse the recommendations of the steroid task force (see preceding paper).

**RÉSUMÉ:** *Pourquoi prescrire de la méthylprednisolone dans les cas de lésion aiguë de la moelle épinière? Perspective canadienne et déclaration de principe.* *Objectif:* Déterminer les modalités d'administration de la méthylprednisolone chez les patients présentant une lésion aiguë de la moelle épinière (LMÉ) en chirurgie de la moelle épinière au Canada et les raisons sous-jacentes à ces pratiques. *Méthodes:* Nous avons fait un sondage auprès des neurochirurgiens et des orthopédistes lors de leur congrès annuel respectif au moyen d'un questionnaire incluant sept questions sur leurs standards de pratique. *Résultats:* Soixante chirurgiens ont complété le sondage, soit environ les deux tiers des chirurgiens qui traitent des LMÉ au Canada. Le régime posologique NASCIS III est le protocole d'administration de stéroïdes le plus couramment prescrit. Cependant, le quart des chirurgiens ne prescrivent pas du tout de stéroïdes. Parmi ceux qui administrent de la méthylprednisolone, la plupart le font à cause de la pression des pairs ou par crainte d'une poursuite. *Conclusions:* La grande majorité des chirurgiens qui traitent des traumatisés de la moelle au Canada ne prescrivent pas de méthylprednisolone pour une LMÉ ou le font pour ce qui pourrait être considéré comme de mauvaises raisons. Ces résultats démontrent qu'il existe un besoin quant à l'établissement de lignes directrices basées sur des données probantes. La Canadian Spine Society et la Canadian Neurosurgical Society appuient entièrement les recommandations du groupe de travail sur les stéroïdes (voir l'article précédent).

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In 1990, the results of a multicentre prospective randomized double-blind controlled trial (NASCIS II) were published, investigating the administration of high-dose methylprednisolone in the treatment of acute spinal cord injury (SCI).<sup>1</sup> Within a very short time, the medical community embraced routine administration of this steroid protocol for patients with acute, nonpenetrating, spinal cord trauma. More recent publications by the same investigators have provided longer follow-up of the original study patients and results from another trial (NASCIS III) investigating a modified dosing strategy of the same drug for the same indication.<sup>2-4</sup> The results of these trials have led the

investigators to conclude that high dose methylprednisolone should be routinely administered for either 24 or 48 hours depending on the acuity of the injury (<3 hrs, 3-8 hrs).

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During the same time period, not only has methylprednisolone enjoyed widespread use in spinal cord trauma, but experts have come forward to declare it a standard of care. Legal precedents have been set.<sup>5</sup> At the same time, independent review of published NASCIS data have led certain authors to form their own conclusions about safety and efficacy, that are quite in contrast to the conclusions championed by the principal investigators.<sup>6-8</sup>

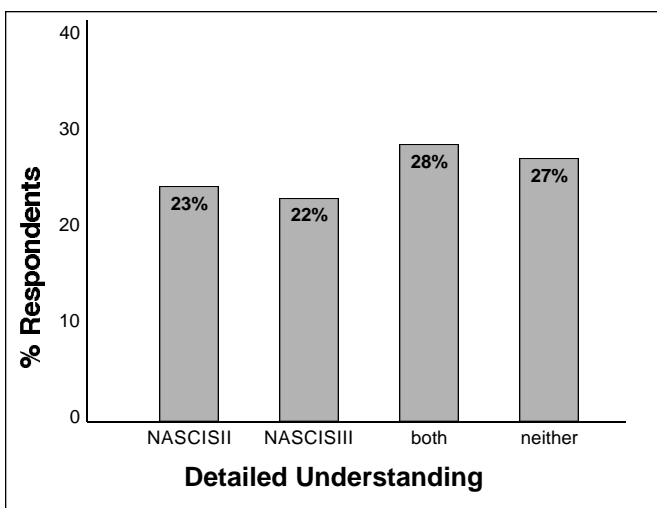
Against this background, the front-line physicians treating patients with acute spinal cord injury are left exposed. Do they prescribe steroids because they have read and understand the NASCIS study results; do they prescribe steroids out of fear of litigation; do they prescribe steroids because everyone else does; or do they prescribe nothing? On behalf of the Canadian Neurosurgical Society and the Canadian Spine Society, we undertook a national survey to try to answer these questions.

## METHODS

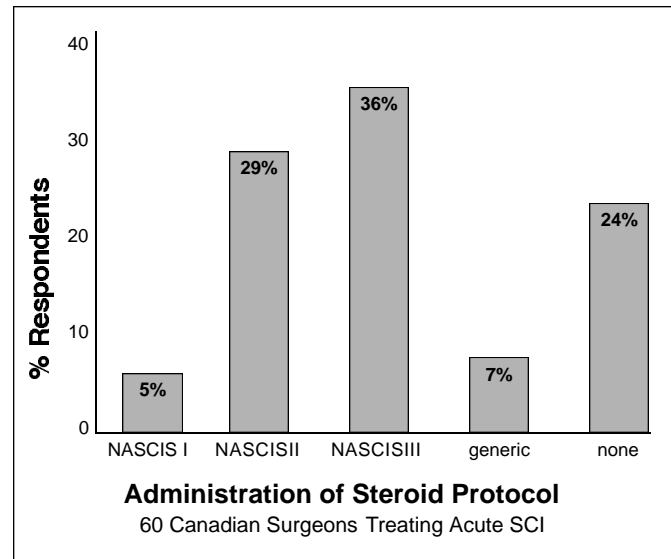
At the annual meetings of the Canadian Neurosurgical Association and Canadian Spine Society for the year 2001, we conducted a survey of neurosurgeons and orthopedic surgeons who treat acute spinal cord injured patients with the questions posed above, in mind. Surgeons were confronted with the questionnaire during scientific sessions throughout the venue of both meetings. They were asked to complete the questionnaire only once, and only if they were responsible for treating patients with acute spinal cord injuries. Results were tabulated and expressed as a percentage of physicians completing the questionnaire. To estimate the number of spinal surgeons treating acute SCI across Canada, we contacted physician specialists at each of 10 University tertiary care centers that routinely manage this disorder.

## RESULTS

Sixty surgeons responded to the questionnaire that either treat acute spinal cord injuries (n=58) or routinely provide advice to



**Figure 1:** Although most surgeons treating acute SCI reported a detailed understanding of NASCIS II and/or NASCIS III, just over 1/4 did not feel comfortable with the literature.



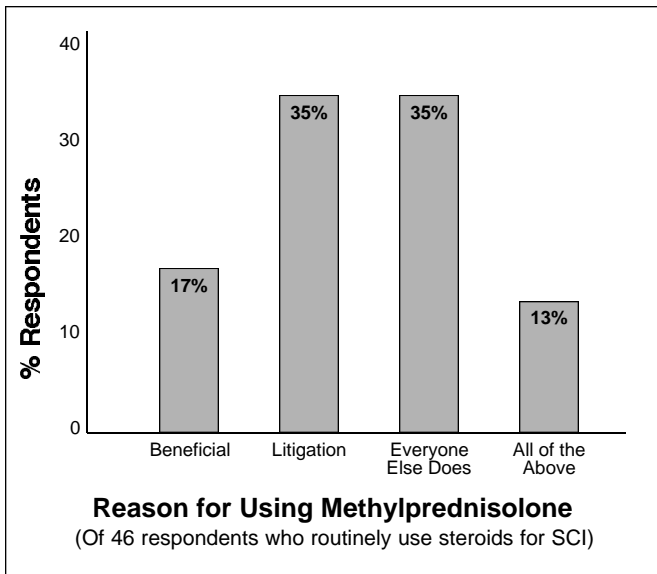
**Figure 2:** Steroid protocol administered to patients with acute spinal cord injury.

other physicians treating this condition (n=2). All 10 University tertiary care centers provided details about the number of neurosurgeons and orthopedic surgeons managing patients with acute SCI in their geographic region. Subsequently we were able to estimate that, within Canada at the time of this survey, approximately 65 neurosurgeons and 25 orthopedic surgeons were active in treating this disorder. Hence, the results of this survey represent the opinion of roughly two-thirds of all surgeons treating acute SCI in this country.

Of the 60 respondents, 48% report treating on average <10 patients with acute spinal cord injuries per year. Forty-one percent treat between 10-40 injuries per year, and 11% more than 40 per year. When asked about their knowledge of the literature, 73% of those surveyed indicated that they have read in detail and understand the results of the NASCIS II study, the NASCIS III study, or both (Figure 1). Implied in these findings is that the majority of surgeons feel adequately informed about prescribing methylprednisolone as a treatment for acute SCI. Just over one-quarter of the respondents admitted to being unfamiliar with either study.

Practice patterns were elucidated through a question examining steroid prescription. Twenty-four percent of Canadian surgeons treating SCI do not prescribe methylprednisolone at all. NASCIS II recommendations are followed by 29%, while NASCIS III recommendations are followed by 36% (Figure 2). Seven surgeons (12%) indicated that they prescribed steroids (such as methylprednisolone or decadron) according to some other regimen. Of those surgeons who prescribe steroids, almost half (47%) follow NASCIS III recommendations.

Those physicians who prescribe steroids for patients with acute SCI were asked to respond to a subsequent question exploring the reason for this practice (Figure 3). The two most common reasons for prescribing methylprednisolone are "because everyone else does" (35%) or out of fear of litigation (35%). Only 17% of those prescribing steroids do so primarily



**Figure 3:** Of those who routinely prescribe methylprednisolone for acute SCI, 70% do so out of fear of litigation or from peer pressure, while another 13% admit that litigation and peer pressure influence their decision. Only 17% prescribe steroids primarily for patient benefit.

because they believe in the benefit to their patients. Thirteen percent indicated their practice to be based on a combination of reasons.

## CONCLUSIONS

In summary, 3/4 of surgeons treating acute SCI in Canada prescribe steroids. This suggests that at face value, steroids for acute SCI represent a national standard of care. The NASCIS III dosing schedule is currently the most widely prescribed steroid protocol in this setting. This is concerning, in that there is the least amount of evidence for this protocol and the most potential for patient harm (see preceding paper by Hugenholtz et al.).

When one examines the reasons for steroid administration, 70% of surgeons are prescribing methylprednisolone because of peer pressure or out of fear of litigation, while only 17% are convinced of the therapeutic benefit. Including those who do not prescribe methylprednisolone, 87% of surgeons treating acute SCI are either not using methylprednisolone, or are using it for what might be considered undesirable reasons. These results argue strongly against methylprednisolone as a standard of care, and raise serious concerns about the influence of misguided medicolegal pressures on practice patterns. Further underscored is the need for an unbiased evidence-based national position statement structured from available literature.

## AN EVIDENCE-BASED PROCESS

In January of 2001, a committee was struck consisting of recognized experts in the field of acute spinal cord injury, emergency medicine, and/or epidemiology (Table). A mandate was provided by the sponsoring societies to undertake an evidence-based review of available literature and through a formal guidelines process, to formulate a set of recommenda-

**Table:** Joint CNS/CSS Steroid and SCI Committee

### Chair

H Hugenholtz Division of Neurosurgery, Dalhousie University, Halifax NS

### Committee Members

DE Cass\* Department of Emergency Medicine, University of Toronto, Toronto ON  
 MF Dvorak Department of Orthopedic Surgery, University of British Columbia, Vancouver BC  
 DH Fewer Division of Neurosurgery, University of Manitoba, Winnipeg, MN  
 RJ Fox Division of Neurosurgery, University of Alberta, Edmonton AB  
 DMS Izukawa Division of Neurosurgery, Mississauga General Hospital, Mississauga ON  
 J Lexchin\* Department of Emergency Medicine, University of Toronto, Toronto ON  
 S Tuli\* Division of Neurosurgery, University of Toronto, Toronto ON  
 N Bharatwal Department of Physical and Rehabilitation Medicine, University of Toronto, Toronto ON  
 C Short Department of Physical and Rehabilitation Medicine, Dalhousie University, Halifax NS

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tions with respect to the use of methylprednisolone in acute spinal cord injury. In April, the entire committee met for three days in Toronto to undertake this process. Their recommendations were finalized over the ensuing weeks. Subsequently they have been formally presented to several national special interest groups including the Canadian Orthopedic Association, Emergency Physician Association of Canada, Physical and Rehabilitation Medicine Society of Canada, the Canadian Paraplegic Association, and the Rick Hansen Society.

## OUTCOME

Both sponsoring organizations have formally accepted the recommendations of the committee. It is the hope of these two societies that the committee's report will help clear up the confusion surrounding the use of steroids in acute SCI. In particular, the document will provide care-givers in Canada with enough information to make an informed choice based on objective review of scientific evidence, without fear of peer pressure or litigation.

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