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). Within a very short time, the medical community embraced routine administration of this 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. 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. 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.

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 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...
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 recommendations 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.

**REFERENCES**