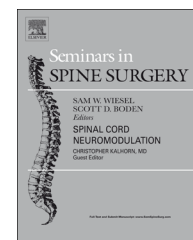


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# Shared decision-making in spine surgery

Kenneth Nwosu, MD, Stuart Hershman, MD, and Thomas Cha, MD\*

Department of Orthopaedic Surgery, Massachusetts General Hospital, 55 Fruit St, Boston, MA 02114

## ABSTRACT

Although relatively new, the concept of shared decision-making (SDM) has become extremely popular over the past few years, yielding a rapid rise in the development of incorporative tools. The value of the SDM process lies in the creation of an open dialog between the surgeon and patient and has been shown to demonstrate usefulness with regard to enhancing the patient experience as well as their understanding of a proposed procedure.

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## 1. Introduction

In the United States, lumbar and cervical spine surgery rates have steadily risen over the last three decades.<sup>1</sup> Over that same period of time, there have been numerous advances in spine care with the advent of newer surgical techniques and the evolution of treatment modalities. Despite this progress, the fact that no one technique has borne superiority over another inherently creates ambiguity as to which one is most appropriate. The various techniques used to treat spinal pathology all have their pro's and con's, making the shared decision process even more critical when treating patients.

While no formal definition exists, shared decision-making is a method by which physicians and patients mutually discuss a diagnosis and its treatment options in order to formulate a plan of care.<sup>2,3</sup> Over the last several years, the concept of working together to create the treatment plan has played an increasingly significant role, even providing a fundamental basis to the United States' Affordable Care Act legislation passed in 2009.<sup>4</sup> This is in stark contrast to models of the past where patients' treatments were virtually dictated by physicians in a paternalistic fashion. For better or for worse, this paradigm shift has been nurtured by the readily available information found on the internet, magazines, television ads, and publicly available quality reporting databases.<sup>5</sup> Despite known flaws in the accuracy and

interpretation of much of this information, its' easily accessible and ubiquitous nature has promoted patient notions of knowledge and empowerment, strengthening the shared decision-making movement. It therefore becomes even more important that an open dialog between the surgeon and patient is readily established to debunk myths and clarify any confusion. This chapter serves to (1) define the shared decision-making process as it relates to spine surgery, (2) describe the various aids available to help spine surgeons and patients navigate the shared decision-making process, and (3) highlight any biases or hindrances in the shared decision-making process that could ultimately negatively affect patient outcomes and satisfaction.

## 2. Shared Decision-Making

Sharing the decision-making process has several benefits for both the patient and spine surgeon. Allowing patients to assume an active role in planning their care has the potential to improve patient compliance, set realistic expectations, and improve outcomes—as could be expected, patients are more likely to adhere to, and approve of a treatment plan if they played an active role in creating that plan and consider it their own.<sup>6,7</sup> Establishing the most ideal course of action requires frank, open discussion regarding the best available

\*Corresponding author.

E-mail address: [tcha@partners.org](mailto:tcha@partners.org) (T. Cha).

evidence; this permits an informed decision to be made based on facts rather than emotion.<sup>8</sup> Furthermore, when patients are involved in directing their care, there is a greater chance their goals will be achieved, thereby potentially increasing patient satisfaction. This open collaboration between surgeon and patient enables an exchange of ideas so that both parties can verbalize their concerns, priorities, and preferences.<sup>9</sup>

Multiple factors may be involved in the decision-making collaboration. Accurate information regarding outcomes, techniques, costs, risks, benefits, and alternatives to surgery all serve to help the patient come to an informed decision about the best treatment option—it is therefore vital for surgeons to have a thorough understanding of these factors.<sup>10</sup> In order for patients to make an informed decision, the information given to them must be of high quality. It is paramount that spine surgeons adhere to strict practices of good surgical indications, are up to date on the most recent literature, and have a command of various different surgical techniques.

There is a significant variation in the definition of shared decision-making (SDM) in the literature. However, Makoul et al. derived nine essential elements according to the four most commonly cited models.<sup>11</sup> They include (1) defining and explaining the problem, (2) presenting options, (3) discussing risk, benefits, and costs, (4) sharing patient values and preferences, (5) discussing patient self-efficacy, (6) offering doctors' knowledge and communication, (7) clarifying understanding, (8) making or explicitly deferring a decision, and (9) arranging follow-up.

Although the emphasis regarding each SDM model varies, all describe the following key processes as it pertains to clinical care—the recognition of preference sensitive decisions, and the ability to provide decision support to patients. Most SDM models are applicable to preference sensitive decisions where there is more than one medically reasonable choice, and the risk-benefit ratio depends on how much importance each patient places on certain outcomes. For example, in patients with cervical radiculopathy, the risk of increased pain or infection from a posterior foraminotomy must be balanced against the risk of dysphagia from an anterior approach. If an anterior approach is decided on, the loss of motion and adjacent segment degeneration often seen with an anterior cervical fusion must be weighed against the risk of wear and associated osteolysis in a cervical disc replacement. In such situations, the information the patient provides about his or her preference is critical towards achieving a shared decision.

SDM sits on a continuum, hence patients' preference to participate in the decision-making process may vary given different situations.<sup>12</sup> For example, it has been shown that elderly patients generally want to be informed but prefer to rely on their physicians' recommendations; women, patients with more education, and those undergoing invasive procedures, tend to prefer to partner in the decision-making process.<sup>13</sup> Conversely, patients in an unfamiliar scenario may benefit more from assistance from their physicians, family members, or decision coaches (decision coaches are individuals or tools that help patients consider their choices in light of their personal goals and values—they are not

designed to give medical advice) to develop their preference for sharing the decision regarding treatment.<sup>14</sup> Assessing the patient's preference to share the decision is a critical first step towards facilitating the process.

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### 3. Evidence-Based Aids

#### 3.1. Best Practice for Risk Communication

Ensuring that patients are adequately informed regarding the risks, benefits, and alternative treatment options is key towards fostering SDM. However, because many decision support materials are written at a higher literacy level than that of the average patient, the information is incomprehensible to many. Innumeracy is also pervasive in the United States where over 20% of college educated adults are unable to distinguish the highest risk between 1%, 5%, and 10%.<sup>15</sup> Hence many patients lack the capacity to understand and interpret numeric information cited, specifically regarding risk and benefit statistics, making it impossible to achieve a truly informed decision. As a result of these challenges, physicians often resort to utilizing verbal qualifiers like, "you have a high risk of infection following this surgery"—patient's interpretation of statements like these are often highly variable.<sup>16</sup> Because of this variability in understanding, numeric and graphic representations are preferred in order to clearly communicate risk.

Upon attempting to educate patients regarding risks associated with treatment options, one must decide to either present relative risk or absolute risk. Research has consistently shown that medical treatment associated differences in risk seem larger when presented as relative risk rather than absolute risk.<sup>17</sup> A spine surgeon may tell a patient that the risk of infection during a posterior cervical spine approach is 1%, but only 0.1% via an anterior approach—presented as a relative risk, an anterior approach reduces the risk of infection ten-fold or 900%. When presented as an absolute risk, the anterior approach reduces the risk of infection by only 0.9%—a far smaller difference than previously implied.

When asking patients to interpret data, the number needed to treat is even more difficult for patients to assess. Sheridan, et al.<sup>18</sup> found the number needed to treat was the most difficult risk communication method for patients to understand and recommended it never be the only risk assessment tool used when communicating with patients.

A growing body of evidence has revealed that pictographs help patients, regardless of literacy or numeracy, to better comprehend risk information.<sup>19</sup> Hawley, et al. concluded that pictographs are the most effective graphical method for communicating gist or verbatim information, leading to their incorporation in several decision aids and intervention studies.

#### 3.2. Decision Aids

Patient decision aids are tools that are used to help patients and physicians come to a decision when the best treatment

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