

# Evaluation of results in lumbar spine surgery

## Conclusions

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Evaluation of results requires selection of appropriate outcome measures. Five outcome variables are often referred to as describing the spectrum of health states; death, disease, discomfort, disability, and dissatisfaction. When selecting outcome variables for spine surgery discomfort and disability are the most important while the other three should not be ignored. For outcome of spinal surgery, this means recording pain and other symptoms, as well as abilities to perform activities and work.

The presence, absence and severity of discomfort is of course always meaningful outcome measure of any surgical procedure. The choice of disability measure is more complex since many different functions are affected by spinal conditions. Improvement in the quality of life can in some spinal patients be as important as return to work. The use of objective, quantifiable "hard" data has been of surprisingly minor importance in studies of outcome of spinal surgery. Yet range of motion, straight leg raise, and strength have all been used. Unfortunately, some "hard" data is not as hard as we tend to believe, and "soft" data (patients reports) can be much improved by design of standardized questionnaires and indices to assess symptoms and functional performance. When properly designed, outcome variables which were traditionally considered "soft" are often more reliable than those generally accepted as "hard."

Reliability, validity, ability to discriminate, and practicality are important measurement criteria. Reliability is a measure of reproducibility of results by the same rates on repeated observations (intrarater), reproducibility of results by different raters (interrater), and the degree to which various items within an instrument (questionnaire), which is designed to measure the same characteristics, is scored similarly by respondents (internal consistency). All these characteristics can be determined. Validity is the extent to which an instrument actually measures what it claims to measure. The validity of questionnaires and scales can be measured using social science methods. A measure

should be sensitive enough to detect a clinical change. On the other hand, it should not be unnecessarily sensitive since we wish to measure "real" changes only. Practicality finally is important both from the point of the patient and the clinician (researcher). Compliance can only be expected if the measurement process is reasonable for both parties.

In practice, evaluation of results after spinal surgery requires measurement of pain (visual analogue or verbal rating scales), function (by a well designed questionnaire) and patient satisfaction. Objective symptoms useful to measure outcome include range of motion and straight leg raise. Since there is no agreed upon method that has been rigorously tested for validity, reproducibility and sensitivity, recommendations on the choice of a particular evaluation system can not be made. This symposium has hopefully stimulated to develop such instruments. Once developed, other issues related to outcome, such as when to evaluate, can be addressed. Only then will we be able to appropriately compare results between disease groups, pathologies and treatment alternatives.