

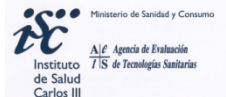
# APPROPRIATENESS CRITERIA FOR VERTEBRAL ARTHRODESIS: thoracolumbar, lumbar and lumbosacral spine.

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# Introduction

**Chronic Back Pain**



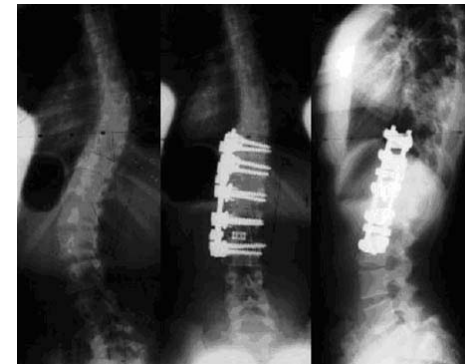
Stenosis

Spondylolisthesis

Disc degenerative disease  
(DDD)

} Spine  
Degenerative  
diseases

✓ Artrhodesis o spine fusion is a surgical procedure that joins two or more adjacent vertebrae, and it involve adding bone graft between the vertebrae. After an osteogenic process vertebral bodies grow together into one long bone. Spinal fusion eliminates motion between the fused segments.





# Justification

- ✓ Thoracolumbar, lumbar y lumbosacral arthrodesis has become one of the most common spinal surgeries for degenerative spine diseases in Spanish Hospitals.
- ✓ Problems associated with arthrodesis:
  - Low success rates of lumbar fusion: Pseudoarthrosis
  - Pain in the autologous graft donor area.
  - Premature degenerative process in the area adjacent to the fusion.
- ✓ The success of the surgical intervention is not always correlated with good clinical outcomes. Technology assessment can help to make decisions in cases like this.



# Objetives

To develop appropriateness criteria for thoracolumbar, lumbar and lumbosacral vertebral arthrodesis' indications in three degenerative spinal pathologies: stenosis, spondylolisthesis and DDD.

- *Systematic Review*: To evaluate arthrodesis efficacy versus alternative therapies in the three pathologies.
- *Expert Panel*: To identify the appropriate arthrodesis indications.



# Methods: Systematic Review

- ✓ Systematic review of literature by searching on the following **databases**:

Medline y EMBASE (*stenosis*, until January 2008; *spondylolisthesis*, until February 2008; *DDD*, until april 2008), Cochrane Library, CRD, INHATA, NICE, SIGN, GIN, National Guideline Clearinghouse.

- ✓ **Key words**: arthrodesis, spinal fusion, DDD, stenosis, spondylolisthesis.
- ✓ **Critical appraisal** process of the studies included in the review (CASP).

# Methods: Systematic Review

## *Inclusion criteria:*

- + **Population:** Adults with degenerative stenosis, espondylolisthesis o disc disease in toracolumbar, lumbar y lumbosacral region. No prior surgery.
- + **Intervention:** spinal fusion, arthrodesis
- + **Comparison:** Alternative therapies or decompression alone
- + **Outcome:**
  - Disability (Oswestry Index, Roland Morris)
  - Pain
  - Quality of life
  - Reoperation's rate
  - Adverse effects
- + **Study designs:** RCT, quasi-experimental trials and prospective studies with comparison group and at least 1 year follow-up. For DDD only RCT were considered
- + **No language restrictions**

## *Exclusion criteria:*

- + Inespecific low back pain
- + Fractures
- + Spine deformities
- + Scoliosis
- + Ciphosis
- + Spondylitis
- + Ankylosing spondylitis
- + Tumors, neoplasms, infections
- + Observational studies without control group. Retrospective studies. Case-control studies



# Methods: Expert Panel

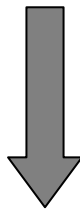
- ✦ 864 scenarios were developed using relevant parameters identified in the SR (288 indications for each pathology).
- ✦ Each indication described the features of a patient who was candidate for surgery
- ✦ The variables used were:
  - ✦ leg pain
  - ✦ back pain
  - ✦ comorbidity
  - ✦ duration of symptoms
  - ✦ neurogenic claudication
  - ✦ functional ability.
  - ✦ For stenosis was included the number of affected levels
  - ✦ For spondylolisthesis the grade of disease
  - ✦ For DDD image analysis

# Methods: Expert Panel

- ✦ A nine-member orthopaedic surgeons national expert panel was convened in October 2008
- ✦ The panel followed the standard procedure of RAND-UCLA method

Systematic Review of literature

List of indications and definitions



**1<sup>st</sup> Round**

Expert Panel

**2<sup>nd</sup> Round**



**Appropriateness score:**

**1-3 Inappropriate**

**4-6 Uncertain**

**7-9 Appropriate**



# Results: Systematic Review

## Stenosis and Spondylolisthesis:

### Quality of evidence:

Studies with low-moderate internal validity

**Standard comparison:**  
decompression alone vs  
decompression+arthrodesis

### Stenosis

Contradictory results  
about improving clinical  
outcomes



**Spondylolisthesis:**  
Weak evidence in  
favour of spine fusion

# Results: Systematic Review

## *Degenerative Disc Disease*

### **Quality of evidence:**

Studies with low-moderate internal validity

### **Alternative therapies:**

- Conservative therapy
- Disc replacement
- Ligamentoplasty
- Decompression alone



**In DDD the assessed alternative treatments presented benefits unlike spine fusion except for the non-intensive and unstructured conservative treatment.**

# Results: Expert panel

Appropriate 11.7%  
Inappropriate 52.5%  
Uncertain 35.8%

Agreement 44,1%  
Disagreement 5,09%  
Uncertain 50,08%

**Expert Scores very dispersed**



Appropriate indications by consensus:

- DDD 0%
- Stenosis 6%
- Spondylolisthesis 23,2 %

# Results: Expert panel

**DDD: None appropriate indications**

**Stenosis: 5 appropriate indications**

Appropriate indications by experts' agreement for <b>STENOSIS</b> without spondylolisthesis															
Comorbidity		Duration (Months)		Level		Back pain			Leg pain			Claudication		Disability	
No	Yes	<6	≥6	≤2	>2	No	Light or moderate	Sev	No	Light or moderate	Sev	No	Yes	ODI ≤40	ODI >40
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# CONCLUSIONS

- ❑ There is no evidence on the benefits of arthrodesis in degenerative **stenosis** or **discopathies** and a weak evidence in degenerative **spondylolisthesis**.
- ❑ No appropriate indications of arthrodesis have been considered for **disc degenerative diseases**, 5 appropriate indications for **stenosis** and 22 for **spondylolisthesis**.



**Thank you**

