Implementation and spreading of propofol sedation by endoscopist in Spain: a successful story.

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Possible conflicts of interest

• No conflicts
Colonoscopy in Spain, by 1990: No sedation

But things have changed...

More complex procedures
Longer procedures
Patients preferences

Sedation, necessary
Spain 1990’s

Begins sedation, but...

A Hospital .................. No sedation

B Hospital .................. Sedation by anaesthesiologists

C Hospital .................. Sedation by endoscopists
2003. Nationwide survey. 175 / 233 Units.
Aparicio J. H. V. Candelaria. Gran Canaria

Sedation in colonoscopies................. 48 %

Drugs:  
- Midazolam + opioids...... 60%
- Propofol......................... 15 %
- Others............................. 25 %

Anaesthesiologist:  
- No........................................ 23%
- < 50%................................. 53%
- > 50%................................. 24%

Pulsioximeter  
- No........................................ 6%
- < 50%................................. 17%
- > 50%................................. 77%
_Campo R. Gastroenterol Hepatol 2004; 27(3): 205_

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonoscopies under sedation</td>
<td>61%</td>
</tr>
<tr>
<td>Anaesthesiologist</td>
<td>25%</td>
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<tbody>
<tr>
<td>Colonoscopies under sedation</td>
<td>55%</td>
</tr>
<tr>
<td>Anaesthesiologist</td>
<td>0 – 45%</td>
</tr>
<tr>
<td>Pulsioximeter</td>
<td>60%</td>
</tr>
<tr>
<td>Recovery room</td>
<td>45%</td>
</tr>
</tbody>
</table>
Consensus conference.
Sedation in Digestive Endoscopy:
By whom, to whom, where and how?
Spanish law permits the full practice of Medicine to any MD.

No boundaries between specialties.

There is no intrusiveness.

It is necessary to possess de knowledge, mastery of technique and to employ the appropriate technical means.

Competence must be achieved during posgraduate training and / or trough specific courses.

Trained staff, monitoring enough, cpr equipment available.

Sedation informed consent.
Sedation/analgesia guidelines for endoscopy

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Sedation for gastrointestinal endoscopy
Clinical practice guidelines of the Spanish society of digestive endoscopy

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Coordinator: Leopoldo López-Rosés
On behalf of the Spanish Society of Digestive Endoscopy (SEED)

Introduction
Sedation for gastrointestinal endoscopic procedures has become indispensable, hence sedation is now a mandatory requirement to be offered to all patients before an endoscopic exam following the discussion of its benefits, risks, drawbacks, and alternative options. Patient selection is made on the basis of the degree of sedation required to perform the procedure, guided by evidence-based recommendations in accordance with the SIGN classification at the end [2]. Each initial draft was reviewed by all authors, and corrections deemed relevant were incorporated in order to provide a definitive edition. The notion that led to the development of these guidelines was to obtain a concise, clear text with scientific rigor and readily applicable to all gastroenterologists, who, together with the patient, can choose among the different types of sedation.

Moderate or superficial sedation: A drug-induced depression of conscience during which patients respond correctly to verbal commands and mild tactile stimulation. No intervention is necessary to maintain airway permeability, and spontaneous ventilation is adequate. Cardiovascular functioning is usually preserved.

Deep sedation: A drug-induced depression of conscience during which patients cannot be easily awakened but respond to repeated or painful stimuli. The ability to maintain ventilation independently may be impaired. Patients may need help to keep their airway permeable, and spontaneous ventilation may be inadequate. Cardiovascular function is usually preserved.

General anesthesia: This involves a drug-induced loss of conscience in which patients do not respond to stimuli. The ability to maintain ventilation independently is often impaired. Patients usually require help to keep their airway permeable, and positive-pressure ventilation may be needed when spontaneous breathing is inadequate.
SEED courses of sedation with Propofol.

**Aim:** to provide endoscopists of the theoretical and practical basis for effective and safe sedation with propofol.

**Composition:** 3 days course.

a) Lectures: Pharmacology of Propofol
   - Curriculum for sedation.
   - Experience in a university hospital.
   - Infusion pumps workshop.

b) Cardiopulmonary resuscitation course.

c) Practices of sedation with propofol in an endoscopy unit.
Results:

Initially, developed in 4 hospitals (Palencia, Gerona, Alicante, Lugo).

Actually, in 16. Nº of courses............. 44 Attendees (until oct 2016).................. 1.178
Courses of sedation SEED. Distribution of attendees, by years

2009 .................. 20
2010 .................. 56
2011 .................. 203
2012 .................. 103
2013 .................. 229
2014 .................. 283
2015 .................. 143
2016 .................. 141

Total..................... 1,178  ( 1,001 doctors / 177 nurses )

**Before course:**

Propofol.......................... 31%
Traditional........................ 62%
No sedation......................... 7%

**After course:**

Propofol................................ 75.8%
Endoscopist...................... 55.2%
2º staff......................... 31.1%
Anaesthesiologist.......... 13.7%

2476 questionnaires → 23% responders.

**Sedation in colonoscopy** > 95%............... 76.1 %  ( 80 % propofol )
Pre colonoscopy risk assessment .................. 94.7%
Monitoring ............................................. 99.6 %
Recovery room ....................................... 94.8 %
Records of sedation ................................... 74.0 %

**Staff**
- 2º MD ......................... 25.7 %
- Nurse ......................... 98.5 %
- Nurse auxiliar .............. 80.5 %
- Anaesthesiologist ....... 64.2 %
- Gastroenterologist ....... 16.4 %
- Resident ...................... 10.4 %
- Other .......................... 9 %
### Table 4  Monitoring and recovery resources in the endoscopy units that responded to the survey.

<table>
<thead>
<tr>
<th>Resource</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse oximeter</td>
<td>516 (99.6)</td>
</tr>
<tr>
<td>Ability to administer (deliver) oxygen</td>
<td>518 (99.4)</td>
</tr>
<tr>
<td>Electrocardiographic monitor</td>
<td>419 (81.5)</td>
</tr>
<tr>
<td>Blood pressure monitor</td>
<td>444 (86.7)</td>
</tr>
<tr>
<td>Capnograph</td>
<td>128 (27.4)</td>
</tr>
<tr>
<td>Carbon dioxide insufflation</td>
<td>121 (24.8)</td>
</tr>
<tr>
<td>Cardiopulmonary resuscitation trolley</td>
<td>508 (97.9)</td>
</tr>
<tr>
<td>Recovery rooms</td>
<td>494 (94.8)</td>
</tr>
<tr>
<td>Within the endoscopy unit</td>
<td>362 (78.9)</td>
</tr>
<tr>
<td>Outside the endoscopy unit</td>
<td>97 (21.1)</td>
</tr>
<tr>
<td>Exclusively for gastrointestinal endoscopy</td>
<td>326 (66.8)</td>
</tr>
<tr>
<td>Shared with other specialties</td>
<td>162 (33.2)</td>
</tr>
<tr>
<td>Staff specifically assigned to recovery rooms</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>328 (68.6)</td>
</tr>
<tr>
<td>No</td>
<td>150 (31.4)</td>
</tr>
</tbody>
</table>

### Table 5  Pre-endoscopy risk assessment methods and rating scales used by Spanish gastroenterologists who answered survey.

<table>
<thead>
<tr>
<th>Anesthetic risk assessment</th>
<th>Diagnostic EGD/colonoscopy, n (%)</th>
<th>Therapeutic endoscopy (ERCP/EUS/other procedure), n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, risk not assessed</td>
<td>30 (5.3)</td>
<td>14 (2.5)</td>
</tr>
<tr>
<td>Inquiries made by doctor/nurse just before examination, without use of written document</td>
<td>206 (36.2)</td>
<td>91 (16)</td>
</tr>
<tr>
<td>Risk assessment (from gastroenterology clinic) available before endoscopy</td>
<td>112 (19.7)</td>
<td>87 (15.3)</td>
</tr>
<tr>
<td>Document/form filled in with history data/scores to assess risk</td>
<td>188 (33)</td>
<td>133 (23.4)</td>
</tr>
<tr>
<td>Risk assessed in pre-anesthetic visit or consultation</td>
<td>74 (13)</td>
<td>186 (32.7)</td>
</tr>
<tr>
<td>Risk assessment systems before and/or during procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>16 (2.8)</td>
<td>10 (1.8)</td>
</tr>
<tr>
<td>Background risk clinical records</td>
<td>320 (56.2)</td>
<td>196 (34.4)</td>
</tr>
<tr>
<td>ASA class system</td>
<td>272 (47.8)</td>
<td>235 (41.3)</td>
</tr>
<tr>
<td>Mallampati score</td>
<td>106 (18.6)</td>
<td>105 (18.5)</td>
</tr>
<tr>
<td>Score to control level/depth of sedation (OAAS, Ramsay score)</td>
<td>47 (8.3)</td>
<td>51 (9)</td>
</tr>
<tr>
<td>Score to assess post-sedation recovery (Aldrete score)</td>
<td>96 (16.9)</td>
<td>82 (14.4)</td>
</tr>
</tbody>
</table>

EGD, esophagogastroduodenoscopy; ERCP, endoscopic retrograde cholangiopancreatography; EUS, endoscopic ultrasound; ASA, American Society of Anesthesiologists; OAAS, observer’s assessment of alertness/sedation.
Gastroenterologists beliefs regarding changes to enhance sedation

1. Training auxiliary staff in sedation and cpr.......................... 28.5 %
2. Gastroenterologists training....................................................... 25 %
3. Wider availability of monitoring and recovery resources....... 25.3 %
4. Improving availability of anaesthesiologist................................. 24.3 %
5. New regulations / laws............................................................... 21.3 %
6. Support training courses............................................................ 94 %
7. Willing to attend courses............................................................ 90.9 %

42% had attended a course:

42.1 % changed his/her practice: Never sedation......................... > 80 % sedation
Previous experience.......... Increase 50% sedation.
SUMMARY

1.- Significant increase of sedation practices in Spain in the last 20 years.

2.- Propofol is the most widely used sedation drug.

3.- Basic monitoring and recovery rooms are universal.

4.- Specific training courses are of great value, and are demanded by gastroenterologists.

5.- There are some barriers:
   a) Training of nurses.
   b) Availability of anaesthesiologists.
   c) Opposition of anaesthesiologists to the sedation by endoscopists.
   d) Lack of specific laws / regulations about sedation in Endoscopy.