Conscious sedation

• The patient remains conscious and co-operative but in a state of complete tranquillity enabling treatment to be carried out
Conscious sedation

- A state of depression of the central nervous system produced by a drug or drugs, enabling treatment to be carried out, and during which communication is maintained such that the patient will respond to command throughout the period of sedation.
General anaesthesia

• The elimination of all sensation accompanied by the loss of consciousness
Consciousness

• capable of rational responses to command
• protective reflexes intact
• ability to independently and continuously maintain a patent airway
Deep sedation

- A state of depression of the central nervous system produced by a drug or drugs enabling treatment to be carried out, but accompanied by partial loss of protective reflexes, including the ability to respond to verbal command or maintain an airway independently.
Intravenous sedation usually with midazolam
Inhalation sedation with nitrous oxide
Spectrum of patient management strategies

- General anaesthesia
- Intravenous conscious sedation
- Inhalation conscious sedation
- Behavioural management
- General anaesthesia

Spectrum of patient management strategies
Beyond behavioural management

• Conscious Sedation Techniques
Clinical decision making

Control of Pain and Anxiety is fundamental to the practice of dentistry
Clinical decision making

Control of Pain and Anxiety is fundamental to the practice of dentistry

Use of conscious sedation very variable experience, training, preference...
Clinical decision making

Control of Pain and Anxiety is fundamental to the practice of dentistry

Use of conscious sedation very variable experience, training, preference...

local culture and politics…
Clinical decision making

Control of Pain and Anxiety is fundamental to the practice of dentistry

Use of conscious sedation very variable—experience, training, preference...

Can decision about need for sedation in dentistry be made more objective?
Sedation clinical decision making

Patient anxiety main indication

- remains significant barrier despite improvements in oral health and less invasive contemporary dental care

Sedation clinical decision making

Patient anxiety main indication

- remains significant barrier despite improvements in oral health and less invasive contemporary dental care

Experienced Dentists may consider that they are expert in determining level of anxiety
Anxiety decision making

There is little agreement between dentists determination of patient anxiety!
anxiety recognition

• uncommunicative or over talkative
• look distracted
• uncooperative
• uncontrolled movements
• won’t enter the room!
physiological signs of anxiety

- increased alertness
- respiratory rate ▲
- heart rate ▲
- blood pressure ▲
- dry mouth and sweaty palms
- pupil dilatation
How can we be more objective?
physiological signs of anxiety

• useful in research setting but not appropriate to clinical setting
Anxiety assessment
Anxiety assessment

Ask the patient!
‘The Modified Dental Anxiety Scale’

CAN YOU TELL US HOW ANXIOUS YOU GET, IF AT ALL, WITH YOUR DENTAL VISIT?

PLEASE INDICATE BY INSERTING ‘X’ IN THE APPROPRIATE BOX

1. If you went to your Dentist for TREATMENT TOMORROW, how would you feel?

Not Anxious □ Slightly Anxious □ Fairly Anxious □ Very Anxious □ Extremely Anxious □

2. If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?

Not Anxious □ Slightly Anxious □ Fairly Anxious □ Very Anxious □ Extremely Anxious □

3. If you were about to have a TOOTH DRILLED, how would you feel?

Not Anxious □ Slightly Anxious □ Fairly Anxious □ Very Anxious □ Extremely Anxious □

4. If you were about to have your TEETH SCALED AND POLISHED, how would you feel?

Not Anxious □ Slightly Anxious □ Fairly Anxious □ Very Anxious □ Extremely Anxious □

5. If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?

Not Anxious □ Slightly Anxious □ Fairly Anxious □ Very Anxious □ Extremely Anxious □

Instructions for scoring (remove this section below before copying for use with patients)

The Modified Dental Anxiety Scale. Each item scored as follows:

Not anxious = 1
Slightly anxious = 2
Fairly anxious = 3
Very anxious = 4
Extremely anxious = 5

Total score is a sum of all five items, range 5 to 25. Cut off is 19 or above which indicates a highly dentally anxious patient, possibly dentally phobic.
The Modified Dental Anxiety Scale

Validity, brevity, availability in many languages

Only a few minutes to complete

Provides total summed score between 5 and 25

CAN YOU TELL US HOW ANXIOUS YOU GET, IF AT ALL, WITH YOUR DENTAL VISIT?
PLEASE INDICATE BY INSERTING ‘X’ IN THE APPROPRIATE BOX

1. If you went to your Dentist for TREATMENT TOMORROW, how would you feel?
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   - Very Anxious
   - Extremely Anxious

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   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

5. If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?
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Indications for sedation

Anxiety

But others include:

- Patient general health and behaviour
- Complexity of treatment
General health indications for sedation

- cardiovascular disease
  - mild angina, controlled hypertension

- respiratory disease
  - asthma
medical indications

- minimise psychological response to stress and will reduce the activity of the sympathetic nervous system

- may avoid or at least reduce likelihood of an angina or asthma attack or of raising the systemic blood pressure
Medical and Behavioural Indicators

**Medical**
- Some medical conditions exacerbated by anxiety or stress of dental treatment and pt benefits from sedation
- Muscle relaxation offered by midazolam beneficial for pts with MS, parkinsonism...
  - However, severe disease may present special risk
  - ASA classification useful to describe severity

**Behavioural**
- Other indicators as diverse as learning difficulties/strong gag reflex
<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>No organic or psychiatric disturbance</td>
</tr>
<tr>
<td>Class II</td>
<td>Mild to moderate systemic disturbance</td>
</tr>
<tr>
<td>Class III</td>
<td>Severe systemic disturbance</td>
</tr>
<tr>
<td>Class IV</td>
<td>Life threatening severe systemic disturbance</td>
</tr>
<tr>
<td>Class V</td>
<td>Moribund patient unlikely to survive</td>
</tr>
</tbody>
</table>
Treatment Complexity

Definition of complexity not straightforward

- May mean invasive for surgical treatments
- May mean multiple quadrant for restorative
- Various clinical and patient factors may change complexity

- Not possible to capture all treatments to complexity bandings so clinician recommend to default to a higher band than lower if in doubt
Description of `Indicator of Sedation Need’ Tool

A patient’s ‘need’ for sedation could be based on three sets of information:

1. Anxiety
2. Medical History
3. Treatment Complexity
Indicator of Sedation Need  (IOSN)

Anxiety
Medical History
Treatment Complexity
Dental Sedation Teachers Group

www.dstg.co.uk
How to use
the Indicator of Sedation Need (IOSN)
Anxiety Score

- Anxiety self-administered by patient
- Clinician uses MDAS score to produce a rank score to enter into IOSN tool
‘The Modified Dental Anxiety Scale’

CAN YOU TELL US HOW ANXIOUS YOU GET, IF AT ALL, WITH YOUR DENTAL VISIT?

PLEASE INDICATE BY INSERTING ‘X’ IN THE APPROPRIATE BOX

1. If you went to your Dentist for TREATMENT TOMORROW, how would you feel?

   Not Anxious □   Slightly Anxious □   Fairly Anxious □   Very Anxious □   Extremely Anxious □

2. If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?

   Not Anxious □   Slightly Anxious □   Fairly Anxious □   Very Anxious □   Extremely Anxious □

3. If you were about to have a TOOTH DRILLED, how would you feel?

   Not Anxious □   Slightly Anxious □   Fairly Anxious □   Very Anxious □   Extremely Anxious □

4. If you were about to have your TEETH SCALED AND POLISHED, how would you feel?

   Not Anxious □   Slightly Anxious □   Fairly Anxious □   Very Anxious □   Extremely Anxious □

5. If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?

   Not Anxious □   Slightly Anxious □   Fairly Anxious □   Very Anxious □   Extremely Anxious □

 Instructions for scoring (remove this section before copying for use with patient)

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Total score is a sum of all five items, range 5 to 25. Cut off is 19 or above which indicates a highly dentally anxious patient, possibly dentally phobic.
## Anxiety Score

<table>
<thead>
<tr>
<th>Score</th>
<th>Rank score</th>
<th>Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - 9</td>
<td>1</td>
<td>Minimal anxiety</td>
</tr>
<tr>
<td>10 - 12</td>
<td>2</td>
<td>Mild anxiety</td>
</tr>
<tr>
<td>13 - 17</td>
<td>3</td>
<td>Moderate anxiety</td>
</tr>
<tr>
<td>18 - 25</td>
<td>4</td>
<td>High anxiety</td>
</tr>
</tbody>
</table>

Score 1, 2, 3 or 4 entered into IOSN
Medical and Behavioural indicators

No medical or behavioural indicator

Systemic disorders (not of severity to exclude sedation) that may be exacerbated by treatment:
- fainting attacks
- epilepsy
- hypertension
- angina
- asthma
- other

or

Conditions that compromise ability to cooperate:
- arthritis
- parkinsonism
- multiple sclerosis
- other

score 1, 2, 3 or 4

* As a rule of thumb ASA II would generally be 2 or 3 and ASA III would result in a score of 4
### The Modified Dental Anxiety Scale

**Can you tell us how anxious you get, if at all, with your dental visit?**

Please indicate by inserting ‘X’ in the appropriate box.

1. If you went to your dentist for treatment tomorrow, how would you feel?
   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

2. If you were sitting in the waiting room (waiting for treatment), how would you feel?
   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

3. If you were about to have a tooth drilled, how would you feel?
   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

4. If you were about to have your teeth scaled and polished, how would you feel?
   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

5. If you were about to have a local anaesthetic injection in your gum, above an upper back tooth, how would you feel?
   - Not Anxious
   - Slightly Anxious
   - Fairly Anxious
   - Very Anxious
   - Extremely Anxious

---

**Instructions for scoring** (remove this section below before copying for use with patients)

The Modified Dental Anxiety Scale. Each item scored as follows:

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- Very anxious = 4
- Extremely anxious = 5

Total score is a sum of all five items, range 5 to 25. Cut off is 19 or above which indicates a highly dental anxious patient, possibly dental phobic.
Medical and Behavioural indicators

- gag reflex score 2, 3 or 4
- behavioural difficulties score 2, 3 or 4
Treatment complexity

- moderately difficult or prolonged procedures
- uncomfortable procedures e.g. scaling, la
- anxiety produced gagging
Treatment Complexity

Routine (score 1)
- single rooted extraction of 1 or 2 teeth, small soft tissue biopsy,
- single quadrant restorations, crown preparations or anterior endodontic treatment

Intermediate (score 2)
- scale and root planing, multi rooted extraction without bone removal, apicectomy anterior tooth, two quadrant restorative or posterior endodontic treatment

Complex (score 3)
- periodontal surgery, surgical extraction with bone removal, apicectomy posterior tooth, multiple quadrant restorative, multiple posterior endodontics

High Complexity (score 4)
- any treatment considered more complex than above or are multiples of the above
### Description of `Indicator of Sedation Need’ Tool

<table>
<thead>
<tr>
<th>IOSN</th>
<th>Rank Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Score</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Medical History Score</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Treatment Complexity Score</td>
<td>1 - 4</td>
</tr>
<tr>
<td>Assessment Score</td>
<td>3 - 12</td>
</tr>
</tbody>
</table>

Summation of the three ranking scores for anxiety, medical and behavioural indicators and treatment complexity gives overall score 3 to 12
Indicator of Sedation Need (IOSN)

<table>
<thead>
<tr>
<th>Assessment Score</th>
<th>Minimal Need</th>
<th>Moderate Need</th>
<th>High Need</th>
<th>Very High Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - 4</td>
<td>5 - 6</td>
<td>7 - 9</td>
<td>10 – 12</td>
<td></td>
</tr>
</tbody>
</table>
Description of `Indicator of Sedation Need’ Tool

- Any patient with a single rank of 4 in medical history or clinical complexity can be fast tracked to a decision supporting need for sedation as overall score will be at least 6

  e.g. an adult with severe learning difficulties that compromises a person’s ability to cooperate for even simple procedures under local anaesthesia
Description of `Indicator of Sedation Need’ Tool

<table>
<thead>
<tr>
<th>IOSN</th>
<th>Rank Score</th>
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</table>

Summation of the three ranking scores for anxiety, medical and behavioural indicators and treatment complexity gives overall score 3 to 12.
Description of `Indicator of Sedation Need’ Tool

- the IOSN sensitive to secondary care units who would not want compromised patients or those who require a highly complex clinical procedure, having to complete, for example, `the anxiety proforma’
`Indicator of Sedation Need’ Tool

Clinical decision making with IOSN should never override clinician’s treatment recommendation for individual patient but could support decision making or challenge the clinician to consider sedation
‘Indicator of Sedation Need’ Tool

• Tool to support clinicians in decision making

• Tool to enable commissioners to understand and identify patients who need conscious sedation in order to plan and deliver sedation services

• Dental access. Help ensure that dental services are available for those who want them. The offer of sedation to those with high anxiety could facilitate attendance
Using IOSN as a health needs assessment tool

Aim

- To use the IOSN tool sedation to determine the sedation need in a population of attending patients
- Explore use as health needs assessment tool
Results

• Service evaluation of four dental practices in NW England

• Each practice completed 100 IOSN forms for each of Band 1, 2 and 3 patients
Results

• 607 completed forms of 625 returned
• No statistically significant difference number male:female

Variables associated with need to sedation

• Sex, with females 6.7 times more likely to need sedation
• Treatment complexity and medical score (showed no association with gender)
• Anxiety (did show significant relationship with females 3.8 times more likely to be anxious in relation to dental treatment)
Results

- Age, dental practice and deprivation showed no association
- Suggests tool can be generalised to populations from different locations and demographies
- IOSN suggested 5.1% of patients had a high need for sedation
- Other studies have suggested higher % although many were reporting demand or preference
Conclusions

• Proportion of attending patients in high need of sedation 5.1%

• Commissioners could use this figure or use the IOSN tool to make own local health needs assessment

• In-line with internationally reported values
Conclusions

• Proportion of attending patients in high need of sedation **5.1%**

• Commissioners could use this figure or use the IOSN tool to make own local health needs assessment

• In-line with internationally reported values

• **Caution:** figures do not include non-attenders. Important as anxiety a major barrier to access
Factors contributing to dental non-attendance

• Gallup Poll survey 22% reported anxiety high enough to delay seeking dental treatment

• Another survey, those would attend only when had trouble with teeth had only one less tooth than those that attended regularly

• 1998 Adult Health Survey 59% attended regularly but not a significant difference in anxiety between regular (43%) and non regular attendees (46%)
Methods

• Large random sample telephone survey conducted across 12 PCTs in England

• 1000 interviews of aged 16 and over in each PCT
Results

- 12,002 interviews conducted
- 17% did not attend regularly (14%-24% throughout 12 PCTs)
- No significant difference in deprivation between regular and non regular attendees
- Non regular attendees tended to be older
  But not when account for edentulous patients
Results

- Top reason for non attendance was anxiety
  \textit{Don’t like dentists/scared of dentists/had a bad experience at the dentist}
- 16% due partly to anxiety
- IOSN tool had indicated 5% of attending patients have need of sedation services
- If include non-attending can assume sedation need would rise to 6.7% throughout entire population
### International comparison of prevalence of dental fear & anxiety

<table>
<thead>
<tr>
<th>Country</th>
<th>Level of high dental fear/anxiety as %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>20.9</td>
</tr>
<tr>
<td>Singapore</td>
<td>7.8-20.8</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.2</td>
</tr>
<tr>
<td>Iceland</td>
<td>4.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.9-10.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>3.9-6.7</td>
</tr>
<tr>
<td>Australia</td>
<td>13.7</td>
</tr>
<tr>
<td>New Zealand</td>
<td>12.5-21.1</td>
</tr>
<tr>
<td>United States</td>
<td>10-19</td>
</tr>
<tr>
<td>Canada</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Mean (conservative)</strong></td>
<td><strong>8.72 % (+- 5.6)</strong></td>
</tr>
</tbody>
</table>

IOSN for referring dentists
IOSN as a referral tool

- Four centres across NW England accepting referrals for treatment with sedation
- IOSN referral form
- Operator questionnaire
- Patient questionnaire
APPENDIX D
PROPOSED NEEDS ASSESSMENT IOSN FORM

IOSN [NA] - VERSION 1.0  PILOT STUDY - PCC  NHS

MEMO: This information is for official and medically confidential use only and will not be released to unauthorized persons.

YEAR OF BIRTH  SEX

NAME OF REFERRER (PRACTICE STAMP)

POSTCODE:

TREATMENT COMPLEXITY GUIDANCE – NOT EXHAUSTIVE
 ROUTINE – Single root extraction of 1 or 2 teeth, small soft tissue biopsy, single quadrant restorations, crown preparations or anterior endodontic treatment
 INTERMEDIATE – Single and root planning, multi-rooted tooth extraction, surgical extraction without bone removal, apicectomy anterior tooth, 2 quadrant restorative, periodontal endodontics treatment
 COMPLEX – Periodontal surgery, surgical extraction with bone removal, apicectomy posterior tooth, multiple quadrant restorative, multiple posterior endodontics

HIGH COMPLEXITY – Any treatment considered more complex than above or a combination of the above.

COMPLEXITY SCORE – CIRCLE ONE
 ROUTINE  INTERMEDIATE  COMPLEX  HIGH

PLEASE INDICATE BAND OF TREATMENT PROVIDED:
 Band 1 / Band 2 / Band 3

PLEASE STAMP HERE IF REFERRED FOR SEDATION

MEDICAL & BEHAVIOURAL INDICATORS

Systemic disorders (not of severity to exclude sedation) that may be exacerbated by treatment:
- Diabetes/insulin dependent
- Hypertension
- Angina/asthma
- Other (please state)

Conditions that compromise ability to cooperate:
- Arthritis/ Parkinson’s
- Multiple sclerosis
- Other (please state)

In a rule of thumb ASA II generally 2 or 3 and ASA III would result in a grade of 4.

Gag reflex
- Normal
- Absent

Behavioural difficulties
- Normal
- Difficult

ANXIETY QUESTIONNAIRE TO BE COMPLETED BY PATIENT

If you went to your dentist for TREATMENT TOMORROW, how would you feel?

Not anxious  Slightly anxious  Fairly anxious  Very anxious  Extremely anxious

If you were sitting in the WAITING ROOM (waiting for treatment) how would you feel?

Not anxious  Slightly anxious  Fairly anxious  Very anxious  Extremely anxious

If you were about to have a TOOTH DRILLED, how would you feel?

Not anxious  Slightly anxious  Fairly anxious  Very anxious  Extremely anxious

If you were about to have your TEETH SCALED AND POLISHED, how would you feel?

Not anxious  Slightly anxious  Fairly anxious  Very anxious  Extremely anxious

If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?

Not anxious  Slightly anxious  Fairly anxious  Very anxious  Extremely anxious

2 These indicators are not designed to replace a full medical history. Please include a full medical history if required.
Sedationist questionnaire

Thinking about the treatment you provided today

<table>
<thead>
<tr>
<th>Agree</th>
<th>Disagree</th>
<th>Unsure</th>
</tr>
</thead>
</table>
I could not have performed this treatment on this patient without sedation
I could have performed the treatment but it would have taken considerably longer
I could have provided the treatment without sedation but it would have been an unpleasant experience for the patient
If I was the patient – I would have had sedation today
I believe there would have been a risk of DNA had this patient not been offered sedation

Thinking about the IOSN form

The medical history detail was suitable for my use
The treatment complexity score was accurate
The anxiety section was completed correctly

The treatment offered today

Anxiety management offered (IV, RA, CBT, Other)
Dose used
Dental treatment undertaken with brief details (i.e. surgical extraction of lower 8, moderate bone removal)

Time taken to complete treatment (minutes)

Free comments on the patient, form and treatment

Please add any further information on the treatment, sedation and patient that you feel will be helpful.
Patient questionnaire

**Thinking about the treatment you had today:**

I could not have had this treatment without sedation  
Without the offer of sedation, I may have cancelled or not attended this appointment  
I asked for this treatment to be provided under sedation  
My dentist suggested that I have this treatment under sedation

**Thinking about a year from now**

I would ask for sedation again in the future for this type of treatment  
I would ask for sedation again for any form of dental treatment

**Thinking about your sedation use in the past**

I always have sedation for dental treatment  
I don’t usually go to a dentist because I am not able to get sedation  
I don’t usually have sedation but my treatment was complex today  
I have failed to attend appointments in the past as I have not been offered sedation

**Thinking about the IOSN form that you completed (copy on the back of this sheet)**

I found the form easy to complete  
I was happy to complete the form  
I needed some help to complete the form
Results

- 78% pts would have been referred according to the IOSN tool
- Dentists receiving referrals deemed information provided was 85% appropriate
- 68% pts found form easy to complete
- 84% happy to complete form
Conclusion

- Study offered further validation of IOSN tool as concurred with 78% sedation referrals
- Acceptable to patients and to dentists receiving referrals
IOSN Summary

• Useful tool to support clinicians in decision making but should never override clinician’s treatment recommendation for individual patient

• IOSN sensitive to secondary care units who would not want compromised patients or those who require a highly complex clinical procedure, having to complete, for example, ‘the anxiety form’

• Tool to enable commissioners to understand and identify patients who need conscious sedation in order to plan and deliver sedation services
Thank you!