

NHS Referral Criteria and Guidance for Sedation Services

Introduction

The standard techniques of inhalation (with nitrous oxide) and intravenous sedation (with Midazolam) employed in dentistry are effective and adequate for the vast majority of patients. The techniques used must be selected to provide the most appropriate and least interventional means of anxiety relief for the individual patient. As a general rule the simplest technique to match the requirements should be used. The provision of these standard techniques will be commissioned via **Tier 1 Services**.

Tier 2 Services will provide alternative (more advanced) sedation techniques. This includes any form of conscious sedation for patients under the age of 12 years other than nitrous oxide/oxygen inhalational sedation. This will be a consultant anaesthetist supported service.

Assessment prior to sedation referral

Prior to referring patients for sedation services the suitability of each individual patient should be assessed, the following factors should be considered:

- a. The American Society of Anesthesiologists (ASA) grade. Only ASA I and II patients will be seen in primary care (see appendix 4).
- b. The Body Mass Index (BMI). Only patients with a BMI>18 and BMI<35 will be seen in primary care (see appendix 4).
- c. Past and current medical problems
- d. Current and previous medication, prescribed and recreational
- e. Cooperation for examination: patient must allow examination
- f. Developmental stage of the patient and ability to understand, comply with simple instructions and maintain communication
- g. Ability to accept treatment under local anaesthetic, with the adjunct of sedation.
- h. Levels of anxiety must be assessed using a validated anxiety scale:
For children under 12: the facial image scale (FIS) should be used, scores of 4 or 5 will be suitable for referral (see appendix 5)
For patients 12 and over: the Modified Dental Anxiety Scale (MDAS) should be used. Scores of 10 and over will be suitable for referral (see appendix 5).
- i. The complexity, invasiveness and duration of treatment involved
- j. Alternative to general anaesthetic (GA) for the individual patient
- k. Age of patient
- l. Consent issues

The following are criteria to follow in arranging a referral for your patients:

1. Tier 1 Services

Referral Centres: to be confirmed

1a. Inhalational Sedation / Relative Analgesia (RA)

Patient Selection

Nitrous oxide / oxygen should be the first choice for paediatric dental patients who are unable to tolerate treatment with local anaesthesia alone and who have a sufficient level of understanding to accept the procedure. It may be offered to children with mild to moderate anxiety to enable them to better accept treatment. However, the extent / invasiveness of treatment needed, level of anxiety and patient cooperation are important factors that need consideration. The following groups may be suitable for RA, (however this is a clinical decision based on your knowledge of the patient, the following is a simple guide):

- Children aged five and over with an adequate degree of comprehension and understanding of the treatment.
- Consider all adults unless contraindications (stated below)
- Patients with mild to moderate levels of anxiety. For children under 12 this should be assessed by a validated facial image scale (FIS). Scores of 4 or 5 on the FIS will be suitable for RA. For children 12 and over and adults the level of anxiety should be measured using the MDAS scale. MDAS scores of over 10 will be suitable for referral (see appendix 5).
- Patients that are cooperative: children must sit on the dental chair and allow an examination.
- All children needing either conservative treatment or extractions in no more than 2 quadrants. Ideally treatment should be able to be completed in a single visit.
- Patient/Parent/Guardian able to give informed consent for referral

Indications for RA

Relative analgesia (RA) with nitrous oxide is a first line of treatment for children. It is indicated for the below patient categories, provided the patient is **ASA I or II and has a BMI > 18 and <35:**

- a. Anxious patients
- b. Needle phobic patients
- c. Where profound analgesia is difficult to obtain (e.g. acute pulpitis)
- d. Increased gag reflex
- e. Prolonged or unpleasant treatment (e.g. difficult extraction in a child)

- f. For special needs/medically compromised patients with sufficient level of intellectual ability and communication, as an alternative to treatment under general anaesthesia. The Community Dental Service (CDS) also provide Tier I sedation services.
- g. Cardiovascular disorders (as it reduces anxiety, elevates pain threshold and provides increased levels of oxygen) e.g. mild hypertension
- h. Liver/ kidney disease (as it does not undergo biotransformation in the body)
- i. Sickle cell disease or trait (as high levels of oxygen are provided throughout treatment)
- j. Systemic diseases where an acute exacerbation of the condition may be triggered by anxiety of providing dental treatment without sedation.

Contraindications to RA

The contraindications to inhalation sedation are:

1. Inability to communicate adequately
2. Very young, pre-cooperative children (due to reduced perceptive ability and incapability to follow instructions and to communicate – although each case should be assessed on its own merit)
3. Unwilling/unable to nose breath (obstructed nasal airway / mouth breathing)
4. Cold/rhinitis
5. Otitis media (due to pressure volume effects), sinusitis or recent ENT operations (within 14 days) and some types of eye surgery
6. Chronic obstructive airways disease (e.g. emphysema, chronic bronchitis) because the lowered blood oxygen level is the stimulus for breathing
7. Severe muscular depression (e.g. Multiple Sclerosis)
8. Severe psychiatric disorders
9. Behavioural/personality disorders or history of recent drug abuse
10. Severe learning difficulties
11. Psychological problems/ fears e.g. fear of 'loss of control', fear of the mask, claustrophobia
12. First trimester of pregnancy
13. Patients on chemotherapy with bleomycin or methotrexate and patients who are immunosuppressed and on chemotherapy.

1b. Single drug Intravenous Sedation (IV) with Midazolam

Patient Selection

Most adult patients referred for sedation can be treated by single drug IV sedation. Children (3 – 15 years) requiring IV sedation should be referred to Tier 2 services as this will be delivered by a consultant anaesthetist. **Only patients that are ASA I or II and have a BMI >18 and <35 should be referred to primary care.** ASA III patients or patients with a BMI <18 or > 35 should be referred to the Community Dental Service (CDS).

Indications for Single Drug Intravenous Sedation (IV) with Midazolam

1. Anxious or fearful patients who cannot accept treatment with local anaesthetic alone. Anxiety levels should be measured using MDAS patient questionnaire. MDAS scores of over 10 will be suitable for referral (see appendix 5)
2. Increased gag reflex that would prevent dental treatment otherwise
3. Prolonged, unpleasant or invasive treatment (e.g. surgical treatment)
4. For special needs/medically compromised patients with sufficient level of understanding and communication, as an alternative to treatment under general anaesthesia
5. Cardiovascular disorders (as it reduces anxiety, elevates pain threshold)
6. Patients with Parkinson's disease or cerebral palsy which prevent cooperation due to uncontrolled movements

Contraindications to single drug IV sedation in primary care

Below are some common contraindications to IV sedation

1. Allergy to benzodiazepines
2. Pregnancy
3. Current drug abuse (including cannabis) or alcohol addiction
4. BMI <18 or >35
5. ASA III (Patients should be referred to CDS)
6. Severe psychiatric disorders
7. Behavioural/personality disorders
8. Some learning difficulties (depending on their cooperation for cannulation)
9. High blood pressure, particularly unstable hypertension
10. Cardiac disease i.e. myocardial infarction, angina

11. Chronic obstructive airways disease (e.g. emphysema, chronic bronchitis) because benzodiazepines depress respiratory rate)

2. Tier 2 Service

This will be a Consultant Anaesthetist supported service providing some or all of the alternative conscious sedation techniques outlined in Standards for Conscious Sedation in Dentistry: Alternative Techniques (2007):

- Any form of conscious sedation for patients under the age of 12 years[#] other than nitrous oxide/oxygen inhalational sedation.
- Benzodiazepine + any other intravenous agent for example: opioid, propofol, ketamine.
- Propofol either alone or with any other agent for example: benzodiazepine, opioid, ketamine
- Inhalational sedation using any agent other than nitrous oxide/oxygen alone.
- Combined (non-sequential) routes for example: intravenous + inhalational agent (except for the use of nitrous oxide/oxygen during cannulation).

[#] It is recognised that the physical and mental development of individuals varies and may not necessarily correlate with the chronological age.

Patient Selection

Tier 2, sedation should be considered for all anxious children between the age of 3 and 5. Children aged 5 and over that have a high or very high sedation treatment need and need extensive dental treatment should also be referred to Tier 2 services.

Stable ASA III adults e.g. stable angina, well controlled epilepsy, well controlled diabetes.

The following groups may be suitable for Tier 2 services, (however this is a clinical decision based on your knowledge of the patient, the following is a simple guide):

- Children aged between 3 and five with an inadequate degree of comprehension and understanding of the treatment to enable to RA or LA alone.
- Children up to the age of 12 with moderate to severe levels of anxiety needing either conservative treatment or extractions in more than 2 quadrants or that require a significant number and level of invasive treatment i.e. extractions who cannot be treated with RA. Anxiety should be assessed by the FIS with scores of 4 or 5.
- Children above the age of 12 with moderate to severe levels of anxiety needing either conservative treatment or extractions in more than 2 quadrants or that require a significant number and level of invasive treatment i.e. extractions. Anxiety should be measured using MDAS (scores above 10 would be suitable for referral)

- Patients (children and adults) with a history of failed Tier 1 sedation
- Cooperation: Patients must sit on the dental chair and allow an examination
- Adults who are a **stable** ASA III e.g. stable angina, well controlled epilepsy, well controlled diabetes.
- Anxious adults with a history of current drug abuse (including cannabis). Anxiety should be measured using MDAS (scores above 10 would be suitable for referral)
- Adults unable to accept treatment with Tier 1 services
- Patient Parent/Guardian able to give informed consent for referral

3. Definition of Urgent dental care

The urgent treatment arrangements are intended to provide patients with any immediately necessary treatment to address severe pain or prevent significant deterioration in oral health. Assessment appointments for urgent dental treatment will be offered within 24 hours, definitive treatment will be completed within one week where clinically appropriate.

Consider referring a patient on an urgent basis if they are experiencing one or more of the following:

- Significant swelling/infection including where not responding to oral antibiotics (Please note severe swelling compromising the airway or eye should be referred to Oral & Maxillofacial Surgery in the usual way).
- Severe pain affecting sleeping and eating where the patient is unable to manage symptoms with analgesia +/- has already received oral antibiotics, where appropriate.

4. Responsibilities of the referring dentist

- Undertake a full clinical oral health assessment before making a referral
- Make a decision on the correct service to refer the patient to i.e. Tier 1, Tier 2, or to the CDS for a GA or IV sedation in theatre.
- If it is an urgent referral ring the sedation provider or fax the referral to prevent delays in treatment.
- Undertake an assessment of anxiety: for children under 12 use the FIS, for patients 12 and over use the MDAS.
- Follow Faculty of General Dental Practitioner (FGDP) guidelines on taking radiographs and provide these to the sedation provider (Ref: FGDP Selection Criteria for Dental Radiography).

- Obtain informed consent for the referral and provide patients with information of provider, waiting times and patient charges.
- Follow guidelines in Delivering Better Oral Health guidance to instigate a prevention regime for all referrals
- Complete every section of the referral form (see appendix 5). **If you are unsure about a referral please contact the sedation practice before making the referral to ensure the patient is sent to the correct service**
- Provide the patient a copy of the referral

5. Responsibilities of the sedation provider

- Provide referring practices with training on the use of anxiety scales.
- Provide GDPs with training, guidance and support on completion of referral forms and advice on when referrals may not be appropriate.
- Provide treatment indicated on the referral form, if this changes the provider will gain informed consent from the patient for the new treatment plan and if indicated on the referral form communicate with the referring practitioner of the changes before commencing treatment. If the referring dentist has indicated they are happy for all necessary treatment to be completed, the referring GDP will be informed of all treatment undertaken in the discharge letter.
- Provide as appropriate all mandatory treatment services
- Follow Faculty of General Dental Practitioner (FGDP) “Selection Criteria for Dental Radiography” guidelines on taking radiographs when GDPs are unable to provide them.
- Routine patients will be offered assessment within 6 weeks of referral and treatment at the earliest opportunity with patients seen in order of clinical priority and within 18 weeks.
- Urgent patients will be offered assessment within 24 hours of referral and definitive treatment provided within 1 week where clinically appropriate.
- A comprehensive discharge letter will be sent to the referring dentist, together with any radiographs supplied by the referring dentist, and copies of any radiographs taken by the sedation practice if monitoring of particular teeth condition is required.
- Patients unable to accept Tier 1 sedation treatment will be referred to Tier 2 sedation services or for a dental general anaesthetic (DGA) as clinically appropriate.
- Patients unable to accept treatment with the aid of sedation will be referred to the dental general anaesthetic (DGA) service or another specialised service appropriate to their needs.

- Liaise with other sedation providers to ensure a smooth patient journey and treatment is provided in a timely fashion if onward referral is required. Providers will be flexible about geography of patient's address to prevent extended waiting times where possible.

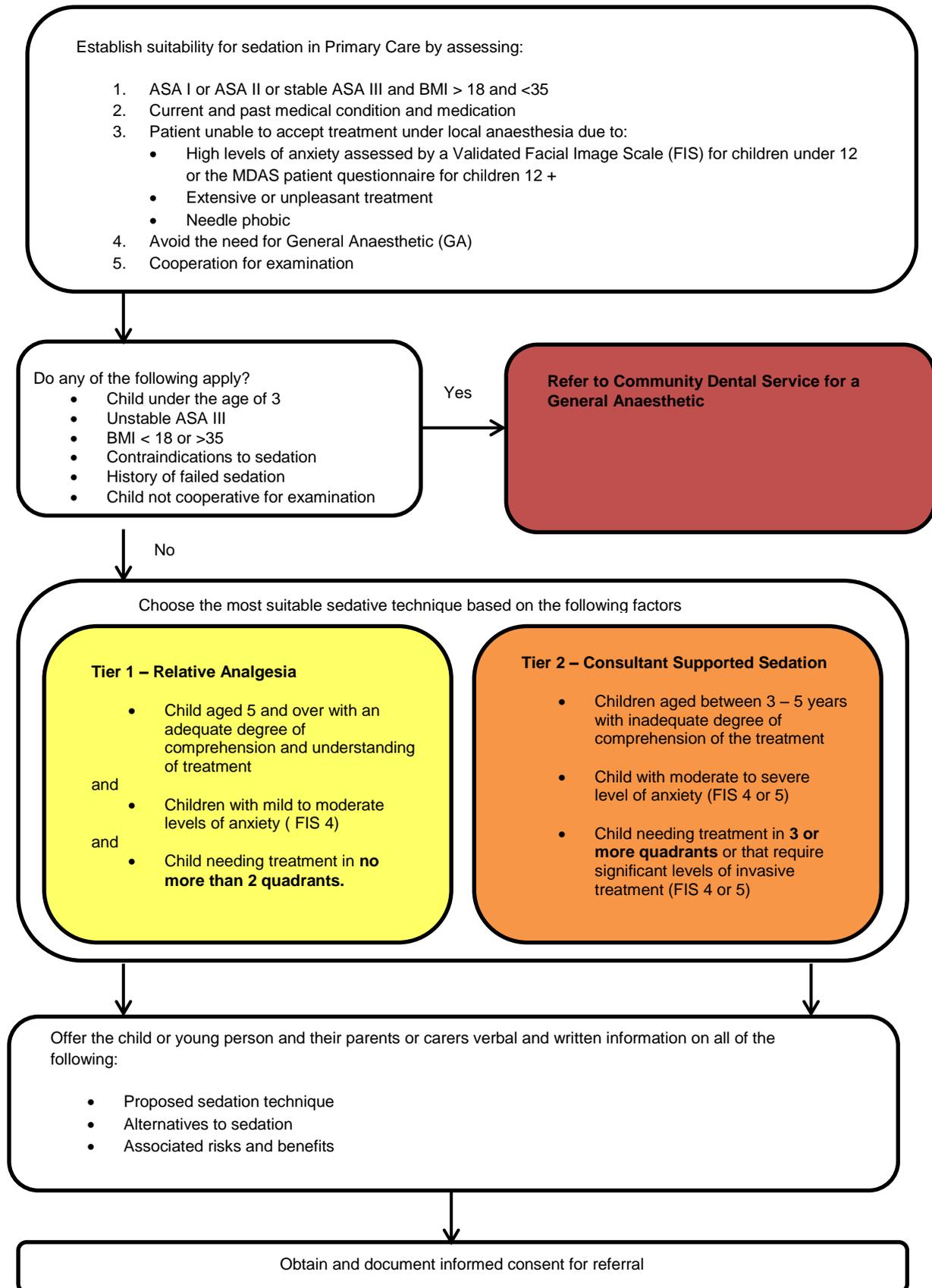
6. Fail to attend policy

- Patients who fail to attend their assessment appointment will be contacted by telephone and offered one further appointment; failure to attend this will result in them being discharged back to the care of their referring dentist. A new referral will be required if the patient wishes to pursue treatment at a later date.
- Patients who cancel their assessment appointment will be offered one further appointment for assessment.
- Patients who fail to attend a treatment appointment will be contacted by telephone and offered one further appointment; failure to attend this will result in them being discharged back to the care of their referring dentist. A new referral will be required if the patient wishes to complete treatment at a later date.

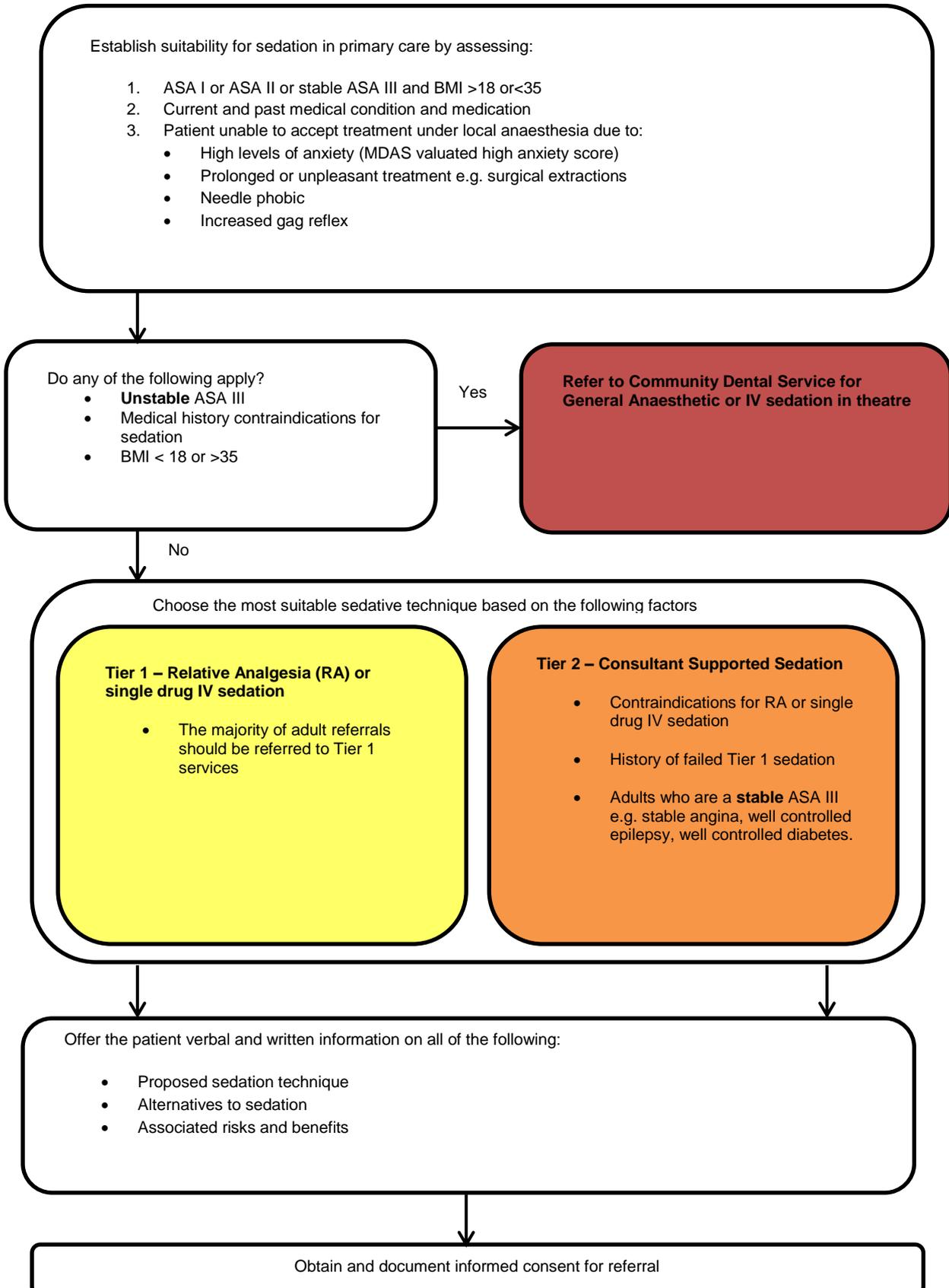
15.5.13

This guidance will be reviewed in January 2014

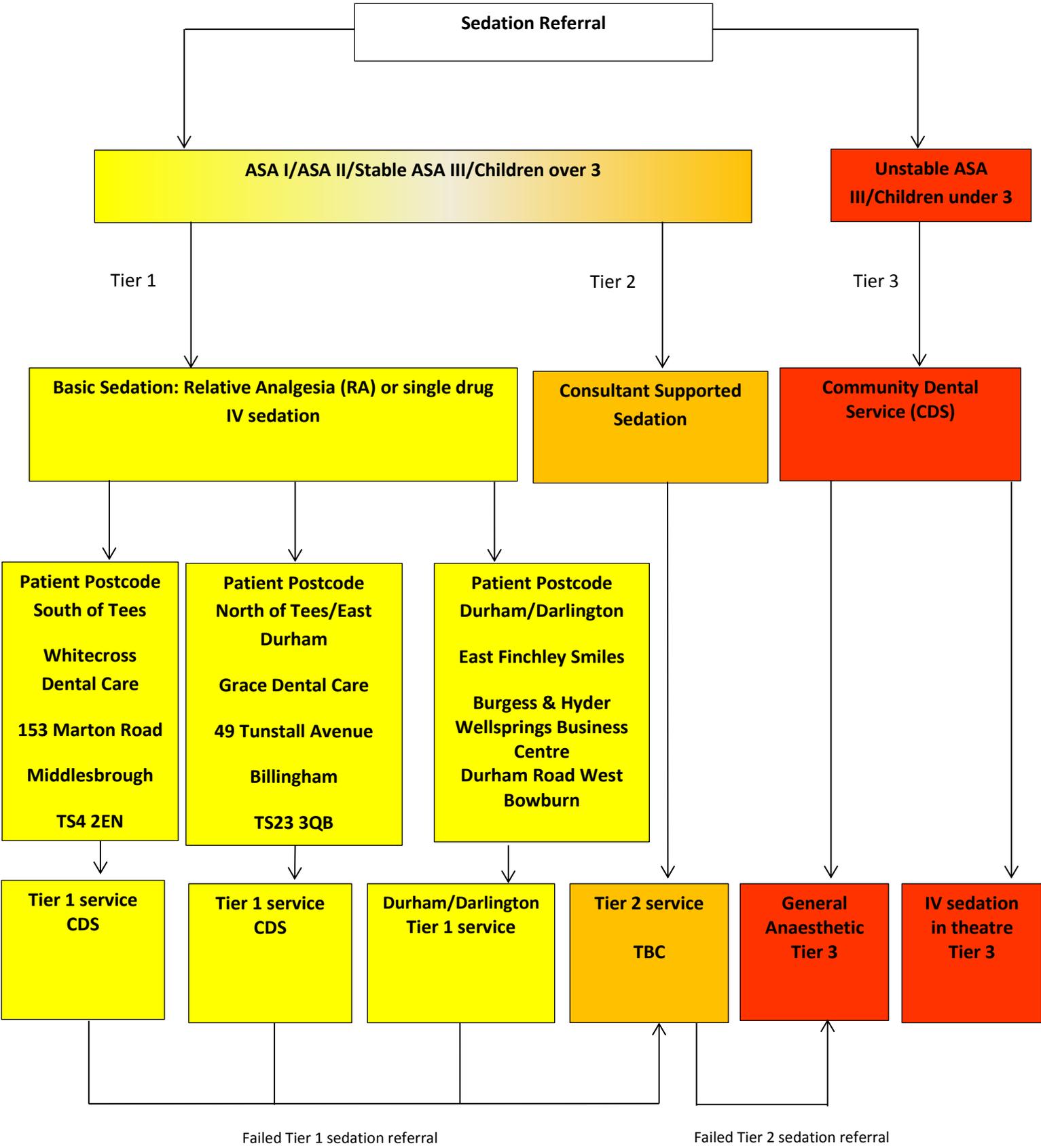
Child Referral Pathway for Sedation in Primary Care



Adult Referral Pathway for Sedation in Primary Care



NHS Sedation Referral Pathway



The American Society of Anesthesiologists (ASA) grade

ASA Physical Status 1 - A normal healthy patient. No organic, physiological, biochemical or psychiatric disturbance.
ASA Physical Status 2 - A patient with mild systemic disease May be due to the condition or pathophysiological processes - eg Well controlled asthma, NIDDM-dietary controlled, mild hypertension - Also: no systemic disease but: extremely nervous (high levels of endogenous adrenaline and> risk of sedation complications), >65years (more sensitive to sedatives and physiology less responsive), obese (< respiratory capacity)
ASA Physical Status 3 - A patient with severe systemic disease - eg stable angina, well controlled epilepsy, chronic bronchitis, congestive heart failure, Insulin dependent diabetes mellitus, healed MI.
ASA Physical Status 4 - A patient with severe systemic disease that is a constant threat to life eg recent MI, uncontrolled diabetes, uncontrolled epilepsy, severe emphysema – requiring oxygen therapy, cardiac insufficiency etc.
ASA Physical Status 5 - A moribund patient who is not expected to survive without the operation Only emergency treatment would ever be provided, e.g. severe trauma.

Classification of Body Mass Index (BMI) - as adopted by WHO 2000

Classification BMI Risk of non-communicable diseases

Underweight <18.5 Low (but risk of other clinical problems may be greater)
Normal weight 18.5-24.9 Average
Pre-obese (overweight) 25.0-29.9 Increased
Obese Class I 30.0-34.9 Moderate
Obese Class II 35.0-39.9 Severe
Obese Class III >40.0 Very Severe

DENTAL SEDATION REFERRAL FORM

 Urgent Routine

Please complete both sides and every section of this form and retain a copy for your records.

Incomplete referrals will be returned.

PATIENT DETAILS Full name: Parent / Guardian: Date of birth: Mobile tel. no.: Daytime tel. no.: Parent's/Patients' address:	From: Referring Dentist: Name & Address Practice Clinic Tel. no. Fax no. Email: Signature: Date:																																								
PATIENT'S MEDICAL PRACTITIONER GP: Tel. no.:	GP Practice: Fax no:																																								
JUSTIFICATION FOR REFERRAL (tick all that apply) Anxiety <input type="checkbox"/> Lack of co-operation <input type="checkbox"/> Needle phobic <input type="checkbox"/> Prolonged or unpleasant treatment <input type="checkbox"/> Increased gag reflex <input type="checkbox"/> Other please state	Please state Facial Image score for children under 12 years..... Please state modified dental anxiety score (MDAS) 12+ years Please confirm you have read the NHS sedation referral criteria and are confident that the patient meets the referral conditions <input type="checkbox"/>																																								
RELEVANT MEDICAL HISTORY – please give details of any medical conditions and medication 																																									
DETAILS OF PREVIOUS DENTAL TREATMENT / ONGOING DENTAL TREATMENT /PREVIOUS SEDATION/PREVIOUS GENERAL ANAESTHETIC 																																									
TREATMENT REQUESTED <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-right: 1px solid black; padding-right: 10px;"> Conservation _____ Extractions _____ Any other treatment _____ </td> <td style="width: 30%; border-right: 1px solid black; padding-right: 10px;"></td> <td style="width: 40%; padding-left: 10px;"> Please tick all that apply: Suitable for RA <input type="checkbox"/> Suitable for single drug IV sedation <input type="checkbox"/> Consultant Supported Sedation <input type="checkbox"/> Please indicate if you are happy for us to carry out any other necessary treatment without contacting you prior to treatment <input type="checkbox"/> </td> </tr> </table>	Conservation _____ Extractions _____ Any other treatment _____		Please tick all that apply: Suitable for RA <input type="checkbox"/> Suitable for single drug IV sedation <input type="checkbox"/> Consultant Supported Sedation <input type="checkbox"/> Please indicate if you are happy for us to carry out any other necessary treatment without contacting you prior to treatment <input type="checkbox"/>																																						
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PRE-REFERRAL CHECKLIST – please tick to confirm you have checked the following: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Patient is over the age of 3</td> <td style="width: 10%;">YES <input type="checkbox"/></td> <td style="width: 10%;">NO <input type="checkbox"/></td> <td style="width: 30%;"></td> </tr> <tr> <td>Patient is ASA 1 or ASA II or stable ASA III</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Patient has a BMI > 18 and < 35</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Is patient is pregnant and in pain?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td><i>If Yes, please state trimester of pregnancy:</i></td> </tr> <tr> <td>Have you discussed the nature of the referral with the patient?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Have you discussed the risks associated with the sedation?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Has the patient / parent or guardian understood and consented to the referral?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Radiographs attached?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Orthodontic treatment plan letter attached?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> <tr> <td>Delivering Better Oral Health prevention programme implemented?</td> <td>YES <input type="checkbox"/></td> <td>NO <input type="checkbox"/></td> <td></td> </tr> </table>		Patient is over the age of 3	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Patient is ASA 1 or ASA II or stable ASA III	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Patient has a BMI > 18 and < 35	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Is patient is pregnant and in pain?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	<i>If Yes, please state trimester of pregnancy:</i>	Have you discussed the nature of the referral with the patient?	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Have you discussed the risks associated with the sedation?	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Has the patient / parent or guardian understood and consented to the referral?	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Radiographs attached?	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Orthodontic treatment plan letter attached?	YES <input type="checkbox"/>	NO <input type="checkbox"/>		Delivering Better Oral Health prevention programme implemented?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
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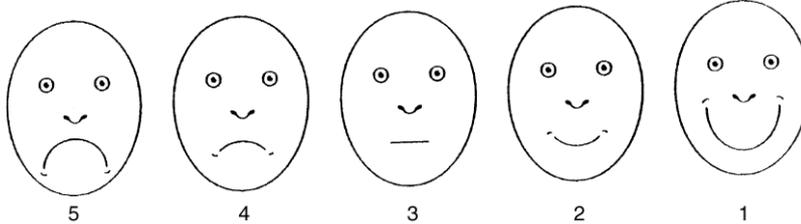
Assessing anxiety levels in children, young people and adults

Anxiety Scale: Facial Image Scale for children under 12 years

Please ask your patients under the age of 12 years to point to the picture that best represents how they feel about receiving dental treatment.

Please record the score (1-5) on the referral form.

FACIAL IMAGE SCALE TO ASSESS CHILD DENTAL ANXIETY



Anxiety Scale: Modified Dental Anxiety Scale for patients over 12 years

Please ask your patients aged 12 and over to complete the MDAS patient questionnaire – see appendix 1.

Please score patient anxiety questionnaire as below.

Each of the five answers is scored as follows:

Not anxious = 1

Slightly anxious = 2

Fairly anxious = 3

Very anxious = 4

Extremely anxious = 5

So the total Questionnaire Score is a sum of all five items (range 5 to 25)

Please convert the questionnaire score to a rank score as below and record this on the referral form.

MDAS 5-9 (minimal anxiety)

MDAS 10-12 (moderate anxiety)

MDAS 13-17 (high anxiety)

MDAS 18-25 (very high anxiety)

Referral Centres

Please tick the referral centre you require, and send your referral to one the below centers.

Tier 1

North Tees
TBC

South Tees

Whitecross Dental Care Limited
The Dental Centre
153 Marton Road
TS4 2EN

County Durham and Darlington

Burgess & Hyder
Wellsprings Business Centre
Durham Road West
Bowburn
DH6 5AU

Tier 2

Address TBC

MODIFIED DENTAL ANXIETY SCORE QUESTIONNAIRE

To be completed by the patient

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

Please indicate by putting a '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*

Humphris GM, Morrison T and Lindsay SJE. The Modified Dental Anxiety Scale: Validation and United Kingdom Norms. *Community Dental Health* 1995; 12:143-150.

Please state your **height** (inches).....

Please state your **weight** (pounds).....

Body Mass Index (BMI) Chart for Adults

Obese (>30)
 Overweight (25-30)
 Normal (18.5-25)
 Underweight (<18.5)

HEIGHT in feet/inches and centimeters

WEIGHT lbs (kg)	4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"
	142cm	147	150	152	155	157	160	163	165	168	170	173	175	178	180	183	185	188	191	193	196	
260 (117.9)	58	56	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31
255 (115.7)	57	55	53	51	50	48	47	45	44	42	41	40	39	38	37	36	35	34	33	32	31	30
250 (113.4)	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	30
245 (111.1)	55	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	29
240 (108.9)	54	52	50	48	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	28
235 (106.6)	53	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28
230 (104.3)	52	50	48	46	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27
225 (102.1)	50	49	47	45	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	27
220 (99.8)	49	48	46	44	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	26
215 (97.5)	48	47	45	43	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
210 (95.3)	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
205 (93.0)	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
200 (90.7)	45	43	42	40	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	24
195 (88.5)	44	42	41	39	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	23
190 (86.2)	43	41	40	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	23
185 (83.9)	41	40	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
180 (81.6)	40	39	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21
175 (79.4)	39	38	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
170 (77.1)	38	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20
165 (74.8)	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	20
160 (72.6)	36	35	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	19
155 (70.3)	35	34	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
150 (68.0)	34	32	31	30	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18	18
145 (65.8)	33	31	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
140 (63.5)	31	30	29	28	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	17
135 (61.2)	30	29	28	27	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	16
130 (59.0)	29	28	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	15
125 (56.7)	28	27	26	25	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	16	15	15
120 (54.4)	27	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14
115 (52.2)	26	25	24	23	22	22	21	20	20	19	19	18	17	17	16	16	16	15	15	14	14	14
110 (49.9)	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13
105 (47.6)	24	23	22	21	21	20	19	19	18	17	17	16	16	16	15	15	14	14	13	13	13	12
100 (45.4)	22	22	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	12
95 (43.1)	21	21	20	19	19	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	12	11
90 (40.8)	20	19	19	18	18	17	16	16	15	15	15	14	14	13	13	13	12	12	12	11	11	11
85 (38.6)	19	18	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	11	11	11	10	10
80 (36.3)	18	17	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	11	10	10	10	9

Note: BMI values rounded to the nearest whole number. BMI categories based on CDC (Centers for Disease Control and Prevention) criteria.

$$\text{BMI} = \text{Weight}[\text{kg}] / (\text{Height}[\text{m}] \times \text{Height}[\text{m}]) = 703 \times \text{Weight}[\text{lb}] / (\text{Height}[\text{in}] \times \text{Height}[\text{in}])$$