IN BRIEF

- Among consultants in restorative dentistry there is a perceived need for sedation services to be provided in secondary care for restorative dentistry for selected patients and/or dental procedures.
- Currently only 41 out of 144 consultants (28%) in restorative dentistry provide treatment under sedation within the NHS — which leaves many primary care practitioners with limited opportunity to refer patients for this type of secondary care.
- Almost all consultants (94%) in restorative dentistry feel that specialist registrars in restorative dentistry should undergo training in sedation. This training need must be met if consultants in restorative dentistry are to provide conscious sedation services in secondary care in the future.

Conscious sedation services provided in secondary care for restorative dentistry in the UK: a survey

C. L. Morgan[1] and A. M. Skelly[2]

Objectives To assess the views of consultants in restorative dentistry on sedation services in secondary care for restorative dentistry and their involvement in the provision of this.
Design Postal questionnaire survey in the UK.
Setting Consultants in restorative dentistry.
Results There was an 80% response rate from 179 consultants. Among consultants in restorative dentistry there was a perceived need for sedation services in restorative dentistry within NHS hospitals other than for teaching purposes. Anxiety and level of trauma of dental treatment affected whether consultants felt it appropriate for patients to have such treatment under sedation. One third (48) of consultants treated patients under conscious sedation, a significant number of these held NHS posts and had graduated more recently. Of those (41) who provided treatment under conscious sedation in an NHS setting, most (38, 93%) provided treatment under intravenous sedation of whom only eight (21%) acted as operator/sedationist. Nearly all consultants (135, 94%) felt that specialist registrars in restorative dentistry should undergo some form of training in sedation.
Conclusions Although consultants in restorative dentistry recognise the need for training in and the provision of sedation in secondary care for restorative dentistry, only one third of respondents currently provide this service.

INTRODUCTION

One third of the UK adult population report anxiety about going to the dentist. Among those who only go to the dentist when they have a problem, this proportion rises to nearly half.[1] Anxiety can result in avoidance of dental treatment and, when severe, is one of the major reasons for the provision of conscious sedation[2] for dental treatment. In addition, complex procedures can be made more tolerable for patients when sedation is given.[3] Gagging[4] and some medical conditions which are potentially aggravated by stress, such as ischaemic heart disease, can be an indication for the provision of dental treatment under sedation.[5] Other medical indications are those which affect a patient's ability to co-operate including those with involuntary movement disorders and physical or learning disabilities.[5]

At present restorative dentistry is provided under sedation in dental practice, community, personal dental service clinics, within most dental teaching hospitals, and more rarely, in a district general hospital. The General Dental Council (GDC) dictates that dentists who administer conscious sedation must do so only within the limits of their knowledge, training, skills and experience. For dentists who assume dual responsibility of sedating the patient as well as providing treatment this includes having completed relevant postgraduate education, training and experience of the technique used.[2] Where a second person is administering the sedation, it is the operator's responsibility to ensure that the sedationist is appropriately trained.[2] Those who act as sedationist/operator must be assisted by a second appropriately trained person who is present throughout and is capable of monitoring the clinical condition of the patient and assisting the dentist in the event of any complication.[2] The appropriately trained person can be another dentist, a medical nurse or a dental nurse with extra training or with an extra qualification.

In dentistry, most care is provided by generalists, and patients are rarely referred to specialists.[6] This is particularly true of restorative dentistry. There are many barriers to secondary dental care, including access to referral services. Only 59% of the UK population attend their primary care providers, the referrers, on a regular basis[1]. Dental practitioners find anxious patients requiring restorative dentistry and anxiety management difficult to refer due to this lack of secondary care service.[7] The need for specialist help is apparent when the care that is required is outside the experience, abilities or facilities available to the referring primary care dentist.[8] As a secondary dental care provider, the consultant in restorative dentistry carries out more complex treatment for patients.[9] Most restorative consultants or departments have specific guidelines as to which type of periodontal, endodontic and prosthodontic treatment can be provided as secondary care within the hospital. With increasing demand, National Guidelines have been set up for the provision of implants within the NHS.[10] More recently an Index of

[1*]Specialist Registrar in Restorative Dentistry; [2]Senior Lecturer/Honorary Consultant in Dental Sedation, GKT Dental Institute, London
*Correspondence to: Meg Skelly, GKT Dental Institute, Department of Sedation and Special Care Dentistry, Floor 26, Guy's Tower, Guy's Hospital, London, SE1 9RT
Email: meg.skelly@kcl.ac.uk

Refereed paper
Received 01.12.03; Accepted 07.04.04
doi: 10.1038/sj.bdj.4812352.
© British Dental Journal 2005; 198: 631–635

Restorative Dental Treatment has been proposed which defines complexity of treatment levels in restorative dentistry.[8] Whilst it has been acknowledged that restorative treatment is mechanistic, patient care involves other issues. Therefore modifying factors have been added to the gradings. These include: medical history that significantly affects clinical management; special needs for the acceptance or the provision of dental treatment and the presence of a retching tendency.[8]

AIMS

This survey was undertaken as an indirect consequence of changes in general anaesthetic and sedation provision in general practice.[2] There is a perception that there are more patients requiring complex restorative dental treatment under sedation being referred to the secondary care services. The target group were consultants in restorative dentistry, who, in later sections will be referred to as consultants.

The aims of the survey were to establish:

1. The type of patient and restorative treatment perceived by consultants to be appropriate for provision under sedation in hospital other than for teaching, ie secondary care.
2. The sedation services available to and provided by consultants at present.
3. The sedation training needs of future consultants in restorative dentistry.

METHOD

A questionnaire was designed comprising three sections. The first five questions were designed to give the profile of consultants in restorative dentistry. Questions 5 to 10 were designed to assess the consultants' opinions on specialist registrar (SpR) training needs and the type of patient and restorative treatment procedures, which are appropriate in secondary care under sedation. The consultants were also asked whether they had facilities in their main hospital base for patients to have restorative treatment under sedation and whether they provided treatment under sedation. The remaining nine questions were aimed only at those consultants who provided treatment for patients under sedation within NHS hospitals or clinics in order to assess their sedation practice. Comments were invited at the end.

The questionnaire was piloted initially among consultants within the Unit of Restorative Dentistry at Guy's Hospital and the Mayday University Hospital, after which minor changes were made.

The definitive questionnaire was sent in April 2003 to 179 NHS and honorary consultants in restorative dentistry within the UK. A list of members was obtained from the Association of Consultants and Specialists in Restorative Dentistry. Some names were removed when recognised as non-hospital specialists and further names (of those known to be consultants) were added from the list of specialists in restorative dentistry held by the GDC. A short covering letter was sent out with the questionnaire and a return stamped addressed envelope.

On return, the individual results were entered onto an Excel spreadsheet and analysed using Stata 8 Data Analysis software (Stata Corporation Tx 77845 USA).

RESULTS

All results are given as absolute numbers of consultants who responded to each question. Where the percentage of consultants is of interest, this is given in addition.

Of the 179 survey forms sent out to consultants 148 (83%) were returned, of which 144 were useable. Those not used were either not filled in (3) or only partially completed (1). The response rate for useable forms was therefore calculated at 80% (144/179).

Consultants' views on types of patient and restorative treatment procedures which are appropriate in secondary care under sedation

A very high number of consultants (137, 95%) felt that it was appropriate for restorative treatment procedures to be provided in NHS hospitals under sedation other than for teaching purposes. The consultants were asked which treatment procedures they felt were appropriate in this setting; three did not answer any of the categories given. These results are summarised in Figures 1 and 2.

Sedation services available to and provided by consultants in restorative dentistry

Most consultants (120, 83%) had facilities in their main NHS hospital or clinic for the provision of restorative dental treatment under sedation. Those that did not referred to: the community services (14); another hospital (9); local sedation clinics (1) and primary care trusts (1). When sedation was required, some patients were referred back to their general dental practitioner (10). One third (47, 35%) of consultants provided treatment for patients under sedation, the great majority providing this in undergraduate teaching hospitals as seen in Table 1.

NHS sedation services provided by consultants in restorative dentistry

Forty-one consultants provided treatment under conscious sedation in an NHS setting. The following results apply to these consultants only. The sedation techniques provided by these consultants are summarised in Figure 3. The following sedative agents were used by the 38 (93%) consultants providing treatment under intravenous (IV) sedation: midazolam (33); diazepam (2); propofol (9); not specified (3). Only eight (21%) consultants acted as both sedationist and operator when providing IV sedation. Twenty-two consultants had another dentist acting as sedationist and 17 had a doctor or anaesthetist or other medical sedationist.

Of 23 (56%) consultants who provided treatment under oral sedation, the benzodiazepines used were: diazepam (9); temazepam (7) and midazolam (7).

For all sedation techniques there were 17 consultants who acted as sedationists, for whom the 'second appropriate person' was recorded as: a dental nurse with sedation qualification (10); a dental nurse with extra training (7); another dentist (3) and a medical nurse (2). When asked about the frequency of sedation treatment provided, the majority of consultants (28, 75%) provided treatment under sedation occasionally. There were seven consultants who provided treatment under sedation on a weekly basis, six of whom provided IV sedation and acted as sedationist.

Nineteen consultants had formal training in sedation, two, holding a University Diploma, with the remainder having attended various NHS and private courses – for example with the Society for the Advancement of Anaesthesia in Dentistry. Ten consultants were involved in the teaching of sedation; these included all eight consultants who acted as sedationist/operator for IV sedation.

Profile of consultants

Fisher's exact test was used to assess whether consultants' profiles affected their responses to questions posed. None of these, including consultants' 'subspecialty' appeared to have any effect on which type of treatments they felt were appropriate for treatment within NHS hospitals for anxious, not especially anxious and the other groups of patients presented. Half of the consultants who responded held NHS appointments with the remainder being honorary contract holders. A significantly high proportion who provided restorative treatment for patients under sedation were NHS consultants (Table 2) and were more recent graduates (Table 3).

Table 1 Locations where consultants in restorative dentistry provided treatment under sedation

Location	Number of consultants (n=47)
Undergraduate dental teaching hospital	33
Dental teaching hospital which is solely postgraduate	7
District general hospital	9
Practice	9
Community	1

Table 2 Fisher's exact test for type of consultant and whether treatment is provided under sedation

Type of consultant	Provided treatment for patients under sedation	Did not provide treatment for patients under sedation	p value
NHS	31	32	
			< 0.001
Honorary	10	52	

Table 3 Fisher's exact test for consultants' year of graduation and whether treatment was provided under sedation

Year of consultants' graduation as a dentist	Provided treatment for patients under sedation	Did not provide treatment for patients under sedation	p value
1961-1970	6	26	
1971-1980	15	32	0.025
1981-1990	23	30	
1991-2000	2	0	

Consultants' views on specialist registrars in restorative dentistry training in sedation

Nearly all consultants (135, 94%) felt that specialist registrars (SpRs) in restorative dentistry should have training in sedation. The great majority (117) thought that a limited core course, for example 12 clinical sessions, would be appropriate. Eleven felt that a Diploma was appropriate. Several consultants observed that training in sedation should carry on throughout the SpR training period. Two consultants commented that SpRs should have experience of treating patients under sedation, but not necessarily giving sedation.

DISCUSSION

Response rate and errors

It has been assumed that the list of consultants in restorative dentistry (179 consultants) was complete, which may well be incorrect. In addition six questionnaires were sent in error to non-hospital restorative specialists (3) and retired consultants (3). These were not the targeted group, they were not therefore included in the survey and no correction was assumed for the non responders. The response rate of 80% for useable questionnaires is considered acceptable by most survey standards[11] and comparable to a previous survey of this group.[12] Whilst most consultants answered most questions, there were some questions which were not answered, by all. Those questions may not have been answered if they were not understood or felt to be ambiguous.

Consultants' views on types of patient and restorative treatment procedures which are appropriate in secondary care under sedation

Virtually all consultants (137, 95%) felt that restorative dentistry should be available in secondary care under sedation. In considering appropriate types of 'restorative treatment under sedation in NHS hospitals other than for teaching purposes', the question aimed to find out what consultants felt was appropriate for

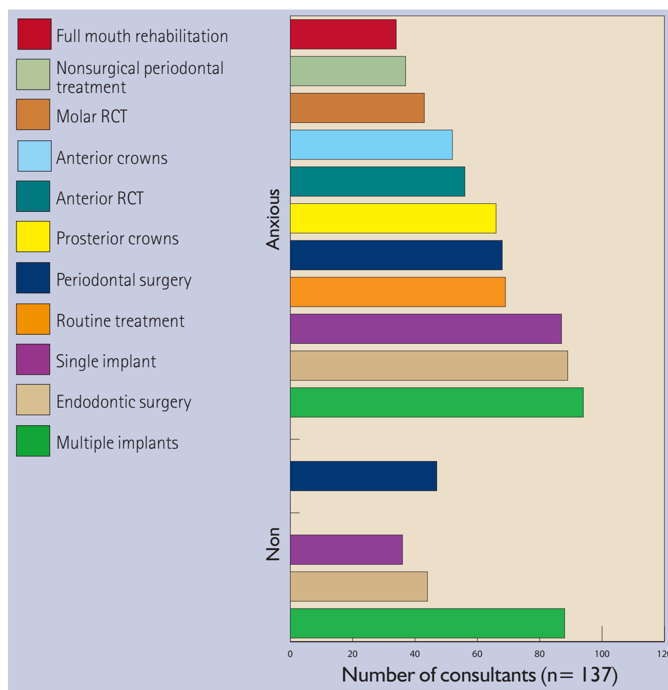

Fig. 1 Restorative treatment procedures, considered appropriate by consultants, for provision in NHS hospitals for anxious patients and not especially anxious patients under sedation

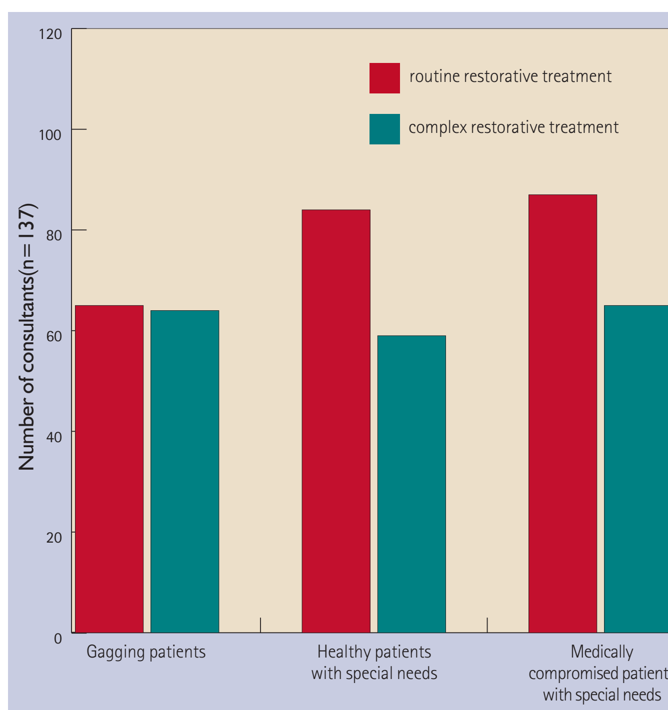

Fig. 2 Restorative treatment procedures, considered appropriate by consultants, for provision in NHS hospitals for gagging patients, healthy patients with special needs and medically compromised patients with special needs under sedation

secondary care. Perhaps the lack of agreement may be surprising, but there are so many factors involved, as pointed out by several consultants who felt unable to answer this part of the questionnaire. These variables include: the patient; type of treatment and its difficulty; consultant's experience; facilities available for sedation both locally and within the hospital and waiting lists. It would therefore be difficult to produce simple guidelines for acceptance of patients for restorative treatment in secondary care.

The responses to treatment appropriate for anxious and not especially anxious patients (Fig. 1), where treatment categories

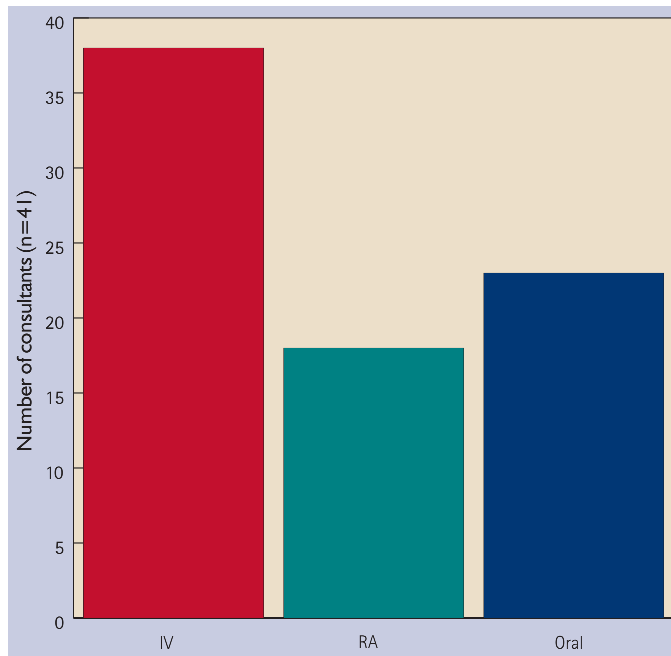

Fig. 3 Number of consultants who provided treatment under different types of sedation in an NHS setting

were repeated, were higher for the anxious group. Multiple implants received the greatest response rate for both the anxious (94, 69%) and not especially anxious (88, 64%) patient groups. The responses are very close in number, indicating that this is perceived as a traumatic procedure for any patient whether anxious or not. Routine treatment also received a high response rate (69, 50%) for the anxious patient group and some consultants felt that this group of patients was not suitable for complex restorative treatment. This may explain why anterior root canal treatment (RCT) gained a greater response rate (56, 41%) in the anxious patient than molar RCT (43, 31%). Molar RCT may be considered to be more difficult and sometimes not possible in the sedated patient. What may be considered primary care in the non-sedated patient becomes secondary care in the sedated patient due to the increase in difficulty of the dental procedure. This is partly reflected in modifying factors, which can increase the complexity code in the Index of Restorative Dental Treatment.[8]

In considering patients with special needs there was quite a high response rate (Fig. 2), which fits the role of the consultant[13] for this group of patients. It is routine restorative treatment which was considered more appropriate. This again could be due to problems in providing treatment for this group and also in the maintenance required.

NHS sedation services provided by consultants and their views on training in sedation for specialist registrars in restorative dentistry

Forty-one (28%) consultants provided treatment under conscious sedation in an NHS setting. Eight (21%), of the 38 (93%) using IV sedation, acted as sedationist/operator. Despite this nearly all consultants felt that SpRs in restorative dentistry should have training in sedation.

Increase in demand for dental treatment under conscious sedation

The proportion of dentate adults in the UK who report attending for regular dental examinations has risen from 43% in 1978 to 59% in 1998.[1] As the general public becomes more dentally aware, the anxious patient may be more inclined to seek dental treatment. With a more dentally aware population the number of complex restorative procedures provided, particularly implants are increasing, which again could increase the demand for dental sedation. Sedation is not the only method for management of the anxious dental patient and due regard should be given to all aspects of behavioural management.[2] General anaesthesia can be used to treat the severely anxious dental patient, although its overuse for dentistry has caused concern in the past.[14] With the GDC ban on the provision of general anaesthetics by non-professional anaesthetists in 1998 there was a substantial increase in the number of sedations provided in primary care as shown by one study in the north west region of England.[15] In 2001 the GDC banned the provision of general anaesthesia outside hospitals, it also laid down more specific guidelines for those providing conscious sedation.[2] Whether these factors have or will further increase the demand for secondary care restorative dentistry using conscious sedation, remains to be seen.

Responsibility for the provision of restorative treatment under sedation in secondary care

As the profile of dental sedation increases along with education opportunities, primary care providers will be responsible for the majority of conscious sedation in dentistry.[16] Routine treatment should be readily available for anxious patients in primary care. With the possible introduction of general dental practitioners with special interests (GDPwSIs) in anxiety and pain relief (dental sedation), and special care dentistry there may be further provision for this group of patients in primary care.[17]

However there should be a secondary care service available for those patients who require complex restorative treatment and sedation for their treatment. Some teaching hospitals provide both primary and secondary restorative dental care for patients under sedation. There are also patients who are medically compromised – for example American Society of Anesthesiologists (ASA) type III/IV – who may require sedation but are not considered suitable for treatment in primary care.[18] Treatment plans may need to be modified for patients requiring sedation.

There is considerable variability as to who is responsible for these patients in different secondary care settings. It is estimated that there are approximately a dozen consultants in sedation and special care or consultants with sedation as part of their job title in the UK. They all have very different backgrounds including restorative dentistry, oral surgery, special care dentistry, general anaesthetics and sedation. Many dentists who are 'experienced' sedationists have a background in general anaesthesia, however with dentists no longer being able to administer general anaesthesia these will reduce in number.

In 2002, trainees (SpRs) in restorative dentistry were advised that the Specialist Advisory Committee in restorative dentistry had made changes to their training Log Book, including the need to record of the 'number of cases treated under inhalational sedation and intra-venous sedation'. With this greater training requirement, the responsibility for sedation services in restorative dentistry in secondary care could fall to future consultants in restorative dentistry. There is, however, a conflicting argument that many of the complex restorative techniques that are learnt during training as an SpR are inappropriate and unrealistic to provide for patients under sedation.

To bridge the gap for special care dentistry across primary care and hospital settings a training pathway for specialists in this field has been proposed.[19] This would interface with restorative dentistry and other specialties to provide an integrated care pathway for patients at the more severe end of the spectrum of disability and complex additional needs who require sedation. There are no indications as to if and when this will come about, but it would seem that this would be of benefit to dental patients within the UK.

The authors would like to thank Dr Ron Wilson for his expert statistical advice and all the consultants in restorative dentistry for returning their questionnaires.

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