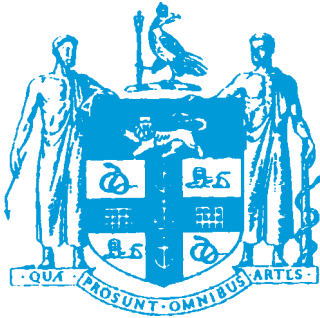


The Royal College of Surgeons of England Orthodontic Clinical Effectiveness Working Party



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Clinical Effectiveness

A new millennium — a new title! Perhaps I should begin my Chairman's Update by explaining that the working-party's new "handle" represents neither a wish for self-aggrandisement nor the belief that a moving target is more difficult to hit. It merely follows the changed title of the former Faculty Audit Committee, which itself now reflects the nomenclature in general use within the College.

National Outcomes Audit

Our current Hospital Service audit of treated cases (financially supported by C.O.G) is progressing well. Ros McMullan tells me that when we exclude people who have legitimate reasons for not taking part (Current retirements, New appointments, etc.) the take-up is about 90%. I know that she is conducting a trawl of non-participants so we hope to improve the figure. The results should provide a valuable "snapshot" of what is currently being achieved.

Audit recipes

I mentioned in my last update that we had collected about thirty recipes from orthodontists around the country and that a few were being published, together with those of other specialties, in a Royal College booklet. Bridget Doubleday has been working to put all of the orthodontic recipes into a uniform format and, by the time you are reading this, they should be published on the B.O.S. Website. I hope that regional groups will look at these and discuss them. We would welcome reports of any which you have tried-out, as well as suggestions for new recipes. Authors will be acknowledged.

Clinical Practice Guidelines

Several years ago we were encouraged to believe that the production of guidelines was "the way forward" and a number of drafts were produced, mainly by (then) Senior Registrars. A few were later worked up into completed guidelines, two of which (dealing with unerupted maxillary canines and unerupted maxillary incisors) were published within a Royal College booklet. It may be an exaggeration to say that the guidelines sank without trace, but we had very little feedback in response to them. The production of an authoritative guideline demands many

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We are already planning a further project (again with C.O.G. support) which will examine orthognathic outcomes and we hope to announce this during the year.

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hours of hard labour from a dedicated author and, unless the results are demonstrably useful, I am reluctant to ask anyone to undertake the work involved.

It would be a help to know to what extent the existing guidelines are considered of use and to have comments on the size, form, choice of topic and their actual recommendations, as well as appropriate avenues of publication.

Audit meeting

Once again, a meeting of regional audit representatives took place at the B.O.C. in Glasgow (report on page 11). These meetings always provide a stimulating exchange of ideas and we hope to gather again at next year's conference. If any representative is unable to attend, please nominate a deputy.

Newsletter items.

Our editor, Steve Richmond, is concerned by the diminishing number of items being submitted for the Newsletter. Many projects are being carried out around the country so may I encourage you to write them up. We would prefer something which will fill about half a page. The last newsletter included a short report dealing with the reading-age of patient-information leaflets. It was concise as well as highly relevant and I was particularly pleased to see that it was contributed by a dental nurse (Keeley Twigg of Wrexham). We welcome further contributions from nurses, reception staff, technicians and the many people on whom we rely to provide our service.

Secretary

David Tidy - who has served the working party well for several years - has resigned (being now chairman of the Development and Standards Committee). I should like to say a personal "thank-you" to him for all his work and support during his time in office. Helen Fellowes, who represents the Community Orthodontists, will now take over as secretary.

Good wishes to all of you for the remainder of 2000 and for the new century.

John D. Muir



Mr J.J. Crabb, York

re Newsletter no.12 March 99

I read the article on "Clinical Effectiveness, what does it mean to you", by John Williams, with great interest. Although recently retired as a Consultant, I belonged to John Williams Audit Group in Yorkshire. He is right to remind us that the purpose of CPE, Audit and Clinical Guidelines is to improve outcomes. He emphasises that we, as clinicians may need to change clinical behaviour. I believe he is right to say that many of our audit projects are unlikely to result in a change of such behaviour.

....there should be a fully trained and accredited examiner in IOTN and PAR in each district and he or she should be responsible for examining consecutively completed cases on an anonymous basis.

What we all want is to treat patients to the highest possible standard in the shortest time at the cheapest cost. The only standard we have at the moment for outcome of orthodontic treatment is Peer Assessment Rating (PAR). Although this is not ideal, it is a start and will no doubt be honed and improved upon in the future.

Nevertheless, it has been well used and is the sort of language that Manager and Commissioning Groups can understand.

The time that we take to treat patients, assuming we understand precisely when we start treatment and when we finish treatment, is known if records are kept properly. The cost of materials is simple but the time factor in hospital is a little more contentious. Nevertheless, a number of clinicians are working on the exact time they spend at the chairside treating a patient and the costing added to materials, (Hospital Trusts are still working on what constitutes overheads in an orthodontic department), would then give us the cost of treating a patient.

What therefore is the way forward in audit groups? I suggest that there should be a fully trained and accredited examiner in IOTN and PAR in each district and that he or she should be responsible for examining consecutively completed cases on an anonymous basis. It would mean visits to hospitals specifically to examine records and to obtain results. This could also highlight problems such as inadequate records etc. The result could be made known to a wise persons committee representing the region that could interpret the results and make helpful suggestions for raising standards.

This does not necessarily mean that techniques have to be changed, but refinements and more attention to detail. It may also mean seeing patients either more or less frequently. It may also mean we have to exclude single arch treatments from scoring (which shouldn't perhaps be treated in a hospital any way); those patients who fail to complete and those who transfer. PAR probably judges best patients who have upper and lower fixed appliances and who complete treatment to the prescribed plan.

At the end of the day, unless outcome of treatment can be measured objectively, it is impossible to compare treatment across the region. We should focus on this and work collectively to improve quality and standards across the region.

An Audit of Orthodontic Appliance Breakages

Colin J. Larmour, Royal Aberdeen Children's Hospital.

AIMS:

To establish the frequency and types of orthodontic appliance breakages that presented to a busy orthodontic department.

STANDARD:

Maximum of 1 patient per day attending with a broken appliance (5 per week)

PROCESS OF AUDIT TECHNIQUE:

The audit assessment was carried out prospectively over a period of 3 months (April — July 1999) within one Hospital Orthodontic Department. Approximately 75 patients attend for scheduled appointments each day. Over the audit period any patient attending with an appliance breakage was included in the study. Information was recorded by the clinician who treated the patient and entered on to a data collection sheet.

RESULTS:

122 patients attended with a problem or breakage. Please see table for details.

Problem	Patients	
Bond	34	(28%)
Band	12	(10%)
Weld	6	(5%)
Transpalatal arch/ quadhelix	10	(8%)
Wire fractured	5	(4%)
Trauma	10	(8%)
URA fractured	31	(26%)
Lost appliance	7	(6%)
Headgear/Mask	2	(1%)
Modules/Ligatures	5	(4%)
TOTAL	122	

DISCUSSION:

As expected bracket failures were the commonest problem seen and lower premolar and incisor brackets the most common bracket types to fail. Removable appliance breakages were the next most common problem encountered. A recurring problem was found with one particular lower twin block design with seven patients attending with a midline

fracture of the appliance. One major concern was the attendance of five patients with a detached lingual/palatal arch ('MIA' system) and also six patients with a weld failure at the point of attachment of a fixed arch.

CONCLUSIONS:

The number of patients attending with breakages was greater than the gold standard.

Audit has highlighted several areas of concern particularly in relation to detachment of active palatal arches and weld failure.

IMPLEMENTATION:

- Welding machines to be assessed and serviced/replaced as necessary.
- Written advice given to all clinicians:
- Must securely ligate all fixed arches/quadhelices
- Should ensure archwire ends trimmed/cinched
- Care during bond-up to ensure adequate isolation and curing
- Protect brackets with a bite plane when necessary (deep OB situation)
- Reinforce advice regarding dietary care
- Lower twin block design modified to reduce midline fracture problem
- Re-audit in 12 - 18 months.

Bond Failure — Gingivally Offset Versus Conventional Premolar Brackets

Trevor Hodge, Doncaster Royal Infirmary

AIMS:

To determine the incidence of bond failure of a gingivally offset premolar bracket compared with a conventional premolar bracket (both American Orthodontics).

To establish an advantage in changing over to gingivally offset premolar brackets.

To establish an acceptable standard of premolar bracket failure to allow repeat audit or investigate new premolar bracket systems in the future.

PROCESS:

A prospective study was carried on 63 consecutive patients receiving full arch Straight Wire Appliance orthodontic treatment. Paired samples of the gingivally offset brackets were alternately placed in diagonally opposing quadrants. The sides

gingivally offset brackets were placed alternated between consecutive patients. The same protocol for bracket placement was followed all brackets being placed with Bond-Fast, a chemically cured adhesive. Where the appliances had been in place for at least 100 days records were kept of those premolar brackets that had failed within this time. Patients whose presenting malocclusion included a buccal crossbite were excluded from the audit.

RESULTS:

20 conventional premolar brackets out of a total of 141 placed were lost and 11 gingivally offset brackets out of 143 placed were lost.

DISCUSSION:

Clinical experience showed that on small clinical crowns gingivally offset brackets often extended subgingivally. (Patients were excluded from the trial if a medical history contraindicated the placement of

these brackets). Because of their increased surface area gingivally offset brackets seemed to have a greater chance of imperfect adaptation to the tooth surface. Implications could be a reduction in casual attendance for replacement of debonded premolar brackets saving patient and operator time and some cost savings.

CONCLUSION:

The incidence of bond failure was greater in conventional based premolar brackets than in gingivally offset premolar brackets.

IMPLEMENTATION:

- To consider using gingivally offset premolar brackets as the premolar bracket of choice except where contraindicated.
- Re-audit in one year when these patients are in their heavy finishing wires and when considering any new premolar bracket system.

An Audit of Lateral Cephalometric Radiographs

Pamela Shankly, Withington Hospital, Manchester

AIMS:

To identify basic standards for lateral skull radiographs
To assess the level of achievement of those standards
To identify those areas where improvements could be made

STANDARD TO BE TESTED:

Head posture to be correct in the vertical and lateral planes
Teeth to be fully in occlusion
A complete soft tissue profile present
Key anatomical reference points visible — sella, nasion, A-point, B-point, anterior nasal spine, posterior nasal spine, pogonion, gnathion, upper incisor apex and tip, lower incisor apex and tip.

PROCEDURE:

Fifty consecutive cephalograms taken for orthodontic purposes at Withington Hospital between 22/09/98 and 22/04/99 were examined
The grade of the radiographer was also recorded.
Examination was by two independent examiners, an orthodontist and a radiographer. Where disagreement existed between examiners a third independent opinion was sought.
The cephalograms were assessed for achievement of each of the above standards
The reasons why the cephalograms failed to meet a standard were identified

RESULTS:

No cephalograms managed to achieve all the standards set. The main problem was that of head positioning. Vertical head positioning was incorrect in 30% of patients, lateral head positioning was incorrect in 70% of patients and only 22% of patients achieved correct head posture in both planes. The teeth were not fully in occlusion in 26% of cases. The complete soft tissue profile was not visible in 16% of patients.
The number of cephalograms with all twelve key points visible was 34%. The most common points to be unidentifiable were A-point (34%), lower incisor apex (30%) and upper incisor apex (18%). Twenty-eight percent of the cephalograms were judged to have some problem with exposure or developing. It was found that the grade of radiographer had no impact on the quality of the cephalogram.

DISCUSSION AND CONCLUSIONS:

The main problem with the cephalograms audited was that of head positioning. On discussion with the radiography department it was found that this was due to problems inherent with the lateral cephalogram machine.

When the Frankfort plane was placed horizontal to the floor the chin was not projected onto the film. As a compromise the radiographers were tilting the head back by 15 degrees in order to achieve a full hard tissue image, particularly in individuals with an increased lower face height. The second problem is that of intercuspatation which should be achieved in all cases. Soft tissue profile was compromised because of the 15 degrees of head tilting which tended to cut off the chin. The grade of the radiographer was found to be unimportant in the standard of the ceph taken. Exposure problems were found in several cephalograms.

RECOMMENDATIONS:

- Improve head positioning - this can only be achieved with adaptation of the cephalogram machine and will involve dropping the height at which the film cassette is held or adapting the height of the ear rods, which support the head whilst the film is being taken.
- Ensure teeth are fully in occlusion
- Make sure the soft tissue filter is positioned correctly in conjunction with correct head position
- Make sure exposure and development is optimal

IMPLEMENTATION:

- The radiography department to consult the maintenance engineers to arrange for the necessary modifications to be made to the lateral cephalogram machine.
- A revised 'checklist' to be placed in the radiography department beside the cephalogram machine.
- The way the orthodontist analyses the cephalogram should be highlighted to radiographers. The radiographer is therefore more informed to decide if the cephalogram quality is adequate for clinical use. This information is to be discussed at the next radiographers training meeting.

FUTURE STUDIES:

The audit project is to be repeated later this year. This will enable an evaluation of whether the recommendations suggested have been implemented resulting in the improvement of the quality of cephalograms.

It will be useful to repeat the audit at regular intervals (perhaps yearly) to make sure standards are being maintained.

Impacted Canines -

Giles Kidner and

AIMS:

To retrospectively assess the various aspects of the surgical and orthodontic management of impacted maxillary canines at the Royal Surrey County Hospital.

STANDARD TO BE TESTED:

The following standards were set with reference to Faculty of Dental Surgery National Clinical Guidelines (1997).

- The mean age at time of referral for surgical exposure should be 13 years.
- Surgery should be carried out within 6 months
- There should be no surgical complications
- Orthodontic treatment should be started within 60 days of surgery.
- Orthodontic treatment should align the canine tooth within two years of fitting appliances with no complications.

PROCESS OF AUDIT:

24 subjects operated on at the Royal Surrey County Hospital were identified from the theatre log book and a data sheet was completed from the patient case notes. The results were entered into a Microsoft Excel database and the results were analysed and compared to the audit standards.

RESULTS:

Demographic: There were 13 (54 %) females and 11 (46%) males with a mean age of 15.1 years (range 13-34 years; standard deviation 4.1) which was 2 years greater than the audit standard.
Occlusion: 13 (54%) subjects had Class 1 occlusion, 4 (17%) Class III, 4 class II/1 (17%) and 3 (12 %) Class II/2. Radiographic position of the canine: vertically, 6 (25%) were good, 16 (67%) fair and 2 (8%) poor. Horizontally 4 (8%) were good, 14 (58%) were fair and 6 (25%) poor. Mean waiting period before surgery was 10.8 months (range 3-34 months standard deviation 8.2) this was outside the standard of 6 months. However, some of the patients declined earlier treatment which would effect the mean waiting period.
Complications of surgery: 3 (12%) needed re-exposure (2 loss of bonded attachment and 1 pack fell of), one tooth (4%) was ankylosed and 1 case (4%) had a post operative infection. Mean time between surgery and orthodontic treatment was 52 days

An Audit of Outcome

Nigel Taylor, Guildford

(range 0-216 days standard deviation 68 days) which was within the standard of 60 days. Some appliances were already in place at the time of surgery in some cases.

Procedure: 9 (37%) were exposed and bonded and 15 (63%) had open exposure. Teeth in good position were more likely to have open exposure. Orthodontic treatment time to align the canine enough to insert a 0.018 $\phi\phi$ or equivalent archwire directly into the canine attachment. The overall mean was 588 days (range 82-1446 days and standard deviation 288) this was within the standard of two years. The mean time for open exposure was 540 days which was less than the time of 666 days for the teeth having closed exposure. This may though be expected due to the poorer position of those having closed exposure.

Mode of Orthodontic treatment: Upper removable appliance alone in 3 (12%) cases, fixed appliance alone in 16 (67%) cases and fixed and URA in 5 (21%) cases.

Failure of orthodontic treatment in 2 (8%) cases, 1 (4%) due to ankylosis and 1 (4%) due to poor oral hygiene.

RECOMMENDATIONS:

- Waiting time for surgery should be reduced, this has been addressed by recent waiting list initiatives, this may however increase the time before orthodontic treatment can start unless similar treatment initiatives are funded for orthodontics.

CONCLUSIONS:

- There was no significant difference between open and closed exposure.
- Orthodontic treatment time is long and patients should be aware of this.
- Bonding of attachments in theatre should be done by an experienced operator using a light cured composite.
- Earlier referral could be improved by informing practitioners and improving referring protocols.
- A similar audit project may be carried out by the South Thames-West regional audit group.
- This subject should be re-audited after 1 year.

REFERENCES:

The Royal College of Surgeons of England, Faculty of Dental Surgery. National Clinical Guidelines. 1997. The management of the palatally ectopic maxillary canine

Occlusal Outcome in Orthognathic Patients 1 year post-surgery

NE Atack, Musgrove Park Hospital, Taunton / Bristol Dental Hospital

AIM:

To undertake a preliminary audit of occlusal outcome in orthognathic patients at 1-year post-surgery using overjet as the outcome measure.

METHOD:

A sub-regional orthognathic database was set up in 1997 with the aim of recording all the osteotomies undertaken in the 8 units in the northern area of the South-West region. This database contains demographic information and details of the surgery undertaken, in addition

(Continued - next column)

to overjet as a simple measure of outcome. Using the overjet measurements recorded on this database a retrospective audit was undertaken to review the occlusal outcome of orthognathic surgery one year post-surgery. The results for the years 1997 and 1998 are presented.

STANDARD:

A standard of 80% of patients with overjet of 2-4mm at 1 year following surgery was chosen¹.

RESULTS:

The information was available on 75 patients out of a possible 96 (78%).

Overjet Value	< 2mm	2-4 mm	> 4 mm
No. of Patients	9	58	8
%	12	77	11

If the patients with clefts are removed from the figures the results were available on 68 patients.

Overjet Value	< 2mm	2-4 mm	> 4 mm
No. of Patients	4	56	8
%	6	82	12

DISCUSSION:

This is an important area to audit as it involves both orthodontic and maxillo-facial clinicians. The results demonstrate the standard (overjet 2-4mm) is being achieved if the patients with clefts are excluded. This audit highlights the difficulty of long-term record keeping. A number of patients failed to attend their one-year post-operative review appointments. Overjet does have its limitation as an outcome measure, nevertheless failure to meet this simple standard would indicate unsatisfactory outcomes in an important area of such treatment. There are, of course, many additional measurements that could assess other aspects of the outcome of orthognathic treatment.

CONCLUSIONS:

82% of patients (excluding patients with clefts) achieved the agreed standard at 1 year post-surgery.

PLAN FOR IMPLEMENTATION:

Emphasise to patients the importance of attending all their review appointments. This is an ongoing audit. It is planned to review the cases where the standard has not achieved. Additional outcome measures are being considered.

ACKNOWLEDGEMENTS:

I would like to thank all the consultant orthodontists and maxillo-facial surgeons who took part in this audit.

REFERENCES:

Proffit et al., 1996, 'Orthognathic Surgery: A Hierarchy of Stability' Int J Adult Ortho & Orthogn Surg, 11: 191-204

Audit of Early Returns After Fixed Appliance Placement

Janice Mackinnon, Raigmore Hospital, Inverness

AIMS:

- to identify reasons for returns prior to first scheduled appointment
- to implement any appropriate changes in clinical practise to reduce the number of such returns

STANDARD:

Penketh (1995) suggested a standard of unscheduled appointments accounting for not more than 5% of appointments. As our study included only patients in the initial weeks of fixed appliance therapy we adopted a standard of 10% of patients requiring an early return appointment.

PROCESS OF AUDIT

TECHNIQUE:

Our unit covers a wide geographical area, only patients under treatment at our main base were involved in this audit. Over the 6 month period 1.12.91 - 31.5.92 details of each patient having a fixed appliance placed were recorded as follows: hospital number, age of patient, sex of patient, type of appliance. When a patient returned early, details of the problem and any apparent reason were recorded.

RESULTS:

The results are presented in the Tables below:

DISCUSSION/CONCLUSIONS:

37% of patients required an early return appointment, failing to meet the standard. Greater than 90% of the early return appointments were due to the end of the wire coming out of the tube and/or the end of the wire irritating, or a debonded bracket.

IMPLEMENTING FINDINGS:

The operators agreed the following action after discussion;

- avoid over-annealing of end of archwire prior to placement and ensure wire is well turned down
- a curing light and light cured adhesive material should be used for bonding molar tubes and other brackets where they are thought to be vulnerable to debond, to achieve the highest possible immediate bond strength

Table 1 Profile of patients and the types of appliances covered by the audit

	Audit	Re-audit
Patients included		
Period of appliance placement	Dec 91 - May 92	Dec 96 - May 97
Number of patients	100	99
Male/Female ratio	33:67	41:58
Age ratio < 18: >18	94:6	97:2
Appliances placed		
Period of appliance placement	Dec 91 - May 92	Dec 96 - May 97
Number of appliances	156	152
Arches involved*		
upper and lower	56 (56%)	53(54%)
upper only	32 (32%)	29(29%)
lower only	12 (12%)	17(17%)
Types of appliance*		
Begg	58 (58%)	8 (8%)
Edgewise	37 (37%)	3 (3%)
Straightwire	5 (5%)	81 (82%)
Tipedge	0	7 (7%)

Table 2 Early return appointments, proportions and reasons

	Audit	Re-audit
Early returns		
Number of patients returning	37 (37 %)	32 (32.3%)
Number of return appointments	48	37
	7 patients twice 2 patients thrice	3 patients twice 2 patients thrice
Male/Female return rate	14:23	13:19
Age return rate <18:>18	36:1	32:0
Reasons for early returns*		
debonded bracket	19 (19%)	18 (18%)
wire out of tube	18 (18%)	7 (7%)
end of wire irritating	12 (12%)	5 (5%)
other part irritating	3 (3%)	2 (2%)
broken wire	2 (2%)	0
distorted wire/laceback	0	7 (7%)

* denominator taken as number of patients

RE-AUDIT:

- After implementation of these findings, a re-audit was carried out for the 6 month period 1.12.96 - 1.5.97. By then one operator had changed and the appliance mix had altered considerably, making comparisons less valid. Re-audit results showed a drop in early return rate but it was not statistically significant. There were fewer problems with the wire coming out of the tube and/or the end of the wire irritating. The rate for debonded brackets was similar. In the reaudit loose brackets on the second premolars and first molars accounted

for 66% of debonded brackets. Action taken from the re-audit was to ensure a scrupulous bonding technique for posterior teeth and to take note of the occlusion involving these teeth.

- A second re-audit is planned for 1.12.99 - 31.5.00 when the operators should be the same and the case mix broadly similar, hence giving more meaningful results.

REFERENCE:

Penketh, D M (1995) Cause and Incidence of Unscheduled Visits, RCS Eng Orthodontic Audit Newsletter: 8,6.

Audit of Appliance Breakages-Primary and Secondary Care

Moira Wong, Susan Power, The North Hampshire Hospital, Basingstoke.

Additional visits for appliance repair during orthodontic treatment can be inconvenient for both patient and clinician. This is expensive in terms of clinical time and materials. Breakages can lead to increased treatment time; this also has cost implications. This regional audit was carried out to determine the number of extra visits required for the repair of orthodontic breakages in hospital and specialist practice.

STANDARD:

Penketh (1995) has suggested that breakage appointments should not exceed 5% of booked appointments. This has been used as a gold standard in orthodontic audit (Tyrrell, 1998) and was adopted for this audit.

METHOD:

Twenty clinicians attending the regional audit meetings took part. This consisted of 15 hospital orthodontists including one community orthodontist and five specialist practitioners. Data was collected over a three-month period. Standard breakage forms were sent to each of the clinicians. Every patient presenting to an extra appointment for orthodontic appliance repair was recorded. Time taken to repair the breakage and type of breakage was recorded.

RESULTS:

Fifteen hospital practitioners and five specialist practitioners returned information for data analysis. Two clinicians had to be excluded due to incomplete data. The successful return rate was 90%.

The time spent on the repair of orthodontic appliances during this three-month period in the units studied was equivalent to four "man" weeks, based on a seven-hour day.

The extra visits as a percentage of the booked appointments range from 0.39-9.64% in the hospital and from 4.06-8.36% in specialist practice.

The reasons for attendance are shown in the Table.

The three major causes of extra visits were; debonded brackets, removable appliance breakages and wire problems. The results in both hospital and specialist orthodontic practice were similar.

	Unit number	Additional appointments as a percentage of total visits	Type of breakages
Hospital clinicians	1	6.6	Bracket 30% Bands 7% Wire 20% Removable 23% Other 20%
	2	4	
	3	3.2	
	4	2.6	
	5	0.4	
	6	2.4	
	7	7.4	
	8	3.7	
	9	6.6	
	10	7.6	
	11	9.6	
	12	6.7	
	13	5.3	
Specialist practitioners	14	7	Bracket 30% Bands 6% Wire 16% Removable 33% Other 15%
	15	5.6	
	16	4.9	
	17	8.4	
	18	4	

DISCUSSION:

This study demonstrated the difficulty of auditing multiple centres:

There was considerable variation in the time taken to return the forms. It was necessary in some cases to write to the participants on more than one occasion to request the return of forms.

There was some confusion over the interpretation of the forms despite all operators taking part in the design of the form. This was clarified during the audit meeting and reinforced with written instructions.

During the data analysis it became apparent that the unit with a breakage of 0.39% of the total number of booked appointments operated a different management system for orthodontic breakages. In some units breakages are repaired at the time of the appointment. Other units repair appliances at extra appointments. This has an influence on the final data and a repeat audit will include the repair of appliances at all appointments.

ACTION:

53% of hospital units and 60% of specialist practices were within the gold standard. The results reflect a need to examine current practice to identify

methods of reducing the incidence of orthodontic breakages on a regional basis. All clinicians will be given the results of their individual units. A meeting of all operators will be held to discuss these findings at the next regional audit meeting. The units within the gold standard will be examined to determine any factors, which may have lead to the reduced incidence of orthodontic breakages.

The audit will then be repeated to determine whether the changes adopted have any effect on the incidence of breakages.

REFERENCES:

Penketh, DM(1995) Cause and incidence of Unscheduled Visits, RCS Eng Orthodontic Audit Newsletter No.8
Tyrrell R(1998) Unscheduled Orthodontic attendances, RCS Eng Orthodontic Audit Newsletter No.11

This article is intended to clarify some of the components of a valid consent

A QUESTION OF CONSENT

Mark G Brennan, Lecturer in Dental Education, Cardiff

Dental Practitioners - and their colleagues working in the professions complementary to dentistry - will have become increasingly aware of the importance of consent in providing dental patient care which is ethically, legally and clinically sound. This article is intended to clarify some of the components of a valid consent. It is not intended to be a complete guide, and various sources of reference are suggested at the end of article. Much of this information is derived from The DDU publication, Good Dental Practice.

Why bother about consent?

It is important to recognise that the whole point of respecting consent is that patients have the right to say no, as well as yes, to proposed courses of treatment. In ethical terms, the right to consent is based on the principle of autonomy; an autonomous adult person has the right to decide what may or may not be done to him or her. In legal terms, any treatment, investigation or deliberate touching without consent may equal a battery. For consent to be valid, the patient must be given sufficient information from which to form a balanced judgement. The phrase "informed consent" rightly implies that without information there can be no consent. Valid consent also requires that the patient is *competent* to give that consent; he or she must have sufficient capacity to understand to what he or she is consenting, and the consent must be given freely. Competent patients have capacity to make treatment decisions if they can comprehend and retain the treatment information; believe the information; and weigh that information in the balance to arrive at a choice.

When considering how much information is required, the dentist will want to explain to the patient:

1. What treatment is proposed and how it will be carried out
2. Why the treatment is necessary and what might happen if the treatment were not carried out
3. What risks may be involved in having this treatment
4. What alternative forms of treatment are available, and the associated risks.

Legally, a dentist should always act in accordance with a responsible body of reasonable dental opinion. He or she should consider all relevant factors, including the severity and likelihood of the risk compared to the need for the procedure.

Types of Consent

There are two main types of consent, *Implied* and *Expressed*. In dental practice, consent to an examination might be implied by the patient

voluntarily lying in the dental chair and opening his or her mouth for examination. Expressed consent (oral or written) should be obtained for all routine dental procedures. An oral consent is valid in law, but it may be appropriate to note in the patient's records the advice given, including risks mentioned, and to confirm that consent was obtained. Written consent is required by the GDC before any general anaesthetic or sedation. It may be difficult to defend an action for battery, without documentary evidence

**IT IS IMPORTANT TO
RECOGNISE THAT THE WHOLE
POINT OF RESPECTING
CONSENT IS THAT PATIENTS
HAVE THE RIGHT TO SAY NO,
AS WELL AS YES, TO
PROPOSED COURSES OF
TREATMENT.**

Age of Consent

Legally, the age of majority is 18, but 16 and 17 year olds can consent to dental treatment as if they are adults.

"Irrational" refusal to consent to essential treatment by 16 and 17 year olds may be over-ridden by a parent in some circumstances. In 1985, the House of Lords held that a child under 16 could give valid consent to medical treatment without parental knowledge or agreement "... provided the child has capacity to give consent". This is known as the Gillick Test. Children under 16 can consent to treatment only if they understand its nature, purpose and hazards. The child should also have an understanding and appreciation of the treatment, a failure of the treatment, alternative courses of action and inaction.

Teaching dental ethics and law

Training in dental ethics and law is now being provided in the majority of UK dental schools. This includes teaching

on consent and confidentiality. This teaching has been strongly recommended by the GDC, and forms part of the curriculum changes which are occurring in undergraduate dental education. A number of postgraduate courses exist which offer dentists training in this fast-growing area; these include the highly respected MA in Medical Ethics and Law at King's College London and the LLM in Medical Law at University of Wales Cardiff. Hopefully this paper will have clarified some key points of consent; it should be emphasised that a sound understanding of the principles of dental ethics and law is not an optional extra for dentists, but a GDC requirement. The following might be helpful in meeting that requirement.

Sources of information

The DDU recently provided each dental school in the UK with a teaching pack, an *Introduction to Dental Ethics and Law*, which contains teaching materials and student handouts on Consent and Confidentiality. The DDU also publish a booklet, *Good Dental Practice*, which contains excellent advice on consent. Contact The DDU at 3 Devonshire Place, London W1N 2EA, Tel: 0171 486 6181 or at www.The-DDU.com.

The British Orthodontic Society document 'Clinical Guidelines: Consent in Orthodontic Treatment' is well worth obtaining. The sample consent form is easily adaptable to different types of practice. (BOS, Developments and Standards Committee, January 1995).

The General Dental Council publication, 'Maintaining Standards' is required reading for all dentists. (GDC, London, November 1997).

The BJO recently published a comprehensive paper by Dr J Warren Jones; 'A medico-legal review of some current UK guidelines in Orthodontics: A personal view' (BJO Vol. 26, No. 4, December 1999).

"CONSENT - ARE WE GETTING IT WRITE?"

N.L. Price and D.O. Morris, Leeds Dental Institute,

In this age of the "vexatious litigant", negligence claims are increasing. Orthodontists amongst other specialties are realising the importance of the need for an informed consent agreement. Without a valid consent to treatment, a clinician may be vulnerable to criticism on a number of counts, including assault or negligence. The Medical Defence Union advise clinicians on the importance of obtaining a valid informed consent form that should be present in the patient's notes.

Informed consent encompasses verbal, expressed and written consent. The clinician should use non-technical language and explain the benefits and risks of treatment. The various treatment options should be discussed and there should be an opportunity for the patient/parent to ask questions.

A working party of the British Orthodontic Society in 1995 advised that informed consent, with the use of a written consent form, should be introduced as soon as possible. As a result of this, consent forms were introduced to the Orthodontic Department at Leeds Dental Institute in March 1997.

AIM:

The audit specifically looked at the presence or absence of a valid consent form in the hospital notes.

MATERIALS AND METHODS:

An audit was undertaken of 200 consecutively seen orthodontic patients at Leeds Dental Institute during a two-week period in April 1999. The sample consisted of 184 "new" patients (*i.e.* treatment was started by the clinician currently treating the patient) and 16 "transfer" patients (*i.e.* the current clinician did not start the treatment). All patients had commenced treatment after March 1997.

RESULTS:

- 63 (31.5%) out of 200 consent forms were not completed.
- out of the 16 transfer patients only 4 consent forms were completed
- out of the 184 new patients, 51 consent forms were not completed

DISCUSSION

In this growing climate of legal awareness, all patients currently undergoing treatment should have a completed consent form present in the notes. The results of this audit indicate that this is not the case. Overall, only 68.5% of patients currently undergoing treatment in the department have a valid consent form. However, it

appears that since their introduction in March 1997, the completion of consent forms has improved, although it is acknowledged that the sample size of the "transfer" patient group is significantly smaller.

If the consent form is absent from the patients notes there are legal implications. Whilst this form might not be absolute proof of informed consent, its absence may leave the clinician vulnerable to criticism on several counts, including assault or negligence.

CONCLUSIONS:

- 68.5% of patients had a valid consent form present.
- 75% of the "transfer" patients did not have a valid consent form.
- 72.3% of the "new" patients had a valid consent form.

PLAN FOR IMPLEMENTING FINDINGS:

Several recommendations have been made as a result of this audit:

- The Head of the Department has written to all postgraduates and staff to re-inforce the importance of obtaining consent.
- The nursing staff has been asked to remind the individual clinician to obtain consent.
- Consent form to be countersigned by supervisor.
- A formal teaching seminar on the importance and method of obtaining informed consent is to be introduced into the postgraduate programme.
- Plan to re-audit this topic in January / February 2000.

THE EDITOR'S EDGE

The Development and Standards Committee of the British Orthodontic Society has published a guide to collection and management of orthodontic records. This is an important document formalising an approach to orthodontic record keeping. The committee made 8 recommendations;

- * There should be a standardised orthodontic record with a common data set
- * There should be a nationwide audit to assess the comprehensiveness and quality of orthodontic records in the four services.
- * A person should be identified to hold responsibility for record collection and management in each clinical setting.
- * For research and audit it may be prudent to obtain ethical approval and appropriate consent prior to record collection.
- * On completion of treatment, records should be clearly marked "low risk/short term storage" (6 years) or "high risk/long term storage" (10 years) from a litigation point of view.
- * Orthodontic records should be culled on a regular basis
- * Orthodontic records should be reviewed before being destroyed to ensure that the status of risk has not changed.
- * Document image processing and electronic capture may be used as a clinical record.

It is interesting that the only legal document relating to dental record keeping is the 1992 National Health Service

regulations. This states that dental records should be kept for a period of 2 years after completion of any course of care. The Health Service Circular documents HSC 1998/217 and HSC 1999/053 are advisory and represent good medical practice. These documents suggest that medical records held in NHS Trusts and Health Authorities should be kept for 10 years after completion of treatment.

Records relating to children should be kept to the patient's 25th birthday or 26th if an entry was made when the person was 17 years old. However, these documents are written for medical practice and do not relate to dental practice (personal communication-The Departmental Record Officer, NHS Executive). The majority of dental claims are brought within four years of the causative event and it would seem unnecessary to keep records forever. The BOS document puts forward a logical approach to record collection and management based on current knowledge. With further input from the medical defence organisations it is hoped that the Committee can make an accurate assessment of clinical problems and the risk of litigation by recording detailed information on "near misses" and litigation proceedings. Prompt feedback from the defence organisations will enable the orthodontic profession to develop an evidence based system to help prevent or reduce problems arising in the future. This can only lead to better clinical practice.

Telephone Referrals to Perth Royal Infirmary—A Process Audit

Grant T McIntyre and John D Clark, Perth Royal Infirmary

AIMS:

To evaluate failed to attend (FTA) initial consultation appointments for the standard letter referral system and a new telephone referral system.

BACKGROUND TO TELEPHONE REFERRALS:

Two systems of patient referral to the Orthodontic Department at Perth Royal Infirmary are currently operational. The standard letter system (which is open to all referring dentists) requires the referring dentist to provide both administrative and clinical details pertaining to that particular patient in order for an initial consultation appointment to be posted to the patient. The telephone system (which is available to all the regular referring dentists, except those who refer to outlying clinics) requires the referring dentist to give the patient / parent an information sheet, the patient / parent then telephones the Orthodontic Department themselves for a mutually convenient appointment (occasionally, the practice receptionist will telephone on behalf of the patient).

STANDARD TO BE TESTED:

The number of FTA's for initial consultation appointments should be as low as possible — ideally nil. The telephone referral system should result in fewer FTA's for the initial consultation appointment, which will

REFERRALS AND FTA's

	Referral Number	FTA	%
Baseline	343	12	3.4
Letter	349	19	5.4
Telephone	95	6	5.7

have been arranged by the patient / parent at the most convenient time.

PROCESS OF AUDIT TECHNIQUE

A retrospective analysis of the outcome criteria for all initial consultation appointments (n=444) which are recorded after each clinical session was undertaken for the periods April 1997 — March 1998 for both the letter and the telephone referral group. A baseline year, April 1995 — March 1996 (exclusively letter referrals) served as a 'control' group for analysis (n=343). There were no significant biases between the groups (age, sex or referring dentist).

RESULTS AND DISCUSSION

The FTA rates associated with both the letter referral (5.4%) and telephone referral (5.7%) systems are low numerically and are comparable (see table). The ideal FTA rate of zero is clearly unachievable in the practice of

orthodontics, but the detected rates were deemed acceptable for a hospital orthodontic department.

The lower FTA rate associated with the baseline group, 3.4% (exclusively letter) may be because there is a shorter time between receiving the appointment card and the consultation appointment. The increase in the FTA numbers between baseline and study groups could be explained by the overall increase in referral numbers.

CONCLUSIONS

Similar FTA rates exist regardless of the referral system to the Orthodontic Department at Perth Royal Infirmary. Most dentists continue to refer by letter.

PLANS FOR IMPLEMENTING FINDINGS

Participating referring dentists should be circulated with the results of this audit. The telephone referral system should be available to all referring dentists.

PLANNED PROSPECTIVE RANDOMISED CONTROLLED TRIAL OF TWO METHODS OF TREATING UNERUPTED MAXILLARY CENTRAL INCISORS: AN INVITATION TO PARTICIPATE

Mr Jim Ferguson
Manor Hospital, Moat Road, Walsall, West Midlands, WS2 9PS (Tel 01922 656971)
E-Mail: fergusonj@wht.walsall-tr.wmids.nhs.uk

The West Midlands Audit Group is planning to undertake a prospective randomised controlled trial of two methods of dealing with unerupted incisors (namely removal of supernumerary teeth only, or removal of supernumerary teeth plus bonding and traction). The protocol has been approved by the West Midlands Ethics Committee. The team is aiming for 100 cases in each group. Supernumerary teeth have a low prevalence, therefore, the team is looking for help in recruitment of patients. If you are willing to help please contact Mr Jim Ferguson at the address above.

QUALITY OF GDP ORTHODONTIC REFERRALS

Peter Nicholson and Pamela Stephenson, North Glamorgan

BACKGROUND:

The Orthodontic Department shares a common referral form with the other Specialities within the Maxillo Facial Unit. This form includes a space for clinical information but also a tick box for "urgent / non-urgent". It was considered that this box might be misused to bypass the waiting list.

AIMS:

To assess the quality of orthodontic referrals, with particular reference to the use of the "urgent" designation.

STANDARD:

All GDP referrals should carry sufficient clinical information to allow the consultant to decide if a patient should be seen urgently.

METHOD:

1. The criteria for new patients who should be seen urgently (within 3 months) were agreed within the department:-

- Delayed eruption of incisors
- Presence of pathology and/or dental anomalies
- Misplaced canines (other than buccal canines)
- Decision on extraction of 1st molars or other compromised teeth
- Decision on management of traumatised teeth
- 2nd opinions
 - Patients in treatment
 - Transfers
- Requests for opinion on treatment already started
- Personal circumstances

2. All orthodontic new patients seen over a 6 month period were included in the study. The data collected included:-

Quality of clinical information in referral
GDP designation of "urgency" in referral
Consultant designation of "urgency" at time of new patient assessment

RESULTS:

Data was collected on 493 new patients, referred by 104 GDPs.

1. 63% of referrals (309) contained adequate clinical information to allow the consultant to make a decision on how quickly a patient should be seen.
2. Designation of "urgency"

	<u>GDPs</u>	<u>Consultant</u>
Not designated	24% (118)	
"Urgent"	24% (117)	18%
"Non-urgent"	52% (258)	82%

DISCUSSION:

1. In 14% of cases (69) both consultant and referring GDP agreed that the patient should be seen early.

2. The areas for possible concern are where there were disagreements.

4% (20) were considered to have required an early appointment by the consultant but this was not indicated on the referral.

10% (48) were designated "urgent" by the GDP but were later considered by the consultant not to have required an early appointment.

Of these:

- 22 cases had adequate information which was either incorrect or had been misinterpreted i.e. genuine mistakes
- 26 cases utilised the "urgent" tick box without adequate clinical information i.e. possible misuse

CONCLUSIONS

The overall level of agreement between Consultant and referring GDP was high.

If the default for referrals without adequate information is "non-urgent" then a reasonably high level of agreement is reached (81%). Adequate clinical information improves this level of agreement to 89%.

PLAN FOR IMPLEMENTATION OF FINDINGS

Individual counselling of the small number of GDP's misusing the "urgent" designation.

Letter to all GDPs advising them of :-

- The criteria for early new patient appointments
- The departmental policy of not seeing patients early without adequate clinical information.

COMMENT

The designation "urgent" within the NHS carries an obligation under Patient Charter Standards for the patient to be seen within one month of referral. We do not consider this to be appropriate for orthodontics and now use the designation "early" to allow some patients to be seen sooner than others.

ORTHODONTIC CLINICAL EFFECTIVENESS WORKING PARTY

REPORT OF AUDIT CO- ORDINATORS MEETING

SEPTEMBER 28TH, 1999 -
GLASGOW

Twenty members were present with Mr. J D Muir in the chair,

Miss R McMullen gave a report on progress with the current outcomes audit project. 160 consultants had enrolled in the project and completed cases had started arriving in Bristol for scoring. Both copies of the report form were to be returned for each case and the bases of the study models must be trimmed accurately to reflect the occlusion. She assured members that a reasonable time would be allowed for the cases to be collected although it would eventually be necessary to impose a cut off in order to allow the results to be analysed. All cases treated with upper and lower fixed appliances were to be included unless they involved orthognathic surgery or hypodontia with a subsequent prosthesis. The project was intended to provide a base line, which would be used as a standard for future orthodontic audit projects. Co-ordinators were asked to discover if possible the reasons why any members of their group had opted not to participate in the study as this information would allow the project to be reported more fully. The project report would emphasise that the results referred only to a specific sub-group of hospital practice. The medium of publication will be agreed jointly between the Working Party and the Consultant Orthodontists Group.

There was general support for a future outcomes project on orthognathic treatments. A patient satisfaction survey had been proposed. A research project was currently being undertaken in this area and advice from the PhD student concerned would be sought on design of the questionnaire. Suitable standards would be devised and used as the basis for the questionnaire.

Additional articles for the forthcoming issue of the Orthodontic Audit Newsletter were requested by Steve

(Continued on page 12)

SUMMARY OF CASE NOTE AUDIT

Amanda Smith, Plymouth

AIMS:

- Examine the quality of record keeping for 10 consecutively treated cases at the completion of fixed appliance therapy, for consultants and clinical assistants.
- To look at retention regimes with a view to considering a future audit.

INFORMATION RECORDED :

- Operator
- Name of consultant
- Adequate medical and social history
- Adequate initial examination
- Stated working diagnosis and treatment plan
- Distinction between routine and emergency visits
- Number of entries legible, signed and dated
- Consistency of operator
- Signed consent form
- Radiographs and models taken and recorded
- Length of treatment
- Number of visits
- Consistency of operator
- Is estimated treatment time recorded?
- Are debonding appointment entries signed and dated?
- Copy of debond letter to GDP in notes?
- Hospital number and patient's name on every page?

- Same day retainer?
- Type of retainer
- Record in notes of information about retainer given to patient?
- Radiographs : available? dated? record in notes?

RESULTS:

There were common omissions;

- Current medication
- Social history
- Differentiation between emergency and routine visits
- Lack of consent form
- working diagnosis often only recorded in the letter to the dentist
- Length of treatment varied between 14.3 and 33.1 months
- Number of visits varied between 12.4 and 25.7
- No operator saw all their patients at every visit
- Only 2 patients out the total sample of 160 cases had fixed retainers
- Virtually all patients supplied with upper retainer on the same day
- Variable practice for provision of lower retainer

DISCUSSION POINTS:

Legal implications of incomplete documentation of:

- Patient's name and hospital number being missing from any page of notes.
- Reason for referral
- Lack of recorded information of radiographs taken
- Lack of recorded verbal instructions given to the patient
- lack of recorded estimate of treatment time
- unsigned entries in notes
- radiographs unavailable or not recorded as having been taken
- missing or unrecorded models
- lack of recorded instructions to patient about retainer
- letter re: debond not in notes or not sent
- Models unavailable, not dated and not recorded in notes

ACTION:

- Review preparation procedure for hospital notes to ensure that all necessary patient information is present
- Review problems of missing radiographs and models
- Record all information re: records taken and information given in the notes Re-audit
- To review quality of record keeping in 1 year

(Continued from page 11)

Richmond. These should be in the form of short summaries only. A few articles had been submitted but more were needed. Articles reporting new ideas for audit projects would be particularly welcome including any carried out by nurses or technicians. The newsletter will be published at the end of the year and articles should preferably be submitted by the end of October and at least by the end of November. Each regional group was asked to provide a project report. The Chairman will write to remind Audit Group Co-ordinators. Specialist practitioners will be invited to contribute as well.

Nigel Taylor reported that he had been asked to fill in a questionnaire by CASPE giving details of projects carried out using the computers which had been funded regionally. He had been submitting detailed reports regularly and was able to give a very

satisfactory response. Ian Crossman reported that computers similarly purchased for units in his area had been appropriated by the IT department and were still not available for audit use. Steve Jones mentioned that his Audit Committee had been asked to become a Clinical Governance Committee. They resisted the change as they felt it would be detrimental to the clinical relevance of the group. It was eventually agreed that they would continue to work as a clinical audit group and report to the Clinical Governance Committee.

Jim McDonald mentioned the impending implementation of personal development plans and suggested carrying out an audit on the success of this development in due course. He agreed to compose an article on personal development plans for the newsletter. Karen Drage reported on an audit of 30 cases per consultant carried

out in the South West region. She pointed out the difficulty of setting standards for outcomes and workload for consultants working in a variety of circumstances. Nigel Taylor warmly thanked John Muir for distributing the audit guidance leaflets to the Audit Co-ordinators at his own expense.

It was agreed that the audit co-ordinators should meet again at the next British Orthodontic Conference.



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