North Cork HSE orthodontic treatment waiting list 2009–2010: retrospective audit of patient records

Précis:
In 2009/2010, 57% of patients on the North Cork HSE orthodontic treatment waiting list were female and the most predominant malocclusion was Class II division 1 (40%).

Abstract:
Purpose of the study: To evaluate the case profile and verify the treatment eligibility (based on the modified IOTN) from written case records, of patients accepted for orthodontic treatment from the North Cork area of HSE South.
Materials and methods: A data collection form was designed and applied to the written case records of 200 consecutive patients accepted for orthodontic treatment in 2009/2010. Data relating to the IOTN (DHC and AC, where relevant) were provided by a calibrated examiner.
Results: Based on the written case records, most (57%) of the treatment cohort were female and had an average age of 14 years and two months. The predominant malocclusion was Class II division 1 (40%). The prevalence of Class III malocclusion was high at 18%. A total of 61% of patients were in grade 5 and 36% in grade 4. The majority of patients in each of these grades fell into DHC 5a (32%), followed by 5i (24%) and 4d AC>8 (16%).
Conclusions: Written case records conclude that patients accepted for orthodontic treatment from the North Cork area of HSE South were predominantly female. Class II division 1 malocclusion was the most common accepted for treatment. These records verify that those patients accepted for orthodontic treatment satisfy the eligibility criteria for HSE treatment.

Introduction
Guidelines were introduced in 1985 to assess orthodontic treatment eligibility in the Republic of Ireland (ROI). These guidelines, however, presented difficulties, in that there were varying interpretations in operation throughout the country and some high need cases were not included.1 It was recommended that they be replaced by an internationally validated index (the Index of Orthodontic Treatment Need; IOTN).1 The IOTN has two components, a dental health and an aesthetic component. The dental health component (DHC) has five categories...
ranging from 1 (no need for treatment) to 5 (very great need), and the aesthetic component (AC) ranges from 1 (little aesthetic handicap) to 10 (great aesthetic handicap). Due to resource limitations, the IOTN has been modified for use in HSE orthodontic units. As part of the modified IOTN (Figure 1), only patients categorised to grade 5 DHC or selected grade 4 components are regarded as of sufficiently high need to be treated in the public health orthodontic service. An individual in category 4d will only be accepted for treatment if there is an AC of grade 8 or greater. Since July 2007, the ‘modified’ IOTN has been used to assess the treatment eligibility of HSE orthodontic patients. Only one previous orthodontic audit carried out in the ROI has examined the IOTN grades, and similarly one audit has examined the profile of patients accepted for orthodontic treatment. Both of these audits were implemented when the 1985 guidelines were in operation. No audit appears to have been undertaken since the introduction of the modified IOTN within the HSE orthodontic service.

The purpose of this audit was to evaluate the case profile and verify the treatment eligibility (based on the modified IOTN), from written case records, of patients accepted for orthodontic treatment from the North Cork area of HSE South.

Aims of the audit
- To analyse, based on written case records, the age, gender and malocclusion distribution of patients accepted for orthodontic treatment in the North Cork area of the HSE South.
- To verify, from written case records, the treatment eligibility (based on the modified IOTN) of patients accepted for treatment.

Gold standard
It was agreed that written case records should verify that patients accepted for orthodontic treatment are in grade 4 or 5 of the modified IOTN. Patients in IOTN grades 1-3 may be eligible subject to justifiable reasons, for example those with special needs or children in the care of the HSE.

Materials and methods
The records of 200 consecutive patients accepted for treatment at the Postgraduate Orthodontic Unit, Cork University Dental School and Hospital (CUDSH), in 2009/2010, were examined retrospectively. These represented approximately 35% of the orthodontic treatment waiting list in the North Cork area of HSE South. All patients had been assessed and scored for the DHC of the IOTN by two orthodontic consultants and one orthodontic specialist, who had been calibrated in the use of the IOTN. Patients who reported a history of previous orthodontic treatment were excluded from the study. Data collection, performed by a single operator, was based on written case records. Radiographs were consulted to confirm the presence/absence and number of unerupted teeth. Assessment of dental decay was not undertaken in this audit.

A form was designed to facilitate data collection. The data collected were as follows:
- patient age;
- gender;
- incisor relationship based on BSI classification;
- IOTN DHC and AC (where relevant).

Child patients were defined as those who had not yet attained their...
eighteenth birthday. To assess examiner reliability in data collection, the records of every twentieth patient were re-recorded and compared with the original data one month after initial entry. All data were stored in accordance with CUDSH data protection policy.

Results
No errors were recorded with respect to data entry, indicating high reliability. Of the 200 patient records examined, 57% were female and 43% were male. Children accounted for 90% of the sample. The child patients ranged in age from nine years and two months to 17 years and nine months, with a mean age of 13 years and nine months. The overall mean age (children and adults) was 14 years and two months. The most common malocclusion was Class II division 1 (40%). The prevalence of Class III malocclusion was high at 18%. A total of 27% of patients were Class I and 15% were Class II division 2.

The results of the categorisation according to rating the DHC of the modified IOTN are demonstrated in Table 1, with 61% in grade 5 and 36% in grade 4. No instances of grade 1 or 2 were recorded in the sample. Five cases of DHC grade 3 were accepted for treatment. Four of these cases were patients with special needs and one was a child in the care of the HSE. A total of 63% of female patients and 59% of male patients were in grade 5. A total of 35% of female patients and 37% of male patients were in grade 4 (Figure 2). Figure 3 shows the breakdown of malocclusion according to each DHC of the modified IOTN. The majority of patients had an increased overjet of greater than 9mm (5a), accounting for 32% of cases. Patients with impacted permanent incisors and canines (5i) were the next most common group, representing 24% of the sample. Within grade 4, most patients (16%) were accounted for by a DHC of 4d AC>8.

Discussion
The demand for orthodontic treatment in the ROI has increased in recent years. The North South Survey of Children’s Oral Health in Ireland, 2006, revealed that by the age of 15 years, 23% of those examined had received orthodontic treatment. Many of these treatments were provided through the Public Health Service. No contemporary comparable data with respect to case profile and malocclusion mix exists for other HSE units in the ROI. An Eastern Health Board audit dates from the 1990s and is likely to have a different case profile and malocclusion mix. Only broad comparisons can be made and these should be interpreted with some caution.

The sex distribution of orthodontic patients requiring treatment has been studied extensively. This audit showed that, based on written case records, 57% of patients accepted for orthodontic treatment from the North Cork area of HSE South were female. This figure is comparable to 59.4% found in the Eastern Health Board audit in...
Similarly in the UK, the Children’s Dental Survey in 2003 reported that a greater proportion of girls were undergoing orthodontic treatment. The overall mean age reported in our audit was 14 years and two months. This was similar to that found in another Health Board area, where the mean age of patients on the orthodontic waiting list was 14.6 years.

Class II division 1 (40%) was the most common malocclusion recorded, which compares to 46.7% in the Eastern Health Board study. A disproportionate number of Class III cases (18%) relative to their prevalence in the general population (3%) were accepted for treatment. In contrast, the prevalence of Class III malocclusion was 11.3% elsewhere in the ROI. This could reflect a regional variation in malocclusion.

On analysis of the written case records, it was observed that 97% of patients accepted for orthodontic treatment were in grades 4 or 5 of DHC IOTN. This verifies that those patients on the orthodontic treatment waiting list satisfy the eligibility criteria for HSE treatment. In this audit, 3% of cases accepted for treatment fell into the moderate need grade category (grade 3). These cases were eligible for orthodontic treatment as the HSE grants all children in the care of the HSE (residential care, foster care and housed on their own up to age 21), and those with special needs, the right to specialist orthodontic care. None of the cases was IOTN score 1 or 2. It is important to be aware that the decision to provide orthodontic treatment is not based solely on indices of treatment need. Other factors such as the patient’s level of oral hygiene, and internal motivation for treatment, are key considerations in the decision-making progress.

Cases with DHC 5a (32%) accounted for the greatest proportion of patients accepted for treatment. Some 24% of patients had ectopic teeth (canines or incisors) and 19% required joint oral surgery care to expose impacted teeth. This underlines a need for interdisciplinary treatment in this group. The corresponding figure in the Eastern Health Board audit was 8.8%. It was not possible to determine the percentage of patients requiring orthognathic treatment at this stage. Given, however, the mean overall patient age of 14 years and two months, and the high percentage of Class II Division 1 patients (40%), it is likely that a modest need will exist.

Conclusions
In the patient cohort assessed, the following conclusions can be drawn (based on the written case records):

- patients accepted for orthodontic treatment had an average age of 14 years two months and were predominantly female (57% female, 43% male);
- the most common malocclusion was Class II division 1 (40%), and the prevalence of Class III malocclusion was high (18%);
- 97% of patients were in grade 4 or 5 of the modified IOTN – the records verify that those patients accepted for orthodontic treatment satisfy the eligibility criteria for HSE treatment; and,
- the majority of patients (32%) fell into IOTN DHC 5a, followed by 5i (24%) and 4d (with AC ≥8)(16%) – 19% of patients required joint oral surgery care.

Recommendations
Re-audit in two years to ensure that 100% of written case records verify that patients accepted for orthodontic treatment conform to HSE eligibility criteria.

References