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The Dilemma of Commissioning: The Isle of Wight Orthodontic Managed Clinical Network: A 3-year Review Part 1: Patterns of Referrals

Abstract: The key objective of developing the Isle of Wight orthodontic service managed clinical network (IOWOS MCN) was to create an integrated service measuring the referral patterns and, ultimately, the current orthodontic need. The first part of this two part series will describe the referrals to the integrated service during the period 2006–2009. A total of 2801 referrals was analysed of which 80% of the 11–18 year-old cohort referrals were considered to have high need for treatment, 8.5% were of moderate need and 11.8% of referrals were considered inappropriate. There was a high level of appropriate referral for orthodontic treatment within the IOWOS MCN but the method of calculating orthodontic need is complex.

Clinical Relevance: This first part of a two part series provides an insight into some of the complexities of commissioning orthodontic care by reference to the referral data collected over the first three years of a recently established orthodontic managed clinical network on the Isle of Wight.

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Managed clinical networks (MCNs) have been defined as 'linked groups of healthcare professionals and organizations from primary, secondary and tertiary care working in a co-ordinated manner, unconstrained by existing professional and existing [organizational] boundaries to ensure equitable provision of high quality effective services'.[1] The goal is to improve access, quality and appropriateness of treatment, with an emphasis on the patient journey so that the patient has the care he/she needs throughout treatment.[2] Although a number of medical models have been described,[3] they have been slow to develop in dentistry. However, following the implementation of the changed contracting arrangements in April 2006, Primary Care Trusts (PCTs) in England were permitted to commission the dental services they needed locally, which provided the opportunity to develop locally managed clinical networks.

The development of the IOW MCN: the Isle of Wight Orthodontic Service

The process of creating the Isle of Wight MCN to improve access has already been described.[4] One of the key objectives was to create an integrated service measuring the referral patterns and, ultimately, the current orthodontic need on the Isle of Wight. This information could, in turn, inform

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commissioners and would allow more appropriate manpower planning, thus improving equitable access for all patients. The responsibility to commission dental services locally introduced by the new dental contract in 2006 has many potential advantages, such as addressing local demand and inequality of access. However, many Primary Care Trusts (PCTs) are ill equipped to deal with the problem of orthodontic need as they do not have integrated centralized data. The true measure of orthodontic need in a population has remained elusive because of the lack of integration of primary and secondary care. Theoretical need is complex and the current justification for orthodontic treatment given to PCTs was outlined by the Department of Health in 2006.[5] Theoretical orthodontic need has been cited in a number of primary sources.[5,6,7] The theories quoted in these sources used to assess orthodontic need are not comparable because of the heterogeneity of their method of calculation.[8,9,10,11]

From 2006, patients referred to the IOW service from primary and secondary care have been triaged and accepted for treatment or discharged. Patients accepted but deemed not ready for treatment are placed on review. Patients ready for treatment are either placed on the central waiting list or designated for immediate treatment.

Service evaluation

The aim of this service evaluation was to review the patient referral and pathway data following triage for the first three years of the IOWOS MCN. The analysis of these data was part of an MSc project approved by the University of Warwick Biomedical Research Ethics Committee.

Although these data were collected from April 2006, which coincided with the introduction of the new dental contract, it was decided to analyse the referral and outcome data from 1st July 2006 to 30th June 2009. This timescale was chosen firstly, to allow the new service to become established and secondly, the midyear population estimates were accessed from the Office of National Statistics website,[12] and these data were used to calculate theoretical orthodontic need for each year from July 2006 to June 2009. A more accurate comparison of the theoretical need and the actual outcomes from the service could then be made.

The referral and the patient pathway post triage data were recorded on a paper–based record by the calibrated triaging orthodontist and later transferred to an electronic database.

Results

Referral data

A total of 2801 consecutively referred patients was analysed for the study period with an age range of 6–62 years, with a mean age of 13.7 years and with a gender distribution of 54.2% female and 45.8% male. When these data are expressed by age of referral, there is a normal distribution with a peak at 12 years (Figure 1).

The index of orthodontic treatment need (IOTN) and the Aesthetic Component, originally described as 'SCAN', the Standard Continuum of Aesthetic Need,[13] data were analysed for all referrals aged between 11 and 18 years. This age group was selected as being a reflection of the normal orthodontic caseload and was calculated to give an indication of the appropriateness of referrals. A total of 234 patients was found to have incomplete IOTN data or consisted of transfer cases and was therefore excluded. Of the 1872 patients analysed, 88.2% were IOTN 3/SCAN 6 or above, with 79.7% in the categories IOTN 4 or 5 (Table 1).

Discussion

Patient referrals

There were significant variations in the number of referrals for the three years of the evaluation. The 2006 data may have been influenced by the closure of the waiting lists in primary care in 2005, causing a backlog of referrals. In addition, the recruitment of overseas dentists to improve access to NHS dentistry may

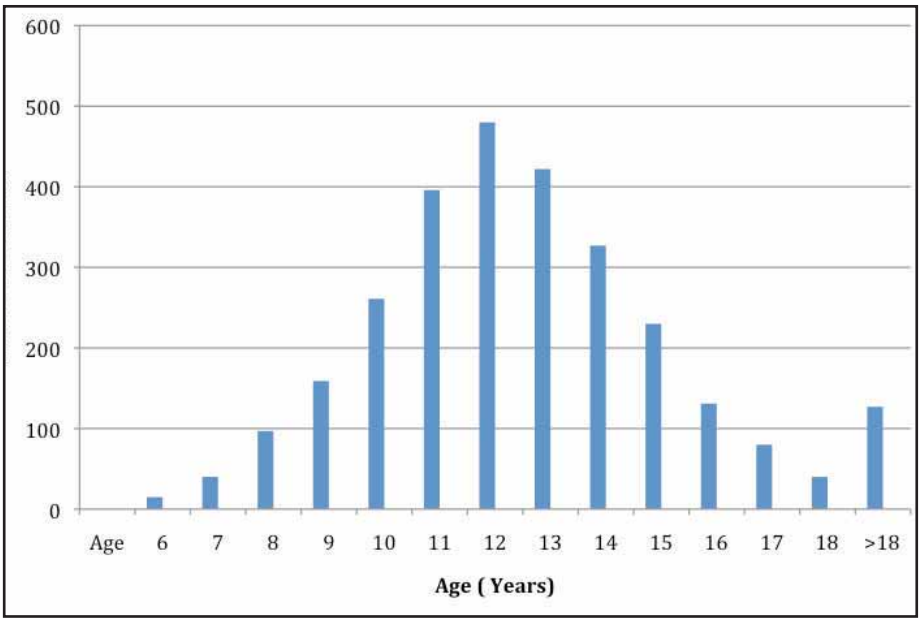

Figure 1. The age distribution of referrals to the Isle of Wight Orthodontic Service Managed Clinical Network between July 2006 and June 2009.

	IOTN 5	IOTN 4	IOTN 3/ SCAN 6 or higher	IOTN 3/ SCAN 5 or lower	Total
2006–2007	225	283	47	73	628
2007– 2008	244	356	63	66	729
2008– 2009	173	212	49	81	515
Total (%)	642 (34.3)	851 (45.4)	159 (8.5)	220 (11.8)	1872

Table 1. IOTN referral data for patients aged between 11 and 18 years for the period July 2006 to June 2009.

have influenced referrals, combined with an unfamiliarity with occlusal indices and a lack of awareness of the process of prioritization in the UK. Training events were held on the use of IOTN in 2008 and this may have influenced the decrease in referrals in 2008–2009. Referrals from non-primary care sources and transfer cases from the mainland accounted for a very small proportion of patients seen. This area needs further investigation as funding should be calculated to include transfer cases and secondary care referrals in a merged service.

There are a number of factors which may influence orthodontic referrals specific to the Isle of Wight. Historically, the growth of orthodontic manpower on the IOW does not mirror the dramatic growth in the local population since 1999.[14] Although the population in the United Kingdom is predicted to grow, the 7–20 year-old cohort will significantly decrease on a short-term basis, reflecting the low fertility rates from the late 1980s to early 2000.[12] This potential reduction in the orthodontic referral cohort should be considered to enable better planning and use of manpower resources.

From the data collected during the study period, more females (54%) than males (46%) were referred for orthodontic care. This has been previously reported in other UK studies.[8] However, in 2001, Üçüncü and Ertugay found no statistically significant difference in IOTN between the sexes[15] and the 2003 Children's Dental Health Survey[6] reported the need for treatment to be the same for boys and girls aged 12 years. The difference in demand between boys and girls could be a reflection of the standards of aesthetics and beauty, which are more clearly delineated for females.[16] Shaw *et al*[17] found twice as many females as males receiving orthodontic treatment and that females considered they were of below average attractiveness. However, the lack of evidence relating to sex and gender differences in oral health has been highlighted.[18]

As can be seen from the referral data, the peak referral age was 12 years. A 1991 analysis of Dental Practice Board records showed that the mean age at commencement of treatment in the General Dental Service in England and Wales was 12.7 years.[19] A comparison of these data suggests that patients are being referred later to the IOWOS and, therefore, the mean age at commencement of treatment will be greater than 12.7 years. However, there has been considerable reorganization of orthodontic services nationally since 1991. The introduction of the specialist list leading to the provision of more complex dual arch fixed appliance therapy to improve standards, a reduction in early treatments in the mixed dentition and a reduction in the number of general dentists providing interceptive care can all have an impact on the age of referral. No data has been collected on the commencement of treatment for IOWOS, therefore a direct comparison cannot be made. This information is important as the correct timing of referral and the start of treatment could reduce early referrals, ultimately improving the patient pathway. The peak referral age of 12 for the IOW is not unexpected as most children are in the late mixed dentition or permanent dentition at this stage of development. A recent pilot central referral triage in Southampton, Hampshire and Portsmouth PCT areas, in response to the IOW MCN, found a comparable age distribution.[20] The development of an occlusal index has standardized the approach to assessing whether referrals for orthodontic care are appropriate. The lack of integration of primary and secondary care has led to a number of audits to measure the appropriateness of referrals, but with limited success. O'Brien *et al*[21] found many orthodontic referrals were unnecessary. From the IOW referral data, it has been possible to assess the IOTN of the referred population after referral and triage for the 11–18 year-old cohort. From these data, the referral pattern by dentists, 'the major gatekeepers' to the service, has demonstrated that, in accordance with referral guidelines, 88% of patients were categorized IOTN 5, 4 and 3/SCAN 6 or higher. It is possible to make comparisons with figures described by Robinson *et al* in the Orthodontic Workforce Survey.[6] The survey of orthodontic practitioners in Hampshire and the Isle of Wight showed that the estimation of their time spent treating IOTN 4 and 5 was 78%. The IOW referral patterns confirm that 80% of referrals were categorized as IOTN 4 and 5, ie high need, and indicates appropriate referral patterns; 8.5% were IOTN 3/SCAN 6 or higher and reflected moderate need, and inappropriate or unnecessary referrals accounted for 11.8% of referrals. Other studies have analysed the Dental Health Component (DHC) of IOTN in a referred population of 11–14 year-olds.[15] In these studies, moderate need was described as DHC 3. However, in the IOWOS sample of 11–18 year-olds, only IOTN 3/SCAN 6 or higher was deemed to represent moderate need. This might explain the difference in the IOWOS results compared to previous studies. The results for those patients assessed as being in high need (IOTN 4 and 5) were comparable to the results found in previous studies.

Recent studies have highlighted the need to provide more support and education for dentists concerning the use of IOTN[22] and further training has been planned in this area. The National Health Service Business Services Authority routinely report to PCTs about the percentage of patients receiving treatment with an IOTN 3/SCAN 6 or higher. Whilst it is acknowledged that a few patients may have been transferred from the pre-2006 triage system, it is important that the decision to treat these mild cases within the NHS is justified. The data from the IOW demonstrates that only 11.8% of 11–18 year-olds were included in this category. There are currently no data on how many of these patients receive NHS care or how many were treated under private contract in general practice.

Conclusions

Interlinked electronic data collection across the IOWOS would facilitate the delivery of patient-centred care.

The integrated data from primary and secondary care can inform commissioning across the service. Firstly, the IOWOS commissioners were considering further prioritization by limiting acceptance for treatment to IOTN 5 and IOTN 4. From our data, the exclusion of IOTN 3/SCAN 6 would not have the expected impact on access as only 8.5% of patients fell into this category.

Secondly, as manpower on the IOW has been historically low, many cases in IOTN 5 and IOTN 4 have been treated unnecessarily in a secondary care setting. This may not maximize resources and reorganization of secondary care services to allow appropriate, more cost-effective, commissioning in primary care should be considered. This would allow the consultant in secondary care to concentrate on complex multidisciplinary cases, and allow protected time to manage and develop the network.

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Book Review

Clinical Cases in Orthodontics. By Cobourne, MT, Fleming PS, DiBiase AT, Ahmad S. Oxford: Wiley-Blackwell: Clinical Cases Series, 2012 (456pp; £59.99). ISBN 978-1-4051-9779-3.

The publisher's stated aim in producing this series is to use the case-based format to encourage problem-based learning, foster independent thought and prepare the student for case-based clinical examinations. The authors have aimed this volume at dental undergraduates, orthodontic therapists and specialist trainees, as well as providing a reference for use in the clinic.

The chapter layout of the book tends to follow most traditional textbooks, but there the similarity ends. There is no section on basic sciences related to orthodontics at the start of the volume. The text starts with the basics of diagnosis and treatment planning in orthodontics, then proceeds directly to consider the developing dentition, Class I, Class II division 1, Class II division 2, and Class III malocclusions, tooth impactions, fixed appliances, stability and retention, orthognathic surgery and, finally, a short chapter on the development of the craniofacial region. A good description of each malocclusion or clinical problem is given at the start of each chapter, with supporting references. Each section has a number of clinical cases demonstrating various aspects relating to that particular chapter. The text is punctuated throughout by questions and answers related to these.

The cases themselves are of widely differing problems, and the format of questioning would reflect the information gathering/summary/problem list/aims of treatment/treatment options that would be encountered in most university and royal college examinations. This is useful in that it introduces the reader to this method of learning at an early stage of his/her training. It is probably optimistic to suggest this should be an undergraduate text, as there are already a number of good textbooks in this area. Orthodontic therapists and specialist trainees would gain most benefit from this, in that it uses cases that they are most likely to encounter in their daily practice.

The range of cases is wide and encompasses the spectrum of problems encountered in specialist practice. The quality of the photographs is in general good, but some are rather variable, and a number are from the pre-digital era. In some cases, the full progress of the treatment is not given: for example, clinical photos of Case 3.7 stop at initial alignment, while others show only the pretreatment photographs or radiographs, and others show the entire progress of treatment, with the relevant records at the appropriate time. Consistency of presentation would be useful – pre- and post-treatment radiographs, cephalometric tracings, and photographs should be standard in a text like this.

The most valuable part of this book is the problem-based learning approach to diagnosis and treatment planning in orthodontics and it will certainly be useful in this regard for specialist trainees and orthodontic therapists preparing for examinations. The range of clinical problems covered is impressive, and the question and answer approach will stimulate the reader to a more critical approach to clinical diagnosis and treatment planning.

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