Essex Orthodontic Needs Assessment 2013

A document to support commissioners in the Essex Area Team

Version 6

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Prepared by: Linda Hillman, Consultant in dental public health, Essex Area Team
For queries relating to this document, please contact the author.

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Executive summary and recommendations

To inform development of its five year commissioning strategy, NHS Essex requested an assessment of orthodontic need across the county, recognising a number of issues including an apparent greater demand than capacity in some areas, inconsistent pathways and costs of care. Contracts for specialist primary care provision were due to end in 2014 and much primary care was undertaken by dentists without specialist qualification. Changes were afoot in hospital care, with no strategic plan in place, and budgets and commissioning responsibility for these services transferring from Clinical Commissioning Groups to the NHS Essex Area Team.

Close to 1.74 million people live in Essex, which in the South, has large populations bordering onto North East London. The vast majority of orthodontic provision is for children aged 10 – 19 years.

The development of the Index of Orthodontic Treatment Need (IOTN) has given clinicians a tool to prioritise patients that stand to benefit most from treatment, and the NHS provides care usually for children who are under the age of 18 at the start of treatment, above an IOTN threshold and sufficiently motivated to comply. The index can also be used to assess need at a population level and it has been repeatedly shown that about a third of all children meet NHS criteria, but a smaller proportion both want and would benefit from care – clinical judgement is important in selecting appropriate cases. The calculation includes a factor for adults who might also access services; information on the NHS Choices website confirms the eligibility of adults for NHS care if they meet the criteria.

There is a role for an orthodontic managed clinical network to set and maintain standards in orthodontic assessment and provision across Essex, and to ensure equity in provision to the public.

Local survey data from 2008/9 showed that improvements still needed to be made in general oral health of 12 year olds in Essex; children needed to receive good dental care when required. The data indicated that 4166 12 year old children both needed and wanted orthodontic treatment in 2008/9 and a further 1897 were likely to have been already wearing an appliance at the time of the survey. Hence in total, out of about 20910 children, 6055 either needed orthodontic care or were already in treatment. The data also showed that professionals would select significantly fewer children to benefit

from orthodontic care than would the children themselves, or their parents, hence dentists have an important role in managing demand.

Population projection data show that numbers of 12 year olds in Essex were falling at the time of the 2008/9 survey and that from 2014 these numbers are starting to rise again, resulting in a small net gain by 2020. Hence in the short to medium term, where orthodontic services currently meet demand, little or no further investment would be required, particularly as existing capacity would be increased by operating pathways and services more efficiently.

The orthodontic pathway starts by appropriate referral from general dental services, to specialised or specialist services. Large orthodontic practices are often located in or near large urban centres.

We compared 'calculated need' to levels of commissioned primary care service in each of the five former primary care trust areas of Essex, assuming that on average, 22 units of orthodontic activity are required to identify and treat a case. 6055 cases were needed in 2008/9 and provision for 6881 treatments to start each year by 2013, 826 more than the need. This calculation shows

- a small *over* provision in North East, Mid and South East Essex,
- need and provision been approximately equal in West Essex,
- slightly less provision than required South West Essex.

Reports from services, however, were of not enough capacity in the North East. When looking at primary care orthodontic service uptake by Essex residents across an area wider than just Essex, it could be seen that many children were receiving services from Hertfordshire, Kent and particularly North East London; in North East Essex, there are not these options, there was a the lack of capacity experienced. Contract data shows that more than 22 units of activity are actually used to identify and treat all cases, and hence the experienced shortfall.

It is of note that the unit cost of primary care orthodontic treatment, and variations between practices is not presented in this needs assessment; NHS Essex Area Team is working to reduce the variation in price towards a national or local benchmark. The over-all cost of orthodontic treatment is high; it produces very little absolute health gain,

and is heavily demand led - this provides a strong case to support the ethical clinical leadership that an orthodontic clinical network can offer to support commissioners.

Although many people access their orthodontic care in the primary care settings of surrounding counties, on the whole, there doesn't seem to be the reciprocal number of patients coming into Essex for care. This is therefore a financial benefit for NHS Essex.

Many people, particularly in some geographical areas, travel a long way for orthodontic care. A course of orthodontic treatment may involve a visit every six weeks for up to two years, and so long travel distances are a considerable inconvenience and may preclude some from receiving the care they need, which is inequitable. There is therefore a further role for an orthodontic network to show leadership in developing models of care that provide suitable care closer to people's homes.

NHS Essex now receives regular information about its primary care contracts on delivery, assessment, treatment and outcomes. A managed orthodontic clinical network could do much to promote good outcomes from all providers, developing innovative ways to raise standards towards those of the best.

Secondary care data will soon be available to the Area Team. Per patient treated, costs are significantly higher, and so services must be used wisely, developing their leadership and teaching capacity, and ensuring that cases are treated in the secondary care environment only if there is no suitable alternative.

Recommendations

1. **An orthodontic network should be formally recognised as part of the local dental network in Essex. It should:**

    - **Support provision of good general dental services as a priority, to ensure basic, good quality preventive care for Essex residents.**

    - **Promote demand management for orthodontics.**

    - **Promote the standards that are monitored by NHS Essex, using data provided through the Dental Services Division of the NHS Business Services Authority.**

2. **Long term population projections indicate that overall orthodontic need is unlikely to change radically over the next few years; some increase in capacity is achievable through measures to ensure that current services are delivered effectively, thought collaborative planning plus quality improvement supported and promoted by the local orthodontic network.**

3. **Care should be taken to ensure that orthodontic care is accessible to eligible special needs patients and those in vulnerable groups, informed by an equity audit.**

4. **It is clear that patients in the North and East of Essex have to undertake significant travel in order to access primary care services, and they are most likely to wait for their care to commence. Their perspectives on this should be understood by commissioners.**

5. **Orthodontic consultants are ideally placed to provide clinical leadership to the orthodontic network, and the large size of the population and the differences in the communities in the South and North of Essex support the need to retain current levels of consultant presence in the major urban areas.**

6. **It is important that the resources currently invested in secondary care orthodontics are identified and transferred to the NHS Essex dental budget.**

7. **Continued evidence of long waits and the need to establish the referral management centre in the North of Essex suggest that there is currently insufficient local capacity to meet the local demand as well as the needs of those of patients who travel a long way to reach services. Some capacity will be created through effective management by clinicians and through contract, performance and quality management by Essex Area Team, supported by the managed clinical network.**

8. **Capacity in primary care in West and South Essex is bolstered through Essex patients accessing care in adjacent counties, and this supports the observation that there is an under supply in other areas of Essex (see above), where the need and capacity calculations alone do not show this. Patients in the East, North and North East do not have similar opportunities to access services out of county.**

9. **Further information is awaited on cost, outputs and outcomes of the referral management service for orthodontics.**

10. **Better information is needed, in general, on patient perspectives.**

11. The optimal configuration and contribution of secondary care orthodontic services is best decided once more data is available, and the greater skills and training of orthodontic consultants should be used to the full in order to get the best possible care to all patients who need it, as close to people's homes as possible.

Glossary

NHS	National Health Service
GDS	General Dental Services (the main type of contractual arrangement used for primary dental care in the NHS)
PDS	Personal Dental Services (an NHS primary care dental contract that can be used to commission more specialised or specific dental services)
IMD 2010	Index of Multiple Deprivation, version established in 2010.
LSOA	Lower Super Output Area – small geographic area for population counts
IOTN	Index of Orthodontic Treatment Need
DHC	Dental Health Component of the Index of Orthodontic Treatment Need
AC	Aesthetic Component of the Index of Orthodontic Treatment Need
SHA	Strategic Health Authority (part of NHS structures in England, prior to 2006)
PCT	Primary Care Trust (part of NHS structures in England, prior to 2006)
DMFT	Decayed, Missing and Filled Teeth. An index used to quantify the prevalence of dental caries in older children.
ONS	Office of National Statistics
UOA	Unit of Orthodontic Activity (contract currency used by the NHS to pay for orthodontic care)
NICE	National Institute for Clinical Excellence
CQC	Care Quality Commission; a body that oversees quality in health and social care in England
QIPP	Quality, Innovation, Productivity and Prevention
DSDBSA	Dental Services Division of the Business Standards Authority of the NHS
PAR index	Peer Assessment and Review – measurable hence comparable way to rate outcomes of orthodontic cases treated

Introduction

Since April 2013, NHS Essex has had responsibility to commission the entire NHS dental pathway for its residents within a national operating framework, to ensure quality, innovation, prevention and productivity. Prior to this, services were managed separately in five areas: North East Essex, West Essex, Mid-Essex, South East Essex and South West Essex, with secondary care services becoming the responsibility of the emerging Clinical Commissioning Groups.

Orthodontics is a specialised branch of dentistry to improve the alignment of teeth and jaws to improve function and aesthetics. It is usually most effective when treatment is overseen by a specialist and started at the right point during a child's growth and development.

NHS Orthodontic care is available on referral from a primary care dentist for patients who meet criteria, described to patients on the NHS Choices website[1]. Service distribution remains largely historical and pre-2006 general dentists could choose to offer orthodontic care themselves, usually to patients of the practice. In some parts of Essex such activity remains within current General Dental Service (GDS) primary care contracts. However, the pathway that is becoming more generally accepted is for general dentists to refer patients to specialist orthodontic practice or to hospital (consultant led) orthodontic services. The latter also provides second opinions where necessary, leadership and knowledge of standards in orthodontics and teaching and training for the next generation of specialists. Consultant care is most appropriate for cases that are harder to treat or that require multidisciplinary consultant input, usually oral surgery, with orthognathic surgery for a small minority of patients. Consultants also contribute to the routine management of patients with a cleft lip and/or palate as they grow and develop.

In the past, specialist orthodontic practices could establish themselves anywhere they considered to be viable, but in 2006, their NHS contracts were replaced by Personal Dental Services contracts (PDS contracts) that were time limited, giving an opportunity for commissioners to change arrangements in line with population needs.

Currently in Essex, there are 23 locations providing primary care NHS orthodontic services through about 40 individual contracts, of which some are GDS and others, usually those of the specialist providers, are PDS. Some of these contracts are due to expire in 2014, giving an opportunity to re-commission differently should the population's needs require this.

The contract currency for primary care orthodontic contracts is the Unit of Orthodontic Activity (UOA). The UOA value is not consistent between practices. In some GDS orthodontic contracts, there is no distinct UOA rate - the activity is recognised by a higher rate for general dental activity (Unit of Dental Activity, UDA). There may also be orthodontic care delivered through trust-based contracts for community dental services, for patients with special needs. NHS Essex is responsible for the cost of primary care services delivered in its geographical area, regardless of the place of residence of the patient.

[1] http://www.nhs.uk/Livewell/dentalhealth/Pages/braces.aspx

Hospital services are currently in Colchester, Chelmsford, Basildon and Southend; beyond Essex are services at Ipswich, Addenbrookes and Whipps Cross Hospitals. Once it is agreed that a patient should be referred to a hospital, patients can choose which hospital they wish to use, but this relies on the referring dentist knowing the system as the 'Choose and Book' system does not connect to dental surgeries. Costs to the NHS for hospital based treatment are ultimately recharged back to the commissioning body where the patient lives.

Hospital services are paid for through nationally set tariffs which are a combination of a core rate for each 'item of service', with an adjustment to take account of local factors for each hospital. There is an orthodontic tariff for each first and for each follow up outpatient appointment for each child seen under 19 years of age, and a tariff for each first and each follow up outpatient appointment for adults over the age of 19, in addition to a tariff for an orthodontic procedure.

Historically, long waiting lists for treatment had built up for some primary care specialist services in some areas; additional short term funding had been provided in recent years to deal with these, and in North Essex, referral management was commissioned, to ensure patients were not being added to more than one waiting list.

The NHS Essex primary care five year commissioning strategy will determine changes to current orthodontic services, based on the findings of this needs assessment and other evidence and will support the implementation of any future changes specified by NHS England[2]. The aim is to improve the outcomes in the following areas:

- To meet the needs of the local population with patients able to achieve timely access to services.
- To provide evidence-based treatment that complies with contemporary standards such as those of the National Institute for Clinical Excellence (NICE) and the Care Quality Commission (CQC).
- To have effective pathways across Essex to support delivery of services so that primary care specialist orthodontic services are receiving appropriate referrals and are able to liaise with other services as needed.
- To have mechanisms to recognise high quality performance and to support improvements in performance where this is required.
- To deliver best practice measured through Quality, Innovation, Prevention and Productivity (QIPP).

If proposing significant service changes, commissioners should work in consultation with commissioners of services in adjacent areas that might be affected by their proposals, and with the public. Terminating a service can be de-stabilise a whole system. Due to protracted treatment times for orthodontic care, patients may move into the area from elsewhere during a

course of treatment and mechanisms should be in place for transfer of orthodontic care to a local practitioner if required.

In Summary, the current orthodontic pathway, standards and cost to the NHS for Essex residents is not consistent across the geographical area and there is a history of long waits for specialist primary care services in some areas that have been tackled through additional short term funding.

Commissioning flexibility includes

- Over-all level of investment in orthodontic services
- PDS specialist practices with contracts due to expire.
- Local negotiation with other contract holders, eg to relinquish their UOAs if not provided by a specialist, or if their outcomes are poor, in favour of UDAs or to transfer them to a specialist, to reduce contract unit value where it is above national averages and to agree quality indicators (kpi s) and to tackle areas of practice highlighted by the Business Services Authority Quality Assurance Framework to be outside the normal range.
- Review of hospital based orthodontic care.

Process of the needs assessment

A review was undertaken by a consultant in dental public health, of

- evidence of orthodontic need at a population level and within national policy on NHS orthodontic provision in England
- orthodontic needs applied to the population of Essex
- orthodontic care and pathways.in Essex
- current contracted activity through primary care in Essex
- mechanisms for referral management across the county
- secondary care provision
- orthodontic provision in community dental services
- professional perspectives
- commissioner perspectives
- patient and public perspectives

[2] Dental Contract reform Programme. Early findings: opportunity to give feedback. Department of Health and NHS England, July 2013.

The needs assessment was requested by commissioners in May 2013, for completion of a draft report by September 2013, to inform the primary care commissioning strategy for Essex for the next five years.

To support this work, a questionnaire survey was undertaken with
a) consultant orthodontists
b) orthodontic contract holders

A meeting was held on June 25th through the developing Local Dental Network for Essex, to which all orthodontic providers across Essex were invited, specifically to discuss the needs assessment, and to identify thoughts and concerns. These were then followed up as appropriate.

Further enquiries were made to identify the volume and costs of hospital orthodontic activity, patient views and data and issues around the referral management centre.

This needs assessment excludes a review of newer orthodontic treatments or private care.

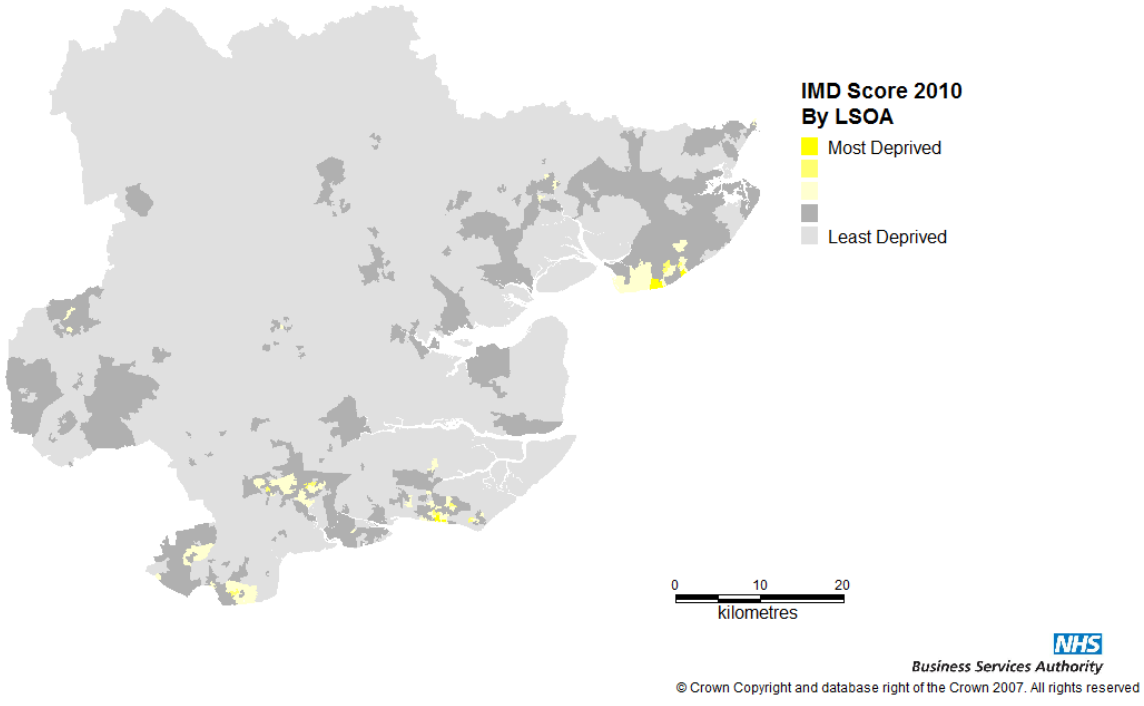
A draft report was prepared for discussion with commissioners and providers before options and recommendations were put to NHS Essex.

The population of Essex

Essex is to the North and East of London and its joint strategic needs assessment, last updated in 2012, describes a total population close to 1.74 million people across the County Council area and the two unitary authorities of Southend on Sea (population 165300) and Thurrock (population 159 600). With the exception of Tendring, there was a similar proportion of children aged 0 -15 to the England average (19%), fewer 15 – 44 year olds and more in the older age groups. Tendring had 16% of its population aged under 16 years. Colchester and Chelmsford were the largest conurbations and Harlow, Castle Point and Basildon the most densely populated areas, with Braintree, Maldon and Uttlesford the least. Areas with high population density were most likely to have pockets of high deprivation and poor housing.
173 900 residents were from black and minority ethnic groups (including Irish and 'other white'), making up 12.4% of Essex residents, less than the English average of 17.2%. Of the ethnic residents, 59 300 were from white minority groups and 114 600 from ethnic groups other than white.

Essex had some of the most affluent and deprived areas in England, with further pockets, hard to identify, for example 30% of travelling families lived on unauthorised sites and 15 430 migrants had registered to work in Greater Essex between May 2004 and December 2009, possibly experiencing poor living conditions and lack of knowledge about services..
Employment opportunity, mental health and educational achievement were recognised as being strongly associated with one another as was the need for an effective transport system to support people to have good access to services.

Figure 1: Map to show areas of deprivation in Essex



The local residents' tracker survey (2010) of public transport reported that residents from Chelmsford, Castle Point and Tendring were the most satisfied with local transport information, with Epping, Uttlesford and Maldon the least. Volume of traffic had increased by 6.25% over the previous ten years, causing congestion on many roads.

Parenting was recognised as having a huge influence on children's health and wellbeing. An estimated 2% of families experienced multiple problems, more likely to be in deprived areas. Families living in social housing, where the mother's main language was not English, lone parent families and families with a young mother all faced a higher than average risk of experiencing multiple problems. There were an estimated 1000 parents aged under 20 years in Essex.

The clinical context of orthodontics and the Index of Orthodontic Treatment Need (IOTN)

Information on clinical aspects of orthodontics relevant to this needs assessment, including the Index of Orthodontic Treatment Need used by dentists to identify patients potentially eligible for NHS treatment, is given in Appendix 1.

Of particular note, a course of orthodontic treatment requires commitment of the patient for up to three years and should not be started if the general oral health isn't good enough to prevent risk of the development of dental caries or where there is doubt about compliance with the treatment that involves regular clinic attendances over a period of months or years for reviews and adjustments. In either of these scenarios, outcomes will be unfavourable.

Population orthodontic needs and national treatment policy perspectives[3]

Measures of need

The Index of Orthodontic Treatment Need (IOTN), developed in the late 1980s,[li] has provided a standardised objective assessment. Table 1 summarises studies that measured the prevalence of malocclusion using the IOTN between 1989 and 2003, in various parts of the world.

[3] The framework for this section is taken from the Cambridgeshire and Peterborough Orthondontic Needs Assessment, 2012.

Table 1: Summary of studies of prevalence of malocclusion using the IOTN

Author	Date	Country	Sample size	Age of children (years)	Percent with definite treatment need*
Brooke and Shaw[II]	1989	England	333	11-12	32.7%
Holmes[I]	1992	England	996	12	32.0%
Otuyemi et al[II]	1997	Nigeria	704	12-18 ǂ	12.6%
Breistein and Burden[III]	1998	Northern Ireland	1,584	15-16	22.6%
Wang et al[IV]	1999	China	765	12	37.0%
Chi et al[V]	2000	New Zealand	152	13	14.0%
Abdullah and Rock[VI]	2001	Malaysia	5,112	12-13	30.0%
Abu Alhaij et al[VII]	2004	Jordan	1,002	12-14	34.0%

*Definite need for treatment as defined by the IOTN Dental Health Component Grades 4 and 5 and/or Aesthetic Component Gradings 8-10

ǂ Mean age 14.8 years

The English studies found 32-33% of 11-12 year olds to have objective (ie professionally determined) need. In the other UK based study, the children were older, hence the lower percentage found might represent unmet need, rather than true objective need, as treatment usually takes place in the early teens. There are further studies that use other indices to IOTN, hence their results are not directly comparable.

The Department of Health (DH) in England recommends orthodontic treatment to be commissioned for children, aged up to 18 years and under at the time of assessment, who are classified with the Index of Orthodontic Need (IOTN) at Dental Health Component (DHC) levels of 4 and 5 or DHC level 3 where there is an Aesthetic Component (AC) of 6 or above. This is intended to focus resources on children with the greatest orthodontic need.

The British Orthodontic Society has stated that it "*believes that if treatment has to be rationed then the IOTN is an objective and reliable way for specialists to select those children who will benefit most from treatment and is a fair way to prioritise limited NHS resources.*"[viii]

Data from the decennial Children's Dental Health Surveys, that take place every 10 years, show the prevalence of objective orthodontic need in the UK to be reasonably consistent over time (although levels were lower in the 1993 sample, in both 12 and 15 year olds), as set out in Table 2.

Table 2: Time trend in prevalence of need for orthodontic treatment in the UK

	1973†‡[ix]	1983†[x]	1993[xi]	2003[xii]
12-year-olds	37%	33%	27%	35%
15-year-olds	27%	25%	15%	21%

(Source: decennial Children's Dental Health Surveys, Office of National Statistics)

* These figures exclude 8% of 12-year-olds and 14% of 15-year-olds currently undergoing treatment and is therefore likely to be an underestimation of objective need. It cannot be assumed however that all those undergoing treatment would have had an objective need as defined by the cut-off point of IOTN DHC Grade 4/5 and/or IOTN AC Grades 8-10.
† The assessment of orthodontic treatment need was not made using the IOTN until 1993. Previous to this an appropriate index was not available therefore the opinion of the examining clinician was used to determine whether or not a need for orthodontic treatment was present.
‡ The 1973 Survey examined only children in England and Wales. Surveys were broadened to cover the whole United Kingdom from 1983.

There were no statistically significant gender differences in objective orthodontic need in the 2003 survey but unmet need was greater in males (24% of 15 year old males) than females (19% of 15 year old females). This supports research findings that females have higher levels of subjective (patient opinion) need[xiii xiv xv] and are more likely to take up treatment than their male peers.[xvi xvii xviii xix].

Unlike other dental conditions such as dental decay, there is no significant difference between deprived and non- deprived areas and orthodontics does not display a social class gradient.[xx]

Subjective need

In the Children's Dental Health Survey of 2003[xxi], an assessment of subjective need (ie from the perspective of patients) for orthodontics was carried out using a postal questionnaire which collected parental views on the appearance of their children's teeth. The findings are summarised in Table 3.

Table 3: Parental assessment of dental appearance and presence of definite subjective treatment need* in the UK, 2003

Parental assessment	12 year olds	15 year olds
Child has crooked or protruding teeth	44%	28%
Child has a definite treatment need	22%	12%

(Source: decennial Children's Dental Health Surveys, Office of National Statistics)

* Definite Subjective Treatment Need is present where assessment by the Aesthetic Component of the IOTN rates the child between gradings 8 and 10

ǂThese figures refer only to children not currently under orthodontic treatment at the time of the survey

It can be seen that parents as a group, overestimated the need for orthodontic treatment, relative to the objective view of professionals. Table 4 shows levels of discrepancy between clinician and parental views on the need for orthodontic treatment.

Table 4: Discrepancies between clinician and parent views on the subjective need for orthodontic treatment*

Parent Assessment	Clinician Assessment			
	Subjective need present (AC 8-10)		Subjective need absent (AC 1-7)	
	12 yrs	15 yrs	12 yrs	15 yrs
Subjective need present	52%	45% ǂ	19%	11%
Subjective need absent	48%	55% ǂ	81%	89%

(Source: Chestnutt I; Pendry L; Harker R. The Orthodontic Condition of Children. Children's Dental Health in the United Kingdom, 2003. London: Office for National Statistics; 2004)

*****These figures refer only to children not currently under orthodontic treatment at the time of the survey

ǂ Low base number of respondent, results are indicative only

Translating normative and subjective need into commissioning need

Evidence from national surveys and literature suggest that around 33% of 12 year olds have an objective need for orthodontic treatment, so objective need is fairly stable and predictable at around one third of 12 year olds. Subjective need, on the other hand, varies between individuals - even between those with the same level of objective need, and is inconsistent and difficult to predict with accuracy. Evidence suggests that clinicians influence the desire for treatment and that provision of orthodontic services may be supply led[xxii] [xxiii].

In spite of the presence of an objective need, the variations seen in subjective need and demand mean that a number of children with objective need will decline treatment. A refined prediction method for estimating orthodontic treatment need, based upon the 12 year old child population, was developed by Stephens[xxiv]. This method involves assessing need from the dental health component (DHC) categories 4 and 5 of the index of orthodontic treatment need (IOTN).

In a typical school population, one third of the children fall into categories 4 and 5. While a number of these cases would decline to have treatment, that number would be offset by a combination of each of the following: a proportion of patients in Dental Health Component (DHC) band 3 who would also justify treatment owing to poor aesthetics, a number of children (ie under the age of 12) who would require interceptive treatment as the front teeth erupt (calculated at 9%) and some adults for whom treatment could be justified (4%).

Therefore a figure of 33.3% of the total 12 year old population was taken as the number of patients needing treatment. This proportion is comparable with the findings of previous Child Dental Health Surveys [xxv] [xxvi] where 46% of children were identified to need orthodontic treatment but only 35% had received it by 15 years. Stephens' formula can be expressed as:

$$\frac{\text{12 year old population}}{3} \times \frac{\text{100 + Interceptive factor (9\%) + adult factor (4\%)}}{100}$$

The Stephens' formula can be modified by taking out the adult factor if treatment is only to be considered in the child population. Table 7 shows the need using Stephen's

formula as compared to that estimated form the local 12 year old survey data in 2008/09.

Inequalities in access

Malocclusion is unique among oral diseases in that its incidence and prevalence are not related to socioeconomic status. There is, however, evidence that uptake of orthodontic services is higher in less deprived groups, for example, the Children's Dental Health Survey of 2003 found socioeconomic variation in access to orthodontic treatment with levels of unmet need higher in children from deprived schools. This may reflect differences in demand, differences in the availability of orthodontic services and/or variations in access to and referral patterns by GDPs. Whatever the cause, it highlights the potential of orthodontic services to increase health inequalities. Strenuous efforts should be made to ensure equitable access and distribution of resources.

Failure to complete treatment

It has been shown that failure to complete a course of treatment is related to socio-economic factors, including inconvenience and cost incurred when accessing care.

It is important, therefore, to consider distance of travel to services, inconvenience and cost when planning provision of orthodontics for patients in more deprived areas.

Predicting treatment uptake

Treatment uptake varies according to the attitude towards orthodontics and desire for treatment in the individual patient, even among children with a high level of objective need[xxvii] but subjective perceptions of need have been found to be less potent predictors of service usage than other factors.

Predictors for treatment uptake have been explored in a number of studies. Overall, objective need has been found to be the strongest predictor of treatment uptake, followed by parent's concern[xxviii], then patient's concern. Patient's gender is also significant as females are more likely to demand treatment than males[xxix xxx xxxi xxxii]

What is clear is that the clinician's assessment plays a major role in determining treatment uptake. Orthodontists therefore need to be aware of how to identify patients with the greatest need and consider those most likely to comply with treatment, so that resources can be used efficiently and clinical outcomes maximised. If clinicians accept patients on the basis of objective need alone, there is a stronger likelihood of failed

appointments and discontinued or abandoned treatments. This increases waiting lists and waiting times and disadvantages patients who could truly benefit from care.

Prioritising those with greatest need

Not all orthodontic patients benefit equally from treatment and it is important to take account of factors that influence outcomes. Services can then be targeted at those most likely to benefit. A search of the literature showed that, for example:

- Orthodontic treatment does not necessarily eliminate objective need.
- Orthodontic treatment is more effective, in the long term, for more severe cases[xxxiii]; it is difficult to achieve a 'greatly improved result' in cases with a DHC of Grade 3 or below[xxxiv].
- Treatment with full upper and lower fixed appliances is most likely to produce an improvement in objective need (and subjective need) as measured by the IOTN[xxxv xxxvi xxxvii].
- In terms of subjective need, evidence is contradictory on whether there will be a benefit from treatment[xxxviii xxxix xl xli]. In some cases, dissatisfaction with appearance is reduced by orthodontic treatment, while in others it is not[xlii xliii]. Findings of a large, 20 year cohort study[xxxviii] suggest there to be little objective evidence to suggest that orthodontic treatment produces a measurable psychological health gain. Neither did it have a positive effect on self-esteem.
- Orthodontic treatment is most likely to be effective for 12 year olds who present with an IOTN of 3.6 or above.
- As dentistry, along with the rest of healthcare, becomes more focussed on outcomes, orthodontic clinicians need to ensure they balance considerations of objective need and demand against what is known about clinical outcomes.

Recommendations:

- Develop an Essex-wide orthodontic network with a remit to have a role in local standard-setting and promoting peer review.

- That the orthodontic network promotes understanding and use, by both general dentists and by specialist orthodontic practitioners, of all aspects of the Index of Orthodontic Treatment Need in the context of managing patient demand for NHS care,

Orthodontic need in Essex

Local survey data

Local Authorities have responsibility to support survey work is carried out as needed to inform the oral health needs of the populations they serve. (Statutory instrument,[4] 3094, 2012)

The North West Public Health Observatory (NWPHO), in collaboration with the British Association for the Study of Community Dentistry (BASCD), completed an oral health survey of 12 year old children in 2008/09 and this was analysed at a local level. This survey included measurements of normative and perceived orthodontic treatment need, using a modified Index of Orthodontic Treatment Need. The remainder of this section covers the key findings relevant to Essex.

Cleanliness

Orthodontic treatment with appliances will cause dental caries if the mouth is not kept clean. The local surveys of 2008/9, showed that across England, over half (51%) of the 12-year-olds examined had clean teeth, 38% had little plaque present and 11% had substantial plaque present (Table 1). Across the Strategic Health Authorities (SHAs), the proportion of children assessed as having clean teeth ranged from 63% of the sample in South East Coast to 35% in North East. Those with substantial amounts of plaque ranged from 7% in South East Coast to 18% in London. For the East of England, 55% children were rated as having clean teeth, with 8.6% having substantial amounts of plaque.

Children with substantial levels of plaque present had the highest levels of decay severity (1.3 D_3MFT), while those with clean teeth the lowest (0.6 D_3MFT) (Figure 2). This relationship held true for all SHAs indicating a clear association between tooth cleanliness and caries.

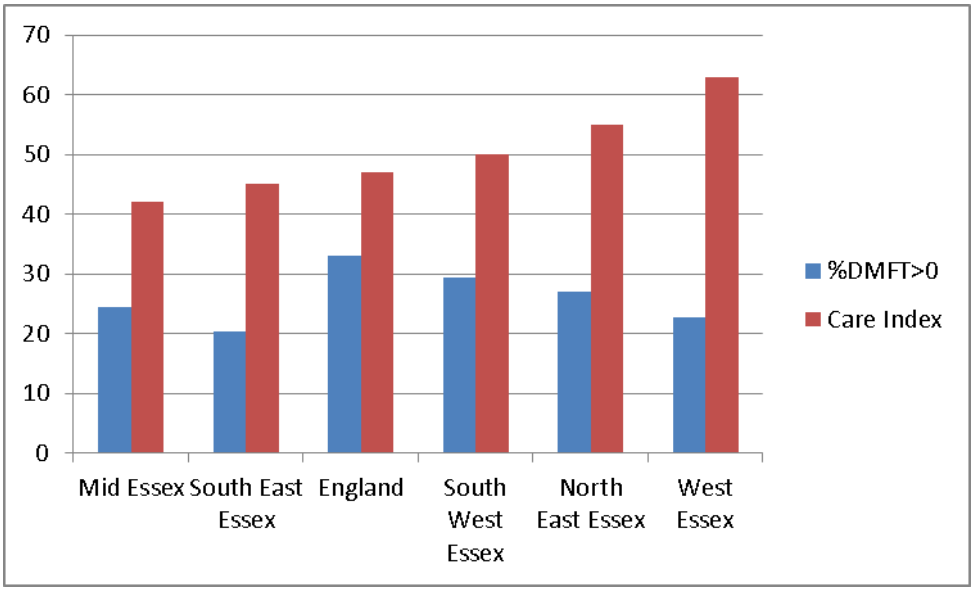
Children were asked *"In the past three months have you had toothache or sensitive teeth, bleeding or swollen gums or been aware of decay in your teeth or a broken adult tooth or ulcers or a loose baby tooth, or a problem because of tooth colour, shape, size or position?".* Response options were 'Yes', 'No', or 'Don't know'.

[4] http://www.legislation.gov.uk/uksi/2012/3094/pdfs/uksi_20123094_en.pdf

Dental decay

Access to orthodontic treatment is always via a primary care dentist, who can advise on mouth care and also identify and treat dental disease. Hence children without access to primary dental services will not benefit from the opportunity of orthodontic care if they need it and so equitable primary care access is a fundamental top priority for dental commissioners. Figure 2 shows data from the 2008/9 twelve year old survey by former Primary Care Trust area in Essex, comparing the proportions of children with any experience of dental decay (DMFT>0) with the 'care index', that measures the proportion of dental decay that is actually treated by dentists (this reflecting population levels of disease, access to dental services, professional decision-making and patient compliance). Common to all other parts of the country, a significant proportion of dental disease is untreated, indicating a great need for earlier interventions. The average across all England for the two measures is also shown.

Figure 2: Percentages of 12 year old children in Essex in 2008/9 with any dental decay experience (one or more teeth either decayed, missing or filled), alongside the percentage of teeth with decay experience that are filled rather than extracted or still decayed.



(Source: NHS Epidemiology Programme for England, Oral Health Survey of 12 year old children 2008/09).

Normative need for orthodontic care

Children in the 2008/9 survey who were not wearing a brace at the time of the study and fell into IOTN DHC 4 or 5 or those classed as IOTN Aesthetic Component (AC) 8, 9 or 10 were regarded as having a clear need for orthodontic intervention

Nationally, as the previous section showed, approximately a fifth of all 12 year olds fall into each of the five Dental Health Components (DHC) and approximately half of the 12

year old population will be classified as having an IOTN score of 3.6 or above. This is a combined score of DHC and Aesthetic Component (AC) of 3.6. 4 or 5.

Using the Modified Index of Orthodontic Need 20 – 34% of 12 year olds in different parts of Essex were identified as having a normative need and not currently wearing an appliance. Mid and West Essex had lower proportions, with South West, North East and South East having higher proportions. Data are set out in Table 5.

Table 5: Estimating the numbers of12 year old children not currently wearing an appliance 2008/09 who both met NHS criteria and who would have liked treatment

			Need- children with IOTN DHC=4 or 5 or AC=8,9,10		**Demand- Children who think their teeth need straightening and are prepared to wear a brace**		**Need and demand- Children with IOTN DHC=4or 5 or AC=8,9,10 who think their teeth need straightening and are prepared to wear a brace**		**Estimated need and demand**
Area	12 year old population (Mid 2008)	Number examined	number	% of children examined	number	% of children examined	number	% of children examined	number
England	608,460	89,442	28,269	31.6%	31,681	35.4%	17,238	19.3%	117,267
Mid Essex	4571	846	174	20.6	315	37.1	129	15.2	697
North East Essex	3661	581	188	32.4	235	40.4	137	23.6	863
South East Essex	4093	238	80	33.6	104	43.7	52	21.8	894
South West Essex	5037	684	208	30.4	278	40.6	150	21.9	1105
West Essex	3548	538	136	25.3	185	34.4	92	17.1	607
All Essex	**20 910**								**4166**

(Source: NHS Epidemiology Programme for England, Oral Health Survey of 12 year old children 2008/09. Results of Orthodontic Need and Demand in Primary Care Trusts)

Perceived need and demand for orthodontic care

As a separate exercise in the survey, volunteers were asked, through a series of closed questions in a postal questionnaire, if they thought that their teeth needed straightening. Those who replied yes were then asked if they would be prepared to have treatment and wear a brace if it were necessary. If, however, they said 'yes' to a question that asked if they were wearing a brace, or if they reported that they had one, they were classed as already being in receipt of orthodontic care and were not involved any further in the measurement of orthodontic need or demand. The findings are summarised in Table 5

As these children had not had their IOTN scores measured, it was not known if they met the criteria for normative need, and some of their appliances may have been fitted for children who would not have met the NHS Regulations.

Children already wearing an appliance

The study on normative need identified the following proportions of children in Essex who were already in treatment, wearing a brace, by the age of 12, as shown in Table 6.

Table 6: Children aged 12 years already wearing a brace 2008/09

Area	**12 year old population (Mid 2008)**	**Examined**	**% Examined**	**Number already wearing an appliance**	**% of children examined**	**Estimated 12 year old population already wearing an appliance**
England	608,460	89,442	74.1%	7,105	7.9%	48,334
Mid Essex	4571	846	65.6%	78	9.2%	421
North East Essex	3661	581	74%	38	6.5%	239
South East Essex	4093	238	73.9%	14	5.9%	241
South West Essex	5037	684	68.5%	70	10.2%	515
West Essex	3548	538	61.1%	73	13.6%	481
All Essex	**20910**					**1897**

(Source: NHS Epidemiology Programme for England, Oral Health Survey of 12 year old children 2008/09. Results of Orthodontic Need and Demand in Primary Care Trusts)

If the co-existence of objective and subjective need is taken as a proxy for the likely numbers of children who may need orthodontic treatment, amongst those who do not already have braces, then the percentages may be converted into numbers of 12 year olds potentially requiring treatment in each PCT. This is set out in Table 7.

When this is added to the number of 12 year old children estimated to be already wearing appliances we have a proxy for the number of 12 year olds each year who are likely to benefit from orthodontic treatment.

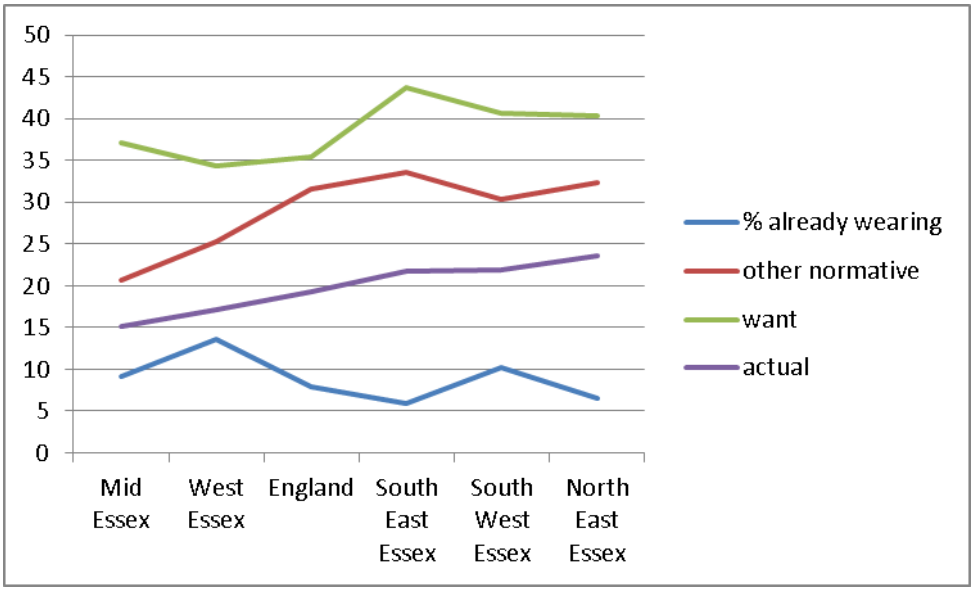
Table 7: Numbers of 12 year old children with both a normative and perceived need with those already wearing braces 2008/09

Area	12 year-old population (mid 2008)	Estimated need and demand	Estimated 12 year old population already wearing an appliance	Need and demand+ those already wearing an appliance (proxy for capacity needed)
England	608,460	117,267	48,334	165,601
E of E SHA	69,770	14,497	7,395	21,892
Mid Essex	4571	697	421	1110
North East Essex	3661	863	239	1102
South East Essex	4093	894	241	1135
South West Essex	5037	1105	515	1620
West Essex	3548	607	481	1088
All Essex	**20910**			**6055**

(Source: NHS Epidemiology Programme for England, Oral Health Survey of 12 year old children 2008/09. Results of Orthodontic Need and Demand in Primary Care Trusts)

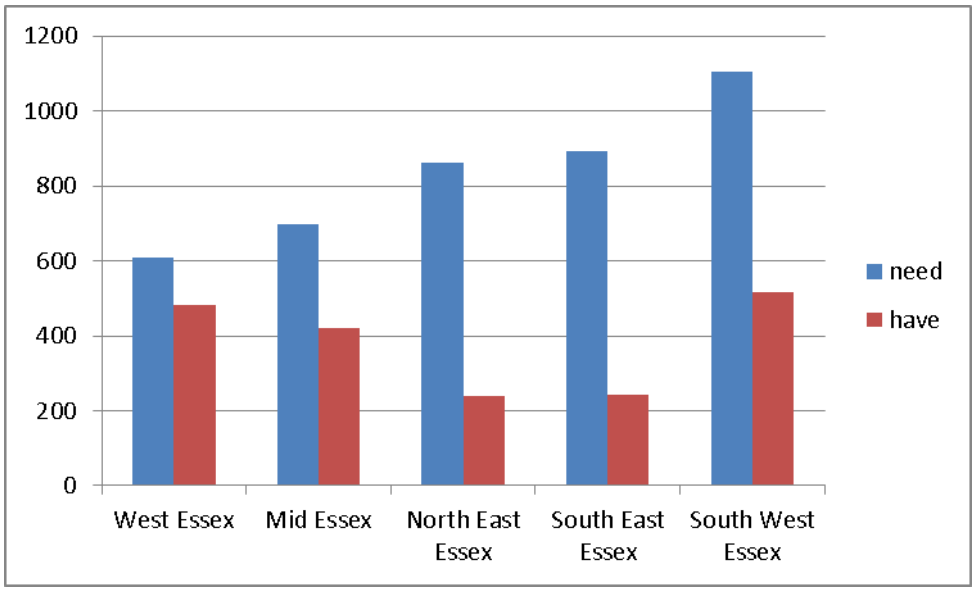
Figure 3 shows the variation between professional ('other normative') and patient ('want') perspectives of need, showing the 'actual' need (where both the patient wants it and the professional agrees it to meet NHS criteria) to be below 'want' and 'other normative'.

Figure 3: Comparison of different perspectives of orthodontic need in Essex, Essex data compared to England



(Source: Orthodontic survey 2008/9. NHS Information Centre)

Figure 4 Predicted number of children in each area that already had an orthodontic appliance and that didn't have, but would have been likely to express a need that would meet criteria for acceptance for NHS orthodontic care, if examined by a trained professional.



(Source: 2008/9 dental survey, NHS Information centre).

Numbers of 12 – 19 year olds in Essex

The distribution of the 'orthodontic population' across Essex (12 – 19 year olds), from the 2011 Census, published by the Office of National Statistics (ONS) is shown in Figure 5. The areas shaded brightest yellow have the highest numbers, and these are in parts of Billericay in South West Essex, Southend in South East Essex, Church Langley in the West, part of Braintree ford in Mid Essex and in a part of Colchester.

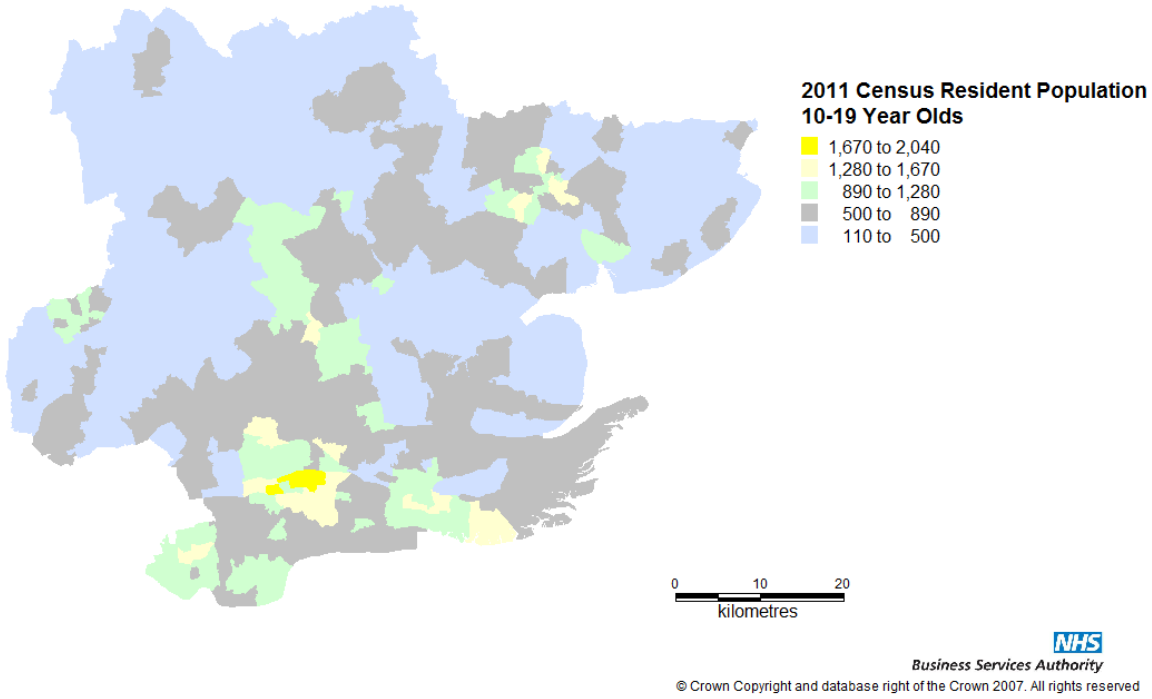
Predicting future numbers of 12 year olds

The ONS have also published interim 2011-based subnational population projections[5] to provide an indication of future trends in population over the next ten years. Assumptions for future births, deaths and migration are based on observed levels during 2006 – 2010. Data is presented by single year group, intended that aggregates of five year groups are used, rather than selection of just one, as is presented. The data nationally show that London, the East and South East are projected to grow at a faster rate to 2021 than England as a whole which is showing an overall annual growth of 0.8%. However, it is advised that the projections over-project the number of births at a national level. This particularly affects areas where the 2011 population estimates have higher numbers of women aged 16-44 than in the 2010 estimates, which is not the case in Essex as a whole. This caveat should be taken into account if using the

[5] www.ons.gov.uk/ons/rel/snpp/sub-national-population-projections/Interim-2011-based/index.html Sub-national populations for England, Office Of National Statistics, Interim 2011, released September 2012.

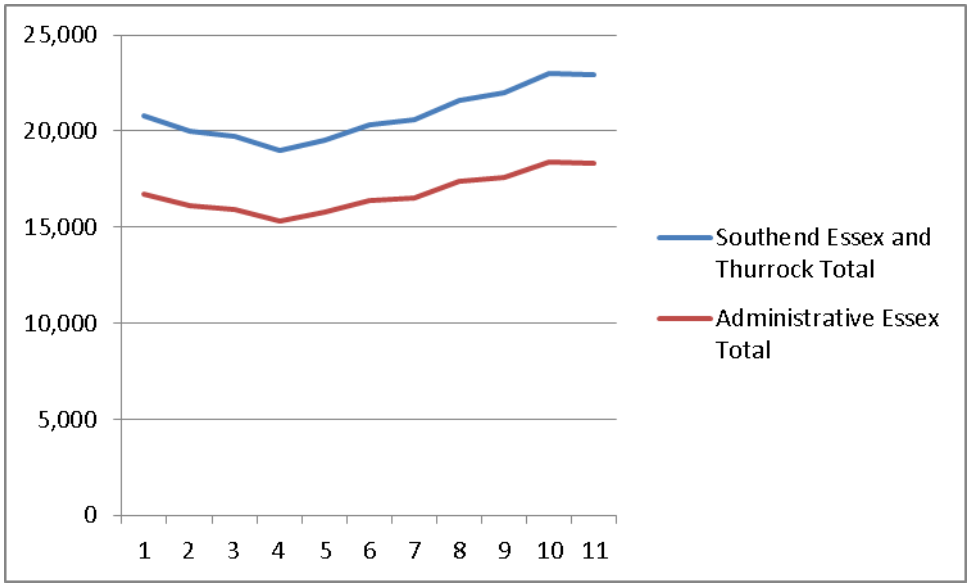
projections for planning, particularly for children under 10. It is expected that the populations will be substantially revised once the data from the most recent population Census is published.

Figure 5. 2011 Resident population of 12 – 19 year olds in Essex



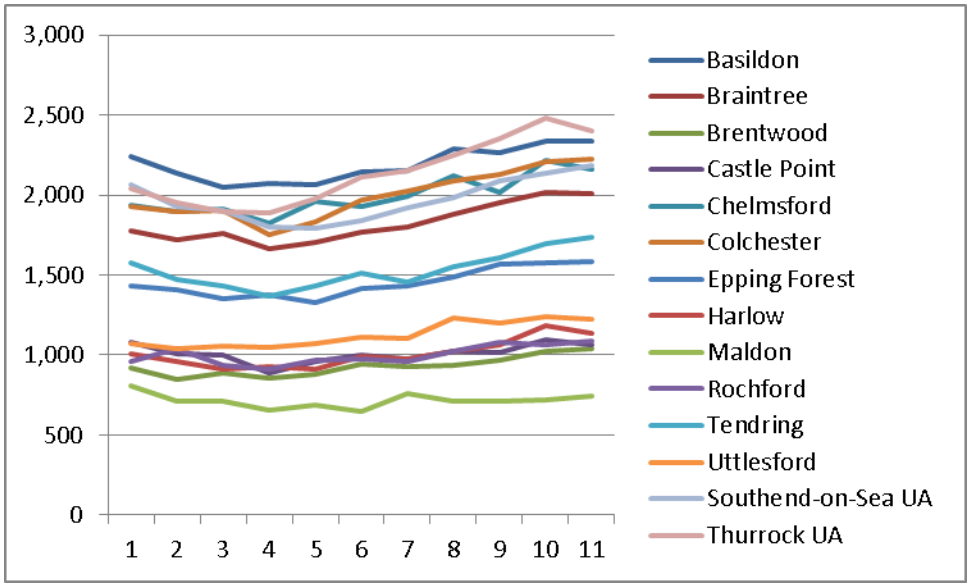
The 2011 interim data,12 year old year group projections alone for Essex County Council and the two unitary authorities of Thurrock and Southend-on-Sea together, estimated 20 827 12 year olds for 2011, rising to 22 929 by 2021, of whom 80% will be in the County Council area and 20% in the two Unitary Authorities, illustrated in Figure 6.

Figure 6: Time trend data of 12 year old population year group, Essex, 2011 – 2021 (2011 is indicated as 1 on the x axis, and 2021 as 11)



The changes within the individual districts are shown in Figure 7.

Figure 7: Estimated number of 12 year olds in different parts of Essex between 2011 and 2021.



These time trends from 2011 show a general dip in the number of 12 year olds to a lowest number in 2014, followed by a steady rise by 2021 if there are no changes to birth death or migration rates, as discussed earlier.

Summary:

The population of 12 year olds has probably dropped since the 2008/9 nationally co-ordinated, local dental survey was carried out on the age group, with lowest levels expected in 2014/15 after which it will slowly rise, if there are no changes to birth, death or migration rates.

Recommendation:

Where current services are already meeting need, capacity would not need to be increased in the short to medium term.

Orthodontic care and pathways in Essex

Orthodontics nationally has shown one of the fastest rates of growth in treatment since the late 1990s, with expenditure almost doubling over a five-year period.[xliv] Growth in population does not account for this increase, suggesting that it has been supply led.[xlv]

In Essex NHS orthodontic treatment is provided in both primary and secondary care. In primary care, there are specialist practices with expertise to serve the vast majority of patients. Orthodontics may also be provided by local community services for a very small group of patients who have 'special care needs'. Hospital services in secondary care are consultant-led and intended for more complex cases including those that may benefit from a multi-disciplinary approach.

As discussed in earlier sections, the pathway to care begins when a patient is referred from community or general dental services, ideally following assessment using the IOTN index. Patients should only be referred if they are likely to meet the criteria for need, where the dentist is unsure for example where the patient is borderline, or where the patient or parent/carer disagrees with the assessment. Figure 8 shows the distribution and size of general dental practices across Essex and figure 9, the locations of specialised services, including practices offering NHS orthodontic care.

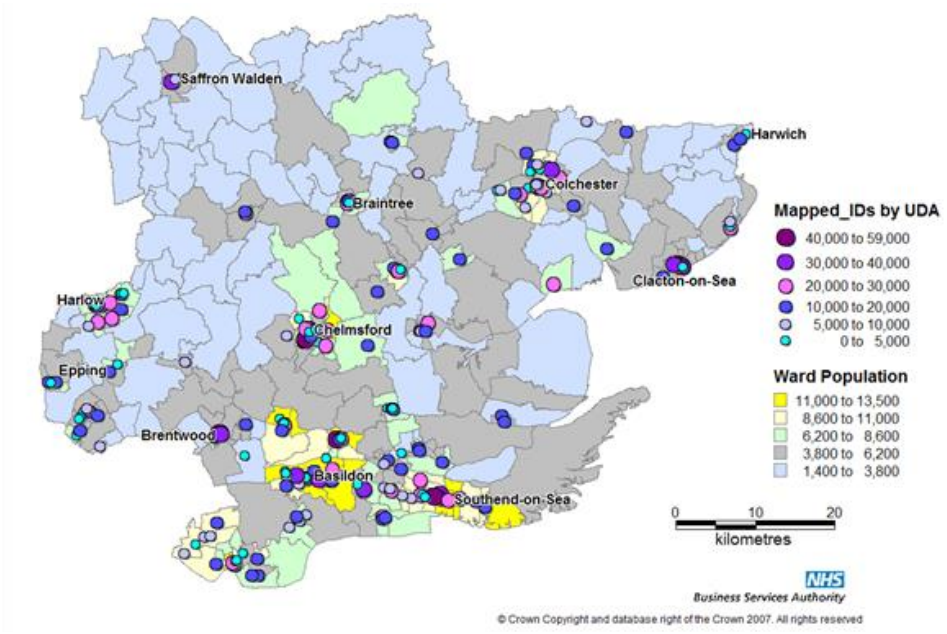


Figure 8 Map to show General Dental Practices in Essex (indicating NHS capacity and overlaid on Ward population data)

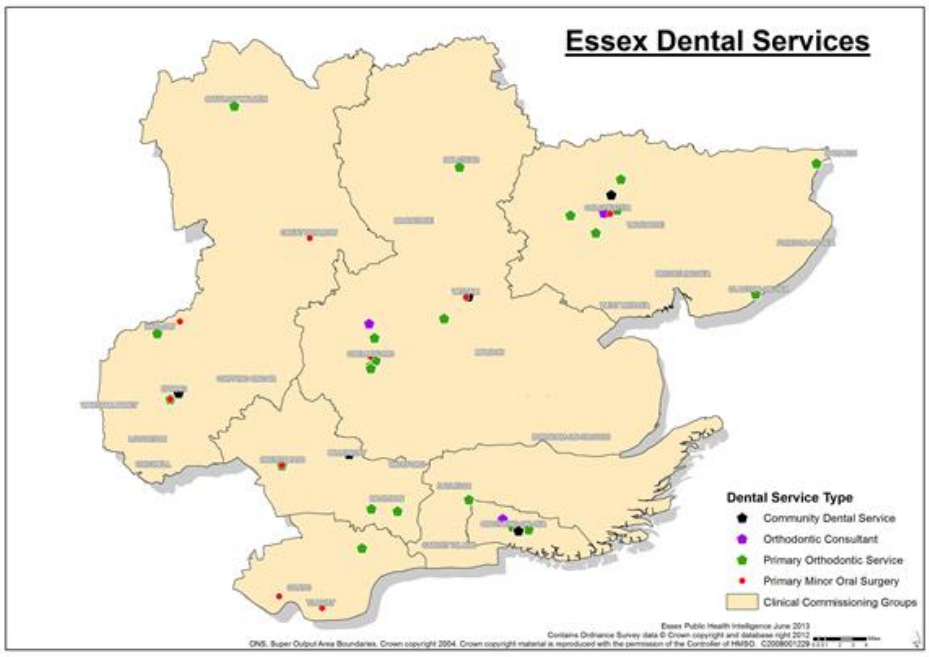


Figure 9: Map to show specialised dental services in Essex

Primary care service locations and population distribution

Figure 10 shows primary care locations along with the volume of care commissioned from them, overlaid on the map showing population density of 5 – 19 year olds.

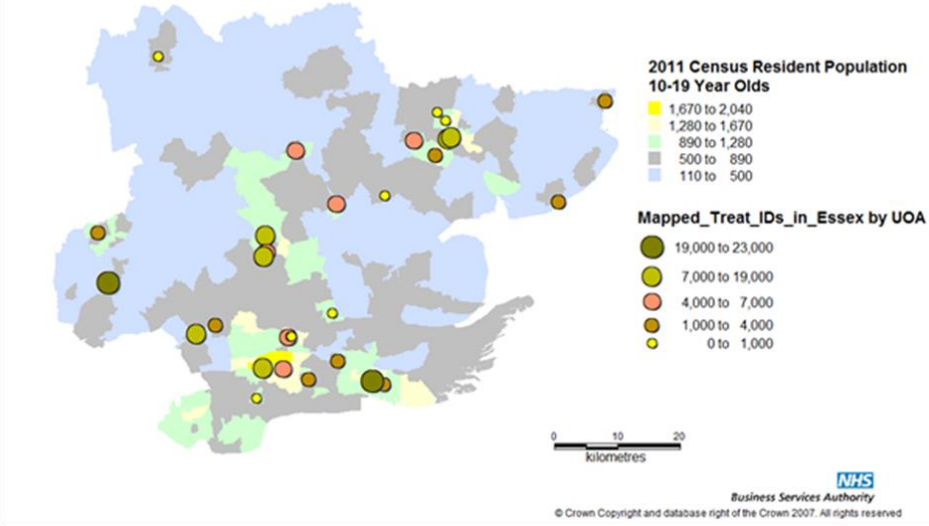


Figure 10: location and volume of primary care orthodontics, overlaid on map to population distribution of 12 – 19 year olds in Essex.

This shows that larger providers of care seem to be in places of higher population density of 10 – 19 year olds.

Primary care service locations and capacity

Figure 11 shows the number of practices within each of the former primary care trust areas of Essex that offer orthdontics. This doesn't give a true reflection of the volumes of activity available and more detail of this, along with information including the earlier estimation of need, the nature of the contracts and other local factors, is given in Table 8.

Figure 11: number of practices with contracted orthodontic activity in the former PCT areas of Essex

Table 8 aims to compare population orthodontic need data and primary care capacity data by geographic area. Although the 12 year old data and the need calculation is based on data from 2008/9, taken in conjunction with the earler graphs to show the population projections, it might reasonably enable some sort of judgement on the potential adequacy of the numbers of UOAs currently contracted, as recorded by the BSA in March 2013. They show that in every area, if (which is hypothetical) each practitioner can use every UOA efficiently such that every 22 UOAs results in a valid case undergoing a full course of treatment, and that all cases are picked up in childhood, there are more UOAs than are needed in North East and Mid and South East Essex, fewer in the West, and about the same in the South West. Dividing the currently commissioned UOA number by the population of 12 year olds illustrated, to get an approxiate number of UOAs per head, each area bar West, has between 7 and 8 UOAs, whereas West has 5.59 UOAs per head.

Table 8: Summary of data relevant to orthodontics for the former Primary Care Trust areas in Essex

Former PCT area	12 year olds*	UOAs**	UOA /22***	Capacity needed****	Comments re contract	Comments re the area
North East	3661	28790	1309	1102	13 contracts, 5 below 800 UOAs, of the other 8, 4 are PDS, 4 GDS	also have hospital service, RMS and orthodontic network, but not practicable choice outside the area
Mid	4571	35666	1621	1110	8 contracts, 1 below 100 UOAs, of the other 7, 6 are PDS	Options for patients to access services in Herts/Cambs
West	3548	19861	903	1088	5 contracts, 2 between 0 and 100 UOAs, of the other 3, 2 are PDS	Options for patients to access services in herts/North East London
South West	5037	35288	1604	1620	10 contracts, 2 between 0 and 600 UOAs, 8 over 1000 UOAs of which 5 are PDS	Options for patients to access services in North East London
South East	4093	31784	1445	1135	4 contracts all over 1000 UOAs, 1 PDS	fewer options to travel out of the area, but there is a significant hospital provision also.
All:	**20910**	**151389**	**6881**	**6055**		

(Sources: various)

*The 2008 population estimate of 12 year olds is used, sourced from the Local Survey of 2009. Population trends show that numbers may not have changed all that much

**UOAs, Units of Orthodontic Activity, were provided by the Business Standards Authority of the NHS, March 2013

***UOA/22 is an estimate of courses of treatment available assuming a ratio of two assesments for every case start

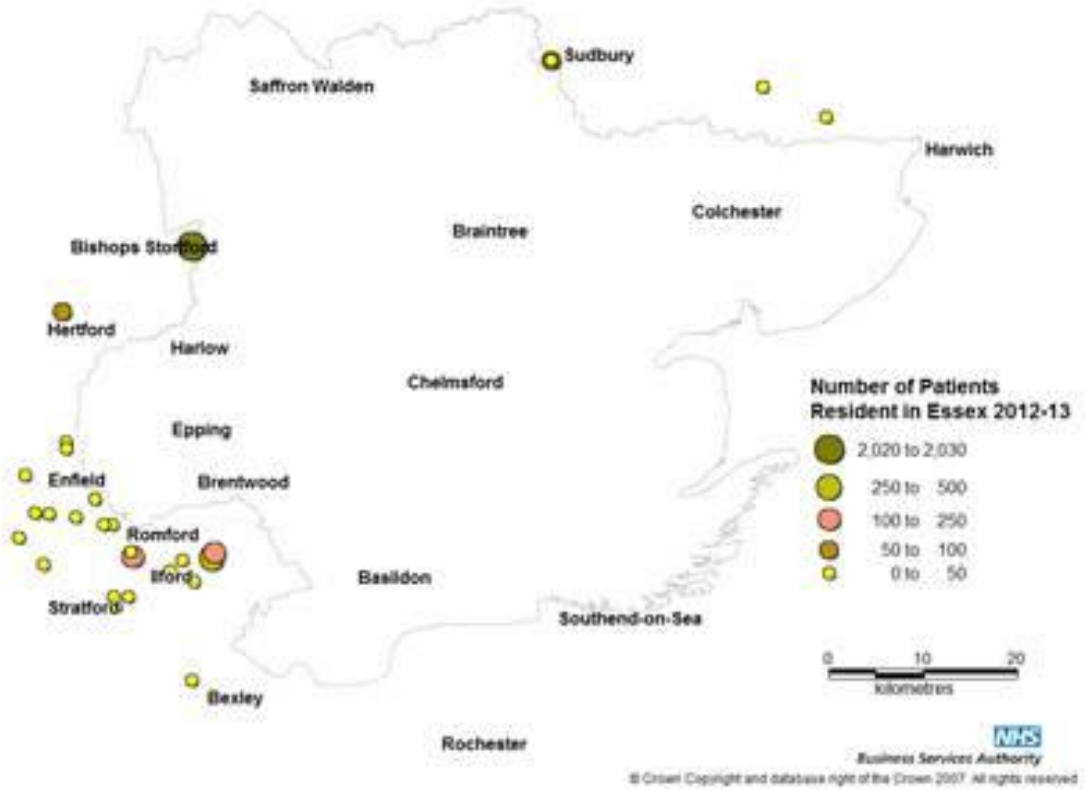
****Capacity needed is concluded from Table 5, based on survey data from the 2008/9 local survey of 12 year olds.

Evidence of insufficient capacity

Pressures are described on services in the North East and this may be due to lack of options for patients to travel outside the area, although it must be noted that there is also a secondary care facility at Colchester that serves this local population, as there is in Mid and South East Essex. This data is intended to be used only as a guide, along with other information in this needs assessment and local knowledge.

Figure 12 shows the primary care orthodontic treatment locations used by Essex patients, outside Essex. It can be seen that there is significant use of services commissioned by North East London, Hertfordshire and some in Suffolk.

Figure 12: Map to show primary care orthodontic treatment locations used by Essex patients.



In previous years there has been a local priority to reduce long waits for orthodontic care which has resulted in some further investments in primary care services. This target has now been removed, unless the wait is for a hospital consultant service, where waits should be no longer than 18 weeks from first referral to treatment commencing.

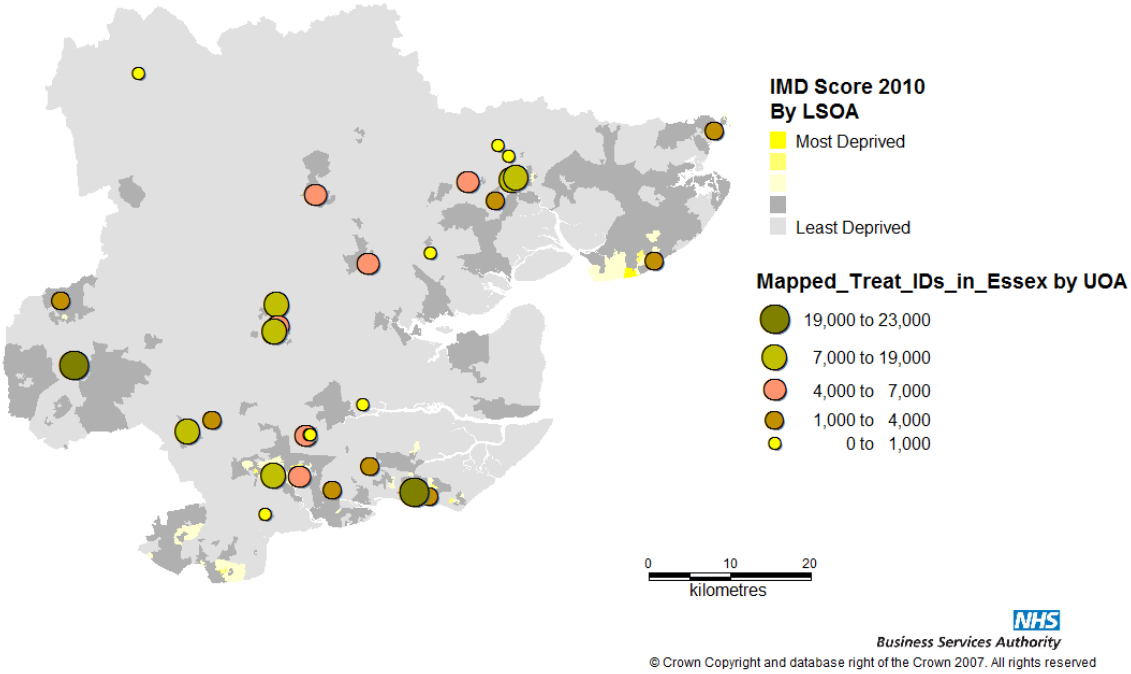
A questionnaire was circulated in May 2013, to all primary care orthodontic practitioners in Essex that asked, among other things, their perception of waiting times for their services. Most reported either no wait or a short wait of some weeks, although there are significant exceptions.

A referral management system was established in North East Essex to allocate patients to the different local providers, but at time of writing, there is no data available from this service, or its cost. The service is included in a wider referral management system that is commissioned by the local Clinical Commissioning Group. The local hospital orthodontic consultant service is not included in the referral management system, which implies that referrals are still direct to this service. If a patient is referred to a local orthodontic service that relies on the hospital for a treatment plan, one could conclude that a patient would pass through the referral management service to a practice, that would then refer to the hospital for the plan before the patient could return to that practice for the treatment to be carried out, which would cause delays to the treatment starting and have added cost.

Primary care service location and deprivation

Looking further at equity of distribution of currently commissioned primary orthodontic care, Figure 13 overlays the location of practices by volume of orthodontic treatment contracted, onto the map of deprivation, as illustrated in Figure 1. Treatment locations at an All Essex level appear to be evenly spread relative to the population density and deprivation, with the exception of the far South Western area, that borders onto London.

Figure 13: Deprivation and primary care orthodontic treatment location in Essex



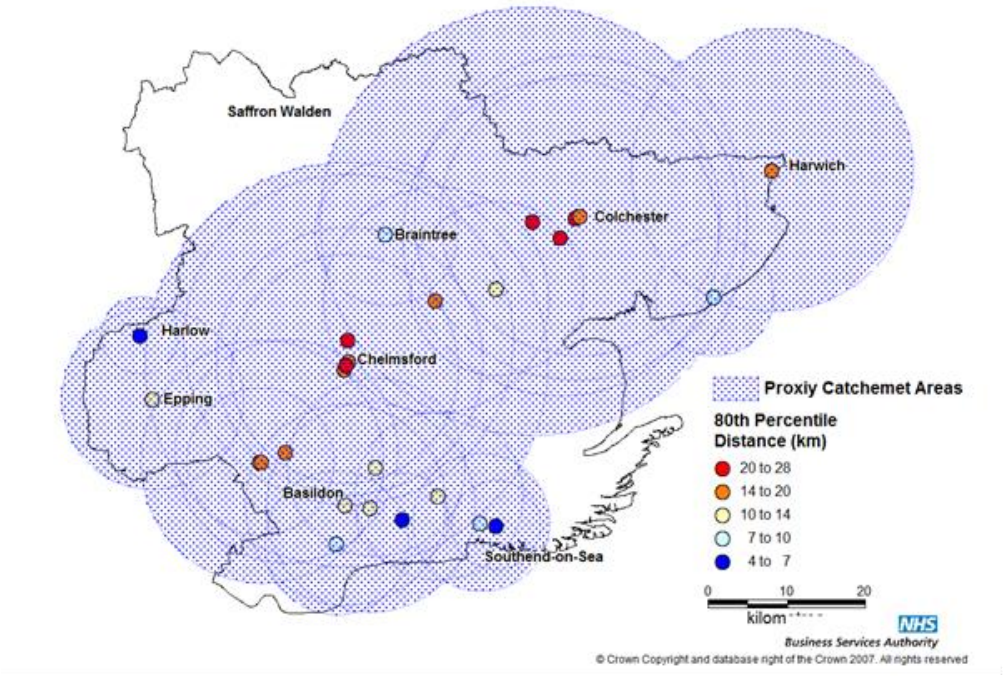
Costs in primary care

The costs of orthodontic treatment in primary care include that part of a Community Dental Contract allocated to orthodontic care of special needs patients, and the cost per UOA for each practice multiplied by the number of UOAs delivered. UOA values have not been supplied for this needs assessment, and work on establishing the costs and variations in costs across Essex is underway by the Essex Area Team. Added to this is the cost of the referral management centre.

When thinking about the costs of orthodontic treatment relative to other healthcare costs, it is to be remembered that health benefit as an outcome of most orthodontic treatment is hard to demonstrate, in that the patient is not actually ill.

Figure 12 gives an indication of the extent of uptake of services outside Essex, and this is a cost that is not met by the local team, however, the costs of patients from outside the area who come into Essex for their treatment are included in their overall costs. That they are fairly low is suggested by Figure 14.

Figure 14: Catchment area of 80% patients attending Essex based primary care practices for orthodontic treatment.

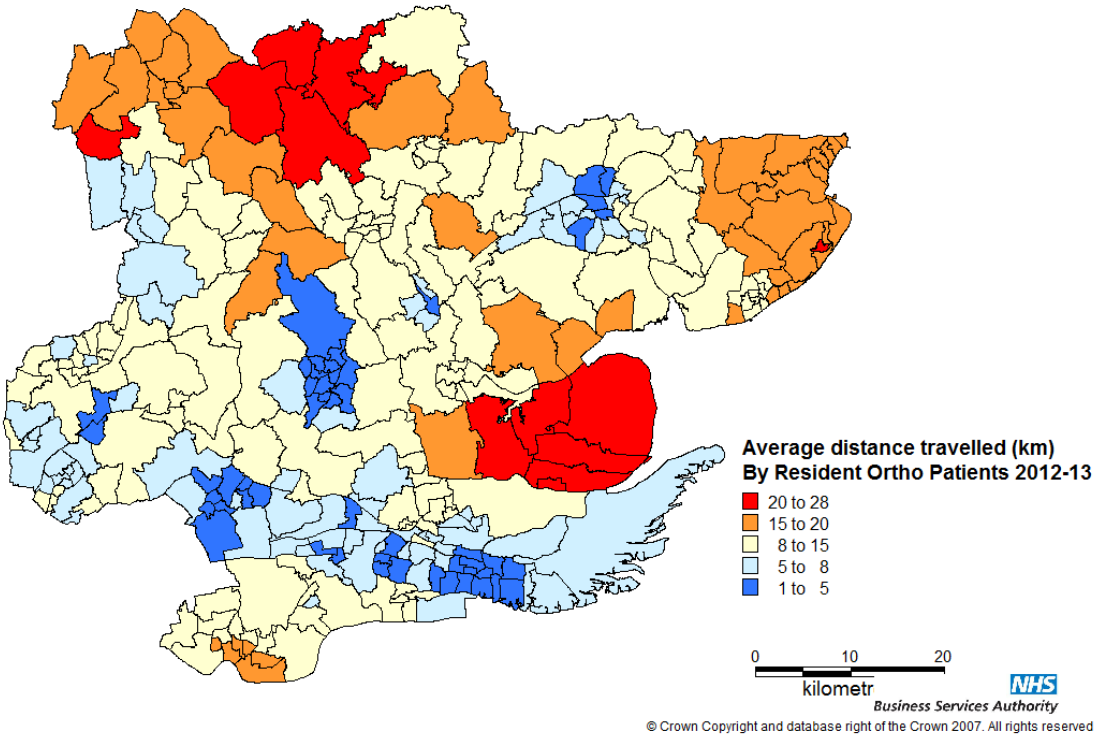


It can be seen that many people travel long distances to centres, particularly Colchester and Chelmsford and Harwich for orthodontic care, and this could contribute to the long waiting lists experienced by some practices. It would appear that travel into Essex from people outside the county is not a significant occurrence over all.

Distance of travel for patients

Figure 15 indicates how far patients are travelling to services. It can be seen that especially in North and East Essex, and the more sparsely populated areas that often have pockets of higher deprivation, patients may be travelling over 30 kilometres for orthodontic care.

Figure 15. Average distance travelled by resident orthodontic patients 2012 – 13.



Quality and Efficiency in primary care orthodontics

It has already been noted that orthodontic care has become increasingly recognised in the NHS as an area of specialist practice and that in many parts of the country, commissioners have worked with clinicians to encourage those with a low throughput of patients and those without specialist skills to replace their orthodontic activity with more general activity.

The Dental Services Division of the Business Services Authority (DSD, BSA) record a range of information collected from orthodontic contracts including some which are known as quality indicators. The format of reporting back to contract managers has been revised to deliver the single operating framework, and the first summary table for the forty contracts across NHS Essex, for the year ending 31st March 2013 is shown as table 9, where the percentages and numbers refer to the number of contracts of concern.

Table 9: summary data on delivery, assessments, treatments and outcomes from primary care orthodontic contracts, 2012/13.

Delivery		England %	AT Total	AT %
UOA Delivered	% of Contracted UOA Delivered (Year to Date)	30.4	11	27.5
Assessment		**England %**	**AT Total**	**AT %**
Assessments by category	% of assessments that are Assess and fit appliance	9.6	3	7.5
Assessments by category	% of assessments that are Assess and refuse	4.2	8	20.0
Assessments by category	% of assessments that are Assess and review	10.4	6	15.0
Age at assessment	% of reported assessments and review where patient is 9 years old or under	4.5	1	2.5
Treatment		**England %**	**AT Total**	**AT %**
Cases reported complete as a function assess and fit appliance	Ratio of reported **concluded** (completed, abandoned or discontinued) courses of treatment to reported assess and fit appliance.	20.1	7	17.5
Type of appliance used	% of **concluded*** (completed, abandoned or discontinued) courses of treatment reported as using removable appliances only. * currently only using completed	3.0	2	5.0
Outcomes		**England %**	**AT Total**	**AT %**
UOAs reported per completed case	Ratio of the number of UOAs reported per reported **completed** case (not including abandoned or discontinued cases)	12.0	5	12.5
Reported PAR Scoring: actual versus expected	% of contracts not meeting their expected reporting of PAR scores	38.3	13	32.5
Abandoned or discontinued care	% of **concluded** (completed, abandoned or discontinued) courses of treatment where treatment is reported as abandoned or discontinued	2.4	3	7.5

Delivery

Reflecting overall delivery on contracts, practices in NHS Essex have performed better than the English average although 27.5% of them under delivered.

Assessment

Regarding orthodontic assessments, across England as a whole, 9.6% of contracts had a low number of appliances fitted compared to the number of assessments undertaken; the percentage in Essex was a little lower, although by only a small amount. Twenty percent of contracts had above average claims for either assess and refuse or assess and review, and this is recognised as an area where the system could be more efficient, with general dentists referring the right patients and the right time, and this is an area where a strong local orthodontic network can assist in ensuring efficiency of NHS resources, through working with the dentists in the practices that refer to them. A very small proportion of orthodontic care (usually 'interceptive orthodontics') needs to take place before a patient is nine. In Essex, levels of referrals are within the expected range for England and it is important that the specialists keep an awareness of any training or information required by general dentists, such that they do not miss these cases in their efforts not to refer too early.

Treatment

Treatments are reported in terms of the ratio concluded to those started, and also the type of appliance used. Essex is recorded an outlier because two practices show up as using removable appliances only, but the number of cases treated in each of these practices was negligible.

Outcomes

Outcomes are measured through UOAs per completed case, 'Peer Assessment and Review' scores (PAR scoring), and rates of abandoned or discontinued care. Essex is an outlier nationally in the number of contracts with a high ratio, and but as with the use of removable appliances, this is affected by general under-delivery of a small number of contracts. However, improving this ratio with individual practitioners is a powerful way for the local system to increase efficiency to enable more patients to be treated within the current contract levels. The local orthodontic network may be able support contract managers with this endeavour. Essex is also flagged as an outlier in the proportion of practices with a higher than average proportion of concluded treatments that are abandoned and discontinued, but again this is due to only a small number of fairly small contracts.

The PAR score (peer assessment rating)

PAR index is accepted by the British Orthodontic Society and the Department of Health as a useful tool to assess the standard of orthodontic treatment for an individual provider. The FP17(O) has a tick box to indicate if the case has received a PAR Assessment.

It is a requirement of the NHS orthodontic contract for all orthodontists to monitor treatment outcomes for 20 cases plus 10% of the remainder of their caseload every year using PAR.

Self assessment of treatment outcomes may be subject to bias.

PAR measures the pre-treatment and the post-treatment study models of patients that have received orthodontics using a PAR ruler. The difference between the scores is the PAR improvement due to the treatment.

PAR is designed to look primarily at the results of a group of patients, rather than an individual patient, as there are always a small number of patients where the index does not really reflect the result obtained.

For a practitioner to show high standards, the proportion of cases falling in the worse or no different category should be negligible (less than 5%) and the mean reduction in PAR score should be high. An improvement of greater than 70% represents a high standard of treatment, less than 50% shows an overall poor standard of treatment.

Patient perspectives on primary care orthodontic treatment

This needs assessment currently has no data or information on patient perspectives and views, other than in the context of their likely perceptions of need for orthodontic care. Patient satisfaction with dental services as a whole has been a subject within the GP questionnaire survey, run by the NHS but there is no specific information relating to orthodontics. Possible sources are practice information systems, and NHS choices, on individual practices.

Patient complaints is another source of information on patient views; this service no longer reports directly to NHS Essex Area Team but are centrallised, Complaints are also dealt with by individual clinical commissioning groups, and there is a signposting service through Healthwatch, located within local authorities.

Recommendations

The local orthodontic networks can be a resource to support NHS managers, who now can focus attention on contracts that appear to have issues relating to performance. The outcome should be improved quality, efficiency and efficacy of existing orthodontic services.

Patient views on services in outlying areas would be a valuable contribution to ensuring equity of provision of specialist NHS dental services for this young age group.

Secondary (hospital) care services

Roles of secondary (hospital) consultant-led services

Hospital orthodontic consultants have had further training to provide leadership, teaching, mentoring and supervision for trainee specialists and consultants for the future.

An NHS consultant contract specifies that there will be a written job plan, signed off by a hospital director. This can include a variety of wider services to the NHS, and there is no reason why consultant orthodontists cannot have an explicit agreement to provide professional leadership to support orthodontists and generalists who refer and treat patients.

The focus of the current needs assessment is the pathway to the routine NHS orthodontic care, which provides largely, but not exclusively, services for children. It includes a small minority of patients whose malocclusion is so severe, that jaw surgery (orthognathic surgery) is required as part of treatment for a good outcome. The majority of hospital based clinical services provided however, are treatment planning for patients referred by generalists and orthodontic specialists, treatment of cases with complexity beyond that of a specialist and treatment for patients with special care needs, including (as part of a mulitidisciplinary treatment plan – see below) for specific aspects of care for patients with a cleft lip and/or palate. Orthodontic consultants can also provide second opinions. Many of the most severe malocclusions, IOTN 5 cases, have a protracted treatment time but this should not be the only reason they are carried out in hospital as it is likely to be less convenient for patients. Primary care clinicians may argue that there is no economic case to treat these individuals when payment is through the UOA system, but this should not be the only reason to refer to a more expensive and specialised service.

There is a group of patients with high orthodontic need due to the position in which their upper permanent canine teeth develop, such that these teeth cannot erupt, instead becoming impacted high in the top jaw. When the patient reaches an optimum point in their growth, the teeth are surgically exposed, and other teeth removed, and appliances are used to guide the long path of eruption of the tooth into the correct position. The surgical part of the treatment plan is made jointly with a consultant oral surgeon, and there is often a benefit for the case to be continued by the orthodontic consultant subsequently. As an alternative, once the surgery is over, suitable cases could be completed by the primary care specialists, but often such cases are protracted, requiring more clinical time over all, leading to the problems outlined above, regarding payment within the NHS arrangements for primary care.

Consultant orthodontists also treat severe hypodontia cases (multiple teeth congenitally missing), those with craniofacial abnormalities and can be involved with sleep apnoea clinics. Some cases fall under local policies for prior approval by commissioners before treatment can be carried out.

Sustaining the consultant workforce

An orthodontic workforce survey in 2005 identified that 38% of approximately 440 orthodontists intended to retire before 2015 leaving a potential shortfall in the capacity at the time of between 60 and 110 by 2015[92]. To prevent this, 40 new specialists a year would have needed to be trained and this would still have led to numbers per head of population below levels in the rest of Europe.

Tariffs

The majority of orthodontic care takes place in outpatient departments. The tariffs are set nationally each year. For 2013/14, a first appointment is £183.00 and each follow up, £81.00. If the patient is under the care of more than one consultant, ie jointly with an oral surgeon, then the tariffs are £251.00 for a first appointment and £115.00 for each follow up appointment.

Local service provision

Hospital based general orthodontic services in Essex are provided at Colchester/Chelmsford and Southend/Basildon. Each pair of hospitals works with an oral and maxillofacial surgery service. Trainees are overseen by the London and not the Eastern Deanery in Cambridge, and all formal teaching takes place in London, with supervised activity taking place at Colchester, Southend and Basildon.

From April, 2013, the North East London Commissioning Support Unit took charge of hospital orthodontic activity data (and other dental data). A first report on orthodontic outpatient activity is imminent and over the coming months, routine hospital data will become available again

Data previous to April 2013 is with local commissioning support units serving the local Clinical Commissioning Groups.

There is a separate specialist orthodontic service based at Broomfield Hospital in Chelmsford, for a small group of patients who have cleft lip and palate, a birth disorder which requires consistent, planned multidisciplinary care throughout childhood. This service is overseen by specialist commissioners and is not considered further here.

Southend-on-Sea/Basildon

The service at Southend-on-Sea sees patients both for assessment and treatment planning for surrounding practices and also to treat patients with severe malocclusions (IOTN grade 5). There are two consultants and three trainees that also cover a base at Basildon. Joint clinics with oral surgery, and treatment sessions, are provided for those patients that need them.

Chelmsford

The Chelmsford service runs on a part time basis. There are no specialist orthodontic training facilities at this centre.

Colchester

The service at Colchester is consultant led, serving the many surrounding practices. Training is provided, and the consultant oral surgeon from Chelmsford visits regularly for joint clinics. Oral surgery treatment sessions are held for Colchester patients at Chelmsford, after which they are returned to the Colchester clinic for continuation of their treatment as required.

Data from a local audit of patients seen in the first three months of the current financial year show that 46 new patients were seen, of whom 9 (20 %) were adults. There were 383 follow up appointments, of which 139 (36%) were adults. Within the overall case load are about 25 patients who require ongoing orthodontic support as part of their specialised treatment plan to treat cleft lip and/or palate.

Discussion and conclusions

A comprehensive orthodontic needs assessment for Essex has not been undertaken before. It has enabled the separate elements of need, demand, services available and pathways each to be considered in turn, and for clinicians to be consulted.

This needs assessment, to date, does not include data on the views of patients, other than collected through the 2008/9 survey work on oral health of 12 year old children, and no special data collection on the patient perspective has been arranged as part of the process.

Orthodontic services are specialised and expensive and the NHS must commission for quality in all aspects, with equity of access to all population groups, and to enable the professional workforce to develop as this requires. A local orthodontic network, with full engagement of hospital consultants can help to bring about the professional developments that are needed.

Public demand for orthodontic services will always outstrip available resource and the network will be instrumental in supporting the Essex Area Team to ensure that appropriate prioritisation is in place.

Further information will become available very soon on the nature, quantity and costs of orthodontic care provided through acute trusts, and this in turn, will help to inform an orthodontic strategy. The orthodontic clinical network will have a key role in the further development and implementation of this strategy.

Work is ongoing:

- with the providers in North East Essex to resolve a build up of patients awaiting assessment, including a review of the role of the referral management centre
- with secondary care providers to establish future configurations of consultant capacity
- to establish a pan-Essex orthodontic network to enable clinical engagement, to help improve outcomes and the experience for patients.

Appendix 1 - Orthodontics – the clinical background and the Index of Orthodontic Treatment Need

Source: An Orthodontic Needs Assessment and service review for Cambridgeshire and Peterborough, 19th December 2012, v 10, chapter 2.

2.1 Orthodontics and Orthodontic Treatment

Three authoritative definitions from national bodies are:
Orthodontics is the distinctive branch of dentistry which deals with the development, prevention and correction of irregularities of the teeth, bite and jaw (known as malocclusion). (*General Dental Council)*[xlvi]. Malocclusion is not a disease but the collective term given to natural variations from the "ideal" in the relationship of the teeth and jaws.

"Orthodontics is the branch of dentistry concerned with growth of the face, development of the occlusion, and the correction and prevention of occlusal abnormalities. Orthodontic treatment deals with variations in facial growth and oro-facial function, and the effects of occlusal variation on facial appearance and the health and function of the masticatory system" (*Royal College of Surgeons of England*)[xlvii].

"Orthodontic treatment" means treatment of, or treatment to prevent, malocclusion of the teeth and jaws, and irregularities of the teeth. (*National Health Service (General Dental Services Contracts) Regulations 2005*[***Error! Bookmark not defined.***]

2.2. The claimed benefits of Orthodontic treatment:

The *British Orthodontic Society* (BOS) is the UK specialist society for orthodontists, established to promote the study and practice of orthodontics, to maintain and improve professional standards in orthodontics, and to encourage research and education in orthodontics. They list treatment benefits[xlviii] as including:

- Removal of dental crowding (or sometimes closing gaps).
- Alignment of the upper and lower dental arches.
- Correction of the bite of the teeth so that the front teeth meet on closing and the back teeth mesh together.
- Reducing the likelihood of damage to prominent teeth.
- Enhancing facial aesthetics.
- Accommodating impacted, unerupted or displaced teeth.

- Preparation for advanced dental treatment, such as crowns, bridges or dental implants.

- Reversing the drifting of the teeth in older patients who have suffered from advanced gum disease.

2.3. Adverse consequences of orthodontic treatment

Less generally known are areas where orthodontic intervention can cause problems[xlix]. Elements of orthodontic appliances can cause localised trauma (usually mild and transient, but rarely there can be more severe consequences) or can be swallowed or inhaled. Orthodontic tooth movement has the potential to cause shortening of the tooth roots, usually minimally, but occasionally to a clinically significant degree. Fixed orthodontic appliances, in particular, make oral hygiene measures more difficult. If the teeth are not cleaned effectively when orthodontic appliances are being worn, plaque accumulation initially leads to a reversible decalcification of the teeth, which may leave permanent white patches. If trapped plaque remains beyond this initial stage, teeth become decayed. As a result of reduced access for cleaning an increase in gingival inflammation is common following the placement of fixed braces and marked loss of periodontal attachment and bony support for the teeth can occur when oral hygiene is poor[l]. Traumatic ulceration can also occur and in some circumstances death of the pulp or nerve of the tooth where the appliance is incorrectly adjusted.

Patient cooperation is essential; if not treatment may need to be discontinued part way through a course of treatment. At this point, the dental relationships may be worse than at the outset, and where extractions have been involved, the sacrifice of those (usually healthy) teeth may have produced no overall benefit.

The aim of all orthodontic treatment is to produce a stable relationship between teeth and jaws at the end of treatment phase. Teeth may relapse from the position achieved at the time the appliances are removed, and in the worst cases re-treatment may be needed.

For orthodontic treatment to be ethically acceptable, benefits of treatment must outweigh the risk of adverse consequences of treatment. In general, evidence of benefit is available for individuals with higher levels of orthodontic treatment need (see below). For those who do not fall into these categories, the risk of harm may outweigh potential benefits.

2.4. Orthodontic Treatment Need

Over the years several measures have been devised for assessing the need for, and potential benefit from orthodontic treatment. The most commonly-used and accepted measure of need in the UK, is the Index of Treatment Need (IOTN)[li]. It has two entirely separate components; the Dental Health Component (IOTN DHC) and the Aesthetic Component (IOTN AC). The IOTN DHC relates directly to tooth positions and is an attempt to measure professionally-defined need in an objective way The IOTN AC on the other hand, focuses on aesthetics and attempts to assess the subjective perception of need, from the perspective of the individual patient.

The Index of Treatment Need Dental Health Component (IOTN DHC) is assessed from a clinical examination of the teeth and jaws, or sometimes from dental models. There are five categories, ranging from one (no treatment need) to five (great need). As the categorisation involves direct measurements of the relationship between teeth, the scoring of IOTN DHC is highly robust and reproducible. There is evidence[lii] that the more severe the orthodontic problem at the onset of treatment, the greater the likelihood that treatment will effect an improvement.

Index of Treatment Need Aesthetic Component (IOTN AC) was devised as a method of recording a person's own judgement of how attractive they consider the look of their teeth to be. This is achieved by selecting the one photograph, from a series of 10 standard (reference) pictures, which they feel most closely equates to their perception of their own appearance. These 10 pictures were chosen and validated as having decreasing attractiveness, in equal steps, and are assigned scores from one (most attractive) to 10.

IOTN AC therefore represents an attempt to numerically quantify an individual's self-rating of attractiveness, but as with any subjectively-rated scale can be criticised for its lack of robustness. Child and Clinician-rated IOTN AC grades of the child's appearance may be very different[liii], as are the dentist and parent/carer ratings[liv]. Although many children who rate themselves as having a high level of unattractiveness (on the IOTN AC assessment) will also have a high-scoring clinical condition on IOTN DHC, that relationship is not a predictable one. Some individuals with a low dental health need (DH score) will have a high personally perceived need for treatment (AC score), and vice versa.

2.5 Eligibility for NHS orthodontic treatment

'High Street' dentists working under NHS General Dental Services arrangements can provide orthodontic services only if they have a specific contractual arrangement (with the local Primary Care Trust) to provide this type of care[lv]. To ensure that there are good results from treatment, it should be commissioned, to meet local needs, from appropriately trained and experienced dentists[lvi]. Such providers are limited in the overall *number* of NHS patients they can assess and treat by level of their contract with their local PCT (expressed as Units of Orthodontic Activity), and also in the *types* of orthodontic problems they can normally treat (as defined by the national Regulations). These are the *National Health Service (General Dental Services Contracts) Regulations 2005*[liii]. In summary, local General Dental Service contracts generally limit the provision of orthodontic treatment to those who:

- are under the age of 18 at the time of assessment;
- and have an IOTN DHC score of 4 or 5 , or an IOTN DHC score of 3 *together with* an IOTN AC score of 6 or above.

These Regulations do, though, offer them some clinical discretion to allow the orthodontist to provide treatment (for people under the age of 18) assessed as not having the level of treatment need assessed through IOTN (as above), "because of the exceptional circumstances of the oral and dental condition of the person concerned". The Regulations do permit PCTs to have a contract with orthodontists for assessment and treatment of people over the age of 18, but locally, such assessment and treatment

is contract exclusion. The verbatim extract of the relevant part of the *Regulations* is at Annex 1.

2.6 "Exceptional circumstances of the oral and dental condition" likely to result in adverse health impacts

There is limited evidence of major impacts on oral health or general health arising from the some of those treatment benefits stated in Section 2:

2.6.1 Prevention of tooth decay and gum disease

i. Crowded teeth, or poor alignment of teeth within the upper and lower dental arches have, in the past, been suggested as risk factors for both tooth decay and gum disease, and therefore orthodontic treatment was promoted as a means of improving oral health. Long term clinical studies do not support this view, and BOS itself states that there is little evidence that orthodontic treatment in general confers such a benefit. However they also suggest that there are individual cases where orthodontic treatment clearly has been beneficial, although give no examples.

ii. Pulpal (the living core of blood vessels and nerves) reactions may cause pain or even tooth 'death' as orthodontic treatment moves teeth. Transient or irreversible damage to pulps may occur.[lvii] [lviii] [lix]

iii. Tooth surface loss may be caused when orthodontic wires and brackets bring appliances into contact with tooth surfaces and have the potential to cause wear of the enamel surface. This can be further exacerbated if patients have a high intake of carbonated drinks or pure juices.

iv. Enamel trauma can occur during placement or removal of appliances or when parts of appliances are debonded.

v. Enamel demineralisation is a common complication of orthodontics. The extent of the problem has been assessed as ranging from 2-96%[lx]. This large variation is due to the different ways decalcification is scored. There is possibility of remineralisation of the lesions, but in some severe cases, cavitation is seen.

vi. Some degree of root resorption is inevitable with fixed appliance orthodontic treatment with, on average, 1-2 mm of the tip of the root lost. In most cases this will not be clinically significant but some teeth have higher level of risk than others and can be associated with severe resorption[lxi] [lxii]

2.6.2 Prevention of damage to prominent front teeth.

i. The number of damaged incisor teeth at age 15 has fallen in recent years; currently the incidence is about 13 teeth per thousand, the majority being fracture of the tooth enamel only[lxiii]. Looking at the child population *as a whole*, the great majority of damaged teeth are those which are not prominent. However, the sub-section of the child population who do have prominent front teeth sustain more damage, when compared with a similar number of children with teeth which are less prominent. Children with upper front teeth which protrude more than 6 mm would be eligible for NHS treatment, as they fall into the high categories of IOTN DHC.

ii. There is evidence from several studies that the risk of dental injuries increases with[lxiv lxv lxvi] an increased overjet of more than 5 mm and/or inadequate lip coverage.

2.6.3 Appearance and psychosocial benefits

i. Appearance is usually the principle factor in the motivation for seeking orthodontic treatment amongst lay people, in the belief that the cosmetic improvement resulting from orthodontic treatment will enhance the social acceptance and self esteem of the individual.

ii. A prospective UK multicentre, hospital-based, trial compared psychosocial measures in a group of children who had early orthodontic appliance treatment (at an average age of nine years old), with a control group with a similar problem, but who would have treatment at a later age. At the end of appliance therapy, the early treatment group had better 'self concept' scores for physical appearance, anxiety, popularity, and happiness and satisfaction. However, in this study there was no comparison with a group from the general population who did not undergo, or wish for orthodontic treatment. The study group actually had higher initial self concept scores than the general population of their age, confirming findings elsewhere that patients who desire orthodontic treatment tend to have a relatively high normal range of self-esteem at outset.

iii. A recent report [lxvii] of a major 20 year prospective, longitudinal cohort study found little positive impact on psychological health and quality of life in adulthood in those who had received orthodontic treatment. The observed effect of orthodontic treatment on self-esteem at outcome, was accounted for by self-esteem at baseline.

iv. Other studies have focussed on patients' perceptions of need and the difference that orthodontic intervention makes to their daily lives, using specifically oral health-related quality of life (QoL) measures. Evidence in this area is generally from weaker, cross-sectional studies, such as the recent paper by Johal et al[lxviii], cited by the BOS. This study compared 13-15 year olds with malocclusion traits with a group of 'normal' children. They found that children with malocclusion traits (prominent incisors of spaced teeth), and their carers, reported more oral health related QoL impacts on a questionnaire than did the control group. The principal limitation of this questionnaire is that it does not elicit the specific causes of the impacts recorded. Such impacts can be related to a variety of oral health conditions, and not necessarily the person's malocclusion. Also, as the research subjects were being seen in the orthodontic department of a teaching hospital it may be that they report greater oral health impact in the hope of receiving orthodontic treatment. One study reported that adolescents who had completed orthodontic treatment had a better oral health related quality of life than those who never had treatment[lxix]

2.6.4 Temporomandibular (TMJ) joint disorders

i. The TMJ is the joint between the base of the skull and the mandible (lower jaw). Disorders of these joints are related to a wide range of signs and symptoms, such as clicking, tenderness and pain on chewing or opening the mouth. All the chewing muscles may be affected by the disorder, and pain is often felt away from the joint itself. Theories of causation are complex, and include physical factors such as poor alignment of teeth, and psychosocial factors, such as stress and anxiety. There is a distinct profile of those affected, which increases with age and has a large preponderance of females.

ii. Treatment options usually begin conservatively, with reassurance and adapting behaviour, followed by a range of active treatments including physiotherapy and the use of splints worn in the mouth to change the biting surfaces of the teeth, and the biting relationship of the jaws. Research on the effect of providing one common type of splint, the Stabilisation Splint, was reviewed in 2004[lxx] and found insufficient evidence for or against its use.

iii. Orthodontic treatment seems to be neither a major preventive, nor a significant cause of, TMJ disorder. Such treatment may be offered to people with TMJ dysfunction on the hypothesis that if the teeth bite incorrectly - in the form of a malocclusion - this can then apply a restriction to the function of the TMJ (or worse, will predispose it to future pathological deterioration). Therefore by correcting the alignment and arrangement of the teeth, the TMJ

will remodel to an overriding new function, thus treating any established disease processes and allowing normal function to continue for the life of the patient.

iv. However, as there is a significant degree of controversy regarding the relationship of TMJ dysfunction and orthodontic treatment, a systematic review of the research literature has recently been commissioned by the Cochrane Collaboration[lxx lxxi]. So far, only the research protocol has been published. This does however provide a useful overview of the uncertainty in the current evidence, both of the appropriateness of orthodontic treatment for TMJ dysfunction, and conversely, the possibility of orthodontic treatment being a causative factor of TMJ dysfunction.

2.6.5 Other functional impairment; speech, mastication and swallowing

i. It is very probable that such a functional deficit will only be found in people with a high score on IOTN DHC, and so they should not be contractually excluded from receiving orthodontic treatment. Cleft lip and palate, or other less common, but severe orofacial abnormalities, require a multidisciplinary approach and therefore should be treated only within a hospital department linked to an appropriate centre.

ii. The soft tissues show remarkable adaptation to the changes that may occur during the transition between primary and secondary dentitions. In the main, speech is little affected by malocclusion and correction of an occlusal anomaly has little effect upon abnormal speech. However, if a patient cannot attain contact between the incisors anteriorly this may contribute to the production of a lisp (Mitchell)

2.6.6 Snoring and Obstructive Sleep Apnoea/Hypopnoea Syndrome (OSAHS)

Snoring is caused by a partial closure of the airway during sleep, allowing soft tissues in the upper throat to vibrate noisily. When the airway narrows so much that it closes, a person may stop breathing during sleep for repeated, short, periods. This not only fragments the sleep, leading to daytime drowsiness, but these repeated falls in blood oxygen levels are also linked to cardiovascular problems.

Appliances worn inside the mouth can improve these problems through altering the position of the lower jaw during sleep; Mandibular Advancement Splint (MAS) therapy. Such appliances are provided by some orthodontists in specialist

practice or within the hospital services, and by general dentists with suitable additional experience and expertise.

Treatment must follow proper physical examination and diagnosis, supported by limited sleep studies. Behavioural interventions such as obesity management are often required. Clinical Guidelines[lxxii] suggest:

- Intra oral devices (MAS) are appropriate therapy for snorers and for patients with mild OSAHS with normal daytime alertness

- Continuous Positive Airway Pressure (CPAP) is the first choice therapy for patients with moderate or severe OSAHS that is sufficiently symptomatic to require intervention, but intraoral devices (MAS) are appropriate alternative therapy such patients who are unable to tolerate CPAP.

ANNEX ONE

Extract from the National Health Service (General Dental Services Contracts) Regulations) 2005[(3)]:

SCHEDULE 1
Regulation 15

ADDITIONAL SERVICES

PART 2

ORTHODONTIC SERVICES

Patients to whom orthodontic services may be provided

4.—

(1) A contract that includes the provision of orthodontic services shall specify that orthodontic services may be provided to:

(a) only persons who are under the age of 18 at the time of the case assessment;

(b) only persons who have attained or are over the age of 18 years at the time of the case assessment; or

(c) persons falling within paragraph (a) or (b).

(2) Where a contract specifies the matters referred to in sub-paragraph (1)(b) or (1)(c), it shall in addition specify the circumstances in which orthodontic services may be provided to a person over the age of 18 years at the time of a case assessment.

(3) Subject to sub-paragraph (4), the contractor shall only provide orthodontic treatment to a person who is assessed by the contractor following a case assessment as having a treatment need in:

(a) grade 4 or 5 of the Dental Health Component of the Index of Orthodontic Treatment Need; or

(b) grade 3 of the Dental Health Component of that Index with an Aesthetic Component of 6 or above, unless the contractor is of the opinion, and has reasonable grounds for its opinion, that orthodontic treatment should be provided to a person who does not have such a treatment need by virtue of the exceptional circumstances of the dental and oral condition of the person concerned.

(4) In a case where a person does not have a treatment need but the contractor has reasonable grounds for its opinion that orthodontic treatment should be provided to that person because of the exceptional circumstances of the dental and oral condition of that person, such treatment as is referred to in sub-paragraph (3) may be provided.

ANNEX 2:

*Except from NHS Choices website[6], downloaded July 2013***.**

Around one in three British children has crooked teeth and needs orthodontic treatment to straighten them.

Braces are usually more successful in children, and four out of five orthodontics patients are children. But more adults than ever now want treatment, many having missed out when they were children. According to the British Orthodontic Society (BOS), nearly 1 million people in the UK started orthodontic treatment last year.

Are braces available on the NHS?

Orthodontic treatment is available free on the NHS for under-18s who need it. Treatment is also available on the NHS at the standard charge for complex dental treatment (just under £200) for adults who need it. However, adults who want orthodontic treatment to fix minor cosmetic problems aren't eligible for NHS treatment.

[6] http://www.nhs.uk/Livewell/dentalhealth/Pages/braces.aspx

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