ORTHODONTIC NEEDS ASSESSMENT FOR YORKSHIRE AND THE HUMBER 2017-2020

Introduction

Currently NHS England commissions primary care services including orthodontic services. Guidance issued by the Department of Health (DH) in 2010 suggested specific considerations to be taken into account by commissioners prior to making decisions on the future of these services. Many primary care trusts (PCTs) extended contracts and some procured services and they did have variable end dates but recently it has been agreed to extend these contracts till March 2019. Procurement law means that commissioners need to make long-term decisions on the future of these contracts. The majority of existing orthodontic services are delivered under time-limited contracts which are personal dental service (PDS) contracts. Over the past 10 years, the cost of orthodontic treatment in general and personal dental services has increased, 2.3% of the total primary care dental budget for England is accounted for by orthodontic related activity. In Yorkshire and Humber (Y&H) the Primary care orthodontic value available for commissioning is £19,889,838.

A key factor in determining the future of orthodontic capacity is an assessment of the level of services to be commissioned to meet population need. While the distribution of orthodontic services in Yorkshire & Humber is still mainly based on historical provision that existed prior to the 2006 dental contract, commissioners should be able to better target resources over time, based on needs and to ensure equity of orthodontic service provision.

General dental practitioners, dentists with enhanced skills and orthodontic specialists deliver primary care orthodontic services. They are, in some cases, supported by orthodontic therapists. Secondary care orthodontics is delivered by consultants and specialists assisted by orthodontic therapists and trainees. Secondary care orthodontists offer advice, training and usually treat the most complex (often multi-disciplinary) cases.

A pan Yorkshire & Humber approach is being adopted in commissioning of orthodontic services by NHS England. This report provides an assessment of the need for orthodontic services across Yorkshire & Humber. It describes estimates of normative need together with demand for orthodontic services. It provides information on current commissioned and delivered orthodontic activity, waiting times and examines orthodontic patient flows in and out of Y&H. The report concludes with an assessment of whether the services commissioned are meeting need.

PDS Orthodontic contracts

With the exception of two orthodontic practices March 2019 sees the expiry of all of PDS Orthodontic contracts across Y&H. NHS England has produced a guide for the consistent commissioning of orthodontic services based on the requirements of the Five Year Forward View. As a minimum, commissioners should ensure that they have completed a needs assessment and a review of current service provision. Patient engagement will need to be considered to ensure NHS England meets its 13Q (NHS Act 2006) requirements.

Health needs assessment for orthodontic care for Yorkshire and the Humber
Planning for procurement of orthodontic services for children requires three elements of assessment:

1. An estimate of the number of 12-year-old children who both need and demand intervention, added to the proportion of children who require orthodontic treatment before age 12 (interceptive orthodontics)

2. A view of the current quantity of provision and the degree to which investment meets need and expressed demand.

3. An assessment of how well current investment in existing orthodontic contracts and agreements is being utilised. The quality, value, outcomes and efficiency of current provision can be assessed using DAF, % PAR improvements (peer assessment rating) and transitional guidance (2014) which outlined an approach to assessing this in 5 domains. (Value of UOAs, numbers of assess/refuse and multiple assess/reviews on same patient, % PAR completed, numbers of abandoned cases and waiting times from referral to assessment/case start.) This exercise allows commissioners to identify potential efficiency savings to support procurement planning and to communicate commissioning intentions to contract holders.

Commissioners need to assess the context for re-procuring orthodontic services relative to other oral and wider health needs for the population they serve e.g. access to primary dental care as gatekeepers to specialist services. Consideration also needs to be given to stability of contracts due to length and the time needed for procurement cycles and the effects on patient continuity.

Background guidance
Current arrangements for the commissioning of specialist orthodontic services in primary care came into operation in April 2006. A number of published documents recommended a range of actions for PCTs to establish a more strategic and effective approach to orthodontic commissioning. These documents suggested moving to a sector-wide approach, commissioning orthodontics across primary and secondary care pathways and assessing levels of orthodontic need as the basis for planning appropriate future capacity and developing clinical governance. Further guidance explored joint commissioning of orthodontics in line with local needs, issues concerning future UOA values and benchmarking ratios between assessments and case starts. ‘Quality assurance in NHS primary care orthodontics’ provided further details of the proposed quality assessment and outcome framework together with compliance required by national regulations. The most recent guidance supports the development of care pathways, and the development of Managed Clinical Networks.

Key policy documents related to orthodontic commissioning are:

- Department of Health (2005) guidance 'Primary dental services: commissioning specialist dental services (revised version)' gateway 58652
- Department of Health (2006). 'Strategic commissioning of primary care orthodontic services', gateway 71053
- Primary Care Contracting (2006). 'New orthodontic contracts, hints and tips'
- PCC guidance November 2007 'Quality assurance in NHS primary care orthodontics'
- Securing excellence in commissioning NHS dental services 2013
- Transitional commissioning of primary care orthodontic services 2012
- NHS England Guide for commissioning Orthodontics, 2015

Estimate of orthodontic need & service provision for Yorkshire & the Humber

Purpose

The purpose of this document is to provide a framework and assessment of the need for orthodontic treatment in Yorkshire and the Humber. It reviews the current provision of orthodontic services, use of available resources and offers recommendations to support future commissioning considerations and decisions. In producing the report, completed Orthodontic Needs Assessments in the North of England have been reviewed to identify good practice. This framework uses a variety of methodologies to inform an evidence-based approach to commissioning. The intention is to support NHS England to achieve best use of resources, improve quality, equitable access and ensure parity of outcome in orthodontic services in Yorkshire & the Humber.

Introduction

Orthodontics is the dental specialty concerned with facial growth, development of the dentition and occlusion, and the assessment, diagnosis, interception and treatment of malocclusions and facial irregularities.

The contractual situation for the provision of Orthodontic services is varied and there is pressure in many localities on waiting times. There are a mixture of GDS contracts and time-limited PDS agreements, which were either awarded following procurement or the contractual reforms in 2006. GDS contracts with an element of orthodontics are currently not time limited. However it should be noted that the Orthodontic Commissioning Guide 2015 recommends a minimum caseload of 50 cases per year which would equate to 1050 UOAs. Commissioners need to understand the impact of current service delivery and support orthodontic providers to identify areas where improvements to efficiency can be made. This needs assessment and review of existing contract delivery together with the NHS England's Orthodontic Commissioning Guide 2015 will give commissioners assurance on direction and steps necessary to complete prior to decisions on future procurement.

Under the contract and agreements introduced in April 2006, Orthodontists or GDPs providing treatment on the NHS are paid an annual fee - the Calculated Annual Contract Value (CACV). This is to provide a complete orthodontic service to a group of patients over that period of time. The contract includes the provision of assessments, treatment starts, repairs, retainer checks and the continuing care of an on-going caseload. As a measure of activity, assessments and treatment starts trigger Units of Orthodontic Activity (UOAs) that are credited against the agreed contracted level of UOAs for the year.

A full orthodontic case assessment generates 1 UOA and applies only to patients seen on referral who are provided with a clinical examination (often involving radiographs and clinical photographs) designed to establish whether orthodontic treatment is necessary and if so, when it should be undertaken.

Units of Orthodontic Activity (UOAs) are attributed to an orthodontist as follows:

1 UOA – full and comprehensive orthodontic assessment
21 UOAs – orthodontic assessment and case start (patient aged 10 -17)
4 UOAs – orthodontic assessment and case start (patient aged below 10)
23 UOAs – orthodontic assessment and case start (patient aged 18+)

Methodology

The first part of an orthodontic needs assessment is to identify 'need' in the population. There are two elements to orthodontic treatment need:

- Normative need - the professionally judged need in a population cohort. Defined following a clinical examination using a standardized clinical index such as IOTN or benchmark and/ or need defined by applying a validated formula.

- Demand – need perceived by the patient that is expressed and presented for treatment. This can also be considered as 'patient willingness to undergo treatment'.

Estimated need in the population should then be viewed in light of existing service provision. The components of existing service provision that require review are:

- Whether the volume of commissioned local orthodontic services (primary and secondary care) is sufficient to meet the identified population need.

- Quality, outcomes and value of current service provision
- If services are located in the right place to ensure equity of access taking into account transport links.

The purpose of assessing orthodontic treatment need is to determine if sufficient effective orthodontic care is currently commissioned for the local population. Consideration should also be given to whether population projections will alter this needs assessment over the coming years

Quantification of population need for orthodontic treatment (methodologies)

An assessment of the need for orthodontic services is necessary to inform long-term decisions on the future of orthodontic contracts. Data from the BASCD 12-year-old survey 2008/2009 suggests that there was variation across the region in terms of need and demand for treatment; however research has shown that orthodontic need is stable across populations and ethnic groups. There are various methods of determining orthodontic treatment need in a population:

The National Dental Epidemiological Programme (NDEP) method

Twelve-year-olds are used as the age group to define need, as orthodontic treatment is usually carried out when all the permanent teeth have erupted and the amount of orthodontic treatment in the younger and older age groups is low. In 2008/9 an NHS epidemiological oral health survey of 89,442 12-year-old children was undertaken across England. As well as a surveying oral health, orthodontic need was also assessed. This gave, for the first time an epidemiological orthodontic needs assessment that included:

- Normative need and
- Demand (willingness to have treatment)
- Interceptive orthodontics (proportion of 12-year-olds already wearing an appliance).

Children with poor oral hygiene or active caries were not excluded from the assessment and so this treatment of the data will therefore overestimate those that are suitable for orthodontic treatment. Prior to the examination, the children in the survey were asked if they were wearing a brace. If they had a brace they were classified as already receiving orthodontic treatment and were not involved in the survey any more. The remainder were asked if they thought their teeth needed straightening. If they replied “yes”, they were asked if they would wear a brace. From this, estimates of patient perceived need (demand), can be made, giving an indication of how many of these children with clinical

need might seek treatment. The examiners were all calibrated with a Regional and National standard and trained in Index of Orthodontic Treatment Need (IOTN) assessment. The threshold set for normative orthodontic need was a Dental Health Component (DHC) IOTN score of 4 or above (the same level used in the 2003 National Child Dental Health Survey) or an Aesthetic Component (AC) of 8 to 10 at lower DHC scores.

Orthodontic treatment is currently funded by the NHS for those patients with IOTN DHC 4 and 5, or and AC of 8-10. It is also funded for those patients who have IOTN DHC 3 if they **also** have an AC of 6 or above. Patients must also have excellent oral hygiene and no active oral disease. Whilst the NDEP 2008 estimate does not capture need for treatment as defined by an IOTN score between DHC 3 plus AC 6 up to DHC 4, it also overestimates treatment need because it does not exclude those who are ineligible for orthodontic treatment due to poor oral hygiene or active oral disease.

Due to the small size of the sample for the survey in some areas of Y&H, conclusions drawn from the results are limited (YHPHO 2012). Caution should be exercised for using the findings of the survey as the sole method for needs assessment. In addition, demand for treatment may have changed since 2009 as social norms for acceptability of fixed appliances have changed. In addition not all data are readily available for the same geographical boundaries as currently used.

Holmes methodology

The prevalence of normative need for orthodontic treatment at a threshold of IOTN DHC and AC 6 or greater has been estimated to be 36.3% (95% C.I. 33.3 to 39.3) (Holmes A, 1992). This research used local population in South Yorkshire and is included for completeness.

National child dental health survey 2013

The National Child Dental Health survey (CDH) 2013 showed 37% of 12 year-old children in the UK had unmet need (dental health component or aesthetic 8-10). However no account was taken of demand.

Stephen's formula method

An alternative method to estimate population orthodontic need and demand is using Stephen's formula which estimates that 1/3rd of the 12 year old population have an IOTN DHC score of 4 or 5. This is then adjusted for those who require interceptive treatment before the age of 12, (9%) and for adult treatment (4%).

12 year old population/3 x 1.13 (to account for 9% interceptive and 4% adult orthodontics)

Stephen's formula assumes that the proportion of patients who require treatment in DHC category 3 is largely offset by the proportion of cases in category 4 and 5 who, despite a normative need for Orthodontic treatment, decline care, i.e. no demand. However, Stephen's formula is considered an overestimate because it does not consider demand and includes the 'adult factor' which will only apply to those being treated in hospital (as no adult orthodontic care is normally commissioned in primary care).

For completeness this needs assessment presents a range of methodologies applied to 2011 population census data. The NDEP methodology may be an underestimate as demand may have changed and Stephen's formula is likely to be an overestimate as demand and suitability (e.g. oral hygiene) is not taken into account. Using a mean of the methodologies produced a very similar estimate to using a third of the population, as illustrated in Table 1 in the appendix. Therefore it is proposed that a third of the population is used as a pragmatic estimate of orthodontic treatment need.

Understanding existing service provision
Primary care orthodontic services

There are 74 primary care contracts open in Y&H during 2017-18 that included orthodontic activity. There was a blend of PDS (n=39) orthodontic agreements and GDS general (n= 35) orthodontic contracts. Mixed GDS contracts have no fixed end date, unless terminated or handed back to NHS England these UOAs are not available for re-procurement. Table 2 illustrates the estimated budgets/contracted UOAs for primary care PDS orthodontic services.

Table 2 Contract values, contracted UOAs and mean UOA values

	Contract Value* (PDS only)	ALL Contracted UOAs 2017-18 (PDS)	Mean UOA** (PDS only) May 2017/18	Range UOA value May 2017/18
North Yorkshire And Humber	£5,675,864	100,960	£56.01	£51.04-£64.31
South Yorkshire And Bassetlaw	£5618757	94,289	£61.81	£60.54 – 62.04
West Yorkshire	£8,595,217	140,742	£61.12	£57.04 - £64.28
Yorkshire & Humber	£19,889,838	335,991	£59.31	£61.04 - £64.31

*Calculated from PDS orthodontic data where available. Does not include mixed GDS contracts

** Includes DDRB uplift

Hospital orthodontic service (secondary care)

It should be stated this report does not yet include actual numbers of orthodontic cases treated in secondary care but an estimate of maximum potential numbers of 'single-professional' treated cases. A CQiN implemented from 2016 should have provided accurate data regarding the annual numbers of completed cases, however, this does not seem to have been reported.

Consultant Orthodontists based in secondary care provide a treatment service predominantly for multidisciplinary (those requiring a joint surgical and orthodontic approach) and complex cases. A number of units also provide training for orthodontic specialists and may take on a number of less complex cases for their trainees. There are currently 15 specialist registrars training in orthodontics in Yorkshire and the Humber, of those 2 are part time and the rest are full time Hospital orthodontic services delivered by consultant led teams are commissioned as part of contracts with secondary care providers forming an established part of NHS England baseline funding for acute sector services. Most referrals to the hospital services are now through a referral pathway with referrals accepted from GDPs, Salaried Dental Services and from specialists for more complex care. There are currently fourteen hospital trust providers of orthodontics in Y&H however, there are plans for an additional facility based in Calderdale in the 2017/18 plan.

In addition to providing orthodontic care for patients who have IOTN 4 and 5, complex orthodontic services are provided in multi-disciplinary clinics. Training of orthodontic specialists is an important function presently carried out in these trusts. **Annual spend in secondary care in Y &H for the financial year 2016/17 was £2,166,416 estimated by claims and national** tariff data. Other orthodontic needs assessments have estimated that 15% of orthodontic treatment is delivered by secondary care.

Estimate of hospital service cost per case and numbers treated

Secondary care dental services are commissioned for the resident population who may seek treatment at any provider trust, with a recharge back to the host NHS England on Payment by Results (PbR) tariff. Hospital tariffs for orthodontic treatment in secondary care set at national level have been used for this calculation. The estimates for this work are based on first attendance and follow up attendance for a single professional. Some hospitals may use first and follow up tariffs for multi professional care. Where this happens the cost per case in secondary care will be more expensive and the funding will pay for less cases.

Orthodontic cases take approximately 18 months to treat. The cost estimates for this work are based on the following number of appointments:

1st appointment
6 weekly appointments over 18 months (78 weeks / 6 = 13). 13 x follow up appointments
2 repair visits (2 follow ups)
1 visit to fit retainers (1 follow up)
3 visits for supervised retention (3 follow up visits)

In summary each hospital case has been costed as 1 first appointment plus 19 follow up appointments.

The box below gives the national tariffs used for these calculations and the cost estimated to treat an orthodontic case in secondary care.

National tariffs for orthodontics and estimated cost per case in secondary care 2016/17, 2017/18 and 2018/19

Service description Consultant led case	**2016/17**	**2017/18**	**2018/19**
Orthodontics – first attendance – single professional	£155	£ 156	£156
Orthodontics – follow up attendance – single professional	£78	£ 69	£69
Estimated cost per case in secondary care	£1637	£1467	£1467

Table 3 in the appendix shows a summary of activity in secondary care as well as an estimate of the number of cases treated in secondary care based on the calculation described before. Using this calculation is likely to give an over estimate as not all cases that attend for a first appointment progress to treatment. The maximum number of cases in hospital (non-multidisciplinary cases) is likely to be **1323** from the 2016/17 tariff (please see table 3).

Matching need to capacity

It is necessary to determine whether existing commissioned capacity is meeting need. The number of case starts available can be estimated by dividing the contracted UOA activity by 22. This assumes that 2 assessments are undertaken to every one course of treatment commenced. This is an estimate of what is achievable and should be seen as a minimum. It also overestimates the UOAs required for interceptive orthodontics. With better quality referrals, this figure may be reduced in the future. The figure for the number of case starts available is then related to population level need.

Matching commissioned capacity to need can also be determined by dividing the contracted number of UOA by estimated normative need to give an indication of the number of UOAs available for each case. **NB this data does not account for orthodontic treatment provided in a**

secondary care setting. Overall availability of UOAs showed that 73% of case starts were available to meet the estimated normative need for treatment of Y&H's resident population in primary care alone (please see table 4a).

Matching commissioned capacity to need can also be determined by dividing the contracted number of UOA by estimated normative need to give an indication of the number of UOAs available for each case. In Y&H primary care, **16 UOAs** are available per case of normative need. Other factors affecting supply, demand and uptake of orthodontic services include: NHS hospital orthodontic provision; access to a GDP as gatekeeper; an un-quantified private market and modifying factors such as groups with lower perceived need and cases with dental caries considered inappropriate for commencement of orthodontic care.

However there would appear to be some areas which may be over-commissioned (Harrogate, Scarborough and Ryedale, Selby, York and Doncaster) and some which may be under-commissioned (Craven, Hambleton and Richmondshire, Hull, North East Lincolnshire, North Lincolnshire, Bassetlaw, Barnsley, Rotherham, Bradford and Airedale and Calderdale). The highlighted column in table 4a demonstrates this. However, NHS England may need to consider natural flows of population from neighbouring areas. In addition there are some areas where UOAs are commissioned in GDS which have not been included.

Table 4a Matching orthodontic need to capacity by local authority area *North Yorkshire has been broken down due to the geographical size

	Estimated case starts needed using third pop	UOAs for normative need	Contracted UOAs 2017-18 PDS only	Estimated case starts available (by 22)	% case starts available relative to need	Current UOAs/ Pop need
***North Yorkshire & Humber**	**6344**	**139568**	**100960**	**4589**	**72**	**16**
Total N Yorks & York	2927	64394	66383	3017	**103**	22
Craven	240	5280	3300	150	**63**	14
Harrogate	607	13354	16192	736	**121**	27
Hambleton and Richmondshire	527	11954	7500	341	**65**	14
Scarborough and Ryedale	559	12298	13002	591	**106**	23

Selby	331	7282	7889	359	**108**	24
York	663	14586	18500	841	**127**	28
E Riding	1237	27214	19421	883	**71**	16
Hull	933	20526	13029	592	**63**	14
NE Lincs	614	13508	1328	60	**10**	2
N Lincs	633	13926	799	36	**6**	1
South Yorkshire & Bassetlaw	**5639**	**124058**	**94289**	**4286**	**76**	**17**
Doncaster	1163	25586	34304	1559	**134**	29
Bassetlaw	488	10736	0	0	**0**	0
Barnsley	912	20064	13076	594	**65**	14
Rotherham	1062	23364	8352	380	**36**	8
Sheffield	2014	44308	38557	1753	**87**	19
West Yorkshire	**9063**	**199386**	**140742**	**6397**	**71**	**16**
Bradford and Airedale	2468	54296	29454	1339	**54**	12
Calderdale	852	18744	5608	255	**30**	7

Kirklees	1777	39094	30709	1396	**79**	17
Leeds	2713	59686	49467	2249	**83**	18
Wakefield District	1253	27566	25504	1159	**93**	20
Yorkshire & Humber	**21044**	**462968**	**335991**	**15272**	**73**	**16**

CCG boundaries are different to local authority footprints therefore population estimates differ (please see table 4b appendix)

Population change

The 12 year old population is predicted to grow from the census in 2011 to 2030. Some local authorities, however, are predicted to have a drop in this age group of children.

For the Yorkshire and Humber region compared with 2011 data, it is estimated that there will be an additional 1060 extra cases in 2020, and 1771 extra cases by 2030 compared with 2011 population data (please see appendix table 5b).

The total UOAs are estimated to be as follows:

2020 = 486,222 UOAs for normative need
2030 = 501,864 UOAs for normative need

In reality less than this number of patients may be referred for orthodontic treatment due to the role of General Dental Practitioners acting as gatekeepers to orthodontic services. Poor oral hygiene will act as a contra-indication to referral and to starting orthodontic treatment. Some patients may not be suitable for NHS orthodontic referral and treatment and other patients will receive orthodontic treatment through hospital provision or private care outside of this commissioning process. It is also possible that some patients may meet the requirements for NHS orthodontic treatment but decline to proceed for a referral for orthodontic treatment. Other patients may not have access to a GDP and therefore are unable to be referred to an orthodontist. The recent work to improve dental access rates for children may impact upon the number of orthodontic referrals by GDPs in the future, if access rates increase.

The 335991 contracted PDS UOAs for 2017-18 translate to 73% of estimated normative need available for the resident population of Yorkshire and the Humber. However, projected figures are this would drop to 69% in 2020 and 67% in 2030 if the contracted number of UOAs remained constant.

NHS England may wish to consider an incremental increase in UOAs to meet the projected estimated increase to orthodontic need in Yorkshire and Humber. One approach which could be considered would be a stepped contract, in which UOAs are increasingly phased into a contract, over consecutive years. To ensure that contractual funding is translated into orthodontic activity for de-novo contracts, NHS England could consider contractual arrangements which stipulate that at the end of the contract the provider will either complete all cases that have been started, or alternatively NHS England would partially recoup funds where treatment has not been completed but had been funded.

It is important to note that these are **estimated projections of orthodontic need in 2020 and 2030 which may vary from the actual need.**

Other factors to consider in estimating orthodontic treatment needs

Commissioners may want to consider the viability of a standalone orthodontic practice in terms of minimum of UOAs. Discussions with specialists have suggested 6500 UOAs to be a minimum but this is also dependent on the amount of private orthodontics that is provided as they are interdependent in running costs.

Orthodontic services are mainly provided on a referral basis from General Dental Practitioners after assessment. **Within a 24 month period up to March 2017 the percentage of 12 year old children resident in Y and H who visited an NHS dentist had a variation between areas ranging between 70% in Bassetlaw up to 91% in Kirklees (please see appendix table 6).** Therefore, not all children will be assessed and referred for orthodontic care if required. In addition, those attending may not perceive a need for treatment even if clinically indicated. Children who are referred for orthodontic treatment should be dentally fit, free from active decay and have good oral hygiene. In 2008 in Y&H, an average of 25% of 12-year olds had active and untreated tooth decay and may therefore be unsuitable for orthodontic treatment. **The same table demonstrates how access to General Dental Services modifies normative need to 87% in terms of cases able to access orthodontic care via referral from a GDP**

Orthodontic service provision in Y&H
Primary care orthodontic services in Y&H

In Y&H, there are 74 NHS primary care orthodontic contracts open; 35 are General Dental Services (GDS) mixed orthodontics contracts and 39 PDS contracts are limited to orthodontics. Planned primary care orthodontic contract spend in 2017/18 (excluding the orthodontic component of mixed contracts) will be £19,889,838 (please see table 2). However claw-back on underperforming orthodontic contracts was £196,693 in 2016/17 (for under delivery below 96%), and this related to 3531 UOAs across PDS and mixed GDS contracts.

Efficiency of use of UOAs in primary care

Greater Manchester has worked with primary care orthodontists to review metrics in provision. An audit sharing the variation with providers from 2013 onwards has shown a marked change in efficiency of use of UOAs which is significantly better than both England and Yorkshire & Humber. KPIs to work towards improving the ratios in Yorkshire and Humber would increase the number of UOAs available for treatment starts and reduce waiting times for both assessment and treatment. The introduction of standardised referral forms has the potential to improve these figures further (a reduction in the numbers of assess & refuse and assess & review procedures). A referral management system to triage appropriate cases may also achieve the same. The table below shows that there are large differences between GM and Y&H for cases that proceed from assessment to treatment. There is therefore considerable potential to increase the number of children receiving orthodontic treatment by more efficient use of UOAs.

Table 7 Use of UOAs

			Jan – Dec 2014	**Jan –Dec 2015**	**Jan-Dec 2016**	**Jan-Dec 2017**
% of assessments that are:	Assess and fit appliance	England	45.6	51.2	55.8	58.8
		Gter Manchester	64.7	69.8	79.2	77.5
		NY&H	43.4	53.5	50.5 Y&H	54.9 Y&H
		SY	37.2	45.1		
		WY	37.3	42.8		
	Assess and refuse	England	13.2	13.2	12	11.4
		Gter Manchester	10.8	9.7	7.3	7.9
		NY&H	14.8	12.1	14.4 Y&H	14 Y&H
		SY	14.0	15.5		
		WY	18.3	16.7		
	Assess and review	England	41.2	35.6	32.2	29.8
		Gter Manchester	24.5	20.5	13.5	14.6

		NY&H	41.7	34.4	35.1 Y&H	31.1 Y&H
		SY	48.8	39.4		
		WY	44.4	40.5		

Referral management centres

The current patient referral system works on market forces and historical choice of provider by the referring dental practitioner. This can lead to acceptance of unnecessary referrals, which may be inappropriate or ill-timed, multiple referrals, uneven waiting times and uneven distribution of service availability for patients. Referral management arrangements can monitor whether referral protocols have been followed and direct appropriate referrals to the most suitable. They can also prevent multiple referrals of the same patient and thus multiple assessments. However there are disadvantages in the cost of the service and may have limited benefit in rural areas where there is only one possible provider. Alternatively, commissioners should ensure that numbers of patient assessments per case start are kept under review so that resources are not disproportionately directed to multiple assessments on the same patient.

Referral letters including IOTN, details of motivation of the patient to have orthodontic treatment, caries levels and oral hygiene status have been developed between LDN and MCNs in Y&H, with a view to improving the quality of referrals. The adoption of these forms exclusively by orthodontic providers could be part of a service specification for primary care. Alternatively a fixed ratio of assessments to case starts could be considered.

Treatment modality

Table 8 in the appendix demonstrates the amount of courses of treatment carried out with removable appliances only. It is widely accepted that in the majority of cases, fixed appliances provide more favourable outcomes. A high proportion may represent sub-optimal results for patients. Reasons needed to be explored with providers which are clearly above the national and area averages.

Patient flows

Primary care dentistry, including orthodontic specialist services, is commissioned for patients choosing to attend a practice in that area and commissioning recognises the inflow of non-residents. However it is incumbent upon commissioners to ensure they are commissioning services as locally as practical to centres of population, especially as children will be travelling every 6-8 weeks for approximately two years for orthodontic treatment. The cross border flow data for 2014/15 has been investigated using data from the NHS BSA for each locality and are shown in tables 9-11 in the appendix. Where the movement of patients could be identified from BSA data, the highest flows were 4.9% into South Yorkshire and Bassetlaw from North Yorkshire & Humber, and 3.8% into North Yorkshire & Humber from

West Yorkshire. NHS England may wish to consider whether this is due to natural flows of patients or due to inequity in service of orthodontic service provision. The cross border flow data for 2014/2015 has been investigated using data from the NHS BSA for each locality and are shown in tables 9-11 in the appendix. The highest flows were 4.5% into South Yorkshire from North Yorkshire & Humber and 4.8% into South Yorkshire and Bassetlaw from North Yorkshire & Humber

Waiting times

Primary care waiting time data for orthodontic care is difficult to determine because there is no agreed methodology for assessing waiting times. As part of an audit, NHSE in Y&H asked for primary care orthodontic waiting times in November 2017 for a theoretical patient being referred that day for assessment or placed on a treatment waiting list. It was apparent that practices managed waiting lists in different ways (those that triaged patients and so had relatively short assessment numbers and longer treatment waiting times versus those who only saw patients when able to treat them if appropriate and therefore had relatively long assessment times and shorter treatment times). Some practices had previously received non-recurrent funding for case starts which would impact on ratios. Consideration should be given to a consistent method of existing waiting list management where by patients are triaged to identify suitability for treatment and those that may require more urgent orthodontic care.

Waiting times in Y&H for an assessment in primary care ranged from 1 to 36 months and 0 to 38 months for treatment (table 12, appendix). Data supplied by hospital trusts in 2016 showed that waiting times in secondary care for consultant led care were within 18 week targets.

Ethnicity

Ethnicity data recorded on primary care FP17 forms is incomplete, however, NHS BSA data shows that all ethnic groups in Y and H appear to receive orthodontic care,

Deprivation and orthodontic need

The national Child Dental Health (CDH) survey (2003) examined orthodontic treatment needs among 12 to 15-year-olds and found that there was effectively no difference between children from deprived and less deprived areas in terms of need as the predisposing factors are more related to genetic predisposition, though this risk may be modified by disease or treatment. However, the 2013 CDH study showed that children in less deprived areas were more likely to use orthodontic services compared to children in more deprived areas. There are many possible reasons for a difference in uptake in areas such as attendance patterns of the child and parent, service provision, personal choice and personal health care priorities.

Managed clinical networks
Managed clinical networks (MCNs) as described in the orthodontic commissioning guide,) should ensure that the highest standard of orthodontic care is provided by the local primary and secondary care workforce and co-ordinate the local provision of orthodontic care in conjunction with commissioners. MCNs can be instrumental in overseeing agreed care pathways, taking forward discussions and issues relating to referral management and developing further quality of outcome measures. They are crucial in the implementation of the new orthodontic commissioning guide but there are varying levels of engagement with orthodontists and MCNs across Y&H and they are at different stages of development. Consideration could be given to engagement with an MCN being included as a KPI.

Conclusion

An estimated £19,889,838 million is spent on orthodontic care in Y&H. An additional **£2,166,416** was spent on hospital orthodontic services. When estimated normative need is matched to primary orthodontic commissioned capacity, **73**% of case starts are matched to need across Y&H. However, factoring in the number of children accessing dental care as GDPs as gatekeepers, 87% of cases could potentially be treated.

Factoring an un-quantified private market, cases with dental caries and hospital orthodontic service provision the data from this needs assessment suggests that the overall orthodontic activity contracted in Yorkshire and the Humber is likely to meet identified need.

However, there are some areas where there are apparent inequities in orthodontic services. Whilst this may be due potentially historic commissioning it may partially be explained by natural patient flow. NHS England commissioners may wish to address whether these apparent differences need rebalancing.

The 12 year old population is predicted to grow slightly by 2020. Efficient use of available resources (contracted UOAs) will be key to enabling shorter waiting times and more people receiving orthodontic treatment. This will be essential to securing sufficient treatment for the population possibly through a referral management system or fixed ratios of assessments to treatment. Whilst the exact numbers of completed cases in the hospital is unknown, there may be the potential for some cases to be delivered in a primary care specialist setting.

Efficient use of UOAs is key to securing sufficient treatment courses for the population. Quality is not simply related to the technical competence of treatment. It refers to whether care is relevant to need and to its effectiveness, efficiency, equity, acceptability and accessibility.

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