Public Health England

Protecting and improving the nation's health

North Yorkshire and Humber oral health needs assessment 2015

This document details the oral health of the people living in North Yorkshire and Humber and describes the services currently commissioned to meet those needs. It identifies key issues that should be addressed in future oral health and dental commissioning strategies.

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Published September 2015
PHE publications gateway number: 2015317

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Executive summary

Introduction

Despite improvements in oral health in England over the last forty years, many people continue to experience the pain and discomfort associated with oral diseases, which are largely preventable. There are socio-demographic variations in the distribution and severity of oral diseases with vulnerable groups experiencing significant oral health problems.

This oral health needs assessment describes the oral health of people living in North Yorkshire and Humber and the services currently commissioned to meet those needs. It identifies the key issues that should be addressed in future oral health improvement and dental commissioning in order to improve oral health and reduce oral health inequalities in the area.

Population and demographics

- North Yorkshire and Humber has a population of 1,714,074.
- there are differences in the population profiles of each local authority. Kingston upon Hull has higher proportions of children under 5 years old, whereas the proportions of children in North Yorkshire, York and East Riding of Yorkshire are lower than the England average. In North Yorkshire, East Riding of Yorkshire and North Lincolnshire there are higher proportions of adults aged 45 years and older
- over the next ten years there is a projected population growth in all North Yorkshire and Humber local authorities especially in York and Selby.
- North Yorkshire and Humber differs from both England and Yorkshire and The Humber with a higher proportion of the population from the White ethnic group and lower proportions of all other ethnic groups
- in North East Lincolnshire and Kingston upon Hull higher proportions of the population fall into the lower two quintiles of deprivation than the England average
- life expectancy is higher than the England average for men in North Yorkshire, York and East Riding of Yorkshire and for women in North Yorkshire and York
- healthy behaviours can contribute to the prevention and control of non-communicable diseases such as cardiovascular diseases,

chronic respiratory diseases, diabetes and cancers. Healthy eating and adult obesity are significantly worse than the England average in Kingston upon Hull, North Lincolnshire and North East Lincolnshire
- tobacco use was also significantly higher in Kingston upon Hull (29.3%), North East Lincolnshire (27.3%) and North Lincolnshire (22.9%)

Determinants and impacts of oral health

- poor oral health results in social and financial impacts both for the individual and society as a whole. A wide spectrum of factors has been identified as influencing oral health including economic and social policy and individual health behaviours. However, focusing solely on individual behaviour change has only short term benefits for oral and general health. It is therefore essential to focus on the wider determinants of health and partnership delivery to achieve sustainable improvements

Epidemiology of oral diseases

- the prevalence of tooth decay in three-year-olds in Yorkshire and The Humber was higher than the England average
- the severity of tooth decay in three-year-olds in Yorkshire and The Humber is the fourth worst area in the country
- the prevalence of early childhood caries in Yorkshire and The Humber was significantly higher than the England average
- there was an association between tooth decay in three-year-olds and deprivation
- the prevalence of tooth decay in five-year-old children in Yorkshire and The Humber was significantly higher than the England average. Richmondshire and Kingston upon Hull were also significantly higher than the Yorkshire and Humber average
- the severity of tooth decay in five-year-old children in Yorkshire and The Humber was the third worst in England. Children living in Kingston upon Hull, Richmondshire and North East Lincolnshire, have significantly higher tooth decay experience than the England average
- children living in North Lincolnshire experienced good oral health which may be related to water fluoridation and lower levels of deprivation
- across all local authority areas in North Yorkshire and Humber inequalities in tooth decay in five-year-olds were seen with prevalence and severity increasing as deprivation increased.

- children in the most deprived quintile had over three times more decay experience than those in the least deprived quintile
- trend analysis showed a significant decline in the prevalence of tooth decay in five-year-olds in Ryedale and Craven
- five-year-old children in Richmondshire and North East Lincolnshire experienced relatively higher levels of tooth decay and yet a smaller proportion of these decayed teeth were treated with fillings demonstrating an inverse care relationship
- the prevalence of tooth decay in 12-year-old children in Yorkshire and The Humber was significantly higher than the England average. Scarborough was also significantly higher than the Yorkshire and The Humber average
- the severity of tooth decay in 12-year-olds in Yorkshire and The Humber was significantly higher than the England average. Scarborough was also significantly higher than the Yorkshire and The Humber average
- across all local authorities within North Yorkshire and Humber inequalities in tooth decay in 12-year-olds were seen with prevalence and severity increasing as deprivation increased Children in the most deprived quintile had over 1.8 times more decay experience than children in the least deprived quintile
- fewer teeth with tooth decay in 12-year-olds were filled in North East Lincolnshire, Kingston upon Hull, Hambleton and Richmondshire than in England and Yorkshire and The Humber. In contrast more teeth with tooth decay had been filled in 12-year-olds in Craven and Harrogate compared to England and Yorkshire and The Humberin Yorkshire and The Humber 12-year-olds had the second worst oral hygiene compared to other areas in England
- in Yorkshire and The Humber 12-year-old children reported problems with eating and cleaning of their teeth as impacting them the most
- an estimated 9,725 of 12-year-old children in North Yorkshire and Humber need orthodontic treatment
- the oral health of adults has improved significantly over the last 40 years with more of the population retaining their natural teeth throughout their lifetime
- in Yorkshire and The Humber, 30% of adults had tooth decay and 2% had severe gum disease
- men from materially deprived backgrounds were more likely to experience higher levels of tooth decay and gum disease but least likely to visit a dentist

- people living in North East Lincolnshire and Kingston upon Hull were more likely to report poorer oral health compared with those living in other local authority areas
- people in Hull and North Lincolnshire were more likely to report a perceived need for treatment
- people in Yorkshire and Humber were more likely to wear a denture than nationally
- the incidence of mouth cancer has increased slightly in North East Lincolnshire, Kingston upon Hull and Scarborough
- information describing the oral health of vulnerable groups in North Yorkshire and Humber is limited
- Kingston upon Hull, North Lincolnshire and North East Lincolnshire have significantly more children with learning disabilities relative to the national average
- children with learning disabilities are more likely to have teeth extracted than filled and have poorer gum health
- North East Lincolnshire has significantly more adults with learning disabilities known to general medical practitioners relative to the national average
- adults with learning disabilities are more likely to have poorer oral health than the general population
- adults with learning disabilities living in the community are more likely to have poor oral health than their counterparts living in care.
- Approximately a quarter of the population experience some kind of mental health problem in any one year. However there is no local information on the oral health needs of this group
- prisoners experience poorer oral health than the general population. This oral health needs assessment does not consider this group
- homeless people are more likely to have greater need to oral healthcare services than the general population
- severely obese people may be at higher risk of oral disease. Dental services for severely obese people are available in all the local authority areas apart from North Yorkshire and York
- looked after children are likely to have greater oral health needs than their peers. In North Yorkshire and Humber, most children in care live in Kingston upon Hull

Oral healthcare services

- the majority of primary care dental services in the area are provided by general dental practitioners
- the cost of a unit of dental activity varies across all local authority areas

- access to care is better across North Yorkshire and Humber as a whole when compared with England however at local authority level there is considerable variation. Access to care is not reflective of need. In more deprived areas where oral health tends to be poorer lower proportions of adults and children access primary care dental services
- a pilot has been undertaken in South Humber to offer more urgent care and courses of treatment
- a prevention pilot in general dental services is ongoing in a number of dental practices across North Yorkshire and Humber
- access to services is inequitable in terms of deprivation and age. It was not possible to assess equity by gender and ethnicity
- the average UDA per resident adult and child population varies across local authorities in North Yorkshire and Humber however it is considerably lower in North Lincolnshire
- adults exempt from paying NHS dental charges are less likely to need care covered by Band 1 treatment
- fluoride varnish application rates are increasing however a significant proportion of children in North Yorkshire and Humber who visit the dentist do not receive fluoride varnish applications with children in North East Lincolnshire and Craven having the lowest levels
- it was not possible to determine if the guidance on recall intervals is being implemented in general dental practice
- there is low provision of domiciliary services in North Yorkshire and North Lincolnshire compared with Yorkshire and The Humber and England. All community dental services provide domiciliary care. Information describing the domiciliary care pathways is unavailable
- a survey of care home managers in York on dental provision for their residents is currently underway
- inhalation and intravenous sedation services are provided by all three community dental services
- a higher proportion of patients accessed urgent dental care in North Lincolnshire and Kingston upon Hull which were well above levels across North Yorkshire and Humber and England
- the community dental services provide primary dental care for vulnerable groups as well as those with more complex special care needs. A review of the services is planned and the development of a common data reporting schedule will help inform treatments provided
- general anaesthetic services are available across North Yorkshire and Humber. The care pathway including costs of services was not described

- the quality assurance process in primary dental care includes reference to the national Dental Assurance Framework, CQC registration requirements and support from clinical advisors
- the primary care dental workforce consists of dentists and dental care professionals. The contract reform programme has highlighted the importance of greater use of skill mix
- there is inconsistent provision of primary care specialist oral surgery services in the area. Currently there is no provision in North Yorkshire and no service evaluations have been carried out. Information describing pathways including tariffs amongst providers is not described. Specialist services are predominantly provided in secondary care
- there are inconsistencies in the commissioning of primary care based orthodontic services across the area including the provision of non-specialist care
- in respect to quality of orthodontic services, some providers are not PAR scoring sufficient cases
- equity of access to orthodontic services could not be established
- the North Yorkshire and Humber commissioning plan includes a review of orthodontic services. Currently a waiting list audit of the primary care orthodontic services is being undertaken across North Yorkshire and Humber. The results of this audit could be used to understand the referral patterns and care pathway for orthodontics
- Based upon Stephen's formula only and considering the limitations of this methodology, there may be a shortfall in orthodontic provision in North Yorkshire and Humber
- most hospital activity is provided on an outpatient basis
- spend on outpatient and inpatient activity is broadly similar
- The majority of activity and spend is on oral surgery
- there are significant numbers of non-elective oral surgery inpatient cases
- there is an agreed CQUIN with secondary care providers
- it is unclear what quality assurance processes are in place for secondary care specialist services

Dental public health services

- local authorities are responsible for improving the oral health of their population. They have responsibility for commissioning oral health improvement programmes and oral health surveys. They also have powers relating to making proposals regarding water fluoridation for their local population

- all local authorities have a specified budget for commissioning oral health improvement programmes except North East Lincolnshire Council
- a range of universal and targeted oral health improvement programmes are implemented by local authorities in North Yorkshire and Humber most of which have some, sufficient or strong evidence base
- the majority of oral health improvement programmes are directed towards children
- local authorities are responsible for commissioning care homes and school nursing services and soon will be responsible for commissioning health visiting service. This will provide an opportunity for integration of oral health into these services
- local authorities in North East Lincolnshire, North Lincolnshire, Kingston upon Hull and East Ridings of Yorkshire have established oral health advisory/partnership groups
- all local authorities commission oral health surveys although sample sizes vary and may not be adequate to provide valid data at sub local authority level

Patient and public engagement

- the majority of adult residents in North Yorkshire and The Humber reported not having problems accessing NHS dental services. A lack of accurate signposting information to NHS dental services, patient charges and NHS treatments has been highlighted
- the literature reports that vulnerable groups experience poorer oral health and have difficulties accessing dental services. There is limited information on the views and experiences of children, young people, parents and carers and vulnerable patient groups and for those living in more rural areas in North Yorkshire and Humber regarding NHS dental services
- local surveys have been conducted in Kingston upon Hull, North East Lincolnshire and North Lincolnshire. These surveys highlight that dental access remains a concern for people living in North Lincolnshire

Key issues for consideration

This needs assessment has helped identify the oral health needs and gaps in oral healthcare provision for the residents of North Yorkshire and Humber. Outlined below are key issues for consideration by NHS England and local authorities to support them in developing commissioning strategies.

Population and demographic variation

- oral health and oral health improvement strategies should seek to address the health inequalities between and within local authority areas across North Yorkshire and Humber
- NHS England should ensure that commissioning plans consider the expected increases in population size in all the local authorities in North Yorkshire and Humber in addition to improving absolute levels of health

Determinants and impacts of oral health

- a common risk factor approach focusing on the wider determinants as well facilitating healthy choices will impact not only on oral health but wider general health

Epidemiology of oral diseases

- prevention of tooth decay and identification and restoration of decayed teeth in children's permanent dentitions should be a priority for dental services in North Yorkshire and Humber
- oral health improvement strategies should include actions to address the increasing incidence of mouth cancer in North East Lincolnshire, Kingston upon Hull and Scarborough
- undertaking a more detailed oral health needs assessment of vulnerable groups should be considered by NHS England and local authorities
- dental services including urgent care should be accessible to people with learning disabilities and provide preventive and treatment services
- NHS England, local authorities, PHE and clinical commissioning groups should work together to ensure access to dental and oral health improvement services for people with mental health problems
- the need for and access to dental services for severely obese people should be reviewed across North Yorkshire and Humber
- the need for and access to dental services for looked after children should be reviewed across North Yorkshire and Humber

Oral healthcare services

- the feasibility of undertaking a health equity audit of access to dental services should be explored in view of variations in availability of and access to dental services across and within local authority areas and across different groups
- dental practices need to be supported to ensure that ethnicity data is captured on dental service activity forms to inform future needs assessment and health equity audits
- dental practices need to be supported to ensure that evidence-based guidance on fluoride varnish applications and recall intervals is implemented in practices. Key performance indictors to encourage evidence-based practice should be considered for inclusion in any new dental contracts
- current domiciliary provision is likely not to be sufficient to meet current and increasing demand. Equity of provision should be confirmed
- NHS England may wish to consider commissioning or undertaking a more in-depth review of sedation service provision to support the development of a consistent service model for anxious patients that incorporate sedation services and behaviour management techniques
- information should be collated to support commissioning intentions to ensure more vulnerable groups with more complex and special care needs are able to access appropriate care
- to help inform a more in-depth needs assessment for special care dental services in preparation for implementation of the national commissioning guide, robust activity indicators should be considered, for incorporation into current community dental service contracts together with the development of a managed clinical network in special care dentistry
- NHS England may wish to consider commissioning or undertaking a more in-depth review of general anaesthesia service provision to support the development of accessible, high quality, safe and patient centred services
- to identify and help address the gaps in provision of primary care specialist oral surgery services in North Yorkshire and Humber a service review should be considered. This should be in line with the forthcoming NHS commissioning guidance
- NHS England may wish to commission a more detailed orthodontic needs assessment including a review of provision of orthodontic services across North Yorkshire and Humber against the commissioning framework due to be published in 2015. It is important

to explore ways of providing more equitable access and to inform the development of a service model with a consistent UOA rate that incorporates key performance indicators including PAR scoring and which is delivered by specialists
- NHS England may wish to consider working with secondary care providers to review secondary care local tariffs and develop and agree standard coding for secondary care dental activity to contain spend on secondary care and ensure value for money
- NHS England may wish to consider working with local clinical networks, PHE and providers to develop and incorporate quality assurance into secondary care contracts and in preparation for implementation of the soon to be published NHS England commissioning guides

Dental public health services

- local authorities should consider including oral health in joint strategic needs assessments and health and wellbeing strategies
- all local authorities should consider reviewing their oral health improvement programmes in line with *Commissioning Better Oral Health and* NICE guidance
- local authorities may wish to consider engaging with partners integrating commissioning across organisations and across bigger footprints to support the efficient management of limited resources
- all local authorities in North Yorkshire and Humber should ensure that contracts are supported by service specifications which detail a process of assuring quality of programmes
- a combination of evidence based universal and targeted activities are required to support reducing inequalities in oral health. Upstream interventions should be complemented by downstream interventions
- local authorities should consider the case for water fluoridation in the context of local needs and the range of oral health improvement programmes currently commissioned and with reference to *Commissioning Better Oral Health* and NICE guidance
- consideration should be given to ensuring programmes support oral health improvement for more vulnerable adults group
- evaluation should be an integral part of all oral health improvement programmes to guide future commissioning
- local authorities should consider integrating oral health improvement into existing commissioned programmes
- oral health improvement should be an integral part of the work of health visitors and schools nurses and should be included in the service specification for these services

- service specification for care homes should include a responsibility for oral health that incorporates an oral health assessment on entry, daily mouth care in care plans for residents and regular access to an NHS dentist
- a *Making Every Contact Count* trained dental workforce should be developed across North Yorkshire and Humber
- trained dental workforce should be developed across North Yorkshire and Humber
- local authorities may wish to explore using cost benefit analysis tools to evidence effective use of resources to support improvements in oral health
- local authorities, who have not already done so, may wish to consider establishing an oral health advisory or partnership group
- PHE should explore developing a Yorkshire and The Humber oral health improvement commissioners' network to facilitate learning and sharing of good practice
- all local authorities should continue to commission oral health surveys, including surveys to support the public health outcomes framework
- service specifications should be in place to support the planning and delivery of the surveys. This should include robust performance monitoring arrangements to ensure that the survey is completed in line with the national protocol
- where appropriate, consideration should be given to increasing consent rates and sample sizes to provide reliable data to support the planning and evaluation of dental services and oral health improvement programmes

Patient and public engagement

- NHS England, local authorities and PHE should engage with local Healthwatches to ascertain public views regarding access to and quality of dental services. Local people's views should be reflected when commissioning services and developing oral health improvement strategies
- NHS England, PHE and local Healthwatch organisations should work together to ensure that people receive accurate information on how to access dental services and which practices are accepting new NHS patients.
- PHE should ensure the views of the public are sought in the consultation process for this oral health needs assessment

Next steps

This needs assessment is an on-going shared planning resource to enable locally prioritised actions. The next stage is for NHS England, local authorities and PHE to develop a prioritised list of actions based on the evidence of effectiveness, local organisational structures and the potential for greatest impact. Review of the actions should be planned from the outset to evaluate their impacts.

1. Introduction

Despite improvements in oral health in England over the last forty years, many people continue to suffer the pain and discomfort associated with oral diseases, which are largely preventable. A healthy mouth and smile means that people can eat, speak and socialise without pain or discomfort and play their parts at home and in society. Oral health is an integral part of health and wellbeing and many of the key risk factors are associated with other diseases.

The distribution and severity of oral diseases varies between and within countries and regions. Unacceptable inequalities exist with more vulnerable, disadvantaged and socially excluded groups experiencing more oral health problems.

This oral health needs assessment describes the oral health of the people living in North Yorkshire and Humber in detail and the services currently commissioned to meet those needs. It identifies the key issues that should be addressed in future oral health improvement and dental commissioning strategies.

In developing this oral health needs assessment, the national and local context has been considered.

National background

The Health and Social Care Act[1]

The Health and Social Care Act created a new commissioning framework for the provision of health, social care and public health in England. From April 2013, NHS England became the single commissioner for the totality of dental services including primary, secondary and unscheduled dental care. In addition, local authorities became responsible for improving the oral health of their communities and for commissioning oral health improvement services.[2]

Statutory dental public health responsibilities of local authorities include:
Securing the provision of oral health improvement programmes to improve the health of the local population, to the extent that they consider appropriate in their areas:

- securing the provision of oral health surveys to facilitate:
  I. the assessment and monitoring of oral health needs
  II. the planning and evaluation of oral health promotion programmes
  III. the planning and evaluation of the arrangements for provision of dental services as part of the health service

IV. where there are water fluoridation programmes affecting the authority's area, the monitoring and reporting of the effect of water fluoridation programmes

- participation in any oral health survey conducted or commissioned by the secretary of state and
- making proposals regarding water fluoridation schemes, including a duty to conduct public consultations in relation to such proposals and powers to make decisions about such proposals

Chapter 7 provides further detail regarding the role of local authorities in relation to oral health improvement.

The Health and Social Care Act 2012 also describes the joint and equal responsibilities of local authorities and clinical commissioning groups to prepare both joint strategic needs assessments and joint health and wellbeing strategies through the health and wellbeing board. The purposes of joint strategic needs assessments and joint health and wellbeing strategies are to improve the health and wellbeing in the local population by promoting integration and partnership working between the NHS, social care, children's services, public health and other local services, and to improve democratic accountability in health. A joint strategic needs assessment describes the current and future health and social care needs of a community within the health and wellbeing board area. Health and wellbeing boards are tasked to consider the demographics of the area and the needs of local people, including vulnerable groups.

This oral health needs assessment should be a useful resource for local authorities to inform joint strategic needs assessments, joint health and wellbeing strategies and oral health improvement strategies.

This oral health needs assessment has been written within the context of a number of national guidance documents.

Healthy Lives, Brighter Futures the strategy for children and young people[3]

Healthy Lives, Brighter Futures describes policy recommendations to inform collaborative working between the NHS, local authorities and partners working across child health services to reduce inequalities in children and young people, particularly for more vulnerable groups. It sets out *the Healthy Child Programme* and it is essential that oral health is considered as an integral part of this programme across North Yorkshire and Humber.

Fair Society, Healthy Lives[4]

The Marmot report *Fair Society, Healthy Lives* sets out a strategy on health inequalities that calls for actions that are universal but proportionate. Key messages from the review include:

- there is a social gradient in health and the lower a person's social position, the worse his or her health. Action should therefore focus on reducing the gradient in health
- health inequalities result from social inequalities. Action on health inequalities therefore requires action across all the social determinants of health. Focusing solely on the most disadvantaged will not reduce health inequalities sufficiently
- to reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage 'proportionate universalism'

Commissioning strategies should work across six policy objectives:

- give every child the best start in life
- enable all children young people and adults to maximise their capabilities and have control over their lives
- create fair employment and good work for all
- ensure healthy standard of living for all
- create and develop healthy and sustainable places and communities
- strengthen the role and impact of ill health prevention

Healthy Lives, Healthy People: Our strategy for public health in England[5]

In response to the Marmot report*, Healthy Lives, Healthy People* describes the government's plan for public health, which from April 2013 became the responsibility of local authorities rather than the NHS. This strategy promotes the adoption of a life course approach for tackling the wider social determinants of health.

Improving outcomes and supporting transparency. A public health outcomes framework for England 2013-2016[6]

The public health outcomes framework describes the overarching vision for public health, the outcomes and indicators for monitoring purposes. Two high level outcomes which cross four domains of indicators have been developed to cover the whole life course from pre conception to old age. Those indicators to which oral health improvement and dental services programmes will contribute are:

- mortality from cancer
- tooth decay in children aged five
- indicators related to smoking and overweight and obesity

- diet
- pupil and sickness absence

The NHS Outcomes Framework 2014/15[7]

The purpose of the NHS Outcomes Framework 2014/15 is to drive improvements in the quality of the NHS placing a focus on improving health and reducing inequalities. Indicators in the NHS Outcomes Framework are grouped around five domains which describes the high-level national outcomes that the NHS should be aiming to improve.

It is expected that NHS dental services will contribute to the following five domains:

- preventing people from dying prematurely
- enhancing quality of life for people with long term conditions
- helping people to recover from episodes of ill health or following injury
- ensuring people have a positive experience of care including access to NHS dental services
- treating and caring for people in a safe environment and protecting them from avoidable harm

In the mandate from Government to NHS England 2015 to 2016[8] two new indicators for dental health included:

- tooth decay in children aged five years
- tooth extractions in secondary care for children aged under ten years

Transforming Participation in Health and Care[7]

NHS England is required to engage with patients and the public with regard to their commissioning responsibilities. This guidance supports the two legal duties described below:

- patients and carers to participate in planning, managing and making decisions about their care and treatment
- effective public participation in the commissioning process itself, so that services reflect the needs of local people

The views of local people are captured within this needs assessment (chapter 8).

Choosing Better Oral Health: An Oral Health Action Plan for England[10]

Choosing Better Oral Health: An Oral Health Action Plan for England sets out the strategy for oral health in England. The Oral Health Plan is underpinned by several principles, including:

- the common risk factor approach, which recognises that risk factors for poor oral health are also the risk factors for other common chronic conditions, namely diet, tobacco, hygiene and alcohol
- basing decisions on the best available evidence
- taking a targeted population approach to reduce inequalities in oral health
- partnership working within the relevant agencies and sectors within and beyond the NHS and with education and social care professionals

The document suggests a variety of ways to improve diet and oral hygiene, optimise exposure to fluoride, control tobacco use and promote sensible alcohol use. Oral health promotion and commissioned dental services across North Yorkshire and Humber should incorporate the recommendations of *Choosing Better Oral Health*.

Valuing People's Oral Health[11]

Valuing People's Oral Health aims to improve the oral health of disabled children and adults, who have the same entitlement to good oral health as the rest of the population and an equal right to responsive high quality oral health services.

The oral health needs of children and adults with disabilities are less well documented than those of the general population and should be considered in future work to inform the commissioning of appropriate high quality dental and oral health improvement services for this vulnerable group. The recommendations from this guide should be incorporated into oral health promotion activities across North Yorkshire and Humber.

Securing Excellence in Commissioning NHS Dental Services[12]

NHS England is responsible for commissioning of NHS dental services. *Securing Excellence in Commissioning NHS Dental Services* proposes a care pathway approach that supports evidence- based decision making and the seamless organisation of care across different care settings for each dental speciality. The care pathway is regarded as a journey through the clinical experience, where co-ordination, consistent high standards, appropriateness of care in relation to best practice and the evidence base and a focus on patient related outcomes is fundamental.

Securing Excellence in Commissioning NHS Dental Services also described the establishment of local dental networks (LDN), an integral part of NHS England to ensure clinically led commissioning drives improvements in the quality of dental services, thereby improving oral health and reducing inequalities locally.

To support commissioning based on a care pathways approach, NHS England has established four multi-stakeholder commissioning guide working groups with a view to developing commissioning guidance for the four dental care pathways:

- orthodontics
- oral surgery
- restorative
- special care dentistry

Local dental networks will play an important role in supporting the implementation of the commissioning framework locally.

Local Authorities Improving Oral Health: Commissioning Better Oral Health for Children and Young People[13]

Commissioning Better Oral Health for Children and Young People provides guidance to local authorities to support the commissioning of evidence informed oral health improvement programmes for children and young people aged up to 19 years of age across the life course. The guidance enables local authorities to review and evaluate existing oral health improvement programmes and consider future commissioning intentions that meet the needs of their population. It provides an evidence based approach with examples of good practice. The guidance encourages the adoption of an integrated approach with partner organisations including NHS England, PHE and clinical commissioning groups, ensuring that all local authority services for children and young people have oral health improvement embedded at both a strategic and operational level.

Oral Health: approaches for local authorities and their partners to improve the oral health of their communities[14]

Recent guidance from the National Institute for Health and Care Excellence (NICE) on oral health approaches for local authorities and their partners to improve the oral health of their communities has made recommendations aiming to: promote and protect oral health by improving diet and reducing consumption of sugary foods and drinks, alcohol and tobacco; improve oral hygiene; increase the availability of fluoride; encourage people to go to the dentist regularly and increase access to dental services. The 21 evidence-based recommendations include:

- ensuring oral health is a key health and wellbeing priority with information and advice on oral health in local policies

- carrying out an oral health needs assessment using a range of data sources and developing an oral health strategy
- ensuring public service environments and workplaces promote oral health
- ensuring frontline health and social care staff can give advice on the importance of oral health
- incorporating oral health promotion and staff training in existing services for all children, young people and adults at high risk of poor oral health
- commissioning tailored oral health promotion services for adults at high risk of poor oral health
- including oral health promotion in specifications for all early years services
- considering supervised tooth brushing and fluoride varnish schemes for nurseries and primary schools in areas where children are at high risk of poor oral health
- raising awareness of the importance of oral health, as part of a 'whole-school' approach in all primary and secondary schools
- introducing specific schemes to improve and protect oral health in primary schools in areas where children are at high risk of poor oral health

NICE is currently developing the following guidance documents related to oral health:

- *Oral Health Approaches for Dental Teams*. This guidance will describe approaches for general dental practice teams on promoting oral health and is due for publication in October 2015
- *Oral health in nursing and residential care*. This guidance is for nursing and residential care homes on promoting oral health, preventing dental health problems and ensuring access to dental treatment and is due for publication in June 2016

Tackling poor oral health in children. Local government's public health role[15]

Recently published Local Government Association guidance describes the important role that upper tier and unitary authorities have in contributing to oral health improvement particularly in children. Key areas for action include:

- ensuring joint strategic needs assessments consider oral health needs, including information on vulnerable groups as recommended in recent NICE guidance
- developing a locally tailored oral health strategy
- promoting local leadership and advocacy for oral health improvement at all levels

National examples of best practice are described.

Delivering Better Oral Health[16]

Delivering Better Oral Health provides guidance on evidence based interventions and advice on how dental team members can improve and maintain both the oral health and general health of their patients. Smoking, alcohol misuse and a poor diet are risk factors for a number of general health and oral health conditions. A patient facing version of the guidance will be published to help patients to better understand the preventive messages.

It is essential that the document is disseminated to all dental team members to support local implementation of the guidance to underpin the delivery of prevention in all dental practices. Implementation of the guidance should form part of the oral health promotion approach across North Yorkshire and Humber and should be implemented by primary care dental teams, including general dental practice teams and community dental services and should be disseminated to other health, education and social care professionals to support improvements in general and oral health thereby reducing inequalities across the area.

Smokefree and Smiling [17]

Smokefree and Smiling describes how dental teams, commissioners and educators can contribute to reducing rates of tobacco use, and highlights resources available to support them. The document acknowledges that dental teams are well placed to provide very brief advice to their patients who use tobacco to help them understand the benefits of stopping and be offered support to do so with a referral to their local stop smoking service.

Oral health promotion services and primary care dental teams should work closely with local stop smoking service to implement *Smokefree and Smiling*.

NHS dental contract reform programme

In 2010, the government's plans for the NHS included a commitment to introduce a new NHS dental contract that would focus on achieving good oral health and increasing access to NHS dentistry, with a particular focus on improving the oral health of schoolchildren[18]. The Department of Health subsequently established the contract reform programme, with the establishment of seventy dental contract pilots in 2011 to inform the development and implementation of a new more prevention-orientated contract. Fundamentally, the aims of the new dental contract are to improve the quality of patient care, including access to NHS dental services and oral

health of the population especially children. Two reports have since been published which describe the preliminary and later findings from the dental contract pilots.[19,20] More recently, the Department of Health published four documents aimed at engaging and seeking the views of the dental profession and the wider dental community in the contract reform programme.[21]

Building on its engagement programme, NHS England's *Improving dental care and good oral health – a call to action*[22] obtained views across local communities, including health, dental and social care professionals and patients to inform the future development of NHS dental services. The challenge remains to address inequalities in oral health and access to dental services across England, placing a greater focus on prevention and improved outcomes.

Local context

The North Yorkshire and Humber Area Team Commissioning Plan 2014-16 identifies eight priority areas. The work programme which also incorporates the Local Dental Network work plan is detailed below:

- to champion evidence based oral health promotion, for example *Delivering Better Oral Health*, seeking opportunities to communicate at all levels with public and other services such as early years settings, schools, local authorities, voluntary agencies and the commercial sector to improve the oral health of the public. There are currently three practice-based prevention pilots ongoing in Hull and North Yorkshire. To support the Area Team to ensure effective delivery of primary care dental practice through GDS and PDS contracts, ensuring equity, reducing inequalities of access to services for patients and identifying and promoting opportunities for the continuing professional development for dental staff, and promoting effective use of clinical audit
- to focus on orthodontic services, implementing the single operating framework in primary care and establishing consistency across secondary care services in the county
- to advise and support the Area Team in the introduction of a North Yorkshire and Humber minor oral surgery pathway that is equitable across the county and does not destabilise other parts of the oral healthcare system
- to contribute to reducing population oral health inequality
- to identify, actively seek and advocate for the patient and public views of dental services in North Yorkshire and Humber and champion their meaningful involvement with services planning
- to undertake a review of all out of hours service provision to ensure equity and clarity of service provision

- to undertake a review of the salaried dental services to ensure there is equity of service provision across the area and to implement changes identified
- to assess referral pathways to ensure efficient use of specialist services and minimise inappropriate referral through correct signposting and education

The LDN aims to develop local clinical leadership across the whole system and collective responsibility to improve oral health and treatment outcomes through:

- driving up service quality and productivity
- improving patient pathways
- contributing to oral health needs assessments promoting the NHS Constitution and supporting the values and work of the North Yorkshire and Humber Area Team, guided by key policy informed by the *Steele Report, Securing Excellence, The Dental 'Call to Action*' and the North Yorkshire and Humber Area Team five-year commissioning strategy

The commissioning plan acknowledges that this oral health needs assessment will inform the development of more detailed plans to ensure that dental services meet the needs of the population of North Yorkshire and Humber.

Health and wellbeing strategies across North Yorkshire and Humber

This oral health needs assessment has considered the health and wellbeing strategies developed by each of the local authorities across North Yorkshire and Humber.

North Yorkshire joint health and wellbeing strategy 2013-2018[23]

The strategy's medium to long-term priorities have been developed around areas that can improve health and wellbeing and the vulnerable groups that should be specially targeted to ensure that they too have opportunity to receive generic services, access to employment, appropriate housing, and lifestyles which will improve their health and wellbeing:

Improving health and wellbeing:

- ill health prevention by encouraging healthy lifestyles and behaviours
- healthy and sustainable communities including access to services, employment opportunities and affordable housing for rural communities

Vulnerable groups:

- people with long-term conditions
- children and young people
- people with emotional health and mental wellbeing needs
- people living with deprivation

City of York health and wellbeing strategy 2013-2018[24]

The following priorities underpin work to improve health and wellbeing in York:

- making York a great place for older people to live
- reducing health inequalities
- improving mental health and intervening early
- enabling all children and young people to have the best start in life
- creating a financially sustainable local health and wellbeing system

Kingston upon Hull's joint health and wellbeing strategy 2013-2016[25]

There are nine strategic aims grouped into sets of three, with the main emphasis of each being on a particular stage in the life course:

Ready to Play and Learn is based on a family approach to providing early intervention and support for families to live healthily, have happy lives and enabling children and young people to do their best at school.

- families in Kingston upon Hull live a healthy life, have a healthy weight and don't smoke. Mums are encouraged to breastfeed their babies and children receive the injections they need to protect them from disease
- children under five are healthy, happy and ready to start school
- young people are confident and are able to deal with problems they might face

Ready to Work and Enjoy a Good Quality of Life emphasising the need to prevent ill health and promote healthy lifestyles. There is clear evidence that good health and mental wellbeing are linked to being in employment and these strategic aims are closely aligned to the City Plan objectives:

- people know that there are lifestyle changes they can make which will reduce their chances of getting and dying from cancer or heart disease. They know that screening tests are available. They know what it means to live a healthy life and to try and keep well
- people know when they should seek support and where from, in terms of maintaining good mental health and general wellbeing. They understand the strong link between physical health and mental health and wellbeing

- people understand how to reduce the risk of cancer and heart disease; know what the early signs are, and when to attend the doctors. They know that the sooner they get help, the greater their chance of getting better
- no matter where people live, they will be able to receive the health services that they need

Ready to Live Later Life to the Full focuses on supporting older people and their carers to have the best quality of life possible:

- people who have been unwell or in hospital, get the help they need to live safely at home. This might include using special equipment to make things easier
- people with dementia have the help they need to live safely in their home. All of the care and help that they and their families get will be good quality
- people of all ages who care for someone who is unwell, or who has a disability, will get the help they need

Health and wellbeing strategy for the East Riding of Yorkshire 2013-2016[26]

The three long-term priority outcomes for health and wellbeing in the East Riding are:

- East Riding residents achieve healthy, independent ageing
  There are two key medium-term objectives related to this outcome:
  - effectively manage the increasing health demands due to the ageing population
  - effectively manage the challenge of increasing numbers of patients with dementia
- health and wellbeing inequalities in the East Riding are reduced
  There are two key medium-term objectives related to this outcome:
  - improve the wellbeing of residents through access to transport, housing, good quality natural environments, employment and learning, leisure opportunities and involvement in community life
  - promote and support healthy lifestyle choices to reduce levels of poor health and promote independence
- children and young people enjoy good health and wellbeing
  There are two key medium-term objectives related to this outcome:
  - improve children and young people's emotional health and wellbeing
  - prevent and reduce obesity in children

North Lincolnshire joint health and wellbeing strategy 2013-2018[27]

The priority actions are:

- focusing on 'best start' from conception to age two to promote children's development and help all aspects of family life
- addressing poverty and reducing the impact on people to tackle inequalities between the most and least well off
- improving literacy, including health literacy, and numeracy skills to increase people's understanding leading to better access to services and life chances
- improving the safety and vibrancy of the night time economy to encourage and support positive behaviours leading to community resilience
- advocating and modelling behaviour change to change the behaviour of individuals and organisations to improve their health and wellbeing

Joint health and wellbeing strategy for North East Lincolnshire 2013-2016[28]

There are five strategic priorities:

- securing the future for children and young people
- keeping people well so people can have healthier lives
- taking wider action on health and well-being by fostering healthy and sustainable communities and places
- improving access to high quality, integrated and equitable services
- maintaining and enhancing independence of vulnerable groups: with particular focus on healthy ageing, mental health

By commissioning evidence based oral health improvement programmes and by ensuring equity of access to high quality evidence based, patient centred dental services, future dental commissioning and oral health improvement strategies will contribute to the overarching aims of the health and wellbeing strategies across North Yorkshire and Humber.

It is essential that this oral health needs assessment underpins the development of local oral health improvement strategies, ensuring that oral health is included in local joint strategic needs assessments and joint health and well-being strategies. In light of recently published guidance[13], it is recommended that all oral health improvement programmes should be reviewed and this includes the commissioning and integration of such programmes within commissioning arrangements for other programmes for children and young people.

2. Oral health needs assessment

Oral health is an important part of health and wellbeing. Good oral health is that without active disease, pain or discomfort, which allows good functioning such as eating, speaking and socialising without embarrassment.[29] Oral healthcare includes both clinical provision of treatments and oral health improvement initiatives.

An oral health needs assessment is a tool for identifying the oral health needs and oral healthcare needs of a population to target resources towards improving the oral health of those at specific risk or in underserved population subgroups.[30] The process involves establishing and describing the oral health of a population, ascertaining their needs, measuring the capacity of existing services to meet these needs and where gaps exist, identifying new or alternative ways in which such gaps can be prioritised and filled.[31]

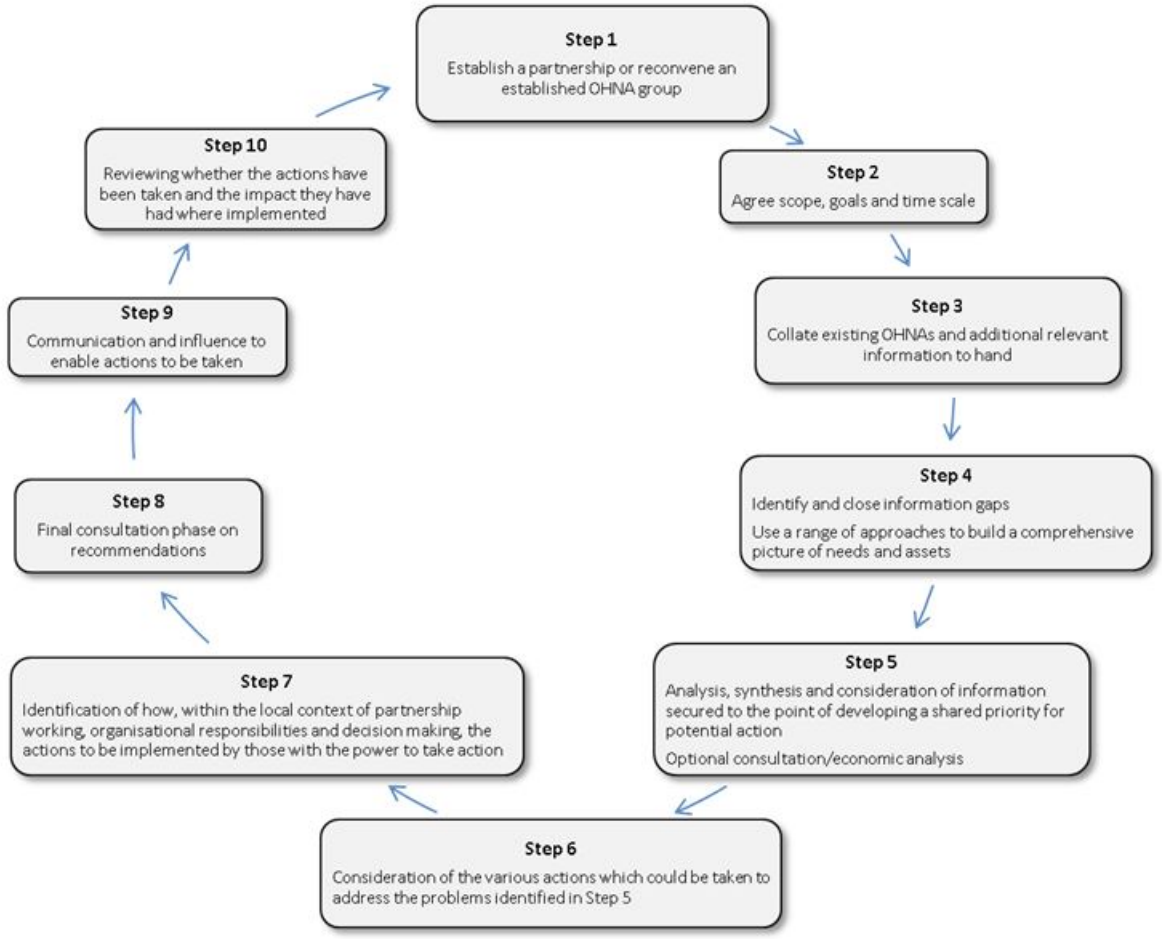
The restructuring of the NHS in April 2013 followed the passing of the *Health and Social Care Act 2012*.[1] The Act conferred the responsibility for the commissioning of NHS dental services to NHS England and conferred the responsibility for health improvement, including oral health improvement to local authorities.

Local authorities now have a statutory requirement to assess their local population's oral health needs.[2] An oral health needs assessment can help local authorities identify the oral health needs in their local communities for inclusion in the joint strategic needs assessment.[13]

New guidance has been produced by NICE to inform local authorities on how to undertake oral health needs assessments and develop local strategies for delivery of community-based interventions and activities.[14] Informing the NICE guidance is a recent review of existing methods for undertaking oral health needs assessments[31]. This review found that there was no one format for them and no evidence on how to conduct an ideal oral health needs assessment that results in changes that are clinically effective and cost effective.

Hence a definitive approach to undertaking an oral health needs assessment needed to be established in the context of the broader joint strategic needs assessment and a 10 step approach for carrying out an oral health needs assessment was proposed[32] that incorporated the key operating principles for a joint strategic needs assessment[32,33] (Figure 2.1).

Figure 2.1 The 10 step approach for an oral health needs assessment



Source: Modified from Chestnutt *et al.,* 2013, p56[31]

The 10 step approach is consistent with the key operating principles for quality joint strategic needs assessment and joint health and wellbeing strategies:

1. Establish a partnership to undertake the oral health needs assessment. Engage key people to ensure 'sponsorship' of the process by those with the power to make the necessary decisions to change if required and involve corporate partners and health alliances where appropriate. Involve patients and the public
2. Agree scope, agree goals and timescale (where geography boundaries differ to agree the population of interest)
3. Review and learn from previous oral health needs assessments
4. Close the information gaps. Build up a comprehensive range of data, evidence, and information on oral health needs and provision of dental services and oral health improvement activities. A range of approaches may be undertaken to engage with the local population
5. Analysis, synthesis and consideration of the information. Develop a list of priority problems. Prioritisation should be based on issues

requiring the greatest attention and where the greatest impact can be made from available resources

6. Consider actions to be taken to address the problems identified in Step 5, reviewing the evidence on the predictability of the effectiveness of those actions. Develop a prioritised list of actions
7. Identify how, within the local context of partnership working, organisational responsibilities and decision making, the actions will be implemented by those in power to take action
8. Final consultation with key stakeholders on proposed recommendations
9. Communication and influence to enable actions to be undertaken. The oral health needs assessment is an on-going shared planning resource
10. Review of the actions undertaken and their impact where they have been implemented. The end of one planning cycle is used to inform the next oral health needs assessment

This approach has been used to develop this oral health needs assessment to give a comprehensive description of the oral health needs in North Yorkshire and Humber and to make recommendations on targeting of resources to meet those needs.

Aim

To undertake an oral health needs assessment across North Yorkshire and Humber to support the planning of oral health care services and oral health improvement services for the local population.

Objectives

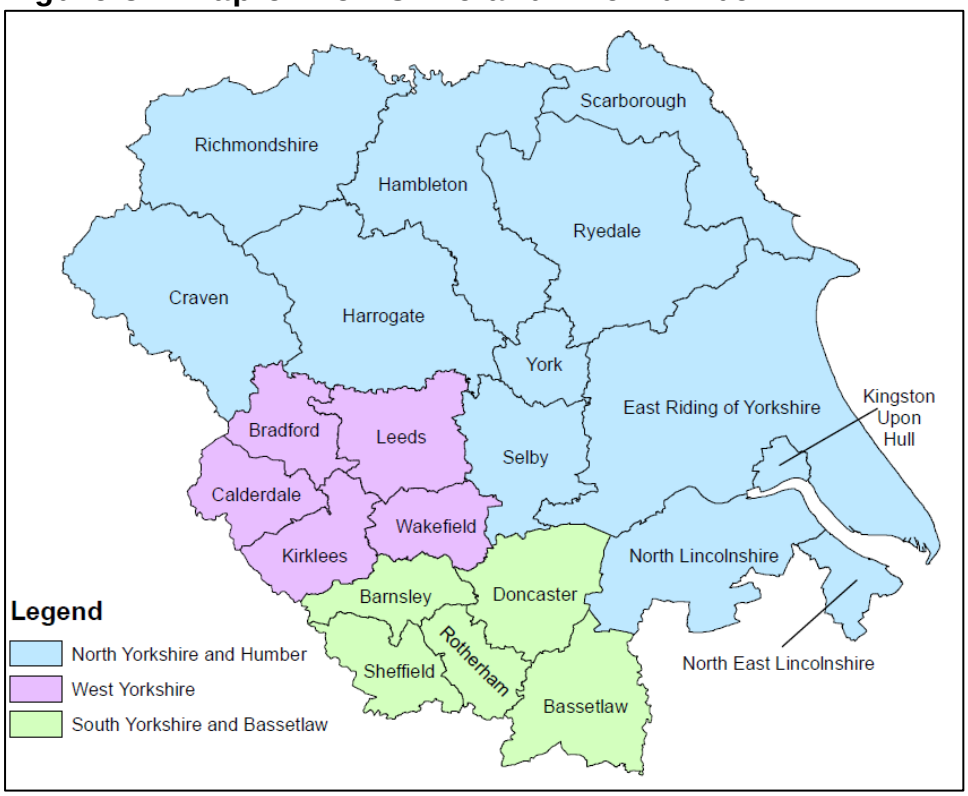
- to describe the oral health needs in the North Yorkshire and Humber population
- to describe the provision of oral health care services and oral health improvement programmes
- to identify any gaps in service provision
- to make recommendations for the future development of high quality, evidence based and outcome focused oral health care and oral health improvement services across North Yorkshire and Humber

3. Population and demographic variations

Population of North Yorkshire and Humber

North Yorkshire and Humber is located in Yorkshire and the Humber. Yorkshire and the Humber is situated in the north of England and is one of nine areas of England (previously known as Government Offices of the Regions) reflecting administrative boundaries at the highest sub-national division and used for the regional statistics. The north and east of Yorkshire and the Humber are largely rural and the south and west are more urban.[34] The region is subdivided into North Yorkshire and Humber, West Yorkshire, South Yorkshire and Bassetlaw (Figure 3.1). North Yorkshire and Humber includes North Yorkshire, a non-metropolitan county with the non-metropolitan districts of: Selby, Harrogate, Craven, Richmondshire, Hambleton, Ryedale and Scarborough and the unitary authorities of York, East Riding of Yorkshire, Kingston upon Hull, North Lincolnshire and North East Lincolnshire.

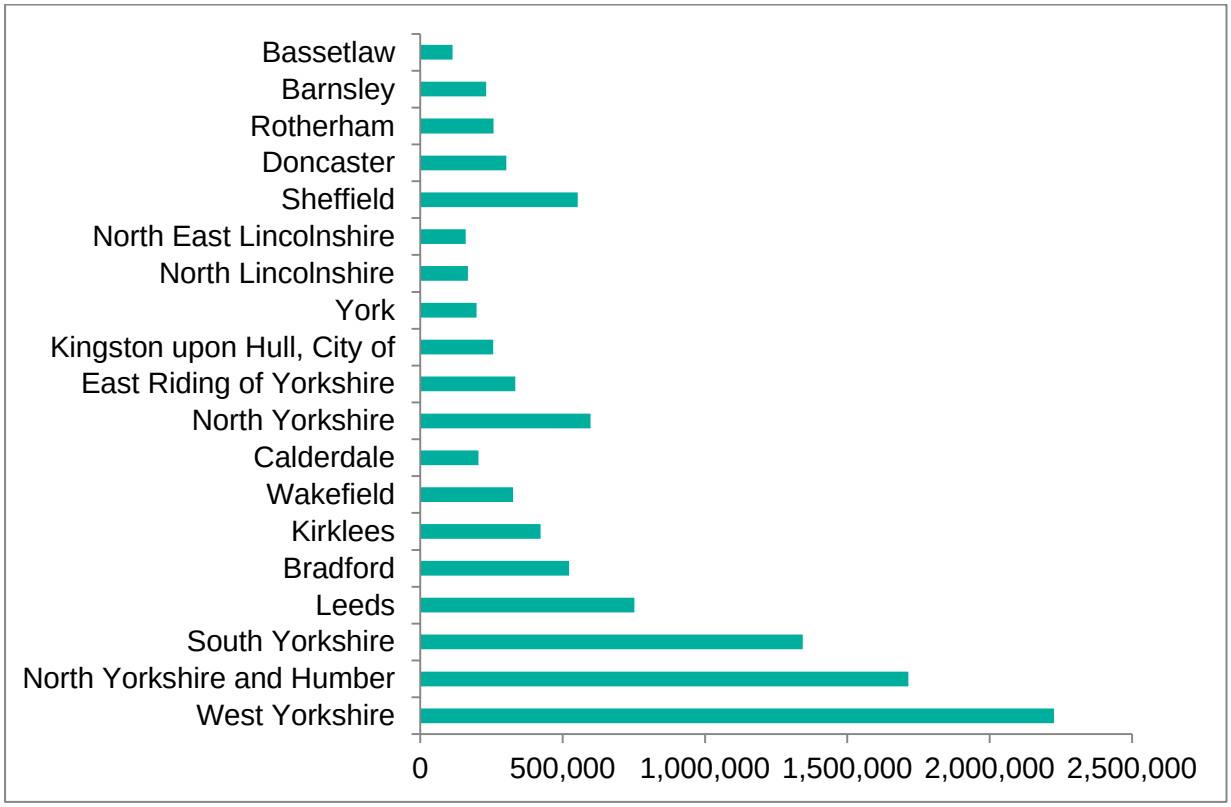
Figure 3.1 Map of Yorkshire and The Humber



Source: University of Sheffield, 2014

The population of North Yorkshire and Humber was 1,714,074 in 2011 (Figure 3.2). There were slightly fewer males (843,042) than females (871,032) and this difference was reflected in all local authorities except for Kingston upon Hull.[35]

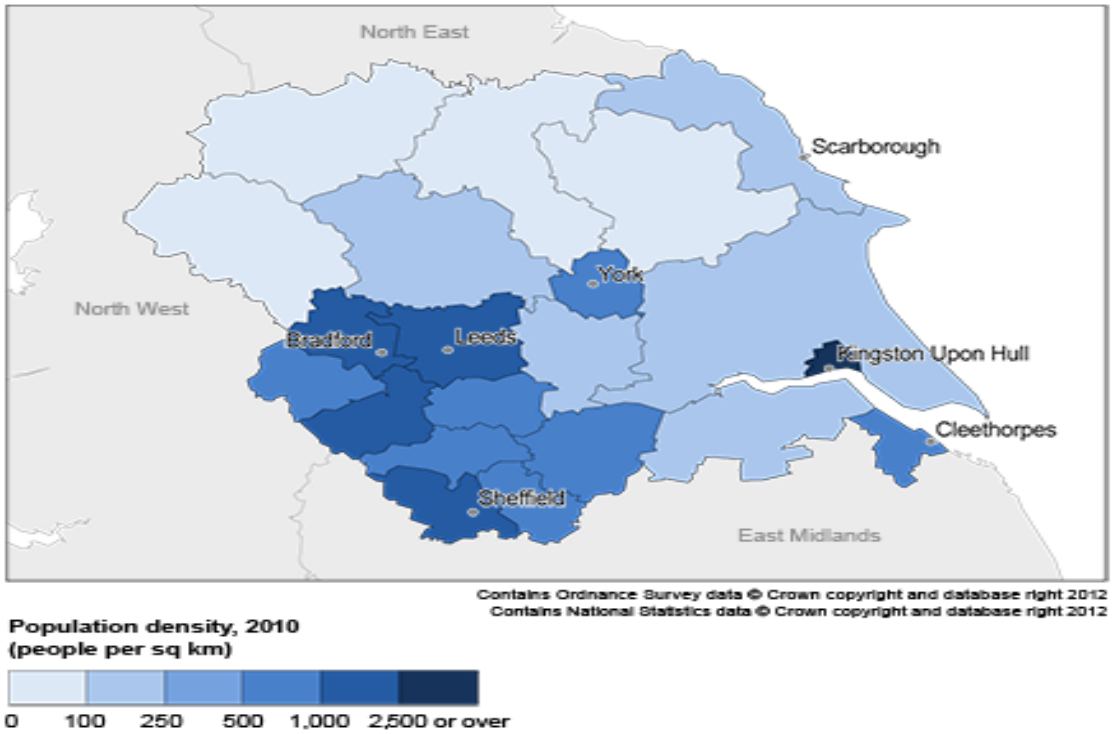
Figure 3.2 Population of Yorkshire and The Humber(including Bassetlaw, Nottinghamshire)



Source: ONS, 2011

Eighty per cent of the population of Yorkshire and The Humber live in urban areas and[36] the population density is highest in Kingston upon Hull at 3,700 people per square kilometre. The North Yorkshire district includes most of the areas of the North York Moors and the Yorkshire Dales National Parks and in the rural districts of North Yorkshire the population density is 140 people per square kilometre (Figure 3.3).[37]

Figure 3.3 Yorkshire and the Humber population density: by local or unitary authority, 2010

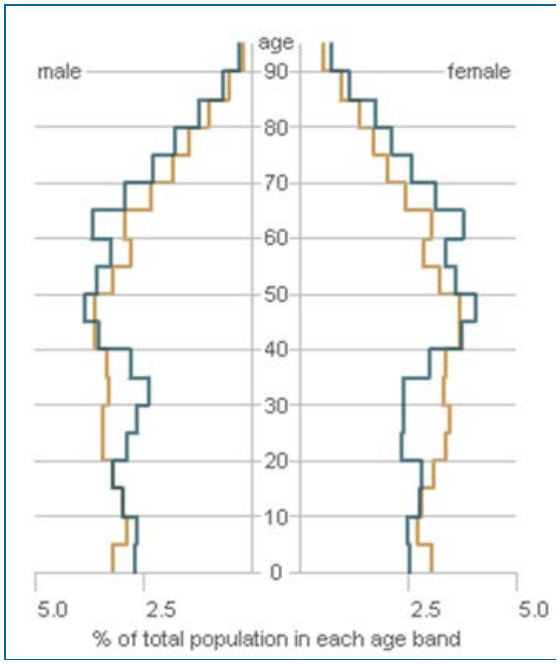


Source: ONS, 2012

The population profiles for each of the local authorities in North Yorkshire and Humber differ from the population profile for England (Figure 3.4). Compared to the England average Kingston upon Hull has higher proportions of children under the age of five years, whereas the proportions of children in North Yorkshire, York and East Riding of Yorkshire are lower than the England average. The higher proportions of young people aged 15 to 20 years in York, and between 20 to 30 years in Kingston upon Hull may in part be accounted for by the student populations of these cities. In North Yorkshire, East Riding of Yorkshire and North Lincolnshire there are a higher proportion of adults aged 45 years and older.

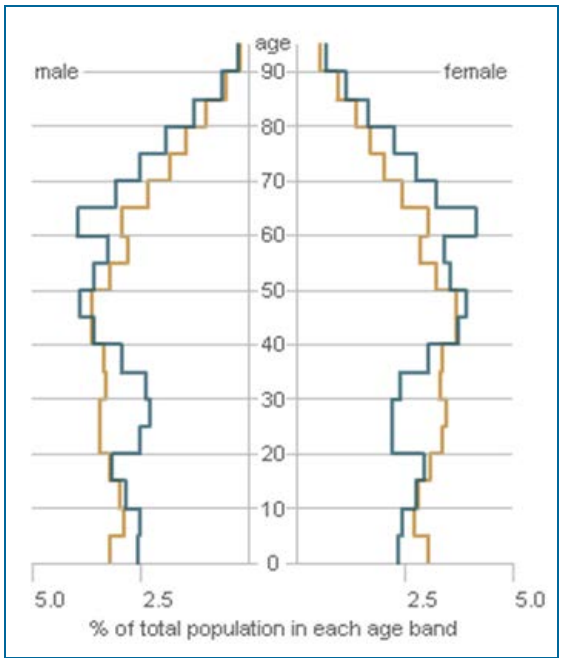
Figure 3.4 Population profiles for North Yorkshire and Humber

Population profile: North Yorkshire



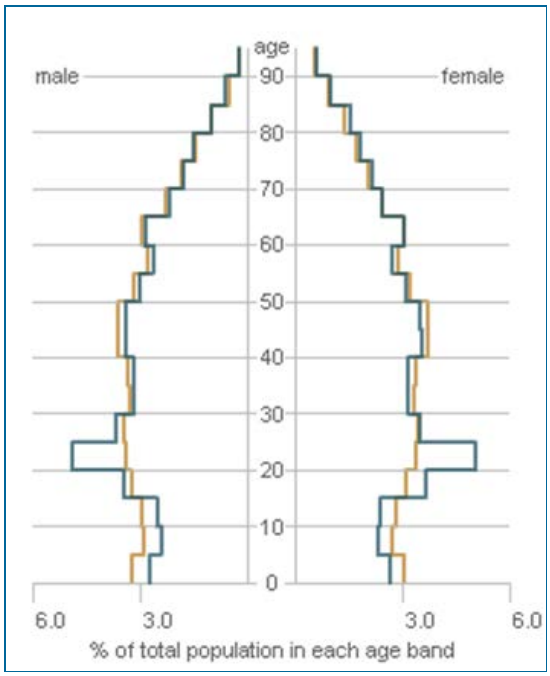
Blue: North Yorkshire population 598,376
Brown: England population 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Population profile: East Riding of Yorkshire



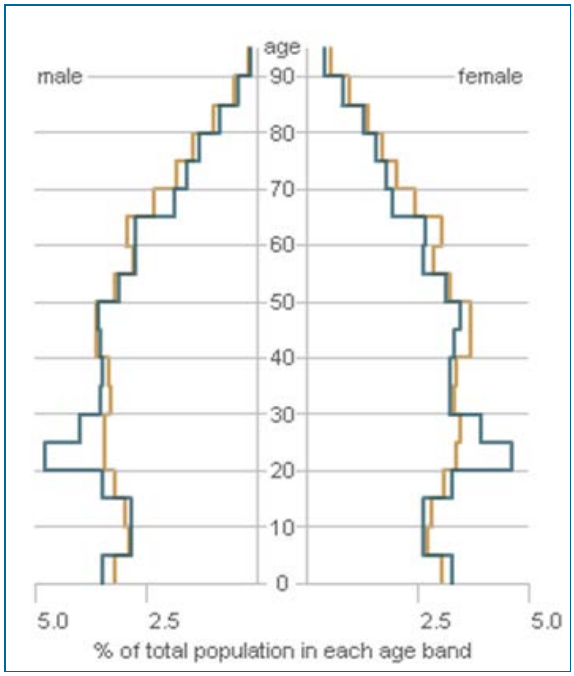
Blue: East Ridings of Yorkshire population 334,179
Brown: England population 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Population profile: York



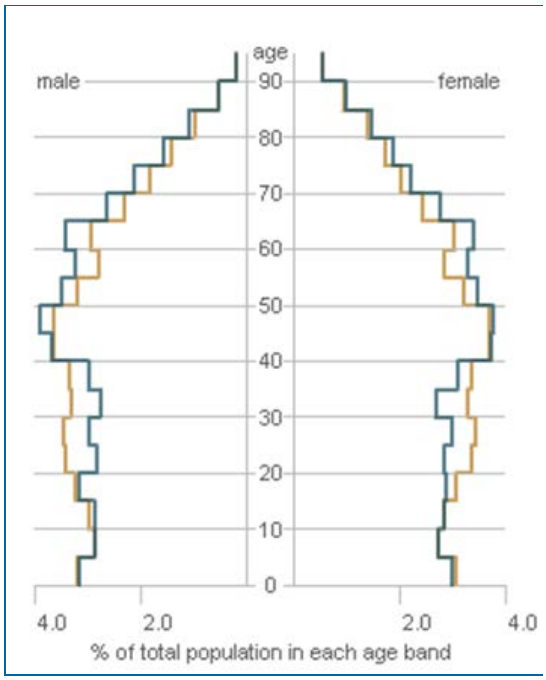
Blue: York population: 198,051
Brown: England population: 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Population profile: Kingston upon Hull



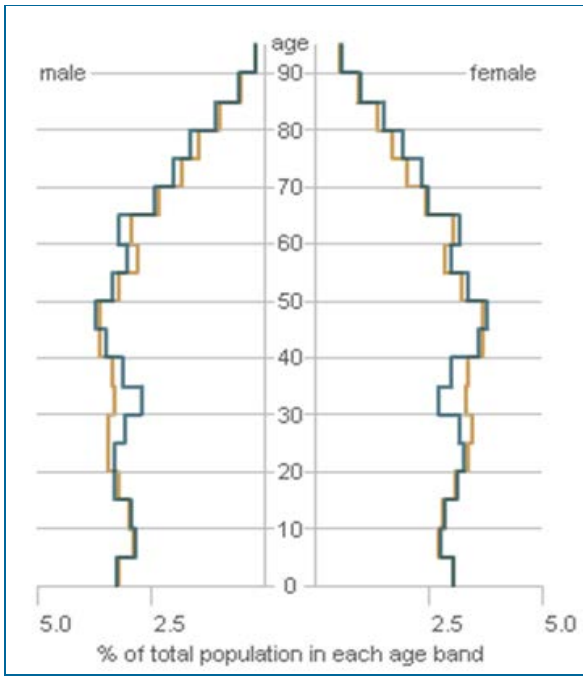
Blue: Kingston upon Hullpopulation 256,406
Brown: England population 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Population profile: North Lincolnshire



Blue: North Lincolnshire population 167,446
Brown: England population 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Population profile: North East Lincolnshire



Blue: North East Lincolnshire population 159,616
Brown: England population 53,012,456
Source: Office for National Statistics licensed under the Open Government Licence v.2.0.

Births, deaths and migration in North Yorkshire and Humber

The population of Yorkshire and The Humber is increasing. The population estimates for mid-2011 to mid-2012 reported that births at 67,383 were higher than deaths at 49,053. Population change at regional and local authority level can also be attributed to internal migration in and out of the areas as well as by international immigration or international emigration. There was a net internal migration out of 2,209 and a net international immigration of 11,040 which together accounted for a 0.5% increase in the population.[38]

Within North Yorkshire and Humber the growth in the population during mid-2011 to mid-2012 was primarily due to people movement, which accounted for a 4,659 increase in the population. Births were greater than deaths by 2,141 over the same period (Table 3.1).[38]

Table 3.1 Births, Deaths and Population Change in North Yorkshire and Humber

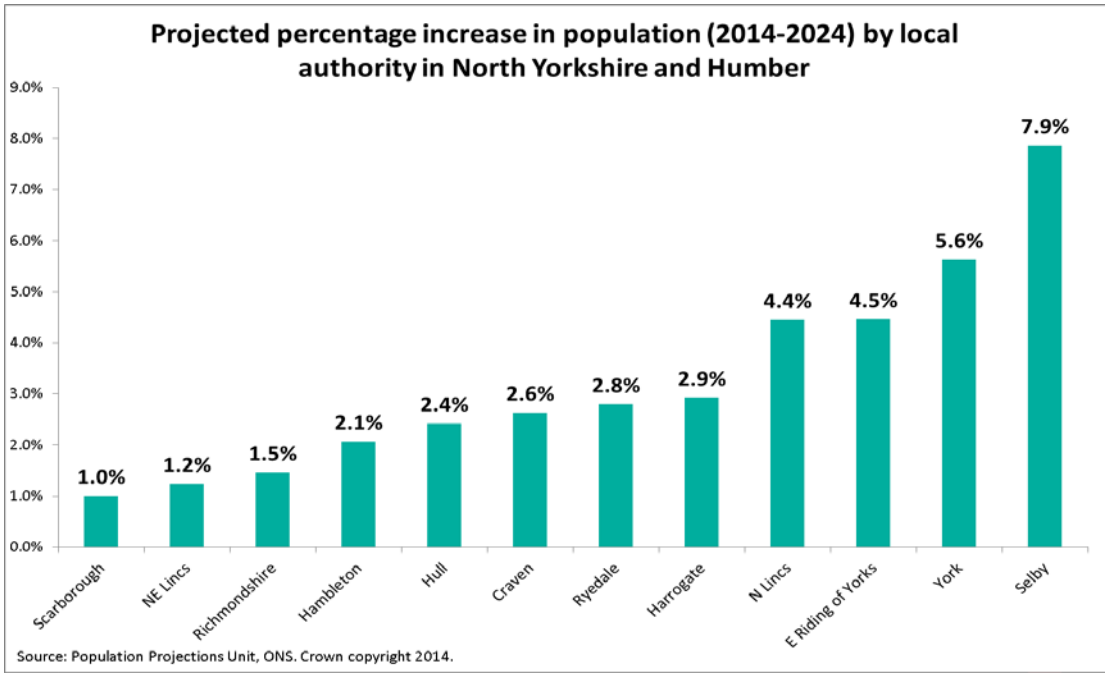
Area	Mid 2011 Population	Births	Deaths	Net Migration in and out (-)	Net International immigration or emigration (-)	Other	Mid 2012 Population	Change
Yorkshire and the Humber	5,288,212	67,383	49,053	-2,209	11,040	1,318	5,316,691	+0.5%
North Yorkshire and Humber	1,717,036	19,225	17,084	1,672	1,924	1,063	1,723,836	+0.3%
North Yorkshire	601,206	6,026	5,967	1,332	-817	848	602,628	+0.2%
East Ridings of Yorkshire	334,673	3,208	3693	1,307	295	97	335,887	+0.4%
Kingston upon Hull	256,123	3,914	2,372	-1,317	770	86	257,204	+0.4%
York	197,783	2,117	1,768	690	1,202	-6	200,018	+1.1%
North Lincolnshire	167,516	1,928	1,642	109	443	18	168,372	+0.5%
North East Lincolnshire	159,735	2,032	1,642	-449	31	20	159,727	0.0%

Source: ONS, 2014

Population projections

There is a projected percentage increase in population in all local authorities in North Yorkshire and Humber (Figure 3.5).

Figure 3.5



Ethnic diversity in North Yorkshire and Humber

The ethnic profile of Yorkshire and The Humber differs from England with a higher proportion of White and Asian ethnic groups. North Yorkshire and Humber differs from both England and Yorkshire and The Humber with a much higher proportion of the White ethnic group and lower proportions of all other ethnic groups (Table 3.2).[39]

Table 3.2 Ethnic Diversity in North Yorkshire and Humber

Geographical Area	White Ethnic Groups	Asian or Asian British	Black or Black British	Mixed/ Multiple Ethnic Group	Chinese, Arab or Other Ethnic Group
	%				
England	85.4	7.1	3.5	2.2	1.8
Yorkshire and the Humber	88.8	7.3	1.5	1.6	0.8
North Yorkshire and Humber	96.5	1.8	0.5	0.9	0.3
North Yorkshire	97.3	1.3	0.4	0.8	0.2
East Ridings of Yorkshire	98.0	0.9	0.2	0.7	0.2
Kingston upon Hull	94.1	2.5	1.2	1.3	0.8
York	94.3	3.4	0.6	1.2	0.5
North Lincolnshire	96.0	2.7	0.3	0.7	0.3
North East Lincolnshire	97.4	1.3	0.3	0.7	0.3

Source: ONS, 2011

In Yorkshire and The Humber the proportion of schoolchildren from a minority ethnic group is lower than the England average. Within North Yorkshire and Humber the proportions of school children from minority ethnic groups is much lower than the average for Yorkshire and The Humber ranging from 4.4% in East Riding of Yorkshire to 13.7% in Kingston upon Hull (Table 3.3).[40]

Table 3.3 Percentage of Schoolchildren from Minority Ethnic Groups in North Yorkshire and Humber

Geographical area	Schoolchildren from minority ethnic groups (%)
England	26.7
Yorkshire and the Humber	21.2
North Yorkshire	6.3
York	9.0
East Ridings of Yorkshire	4.4
Kingston upon Hull	13.7
North Lincolnshire	10.6
North East Lincolnshire	5.9

Source: (PHE, 2014).

Deprivation

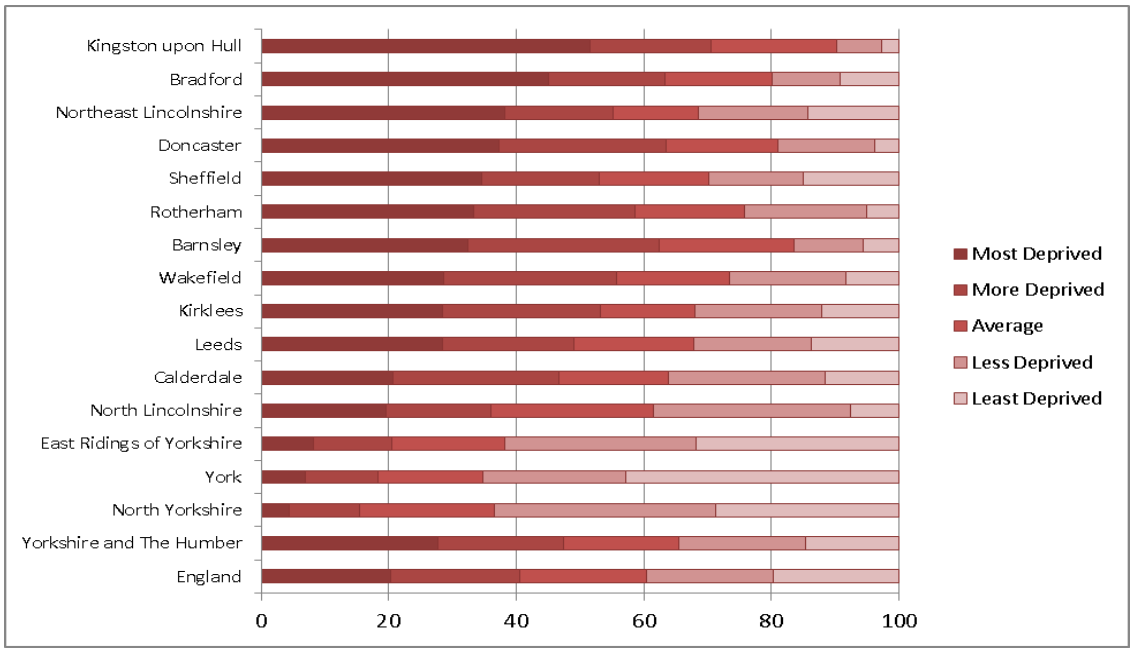
Deprivation covers a wide range of factors and refers to unmet needs caused by a lack of resources of all kinds, not just financial. Accordingly, the English Indices of Deprivation (2010) comprise 38 separate indicators, organised across seven distinct domains or dimensions that can be combined, using appropriate weights, to calculate the Index of Multiple Deprivation 2010. [41] The IMD is calculated at lower layer super output area (LSOA) level[42]. LSOAs are geographical areas with an average population of 1,500 people living in mutual proximity and social homogeneity.

The seven domains used are:

- income deprivation
- employment deprivation
- health, deprivation and disability
- education, skills and training deprivation
- barriers to housing and services
- crime
- living environment deprivation

Deprivation in Yorkshire and The Humber is higher than the England average with 47.4 % of the population of Yorkshire and the Humber in the lower two national quintiles of deprivation (Figure 3.6).[43]

Figure 3.6 Yorkshire and The Humber Deprivation Quintiles



Source: Health profiles. Data Tables for 2013. Deprivation quintiles 2010, PHE, 2013

In Yorkshire and The Humber 23.6% of children under the age of 16 years live in poverty, slightly higher than the England average of 20.6%. In North Yorkshire and Humber a significantly higher proportion of children live in poverty in North East Lincolnshire and Kingston upon Hull compared with the England average (Table 3.4).[40]

Table 3.4 Percentage of children under 16 years living in poverty in North Yorkshire and Humber

Geographical area	Children living in poverty (%)
England	20.6
Yorkshire and The Humber	23.6
North Yorkshire	11.9
York	13.1
East Ridings of Yorkshire	12.9
Kingston upon Hull	32.6
North Lincolnshire	20.4
North East Lincolnshire	28.6

Source: Child Health Profile March 2014, PHE, 2014.

Maps of deprivation in North Yorkshire and Humber local authorities.can be found in Appendix 1.

Health inequalities

Health between different socioeconomic groups in society follows a continuum[44] with those of highest socioeconomic status enjoying the best health, and those of the lowest socioeconomic status the worst health,[10,45] as measured by key health indicators such as mortality and morbidity.[46]

In Yorkshire and The Humber life expectancy is lower than the England average with men living on average to 78.3 years and women to 82.2 years. In North Yorkshire and Humber average life expectancy for men is higher than the average for England in North Yorkshire, York and East Riding of Yorkshire and lower for the other local authorities. For women life expectancy is higher than the England average in North Yorkshire and York but lower in all other local authorities (Table 3.5).[40]

Table 3.5 Life expectancy at birthing years in North Yorkshire and Humber, 2010-2012

Geographical area	Males	Females
England	79.2	83.0
Yorkshire and the Humber	78.3	82.2
North Yorkshire	80.0	83.6
York	79.6	83.2
East Ridings of Yorkshire	79.6	82.9
Kingston upon Hull	76.6	80.5
North Lincolnshire	78.3	82.8
North East Lincolnshire	77.9	81.9

Source: Child Health Profile March 2014, PHE, 2014.

Within North Yorkshire and Humber there is a gradient in life expectancy. Men and women living in the most deprived areas can on average expect to live fewer years than men and women in the least deprived areas. The gap is greatest in Kingston upon Hull, North East Lincolnshire and North Lincolnshire (Table 3.6).[42]

Table 3.6 Gap in life expectancy in years between men and women in the most deprived areas compared to men and women in the least deprived areas in North Yorkshire and Humber

Geographical area	Males	Females
North Yorkshire	6.3	4.6
York	9.7	5.1
East Ridings of Yorkshire	6.8	4.1
Kingston upon Hull	11.9	9.3
North Lincolnshire	10.7	9.5
North East Lincolnshire	11.1	8.8

Source: Health Profile September 2013, PHE, 2013.

Infant and child mortality rates in North Yorkshire and Humber are similar to the England average.[40] Early deaths from heart disease and cancer are significantly worse in Kingston upon Hull, North Lincolnshire and North East Lincolnshire. Early deaths from cancer are significantly worse in Kingston upon Hull and North Lincolnshire. [42] Throughout the country there is a downward trend in deaths from these diseases and an upward trend in life expectancy.[42]

Health related behaviours in North Yorkshire and Humber

Healthy behaviours can contribute to the prevention and control of non-communicable diseases such as cardiovascular diseases, chronic respiratory diseases, diabetes and cancers.[47] The Health Survey for England monitors trends in the nation's health[48] and health related behaviours in the population are measured by health eating adults, physical activity, alcohol use and tobacco use.[42] Comparisons of health related behaviour measures in North Yorkshire and Humber local authorities with the England average are summarised below (Table 3.7).[42]

Table 3.7 Health related behaviours in North Yorkshire and Humber

Health related behaviours	England %	North Yorkshire %	York %	East Ridings of Yorkshire %	Kingston upon Hull %	North Lincoln-shire %	North East Lincoln-shire %
Healthy eating adults	28.7	28.8	28.3	27.1	20.4	22.5	24.6
Physically active adults	56.0	57.8	61.5	59.1	43.8	55.5	55.4
Increasing and higher risk drinking	22.3	24.1	24.5	23.5	21.7	22.6	21.2
Smoking		16.7	17.1	17.2	29.3	22.9	27.3
Smoking in pregnancy	13.3	14.1	14.1	14.4	23.2	19.9	24.9

Significantly worse than England average	
Not significantly different from England average	
Significantly better than England average	

Source: Health Profile September 2013, PHE, 2013.

Healthy eating in North Yorkshire and Humber

A healthy diet is important in preventing diseases such as cardiovascular disease and diabetes.[49] An estimate annual cost of food related ill health to the NHS was £6 billion.[50] A minimum intake of five portions of fruit and vegetables is an important component of a healthy diet[49] and is the measure used for healthy eating adults.[51]

Healthy eating adults in North Yorkshire and Humber were not significantly different to the England average of 28.7% in North Yorkshire, York and East Ridings of Yorkshire. However fewer adults in Kingston upon Hull, North East Lincolnshire and North Lincolnshire ate healthily than the England average (Table 3.7).[42]

Physically active adults in North Yorkshire and Humber

Lack of physical activity is an important risk factor for chronic non-communicable diseases such as ischemic heart disease and stroke.[52] An estimated direct cost to the NHS is £1.1billion.[53] Guidelines for physical activity for all ages have been drawn up and for adults daily activity of moderate intensity should add up to 150 minutes a week.[54]

Comparison of physically active adults (aged 16 and over) with the England average of 56.0% found that North Yorkshire (57.8%) and York (61.5%) were significantly better; there was no significant difference in East Ridings of Yorkshire and North East Lincolnshire, however it was significantly worse in Kingston upon Hull (43.8%) (Table 3.7).[42]

Obesity in North Yorkshire and Humber

Whilst not a health related behaviour, being overweight or obese reflects an unhealthy diet and lack of physical activity. Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.[55] Obesity in adults is associated with cardiovascular diseases, diabetes, musculoskeletal disorders and some cancers.[55] Obesity in children is linked to long term physiological and psychological health risks and can persist into adulthood.[56] The estimated cost to the NHS of excess weight is £5 billion each year.[57]

The WHO definition of obesity is a Body Mass index (BMI) greater than or equal to 30. BMI is calculated by weight (kg) divided by height squared (m^2).[55] In children those classified as obese are those above the 95th BMI centiles of the 1990 reference population.[56]

Obesity is associated with low income in women but is evenly distributed across income groups in men.[58] Obesity prevalence in children is highest for both boys and girls in the two most deprived IMD quintiles (16% and 19% compared with 9% and 14% in higher quintiles).[56]

In all local authorities in The Humber adult obesity is significantly worse than the England average. In children aged 4 to 5 years and 10 to 11 years obesity prevalence is similar to the England average except for Kingston upon Hull where

prevalence is higher and East Ridings of Yorkshire where prevalence is lower (Table 3.8).[40,42]

Table 3.8 Obesity prevalence in North Yorkshire and Humber

Obesity	England %	North Yorkshire %	York %	East Ridings of Yorkshire %	Kingston upon Hull %	North Lincoln-shire %	North East Lincoln-shire %
Adult obesity	24.2	24.2	23.0	25.9	28.2	29.3	29.1
Child obesity 4-5 years*	9.3	7.9	8.1	7.6	9.7	9.5	10.0
Child obesity 10-11 years*	18.9	15.4	16.3	17.9	21.0	19.1	20.0

Significantly worse than England average	
Not significantly different from England average	
Significantly better than England average	

Source: Health Profile September 2013, PHE. *Child Health Profile March 2014, PHE, 2014.

Alcohol use in North Yorkshire and Humber

Alcohol use can affect health and increases the risks of accidents, injury and violence. The health harms of alcohol are dose -dependent, that is the risk of harm increases with the amount drunk. In England hospital admissions between 2002 and 2012 related to alcohol consumption doubled from half a million to over a million.[59]

The recommended safe limits to avoid the risk of alcohol-related harm are no more than 21 units in men 14 units in women. Adults who regularly drink more than these amounts are considered to be at increased risk. Men who regularly drink more than eight units a day (or 50 units a week) and women who regularly drink more than six units a day (or 35 units a week) are high risk drinkers at particular risk of harm.[59]

In the North Yorkshire and Humber local authorities the percentage of adults over the age of 16 years who are high risk drinkers is not significantly different from the England average [42] (Table 3.7).

Tobacco use in North Yorkshire and Humber

Tobacco use is a risk for cancers, chronic respiratory diseases and circulatory diseases.[47] In England tobacco smoking ‘is the greatest cause of preventable illness

and premature death'[60] with an estimated 102,000 people dying in the UK in 2009 from smoking related diseases.[61] It costs the NHS an estimated £2.7 billion to treat smoking related diseases.[62]

Twenty per cent of English adults aged 18 years and over smoke tobacco. Tobacco use was significantly lower than the England average in North Yorkshire (16.7%), York (17.1%) and East Riding of York (17.2%), however it was significantly worse in Kingston upon Hull (29.3%), North East Lincolnshire (27.3%) and North Lincolnshire (22.9%).[42]

Smoking in pregnancy (% smoking in pregnancy where smoking status is known) was not significantly different than the England average of 13.3% in North Yorkshire, York and East Riding of Yorkshire however it was significantly worse in North East Lincolnshire (24.9%), Kingston upon Hull (23.2%) and North Lincolnshire (19.9%) (Table 3.7).[42]

The 2009 Adult Dental Health Survey[63] reported that more men than women smoked and that smoking was socially patterned with 8.8% of participants smoking in the least deprived areas compared to 26.4% in the most deprived areas. Despite this prevalence only 6.8% of smokers reported receiving quitting advice from a dentist and only 2.9% reported receiving advice from a member of the dental team.

Oral hygiene practices

The most prevalent oral diseases, tooth decay and gum disease can both be reduced by regular toothbrushing with fluoride toothpaste. The fluoride in toothpaste is the most important element of tooth brushing to control tooth decay, as it prevents, controls and arrest tooth decay. By contrast the physical removal of plaque is the important element of tooth brushing to control gum disease as it reduces the inflammatory response of the gums and its consequences.[16]

In 2008/09, the majority of 12-year-old schoolchildren reported to brush their teeth twice daily [64] (Table 3.9).

Table 3.9 Frequency of toothbrushing among 12-year old children, 2008/09

Area	Never (%)	Once a day or less (%)	Twice daily (%)	More than twice daily (%)
Yorkshire and The Humber	0.2	22.3	73.1	3.8
England	0.2	22.8	72.9	3.7

Source: NHSDEP, 2011

In the 2009 National Adult Dental Health Survey 72% of adults in Yorkshire and the Humber claimed to brush their teeth twice a day or more, 22% once per day, 5% less than once per day and 1% never, which was comparable to the responses for England (75%, 22%, 2% and 1% respectively).[60]

The relationship of health related behaviours to deprivation

Health behaviours are related to deprivation with those in the most deprived quintile having the lowest physical activity [52] more likely to drink alcohol in the previous week, more likely to smoke tobacco and less likely to consume five or more portions of fruit and vegetables. [51]

Summary for North Yorkshire and Humber

- North Yorkshire and Humber has a population of 1,714,074.
- there are differences in the population profiles of each local authority. Kingston upon Hull has higher proportions of children under 5 year old, whereas the proportions of children in North Yorkshire, York and East Riding of Yorkshire are lower than the England average. In North Yorkshire, East Riding of Yorkshire and North Lincolnshire there are higher proportions of adults aged 45 years and older
- over the next ten years there is a projected population growth in all North Yorkshire and Humber local authorities especially in York and Selby.
- North Yorkshire and Humber differs from both England and Yorkshire and The Humber with a higher proportion of the population from the White ethnic group and lower proportions of all other ethnic groups
- in North East Lincolnshire and Kingston upon Hull higher proportions of the population fall into the lower two quintiles of deprivation than the England average
- life expectancy is higher than the England average for men in North Yorkshire, York and East Riding of Yorkshire and for women in North Yorkshire and York
- healthy behaviours can contribute to the prevention and control of non-communicable diseases such as cardiovascular diseases, chronic respiratory diseases, diabetes and cancers. Healthy eating and adult obesity are significantly worse than the England average in Kingston upon Hull, North Lincolnshire and North East Lincolnshire
- tobacco use was also significantly higher in Kingston upon Hull (29.3%), North East Lincolnshire (27.3%) and North Lincolnshire (22.9%)

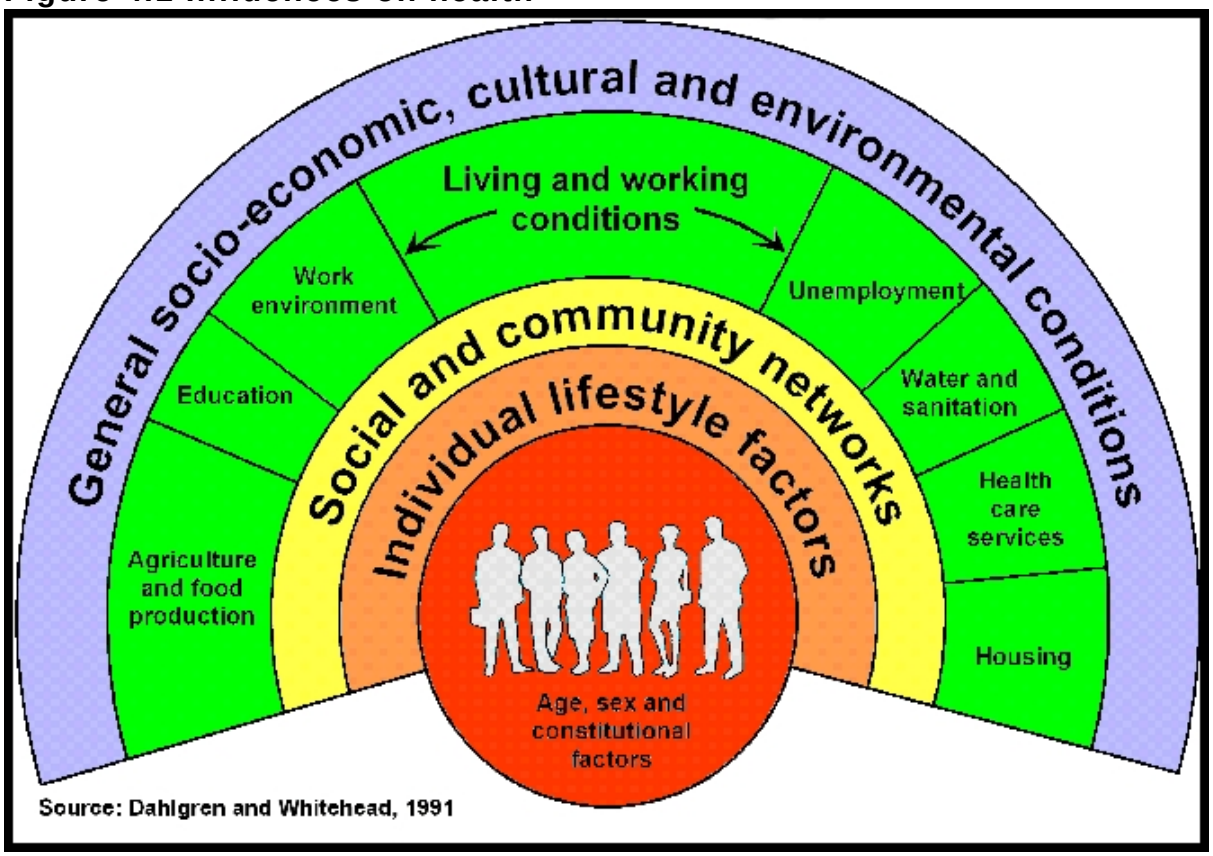
Key issues for consideration

- oral health and oral health improvement strategies should seek to address the health inequalities between and within local authority areas in addition to improving absolute levels of health
- NHS England should ensure that commissioning plans consider the expected increases in population size in all the local authorities

4. Determinants and impacts of oral health

Good oral health is essential for good general health as it influences the general wellbeing and quality of life of people by allowing them to eat, speak and socialise without active disease.[29] To achieve sustainable improvements in oral health and reduce inequalities it is necessary to consider the underlying factors influencing poor oral health. A large spectrum of factors have been identified by contemporary public health research as influencing oral health and these are found to range from economic and social policy to individual health behaviours (Figure 4.1). Individual behavioural change approaches to improving oral health have been shown to have only short term benefits[65] and focussing on the wider determinants of health is necessary to achieve sustainable improvements in health related behaviours.

Figure 4.1 Influences on health



Social determinants of oral disease

The World Health Organisation (WHO) defines the social determinants of health as the conditions in which people are born, grow, live, work and age, including the health system.[66] These circumstances are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices. The social determinants of health are mostly

responsible for health inequities, which are the unfair and avoidable differences in health status seen within and between countries.

In the UK, health inequalities including oral health inequalities are a dominant feature nationally and across all areas. Health inequalities are not inevitable, they stem from inequalities in income, education, employment and neighbourhood circumstances throughout life and can be reduced. Avoidable inequalities are unfair and remedying them is a matter of social justice. As described in chapter one Marmot proposed the most effective evidence based strategies for reducing health inequalities in England.[4]

The relationship between oral disease and social determinants are inextricably bound together. As discussed above, it is well-recognised that oral health is influenced by a wide range of determinants starting from individual lifestyle choices such as sugar intake to national policy for example smoke-free environments and policies tackling sugar and alcohol availability. It is essential that for a successful public health approach, these wider determinants must be focussed upon through a partnership approach.

Oral diseases and conditions

Good oral health is threatened by conditions such as gum (periodontal) disease, tooth decay (dental caries), trauma and oral (mouth) cancers. The common oral diseases and conditions are described below together their impacts on individuals and society.

Tooth decay

Tooth decay (dental caries) occurs when a tooth demineralises in response to the acids produced when plaque bacteria use dietary sugars for energy. The acids attack the tooth causing it to lose minerals shortly after sugar enters the mouth and the process can last for an hour. If the tooth is given a rest phase without any sugar, the chemistry of the mouth (particularly saliva) can then replace the lost minerals. Unfortunately frequent sugar intakes with fewer periods of rest shift the balance towards demineralisation of the tooth, eventually leading to tooth decay. Once decay has breached the outer layer of enamel it spreads widely in the dentine beneath. As it reaches the central pulp (nerve), it causes severe pain and infection often leading to the loss of the tooth. In older people, tooth decay can also attack the root surface of the tooth where gums have receded, which has no outer protective layer of enamel. The groups at highest risk of tooth decay include infants, preschool children, children, adolescents and older people especially those living in institutions.

The sugars causing tooth decay are present mainly in confectionary, biscuits and soft drinks. The WHO currently recommends sugar should make up less than 10%

(approximately 50g) of peoples energy intake per day with a further reduction to below 5% offering additional benefit.[67] The majority of the people in England consume more than the recommended amount.

Factors such as costs, availability, access to healthy foods and clear information are all important in influencing what people eat and drink. Eating a healthy balanced diet containing fruit and vegetables that is low in fat, salt and sugar and based on whole grain products is important for good health. *Delivering Better Oral Health*[16] supports dental teams to give clear and consistent evidence-based advice to their patients. Advice relates to infant feeding, the intake of sugars within the diet, a balanced diet and the five a day message. Current dietary advice is to reduce not only the amount of sugar within the diet but also the frequency of its intake to reduce the risk of tooth decay.

Fluoride use

Fluoride acts in several ways to slow and prevent the decay process and also to reverse decay in its early stages. The most important modes of action are to reduce demineralisation and promote re-mineralisation so that minerals are deposited back into the tooth surface. The effectiveness of fluoride reducing levels of tooth decay at an individual level and at a community level is well documented.[16]

Individual level

Fluoride has been added to toothpaste since the 1970s and this is widely recognised as the main reason for improved oral health in the UK. The preventive fraction i.e. the relative effectiveness of fluoride toothpaste in reducing tooth decay is 24%.[68] Programmes such as Brushing for Life have been commissioned for example in North Lincolnshire and North East Lincolnshire and involve the promotion of toothbrushing as soon as the first teeth erupt in order to increase the delivery of fluoride to children from lower socioeconomic groups.

Fluoride varnishes are applied professionally usually at six monthly intervals and have a preventive fraction of 37% in primary teeth and 43% in permanent teeth.[69]

Fluoride rinses can be prescribed for people aged eight years and over for daily or weekly use, in addition to twice daily brushing with fluoride toothpaste. Rinses require patient compliance and should be used at a different time to tooth brushing to maximise the topical effect of fluoride which relates to the frequency of availability. The preventive fraction for fluoride rinses is 26%.[70]

Community level

In areas with high levels of tooth decay water fluoridation is an effective and safe public health intervention. The level of fluoride, which is naturally present in water

supplies, can be adjusted to the optimal level of one part per million (ppm) to improve dental health. In the West Midlands 70% of the population consume fluoridated water and children living in these areas have better oral health at every level of deprivation.[71]

Water fluoridation became the responsibility of local authorities from April 2013. Local authorities are responsible for conducting public consultations and for meeting the costs the water companies incur for implementing and operating water fluoridation schemes.[1]

The Lincolnshire water fluoridation scheme is supplied by Anglian Water and covers North Lincolnshire and North East Lincolnshire local authorities. Approximately 136,000 people receive artificially fluoridated water of whom 111,724 (75%) live in North Lincolnshire and 23,822 in North East Lincolnshire. Fluoridated communities include Scunthorpe, Barton-upon-the-Humber in North Lincolnshire and some of the rural communities to the west of Grimsby in North East Lincolnshire. Oral health in five-year-olds in North Lincolnshire is significantly better than the Yorkshire and The Humber average which may reflect the benefits of water fluoridation and the lower levels of area deprivation.

Tooth wear

Apart from tooth decay, tooth tissue loss can also occur due to tooth wear. Tooth wear is a natural part of life, so the extent and severity of wear is age related. The wear can have chemical, physical or mechanical causes The tooth tissue can dissolve in dietary or other acids (erosion), be worn away by contact with something else, such as a toothbrush and abrasive paste (abrasion) or the top and bottom teeth may grind against each other and be worn away (attrition). Typically, these processes all occur together with the overall result being loss of tooth tissue changing the shape and form of the tooth. Whilst wear is a natural process, sometimes it can be rapid and destructive and requires treatment.

Tooth wear is most commonly seen as erosion. Children and young people who consume excessive amounts of acidic fizzy drinks (including diet and sugar free varieties) are more likely to be affected by tooth erosion. Less commonly, erosion arises from intrinsic factors such as frequent vomiting or regurgitation in groups with stomach acidity problems or eating disorders such as bulimia.

Whilst severe tooth wear can have significant impacts on individuals, affecting function and appearance, it is not considered to be a public health problem.

Gum (periodontal) diseases

Gum (periodontal) diseases comprise a range of conditions characterised by inflammation of the gums and loss of the tissues supporting the teeth, including bone. The diseases are caused by the interaction between the plaque bacteria and the body's immune system. The mild forms of disease, where there is only inflammation of the gums (gingivitis), are very common affecting 54% of adults in England and Wales. In more severe forms the attachment between the tooth and gum is lost causing a pocket. Forty-five per cent of dentate adults have pocketing, most of which (37% in adults) is mild, between 4 and 6mm deep. Nine per cent have deeper pockets. As the pocketing progresses slowly it is more common amongst older people.

Gum diseases can cause a variety of symptoms but are usually painless until an advanced stage. Gum diseases affect a large proportion of the population and become more common with increasing age. The progressive loss of the supporting structures of the teeth, which can ultimately lead to looseness and loss of the tooth if untreated is the most important manifestation of gum disease.

Mouth (oral) cancers

Although mouth cancer is relatively uncommon it has a significant impact on the lives of those people affected because the disease and its treatments may cause difficulty in speaking and swallowing and sometimes affect facial appearance. Early diagnosis increases five year survival to 80% but small tumours are often undetected because of low awareness and the painless nature mean that people often only seek help when the cancer is advanced.

The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD 10) defines oral cancers. Mouth cancers include ICD 10 codes C00-C14, C30-C32, which can be defined as head and neck cancers, excluding the thyroid gland.[72]

The main risk factors for mouth cancer are use of tobacco, combined with alcohol consumption. These two factors act synergistically and this multiplies the risk of developing mouth cancer by up to 40%. Smokers are 7-10 times more likely to suffer from an oral cancer when compared to those who have never smoked and those who regularly use smokeless tobacco have 11.4 times the risk of a non-user.[73] Diet is also a risk factor for oral cancer with some evidence stating the protective role of fruits and vegetables, particularly citrus fruits in the prevention of the development of cancers of the digestive and upper respiratory tract.[74]

Tobacco use

As well as causing mouth cancer, tobacco use affects the mouth by staining of the teeth, discolouring 'tooth-coloured' restorations and dentures, reducing taste sensation causing bad breath, delaying healing and strongly increasing the risk of gum disease.

Tobacco products may be smoked or used in smokeless products.

Smokeless tobacco

Smokeless tobacco refers to over 30 different products worldwide. The main products used in the UK are betel quid (paan) with tobacco, gutkha and niswar. All forms of smokeless tobacco, whether or not combined with other ingredients, increase the risk of mouth cancer, pancreatic cancer, gum disease and heart disease. In England smokeless tobacco products are mainly used by the South Asian community. The Health Survey for England [75] (2004) recorded the highest self-reported use of smokeless tobacco among Bangladeshi women (16%) and men (9%), followed by Indian men (4%), Pakistani men (2%) and Indian and Pakistani women (both 1%).

Smokeless tobacco is sometimes used by the whole family and children are often not discouraged.[76] There is compelling evidence that people from South Asian backgrounds are at increased risk of mouth cancer with increasing morbidity and mortality rates because of smokeless tobacco use. The debate around how to support smokeless tobacco users has begun at a national government policy level. The issues include regulations in the sale of these products[77] along with the support to quit for user.[16,17]

Shisha smoking

Shisha is a device for smoking, traditionally used in Middle Eastern cultures. Shisha is operated through a water filter and indirect heat; consequently smokers often feel it is less harmful than cigarettes.

Khat chewing

Khat or Qat is an edible flowering plant and a mild stimulant and the WHO has classified it as a drug of abuse, though it is not considered to be very addictive. Until July 2013, the UK was the only European country where khat was legal. Since July 2013 khat has been classified as a class C substance under the Misuse of Drugs Act 1971.

Khat is often chewed and kept in the mouth for prolonged periods of time, up to six hours. Consequently, negative oral effects are due to chemical and mechanical

irritation of the mouth. These effects include: white changes in the mouth, mucosal pigmentation, dry mouth and gum disease.[78,79]

Alcohol

Together with tobacco use alcohol is a key risk factor for mouth cancer. The effect of alcohol consumption and combined tobacco use potentiates the risk of developing mouth cancer in heavy drinkers and smokers to 30 times that of non-users to develop mouth cancer.[80] Many major facial traumas are related to alcohol use.[81,82]

Alcohol misuse contributes to increased mortality, chronic ill-health, violent crime and antisocial behaviour and places a considerable burden on the NHS. The annual cost to the NHS due to alcohol misuse was estimated at £2.7 billion based on 2006/07 prices, with alcohol accounting for 6% of all hospital admissions.

Human papilloma virus

The human papilloma virus has a role in the development of oral cancer. There are over 100 genotypes in the human papilloma group of viruses. However, human papilloma virus types 6, 11, 16 and 18 are the viruses which infect the mucosal epithelial cells in the oral cavity and oropharynx. It has been suggested that 20-25% of head and neck cancers contain human papilloma virus.[83] In England, incidence rates of human papilloma virus associated oral pharyngeal cancers rose sharply between 2005 and 2010, from 2.1 per 100,000 to 6.2 per 100,000 of the population.

Currently all females aged 12-years to 13-years are offered vaccination against some human papilloma virus to reduce the risk of developing cervical cancer. It is estimated that this programme will eventually prevent up to 400 deaths a year. The British Dental Association is supporting calls for gender-neutral human papilloma virus vaccination, in a bid to reduce the number of oro-pharyngeal cancers although no trials of its use against oral cancer have been reported.

Facial and tooth abnormalities

Tooth alignment problems occur because of a discrepancy between jaw size and the number of teeth present. Commonly, there is a lack of space in the mouth for all the adult teeth. Problems with tooth alignment may also occur in association with other syndromes such as cleft lip and palate.

Irregularly positioned teeth may be treated with orthodontic care. Eligibility for NHS orthodontic care is dependent on the severity of misalignment. Orthodontic treatment need is assessed using the Index of Orthodontic Treatment Need (IOTN).[90] The IOTN consists of two separate components, the aesthetic component and the dental

health component. The aesthetic component is graded from 1-10, looking at the overall attractiveness of the anterior teeth by comparison with a visual chart. The dental health component is a five point scale which looks at different aspects of malocclusion including missing teeth, overjet, crossbite, displacement of contact points and overbite. It is considered that children who fall into the most severe categories of misaligned teeth, IOTN 4 and 5 are most likely to benefit from orthodontic care as the improvement in dental health in these children is likely to outweigh the risks. In addition, children in category 3 with the most severe dental aesthetic components (categories 6-10) are also considered to need orthodontic treatment.

Cleft lip and palate

Clefts occur when the upper lip and/or palatal shelves fail to fuse during development of the embryo. The type of cleft and how severe it is can vary widely between children. The exact cause of clefts is not known, although evidence suggests they are caused by a combination of genetics and environmental factors, such as smoking and drinking in early pregnancy and a lack of folic acid in the mother's diet. Cleft lip and palate can occur on its own (non-syndromic) or can sometimes be part of a wider series of birth defects (syndromic).

Cleft lip and/or palate can affect a variety of functions, including speech and hearing. Appearance and psychosocial health may also be compromised in those with a cleft. Typically, children with these disorders need multidisciplinary care from birth to adulthood and they have higher morbidity and mortality throughout life compared with unaffected individuals.

Social impacts of oral disease

Good oral health is essential for good general health and wellbeing. Oral disease may cause pain and discomfort, sleepless nights, loss of function and self-esteem. The discomfort may disrupt family life and lead to time off work or school. Decayed or missing teeth or ill-fitting dentures may lead to social isolation and loss of confidence. Limited function of the dentition may also restrict food choices compromising nutritional status. The 2010 Global Burden of Disease study reported that children aged five to nine years experienced the most disability caused by poor oral health, with the level of disability exceeding that caused by vision or hearing loss and diabetes mellitus.[84]

There is a substantial body of treatment that links the oral diseases described in this report to impacts on people’s quality of life. Furthermore, treatment of these diseases improves quality of life. There is also appreciable evidence that the appearances of oral diseases influences the social judgements of others so that people with poor

dental appearance are deemed to be less intellectually or socially competent. Judgements such as these will influence the life chances of people with visible oral disease.

Financial impacts of oral disease

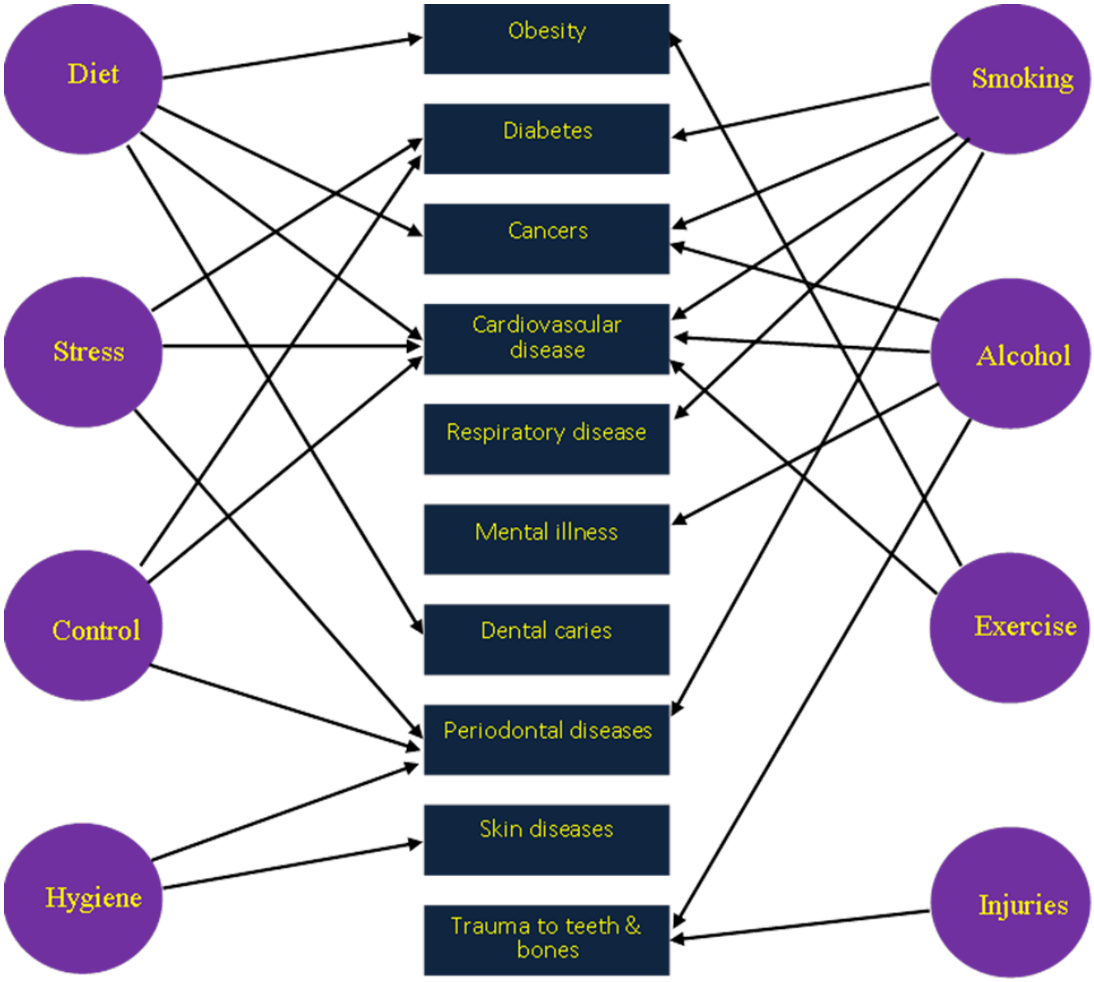
In England, in 2012/13 the spend on NHS dental services was £3.58 billion with a further spend of £660 million in patient charges. The costs locally are detailed in Chapter 6. In addition, expenditure on private dentistry outside the NHS is likely to exceed £2.5 billion in England. These financial impacts are likely to increase as treatment options become more complex and costly for an aging population retaining heavily restored teeth for longer and public expectations regarding maintaining teeth for life increase.

A common risk factor approach

Oral diseases and conditions share risk factors with other diseases such as cancer, cardiovascular disease and obesity.[85] A common risk factor approach was developed as there are identifiable risk factors which, if controlled, could have an impact on a multitude of conditions and diseases. Applying a common risk factor approach to multiple public health strategies would impact on multiple health outcomes and ensure more effective use of limited resources.

The links between the common risk factors for oral and general health are shown below for a multitude of general and oral health conditions such as, obesity, diabetes, cancers, cardiovascular diseases, tooth decay and gum diseases (Figure 4.2).[85]

Figure 4.2 The common risk factor approach



Source: Sheiham and Watt, 2000

Summary

- poor oral health results in social and financial impacts both for the individual and society as a whole
- the main oral diseases are preventable through optimising exposure to fluoride, limiting consumption of dietary sugars, good oral hygiene and reducing tobacco and alcohol consumption
- however, focusing solely on individual behaviour change has only short term benefits for oral and general health. It is therefore essential to focus on the wider determinants of health and partnership delivery to achieve sustainable improvements
- Marmot's review of health inequalities advocated six policy actions to reduce health inequalities. All health improvement partnerships should contribute to this agenda addressing the wider determinants of health

- lifestyle choices such as poor diet, poor oral hygiene practices, tobacco and alcohol use and sexual behaviours all have impacts on oral health and general health

Key issues for consideration

- a common risk factor approach focusing on the wider determinants as well facilitating healthy choices will impact not only on oral health but wider general health

5. Epidemiology of oral diseases

Tooth decay is the main oral disease affecting children. It has significant impacts on the daily lives of children and their families including pain, sleepless nights and time missed from school and work. As discussed previously, the main risk factors for tooth decay are diets high in sugars and lack of exposure to fluoride therefore tooth decay is largely preventable.

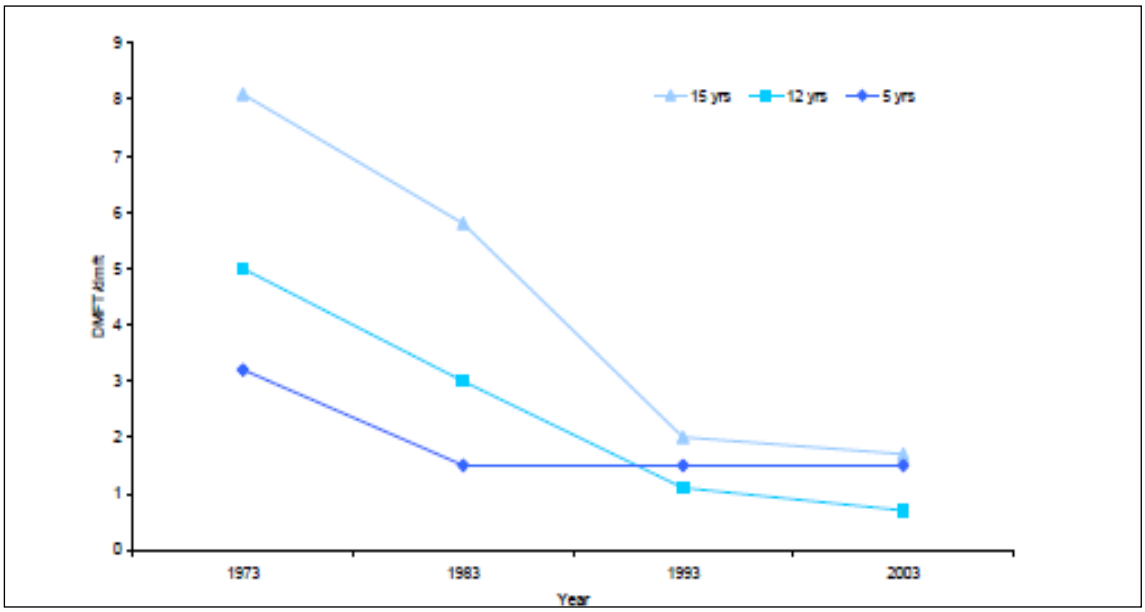
A commonly used indicator of tooth decay and treatment experience, the dmft index, is obtained by calculating the average number of decayed (d), missing due to decay (m) and filled due to decay (f) teeth (t) in a population. In five-year-old children, this score will be for the first (primary) teeth and is recorded as dmft. In 12-year-old children it reports the adult teeth in upper case (DMFT). The average (mean) dmft/DMFT is a measure of the severity of tooth decay experience.

As tooth decay in schoolchildren is highly polarized towards lower socio-economic groups another indicator, percentage of children with a dmft>0, demonstrates the proportion of children with obvious tooth decay experience. A further useful indicator is the mean dmft>0, demonstrates the severity of tooth decay after excluding those children with no obvious tooth decay. The Care Index is the proportion of decayed teeth that have been treated by fillings or restorations.

Epidemiology of oral diseases in children

National surveys of the oral health of children have been undertaken on a ten yearly cycle beginning in 1973. Since then there has been a decline in the average number of teeth with tooth decay which was also associated with a decline in the number of children experiencing tooth decay. This rapid decline is attributed to the introduction of fluoridated tooth paste in the 1970s. The last national children's survey was in 2003 and demonstrated a continuing decline in tooth decay experience in the permanent teeth of 12 and 15-year-old children. However evidence for this in the primary teeth of five-year-olds was more limited with the improvement seen from 1973 to 1983 having curtailed (Figure 5.1). However the findings from the last two NHS dental epidemiology surveys of five-year-old schoolchildren in England (2007-2008 and 2011-12) showed a significant decline with a fall in average dmft from 1.11 in 2008 to 0.93 in 2012.

Figure 5.1 Severity of tooth decay experience in children from 1973 to 2003[86]



Source: National Children's Dental Health Surveys 1973 to 2003. Harker and Morris, 2005.

The 2003 national survey also highlighted inequalities by social status in five-year-old children. Children from the lowest social backgrounds were twice as likely to have tooth decay as children from the highest social group.

Regular NHS dental epidemiological surveys allow more detailed information at a local level and have provided information on the oral health status of five, 12 and 14-year-old schoolchildren since 1985. In 2013 a national survey of three-year-old pre-school children was carried out for the first time.

In this chapter a broad overview of findings will be given and more detailed findings of the last five and 12-year-old surveys may be found in Appendix 2 (Table I and II).

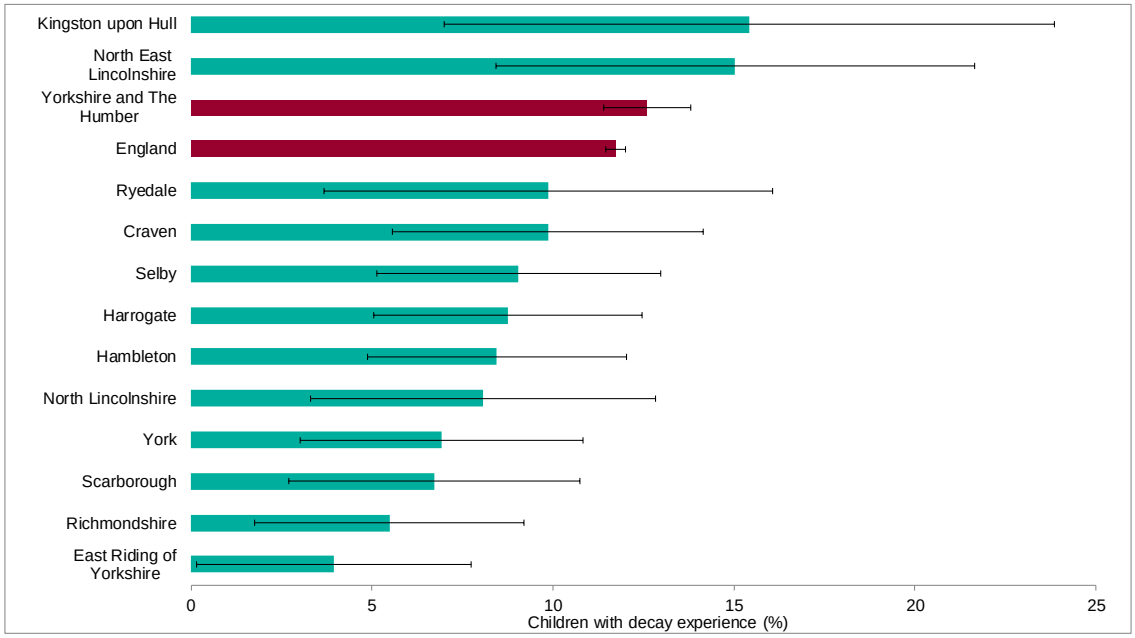
Tooth decay in three-year-old pre-school children

The 2013 national survey examined three-year-old children, attending state and private funded nurseries and nursery classes attached to schools and play groups. [87] Yorkshire and The Humber was amongst the worst four regions in England for oral health for this age group.

The proportion of three-year-old children experiencing tooth decay is an indicator of the prevalence of tooth decay. Although the large majority of three-year-olds were free from visually obvious tooth decay, the prevalence of tooth decay in three-year-olds in England was 11.7% and in Yorkshire and The Humber the prevalence (12.6%) was higher than the England average, the fourth worst in the country. The proportion of three-year olds in North Yorkshire and Humber with experience of tooth

decay ranged from just under 4% in the East Ridings of Yorkshire to over 15% in Kingston upon Hull and North East Lincolnshire. (Figure 5.2).

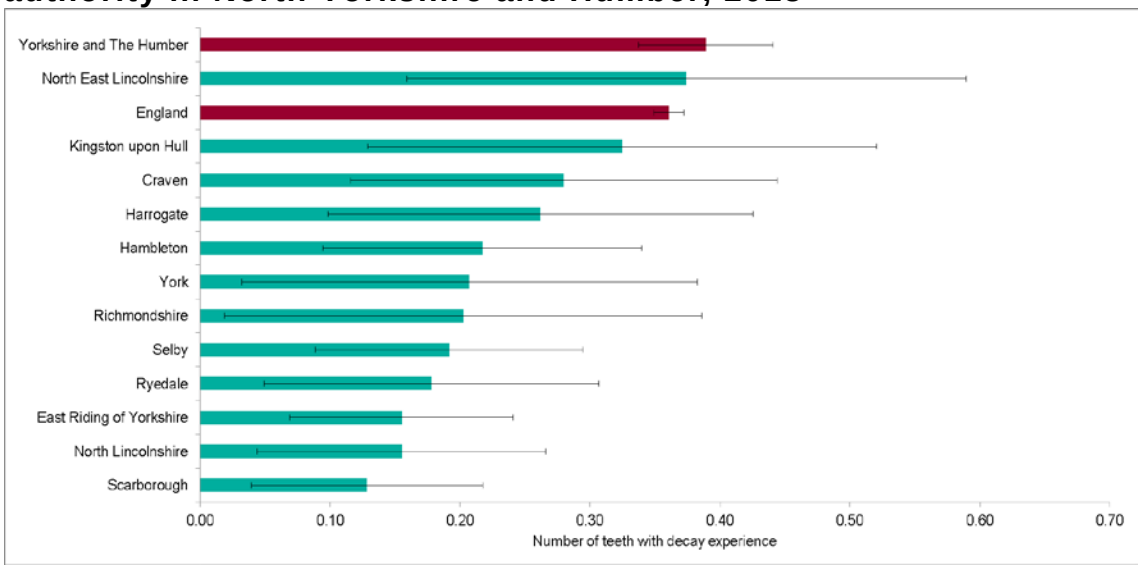
Figure 5.2 Prevalence of tooth decay experience in three-year-olds by local authority in North Yorkshire and Humber, 2013



Source: PHE, 2014.

No differences in severity of tooth decay across local authority areas could be determined due to the small numbers of children participating (Figure 5.3).

Figure 5.3 Severity of tooth decay in three-year-olds by local authority in North Yorkshire and Humber, 2013



Source: PHE, 2014.

Of the three-year-old children who had decay, each child had on average three decayed, missing or filled teeth. The numbers of affected children were too small to allow for robust comparison of severity in these children across local authorities.

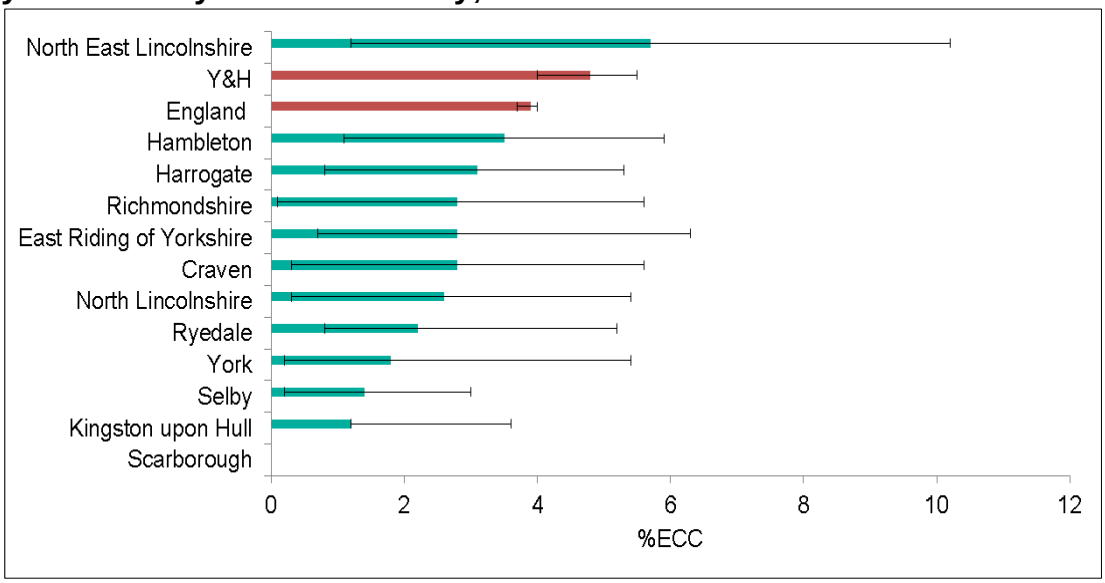
There was a strong association between levels of tooth decay and level of deprivation. Deprivation explained 19% of the variation in prevalence and 25% of the variation in severity of tooth decay.

A moderate association was found between prevalence of tooth decay at age three and at age five.

Prevalence of early childhood caries

For the first time data were collected that allowed for investigation into a type of tooth decay called early childhood caries. This is tooth decay that affects the upper front teeth (incisors) and can be rapid and extensive. It is associated with long term use of a bottle containing sugar-sweetened drinks, especially when these are given overnight or for long periods of the day. The definition of early childhood caries used here is tooth decay affecting any surface of one or more upper primary incisors, regardless of the decay status of any other teeth. Overall the prevalence of early childhood caries was 3.9% (Figure 5. 4).

Figure 5.4 Prevalence of early childhood caries experience in three-year-olds by local authority, 2013



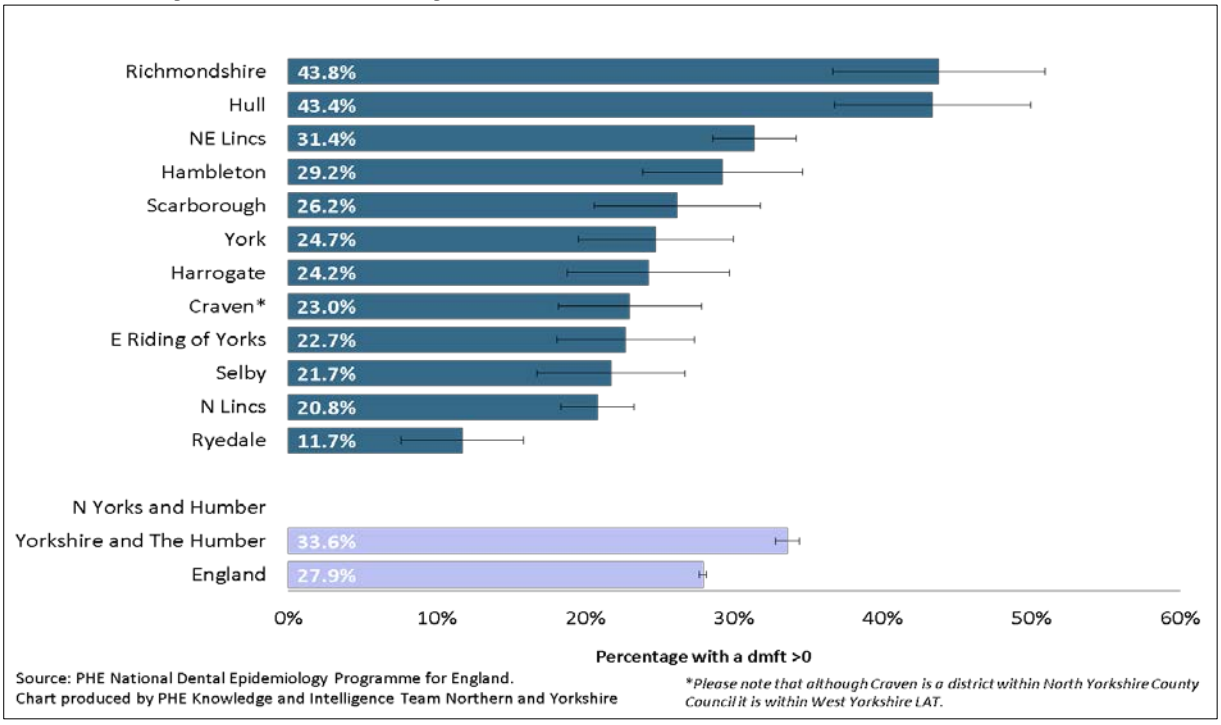
Source: PHE, 2014.

A moderate association was found between prevalence of tooth decay at age three and at age five.

Tooth decay in five-year-old school children

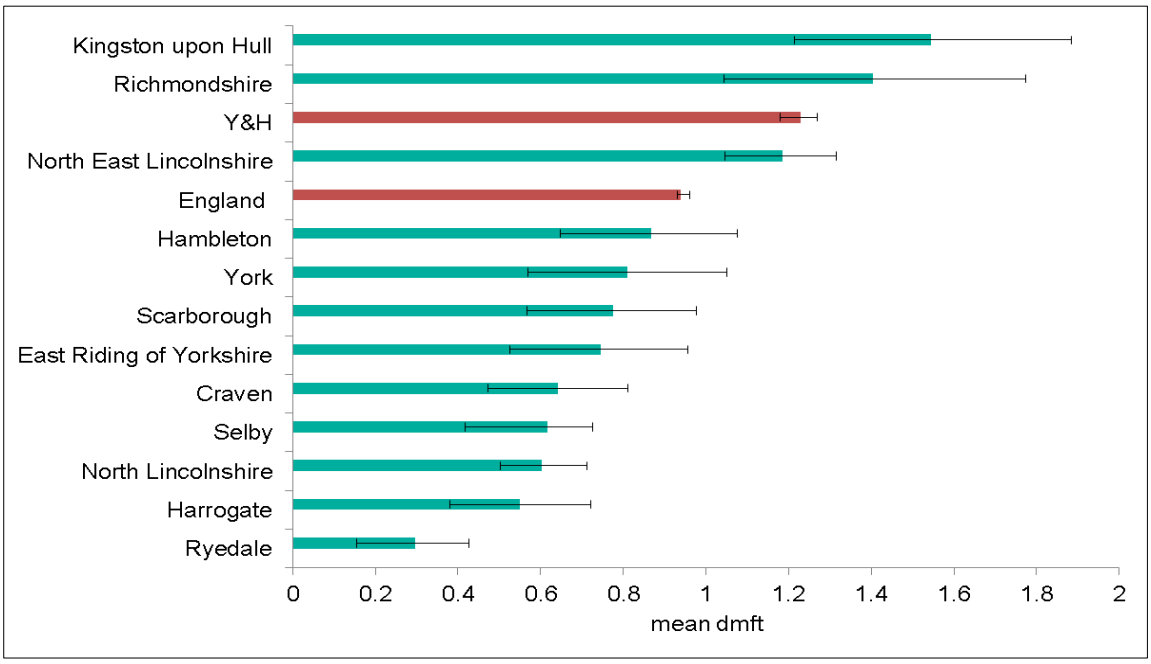
In 2011/12 the prevalence of tooth decay in five-year-olds [88] in Yorkshire and The Humber was the second highest in the country (33.6%). The proportion of five-year-olds in North Yorkshire and Humber with experience of tooth decay was highest in Richmondshire and Kingston upon Hull and both areas had significantly more children with tooth decay than the other local authorities in North Yorkshire and Humber, Yorkshire and the Humber and England as a whole (Figure 5.5).[88]

Figure 5.5 Prevalence of tooth decay experience in five-year-old children by local authority, 2011/12



The severity of tooth decay in five-year-old children in Yorkshire and The Humber was the third worst in England (1.23). Five-year-old children in Kingston upon Hull, Richmondshire and North East Lincolnshire had significantly more tooth decay experience than the England average (Figure 5.6).

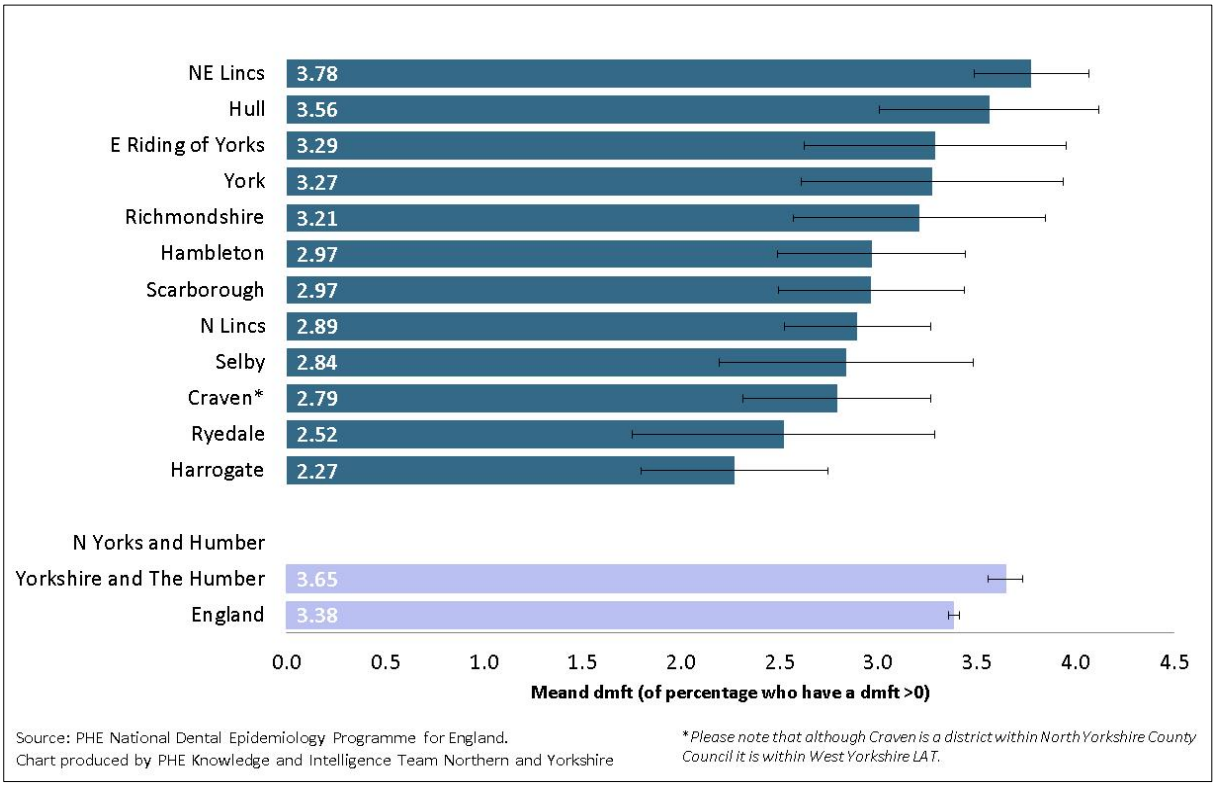
Figure 5.6 Severity of tooth decay experience in five-year-old children by local authority, 2011/12



Source: PHE, 2013

Excluding those children with no experience of tooth decay, five-year-olds in North East Lincolnshire had significantly more teeth with decay experience (3.78) than children from Harrogate, Ryedale, Craven, Selby, North Lincolnshire, Scarborough, Hambleton and England as a whole (Figure 5.7)

Figure 5.7 Severity of tooth decay in those children with experience of tooth decay by local authority, 2011/12



Inequalities in the oral health of five-year-old children

Inequalities in the prevalence and severity of tooth decay in five-year-old children were found between local authorities (Figure 5.5; Figure 5.6) and also within local authorities. The prevalence of tooth decay in five-year-olds increases with increasing deprivation. In North Yorkshire and Humber over one third (37.3 %) of the most deprived five-year-old children experienced decay compared with just over a quarter (25.9 %) in the least deprived quintile.

The severity of tooth decay in five-year-olds also increased as deprivation increased. The children in the most deprived quintile had over three times more decay experience than those in the least deprived quintile (Figure 5.8).

Inequalities in the severity of tooth decay in five-year-old children can be seen at ward level in Figures 5.9 to 5.20.

Figure 5.8 Severity of tooth decay in five-year-olds by quintiles of deprivation, 2011/12

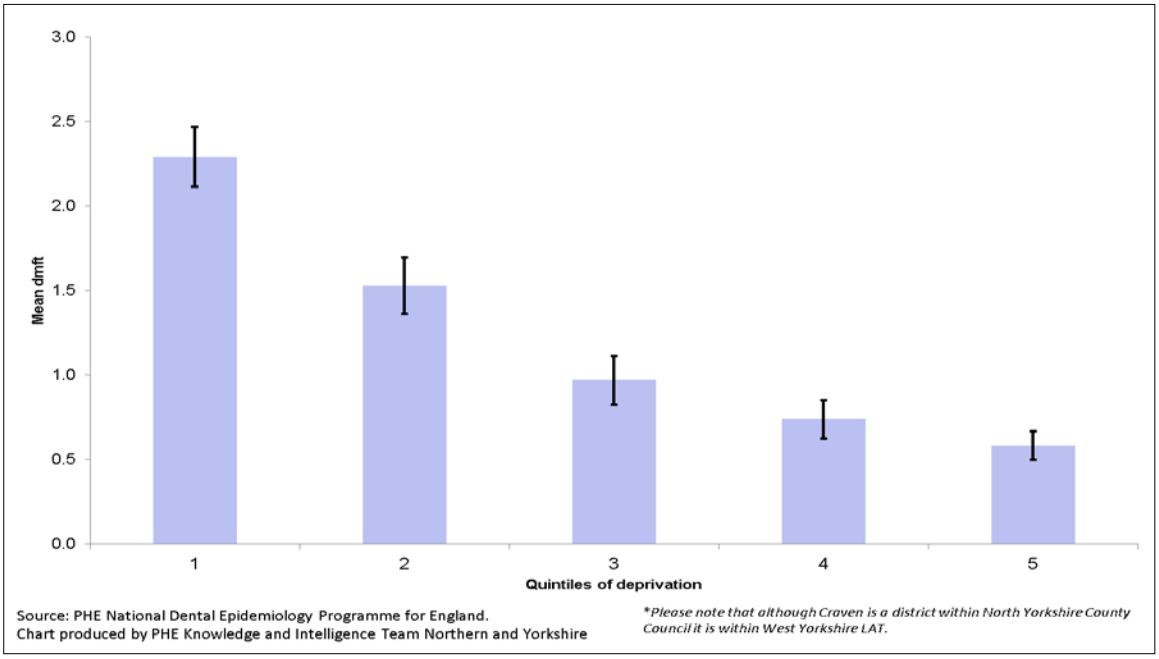
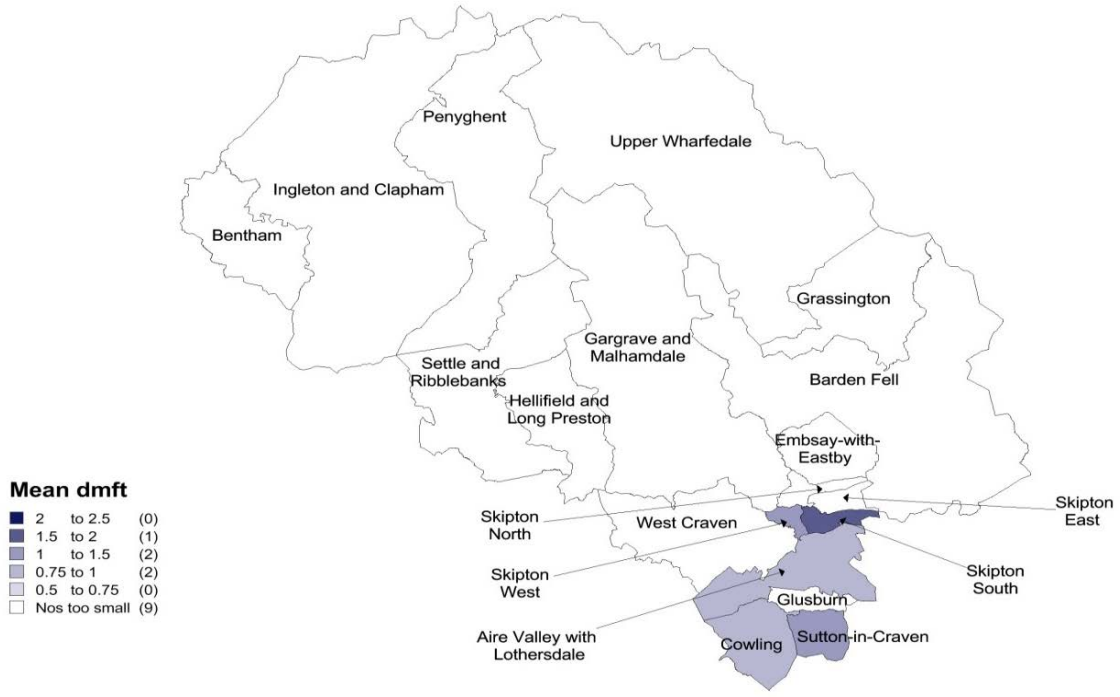
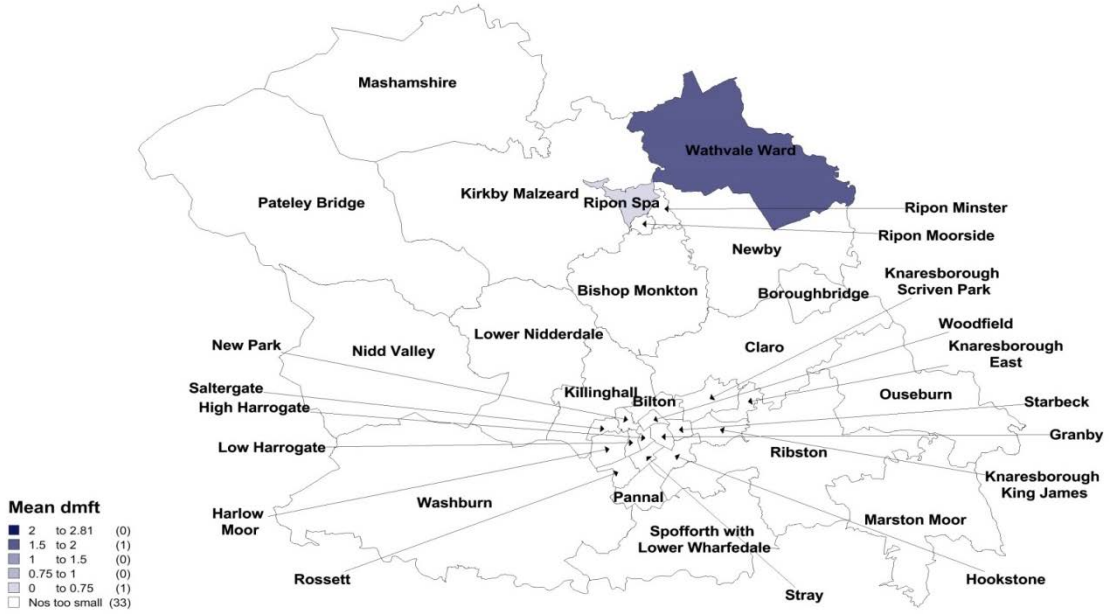


Figure 5.9 Severity of tooth decay in five-year-old children in Craven by ward, 2011/12



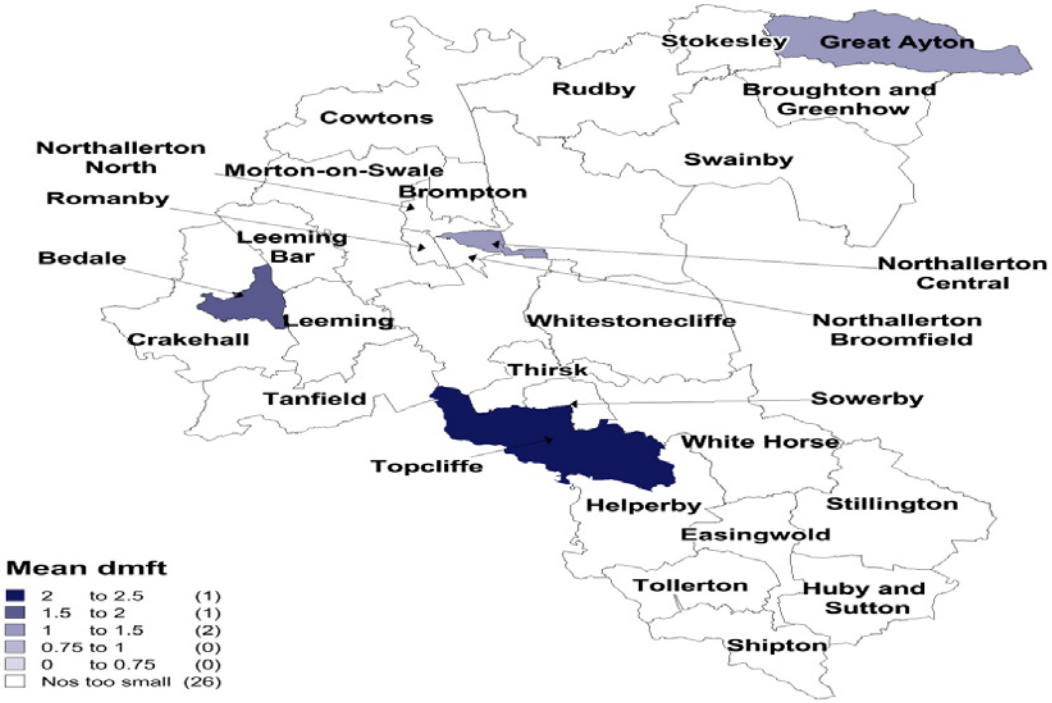
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.10 Severity of tooth decay in five-year-old children in Harrogate by ward, 2011/12



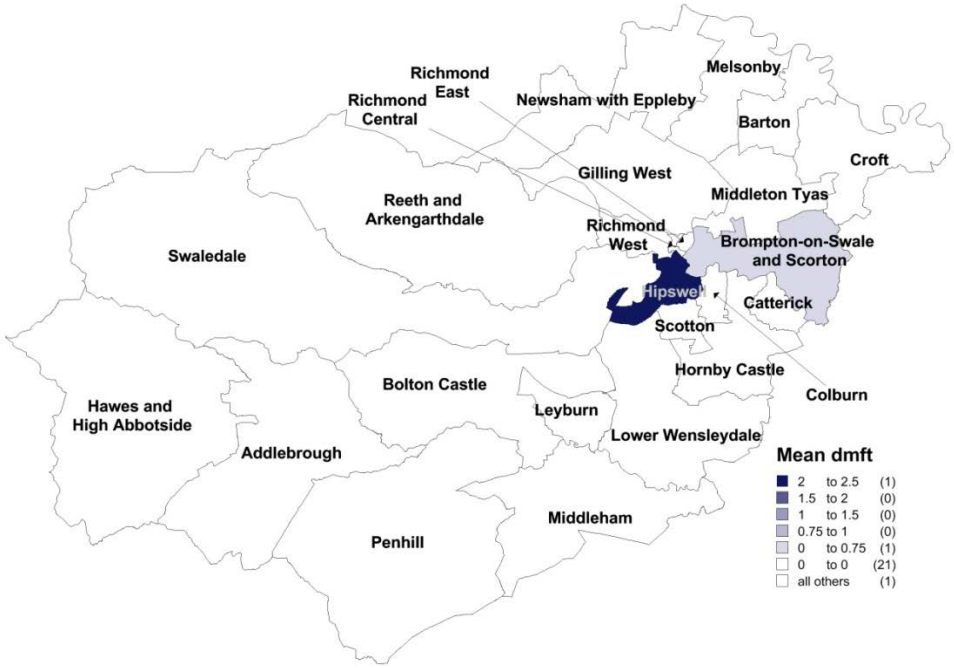
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.11 Severity of tooth decay in five-year-old children in Hambleton by ward, 2011/12



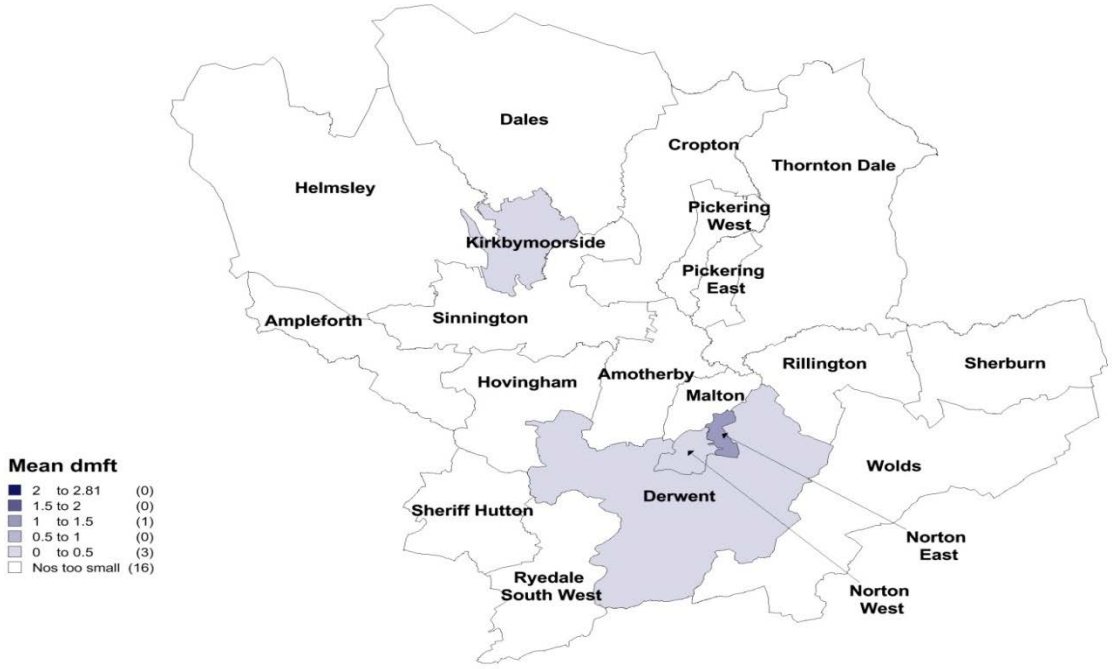
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.12 Severity of tooth decay in five-year-old children in Richmondshire by ward, 2011/12



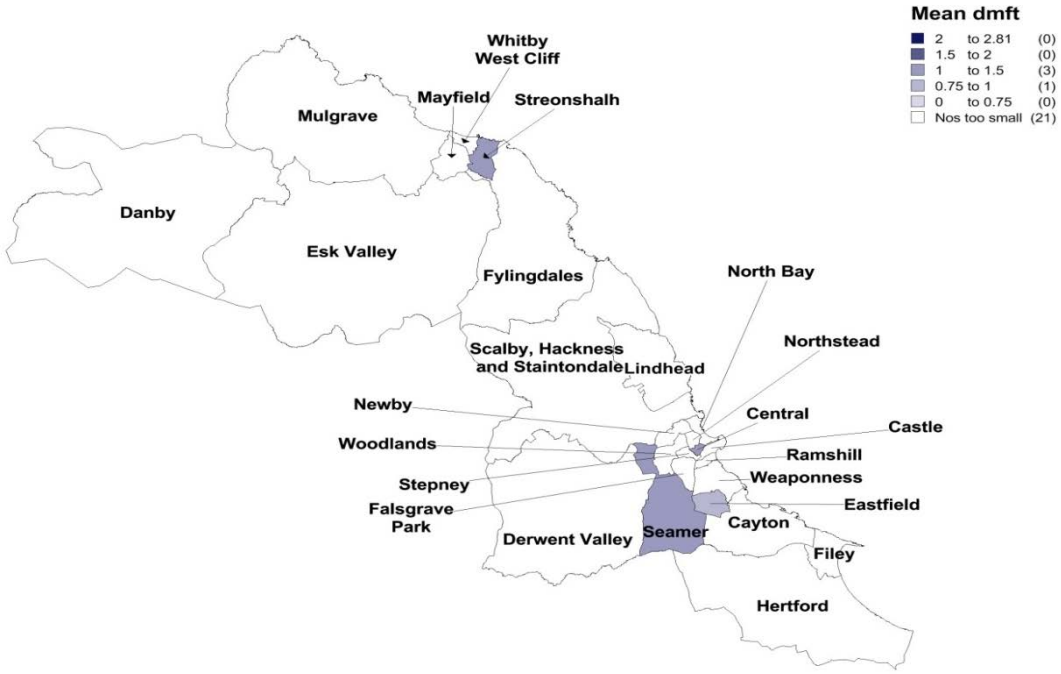
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.13 Severity of tooth decay in five-year-old children in Ryedale by ward, 2011/12



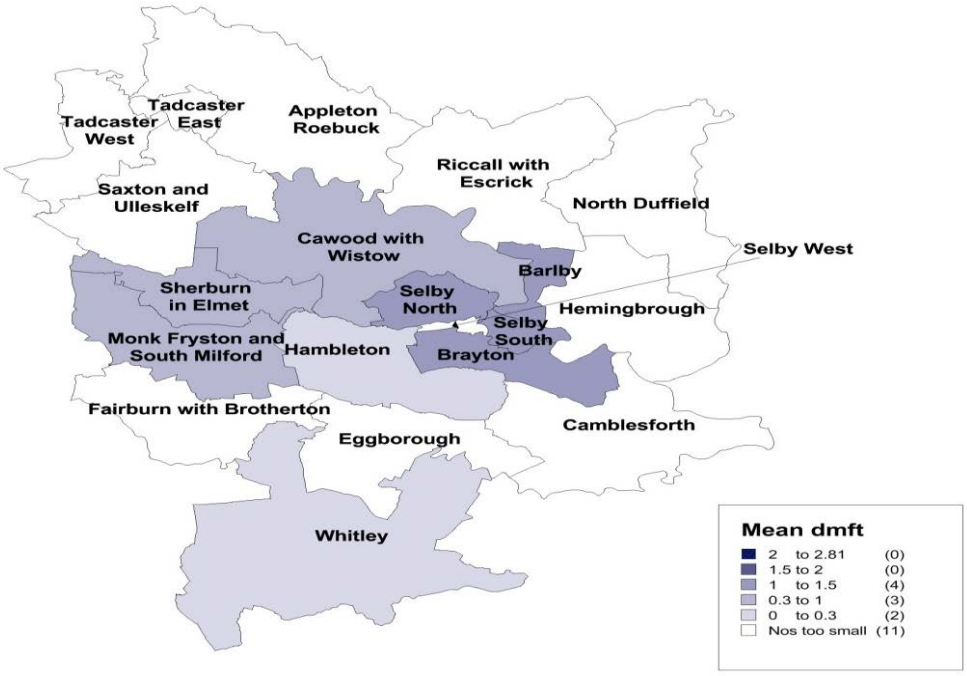
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.14 Severity of tooth decay in five-year-old children in Scarborough by ward, 2011/12



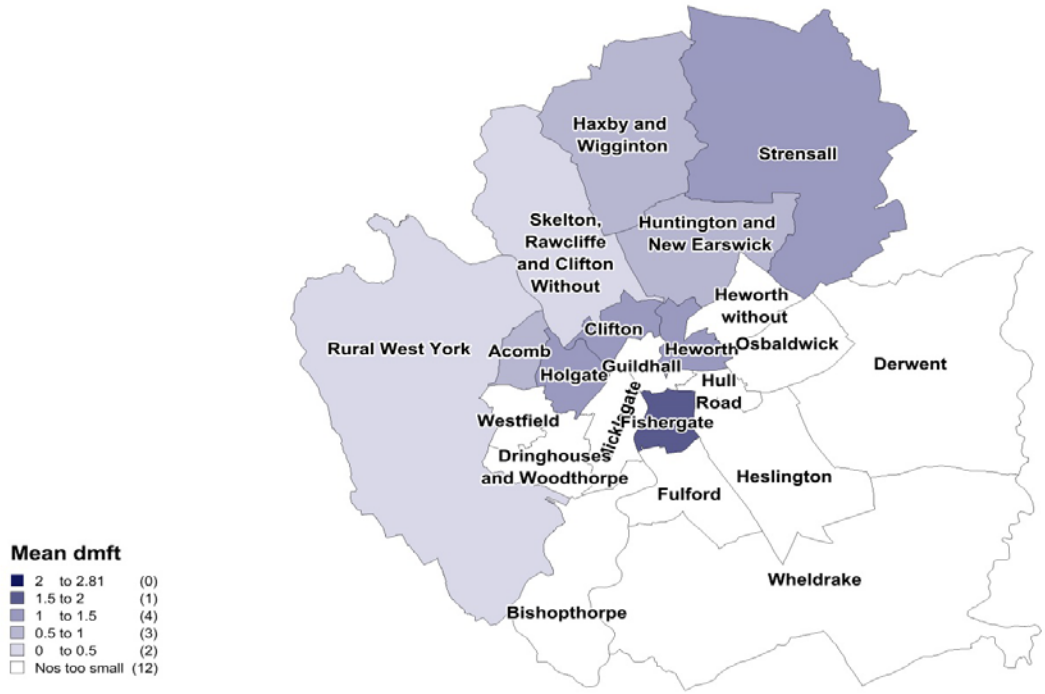
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.15 Severity of tooth decay in five-year-old children in Selby by ward, 2011/12



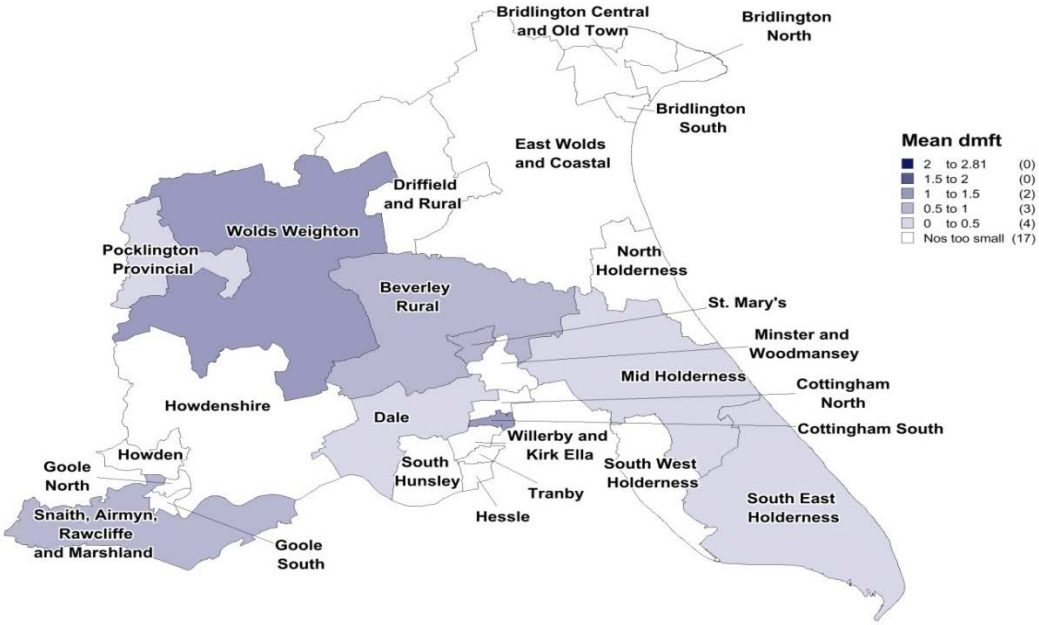
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.16 Severity of tooth decay in five-year-old children in York by ward, 2011/12



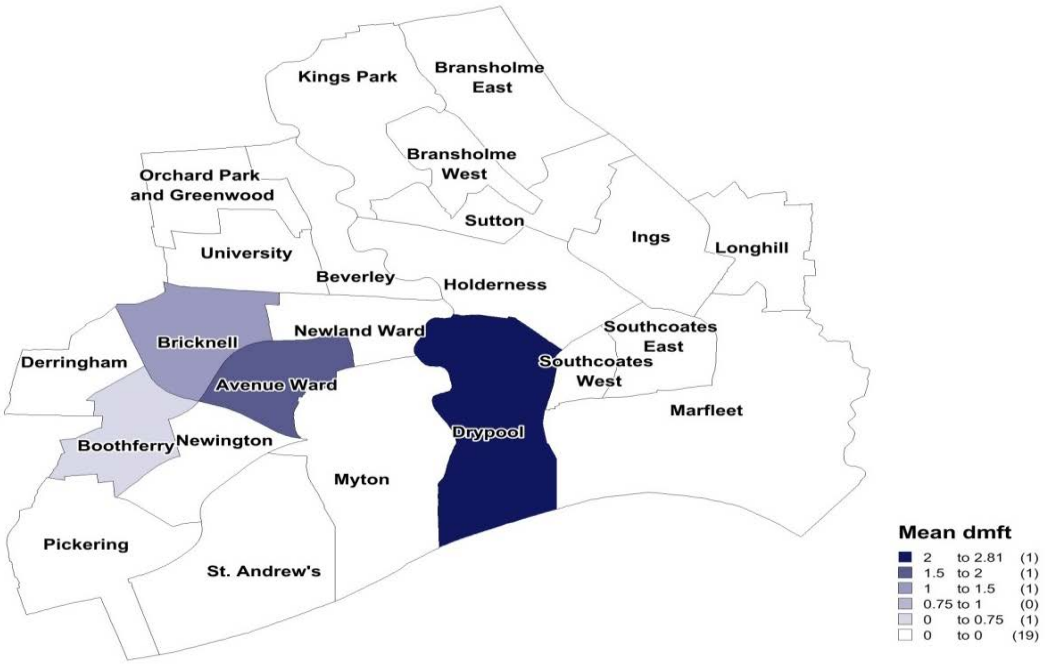
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.17 Severity of tooth decay in five-year-old children in East Ridings of Yorkshire by ward, 2011/12



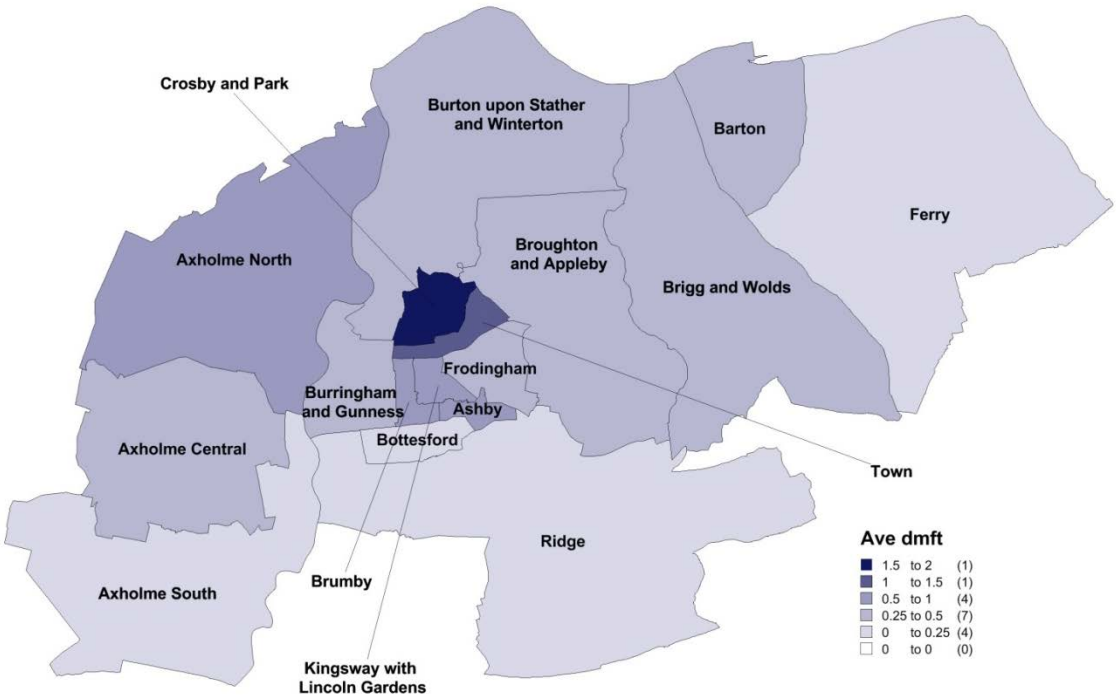
Source: PHE National Dental Epidemiology Programme for England.
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.18 Severity of tooth decay in five-year-old children in Kingston upon Hull by ward, 2011/12



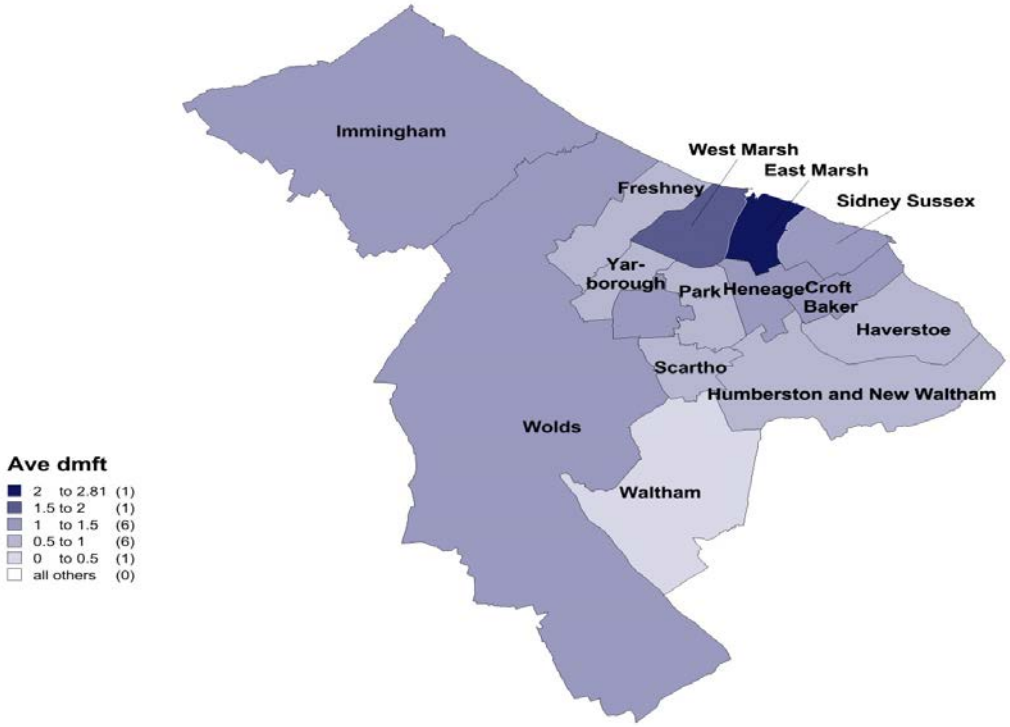
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.19 Severity of tooth decay in five-year-old children in North Lincolnshire by ward, 2011/12



Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure 5.20 Severity of tooth decay in five-year-old children in North East Lincolnshire by ward, 2011/12



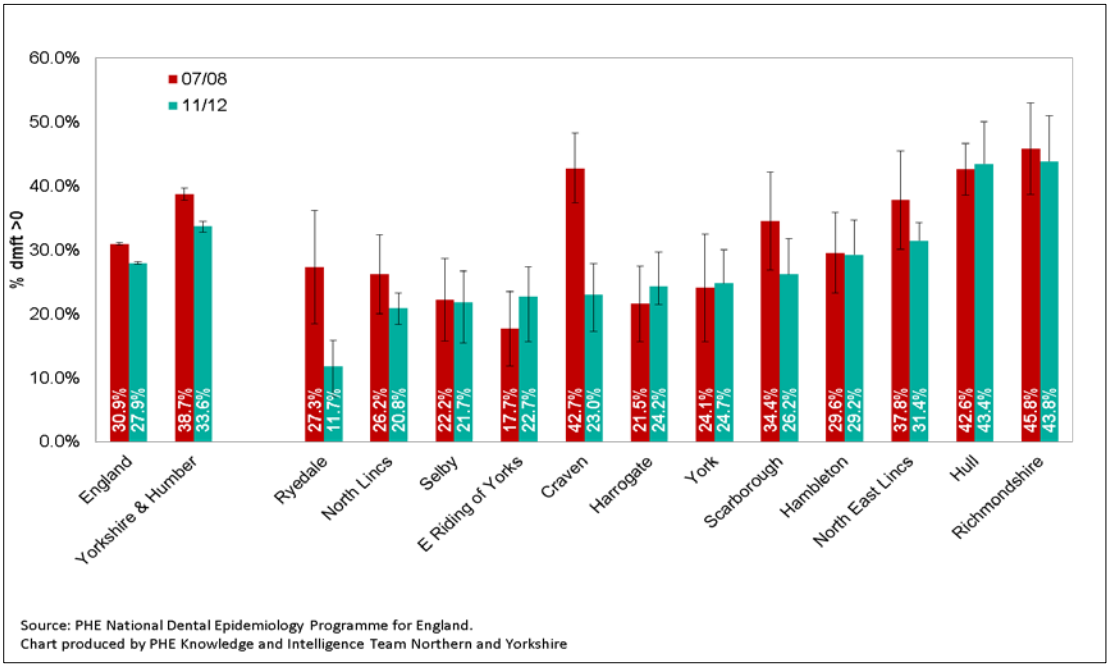
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Trends in tooth decay in five-year-olds

The prevalence of tooth decay showed a significant decline in children in Ryedale, Craven, Yorkshire and The Humber as well as England as a whole between 2007/08 and 2011/12 (Figure 5.21)

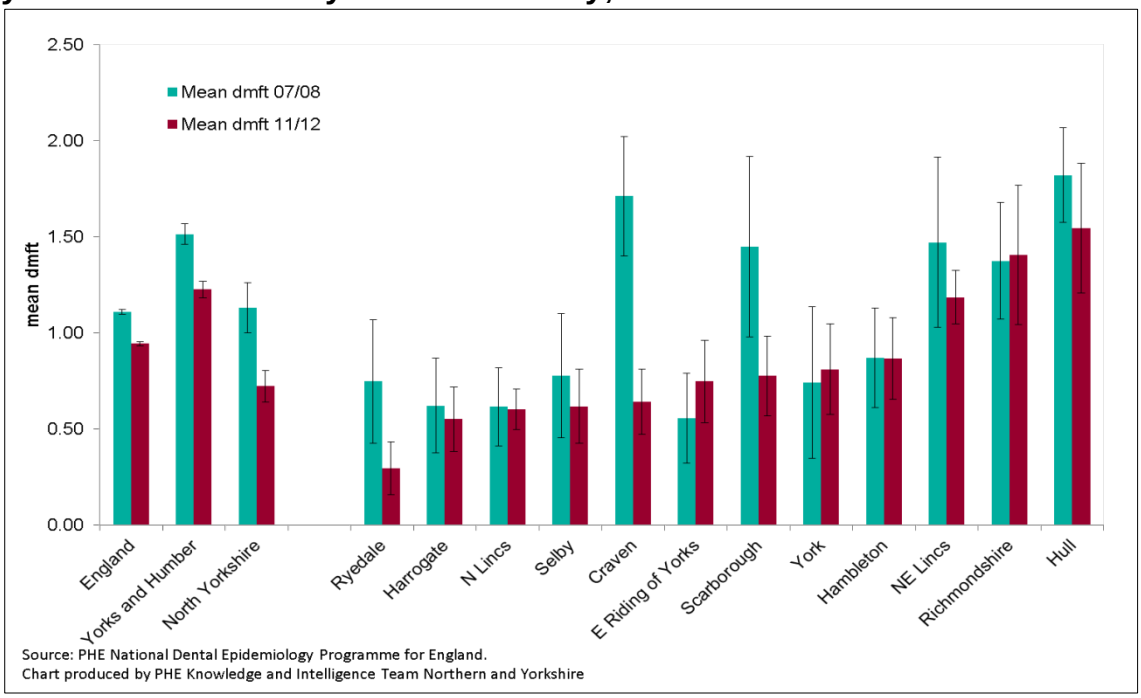
Further backward comparisons of trends in tooth decay experience in five-year-old schoolchildren are not possible due to changes in the national protocol for the surveys from 2008.

Figure 5.21 Trends in the prevalence of tooth decay experience in five-year-old children by local authorities, 2007/08 and 2011/12



There were no significant differences in the severity of tooth decay in five-year-old children between 2007/08 and 2011/12.

Figure 5.22 Trends in the severity of tooth decay experience in five-year-old children by local authority, 2007/08 and 2011/12



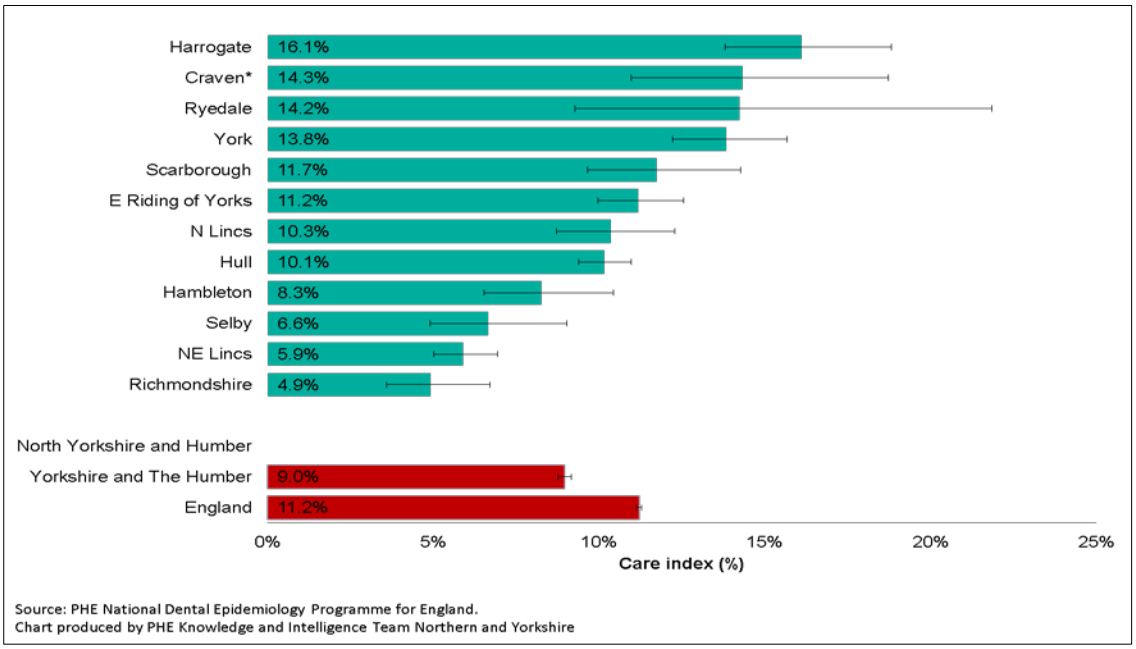
Care Index in five-year-old children

The Care Index was 11.2% across England as a whole showing that just over a tenth of decayed teeth are treated by fillings.[88]

In Harrogate the Care Index was significantly higher than the England average. Within North Yorkshire and Humber it was also significantly higher than Richmondshire, Selby, North East Lincolnshire, Hambleton, North Lincolnshire, Kingston upon Hull, East Ridings of Yorkshire and Yorkshire and The Humber. It is important to assess factors such as deprivation, dental service provision (including access to care and types of treatments provided) and disease prevalence data when interpreting findings and not use the care index data in isolation. There is also a lack of definitive evidence-based guidance regarding the appropriateness and benefit of filling decayed primary teeth.

The Care Index could be linked to levels of dental activity commissioned to provide an indication of the level of NHS dental service provision at different area levels.

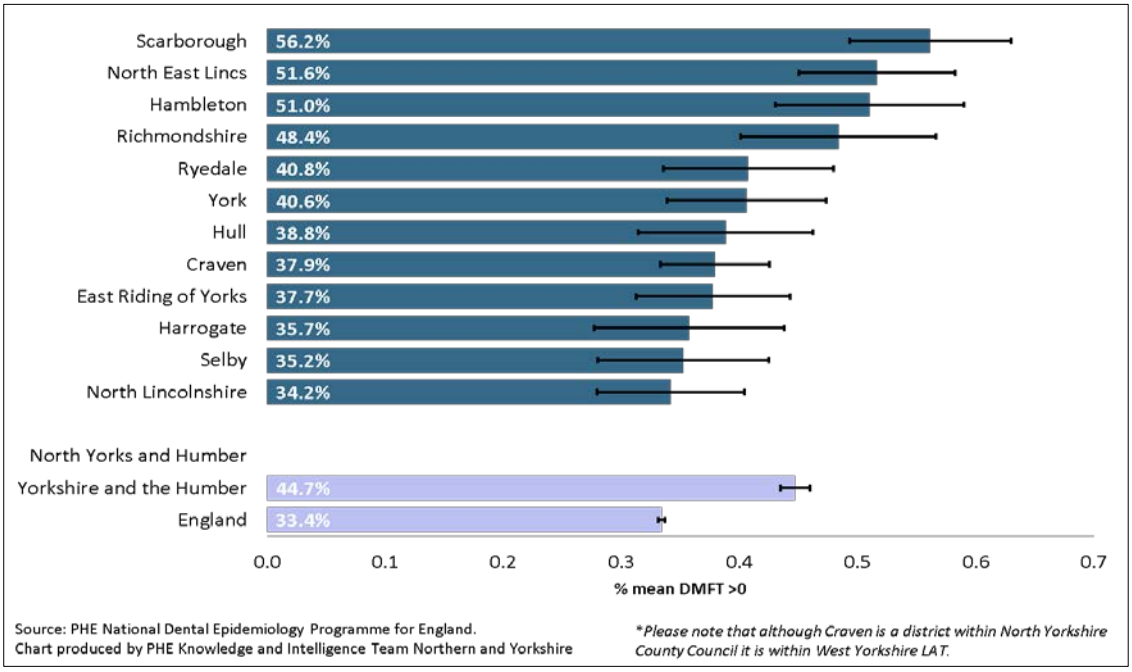
Figure 5.23 The Care Index in five-year-olds by local authority, 2011/12



Tooth decay in 12-year-old children

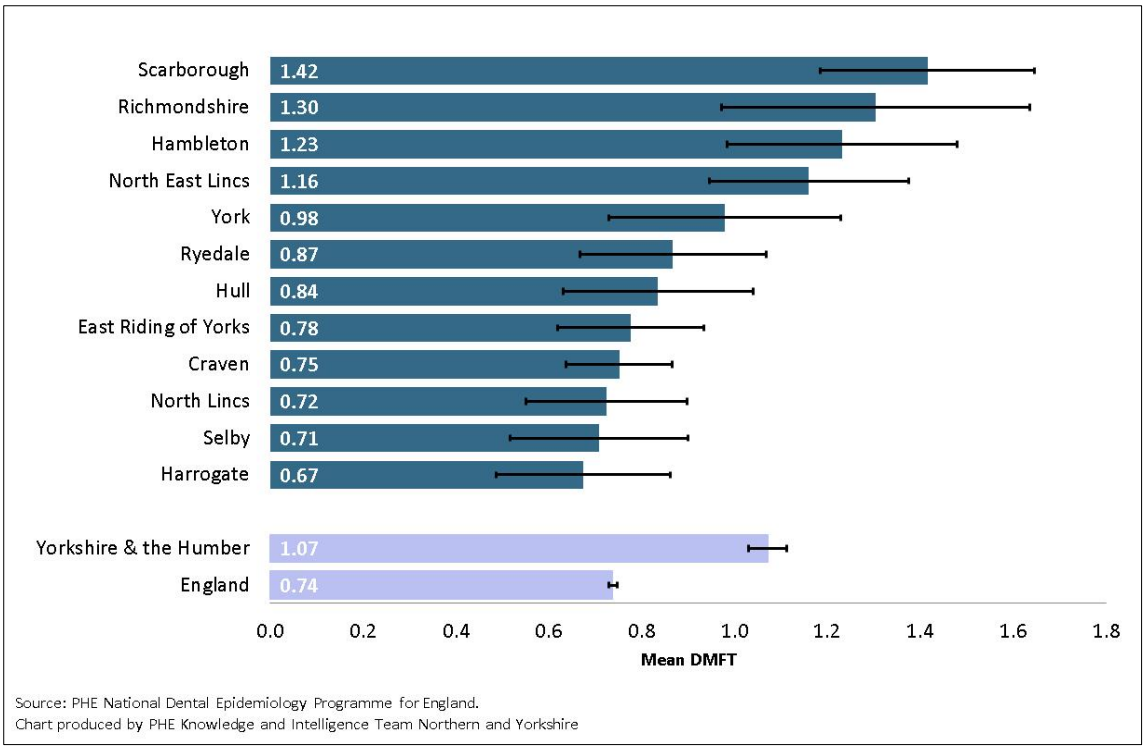
In 2008/09 the prevalence of tooth decay in 12-year-old children in Yorkshire and The Humber was the worst in the country (44.7%). [89] Within North Yorkshire and Humber the proportion of 12-year-olds with experience of tooth decay ranged from 56.2% in Scarborough to 34.2% in North Lincolnshire. The proportion of 12-year-olds with tooth decay in Scarborough, North East Lincolnshire, Hambleton and Richmondshire was significantly higher than the England average (Figure 5.24).[89]

Figure 5.24 Prevalence of tooth decay experience in 12-year-old by local authority, 2008/09



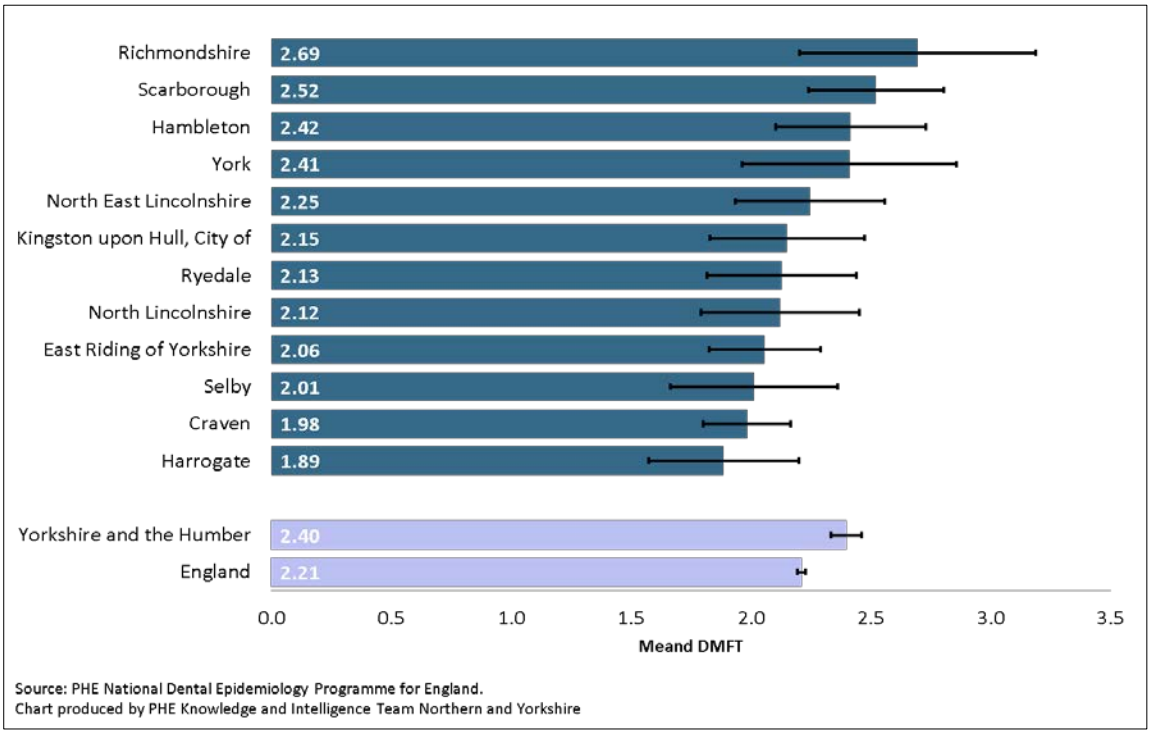
The severity of tooth decay in Yorkshire and The Humber is the worst in England (1.07). However the severity of tooth decay was significantly lower in North Lincolnshire, Craven and East Ridings of Yorkshire when compared to Yorkshire and The Humber (Figure 5.25).

Figure 5.25 Severity of tooth decay experience in 12-year-olds by local authority, 2008/09



When only children with tooth decay are examined, children in Richmondshire had more teeth with decay experience (2.67) than children from Craven (1.98) (Figure 5.26).

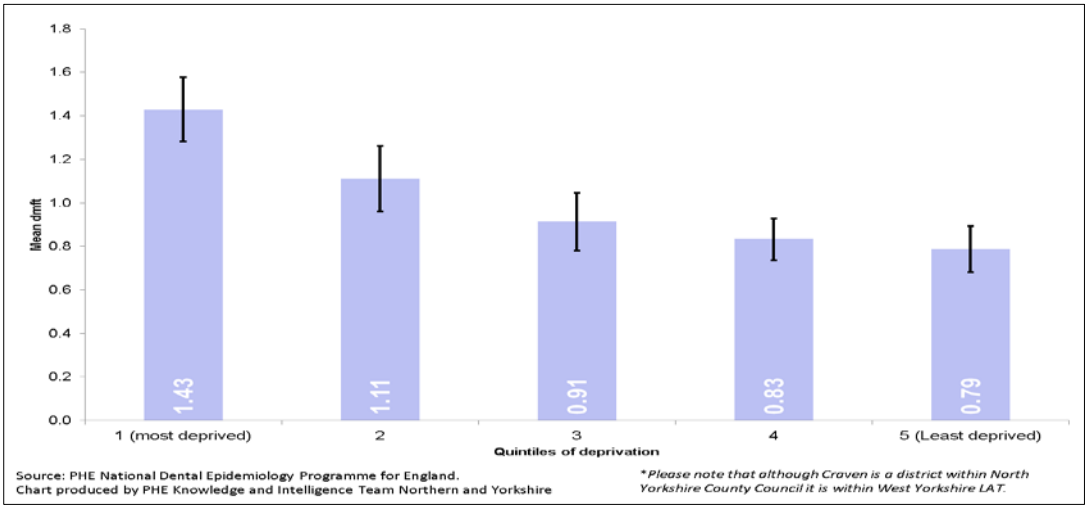
Figure 5.26 Severity of tooth decay in children with caries experience in North Yorkshire and Humber, 2008/09



Inequalities in the oral health of twelve-year-old children

Inequalities in the prevalence and severity of tooth decay in 12-year-olds are seen between and within local authorities. Significantly higher proportions of 12-year-old children in the most deprived quintile of deprivation experienced tooth decay (55.9%) compared to children in all other quintiles with just over one third of children (36.9%) in the least deprived quintile experiencing tooth decay. There is a positive correlation between the level of tooth decay experience and deprivation. Children within the most deprived quintile had over 1.8 times more decay experience than those in the least deprived quintile (Figure 5.27).

Figure 5.27 Severity of tooth decay experience in 12-year-old children by deprivation quintile, 2008/09

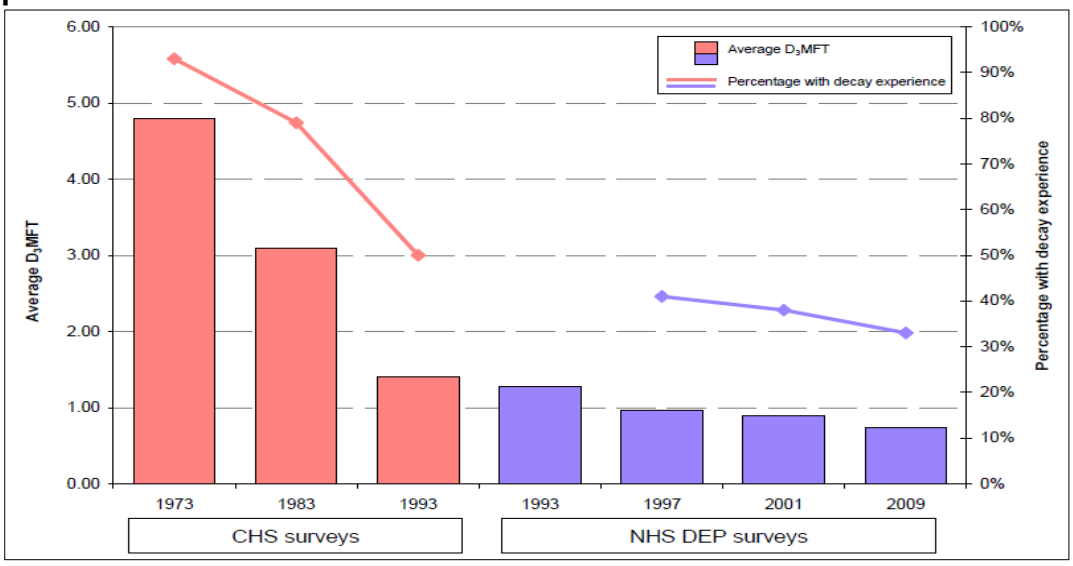


A higher proportion of 12-year-old children who had experience of tooth decay lived in the most deprived quintile.

Trends in tooth decay in 12-year-old children

The prevalence and severity of tooth decay in 12-year-olds has been declining over the past 26 years. Figure 5.28 combines the prevalence and severity of tooth decay levels in the National Child Health (CHS) surveys over the time period 1973 to 1993 and the NHS Dental Epidemiology Programme (NHS DEP) surveys over 1993 to 2008/09.

Figure 5.28 Results of tooth decay surveys of 12-year-olds in England from National Child Health Surveys and NHS DEP surveys over 6 time periods

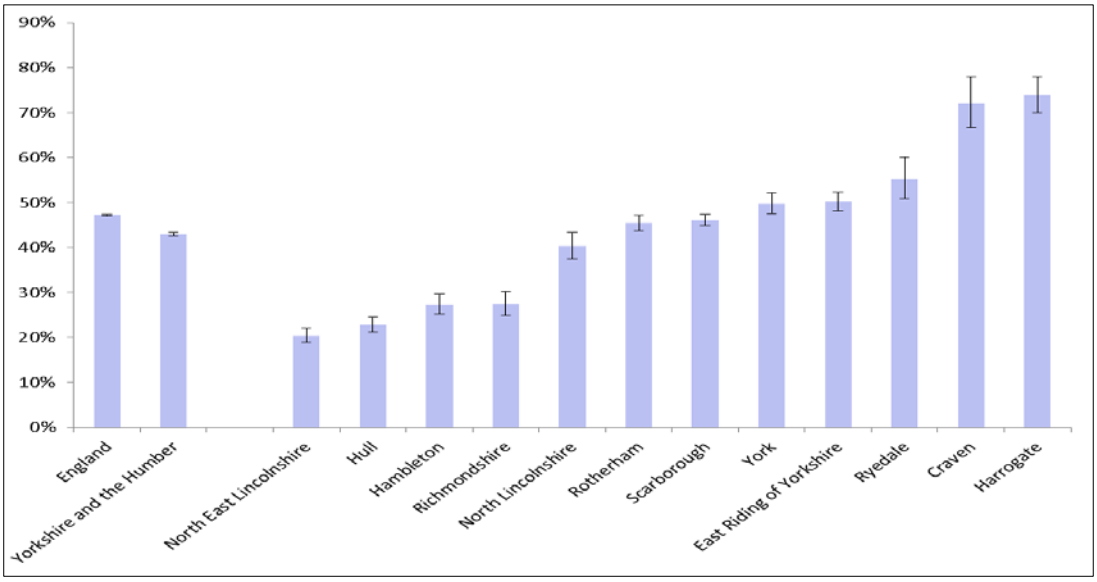


Source: NWPHO, 2010.

Care Index in 12-year-old children

The proportion of permanent teeth with tooth decay that had been filled in 12-year-olds in Yorkshire and The Humber was the third worst in England. The Care Index was significantly lower in children living in North East Lincolnshire, Kingston upon Hull, Hambleton and Richmondshire compared with those living in Yorkshire and The Humber as a whole. In contrast the Care Index of children living in Harrogate and Craven was significantly higher than Yorkshire and The Humber and England (Figure 5.29).

Figure 5.29 The Care Index in 12-year-old children by local authority, 2008/09

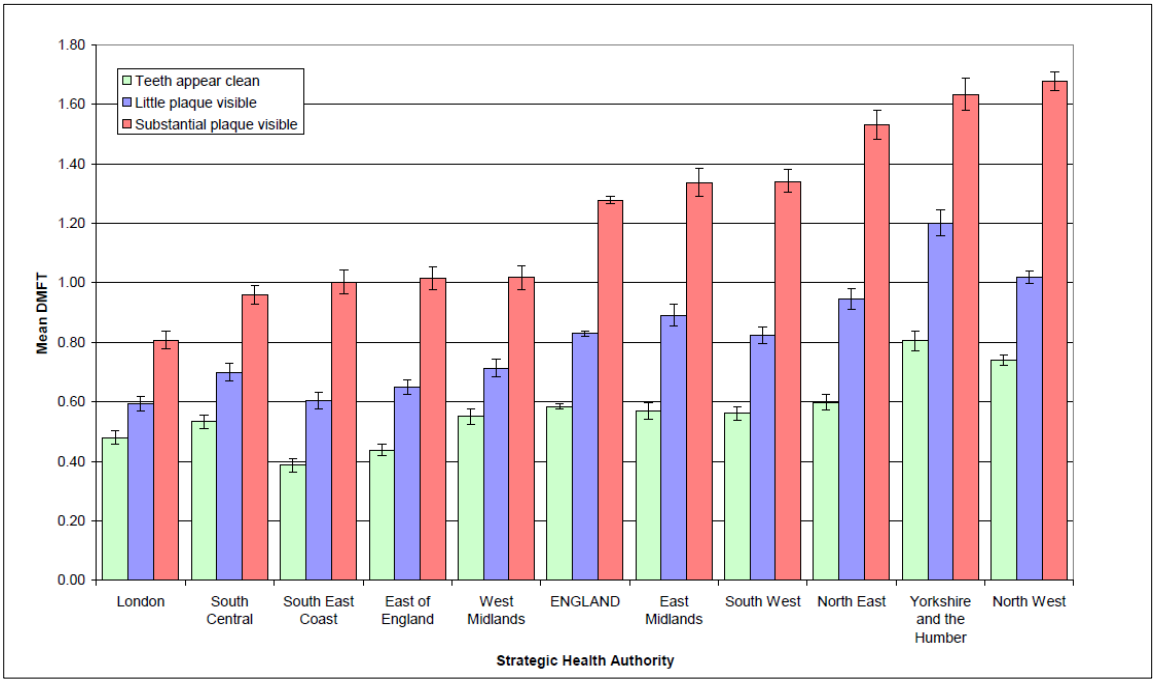


Source: NWPHO, 2010.

Twelve-year-old children oral hygiene: comparison of Yorkshire and The Humber and England

The children within the study were also assessed for the presence of plaque which revealed that in Yorkshire and The Humber 54% had the appearance of clean teeth, 33% had little plaque visible and 12% had substantial plaque present on examination (England: 51%, 38% and 11% respectively). Figure 5.30 shows the variation of plaque levels by mean DMFT score by area.

Figure 5.30 Severity of tooth decay experience in 12-year-olds with differing plaque levels, 2008-09



Source: NWPHO, 2010.

Self-reporting of dental conditions and impact on quality of life: comparison of Yorkshire and The Humber and England

Within the 12-year-old survey children were asked questions on the impact of diseases and disorders. The children were asked in the past three months ‘have you had toothache or sensitive teeth, had bleeding or swollen gums, been aware of decay in your teeth or a broken adult tooth, had ulcers or a loose baby tooth or had a problem because of tooth colour, shape, size or position’. Those children who had experienced one or more of these problems were then asked ‘have any of these problems with your teeth and mouth led to difficulties with eating, speaking, cleaning your teeth, relaxing (including sleeping), your feelings (for example being more impatient irritable, easily upset), smiling or laughing, doing your schoolwork and mixing with friends and other people. Table 5.1 shows the proportion that experienced problems in these domains and overall eating followed by cleaning teeth were reported most frequently at a regional and national level.

Table 5.1 Percentage of 12-year-olds reporting oral health problems

Number reporting problem (N)	Eating	Speaking	Cleaning teeth	Relaxing including sleeping	Feelings	Smiling/ laughing	School work	Mixing with friends /other people
Yorkshire and The Humber N=2,786	35	6	27	8	13	13	3	5
England N=38,723	34	5	28	8	13	12	4	4

Source: NWPHO, 2010.

Misaligned teeth

Stephen's Formula[91] is used to assess the number of people needing orthodontic treatment in a population and takes into account demand for orthodontic treatment that is those children in IOTN categories 4 and 5 who will decline orthodontic treatment despite their level of need. This offsets the children with an IOTN of 3 and an aesthetic component of 6 and above who are not taken into consideration in the formula. Additional factors are also taken into account, such as younger children needing early corrective treatment (interceptive treatment (9%) and adults requiring treatment (4%)).

Stephen's Formula is expressed as:

$$\frac{\text{12-year-old population}}{3} \times \frac{100 + \text{Interceptive Factor (9)} + \text{Adult Factor (4)}}{100}$$

The estimated level of need for orthodontic treatment in North Yorkshire and Humber using Stephen's formula is 9,725 people per year (Table 5.2). However this is likely to be an overestimation as the 'adult factor' in Stephen's Formula will only apply to those being treated in hospital as no adult orthodontic care is commissioned in primary care.

Table 5.2 Orthodontic treatment need in North Yorkshire and Humber

Area	12-year-old population (n)*	People needing orthodontic treatment (n)
Craven	719	271
Hambleton	981	370
Harrogate	1,822	686
Richmondshire	599	226
Ryedale	612	231
Scarborough	1,064	401
Selby	993	374
East Riding of Yorkshire	3,711	1,398
Kingston upon Hull	2,797	1,054
North East Lincolnshire	1,842	694
North Lincolnshire	1,899	715
York	1,990	750
North Yorkshire	6,790	2,558
North Yorkshire and Humber	**25,819**	**9,725**

*Source: ONS, 2011

Cleft lip and palate

Cleft lip and palate is the most common facial birth defect in the UK. One in every 700 babies is born with a cleft. Approximately half of all affected babies are born with a cleft lip and palate, a third with a cleft palate only and 1 in 10 have a cleft lip only or a submucous cleft. A cleft lip or combined cleft lip and palate are more common in boys, but a cleft palate on its own is more common in girls. Clefts occur more frequently in East Asian people and less frequently in Black people.

Overall, 10,204 children born between 1 January 2003 and 31 December 2012 with a cleft lip and/or palate, were registered on the CRANE database[92]. Within England, Wales and Northern Ireland there are 15 centres where cleft lip and/or palate cases are registered. Within this time period 7% of cases were registered within Leeds and 7% with Newcastle.

Summary of oral health in children

- the prevalence of tooth decay in three-year-olds in Yorkshire and The Humber was higher than the England average
- the severity of tooth decay in three-year-olds in Yorkshire and The Humber is the fourth worst area in the country

- the prevalence of early childhood caries in Yorkshire and The Humber was significantly higher than the England average
- there was an association between tooth decay in three-year-olds and deprivation
- the prevalence of tooth decay in five-year-old children in Yorkshire and The Humber was significantly higher than the England average. Richmondshire and Kingston upon Hull were also significantly higher than the Yorkshire and The Humber average
- the severity of tooth decay in five-year-old children in Yorkshire and The Humber was the third worst in England. Children living in Kingston upon Hull, Richmondshire and North East Lincolnshire, have significantly higher tooth decay experience than the England average
- children living in North Lincolnshire experienced good oral health which may be related to water fluoridation and lower levels of deprivation
- across all local authority areas in North Yorkshire and Humber inequalities in tooth decay in five-year-olds were seen with prevalence and severity increasing as deprivation increased Children in the most deprived quintile had over three times more decay experience than those in the least deprived quintile
- trend analysis showed a significant decline in the prevalence of tooth decay in five-year-olds in Ryedale and Craven
- five-year-old children in Richmondshire and North East Lincolnshire experienced relatively higher levels of tooth decay and yet a smaller proportion of these decayed teeth were treated with fillings demonstrating an inverse care relationship
- the prevalence of tooth decay in 12-year-old children in Yorkshire and The Humber was significantly higher than the England average. Scarborough was also significantly higher than the Yorkshire and The Humber average
- the severity of tooth decay in 12-year-olds in Yorkshire and The Humber was significantly higher than the England average. Scarborough was also significantly higher than the Yorkshire and The Humber average
- across all local authorities within North Yorkshire and Humber inequalities in tooth decay in 12-year-olds were seen with prevalence and severity increasing as deprivation increased Children in the most deprived quintile had over 1.8 times more decay experience than children in the least deprived quintile
- fewer teeth with tooth decay in 12-year-olds were filled in North East Lincolnshire, Kingston upon Hull, Hambleton and Richmondshire

compared with England and Yorkshire and The Humber, however in Craven and Harrogate more teeth had been restored
- in Yorkshire and The Humber 12-year-olds had the second worst oral hygiene compared to other areas in England
- in Yorkshire and The Humber 12-year-old children reported problems with eating and cleaning of their teeth as impacting them the most
- an estimated 9,725 of 12-year-old children in North Yorkshire and Humber need orthodontic treatment

Oral health of adults

Information regarding the oral health of adults has been collected nationally through Office for National Statistics co-ordinated socio-dental surveys on a decennial basis since 1968. The surveys consist of an interview schedule and a dental examination performed by trained and calibrated dental examiners. The most recent survey was undertaken in 2009.[60]

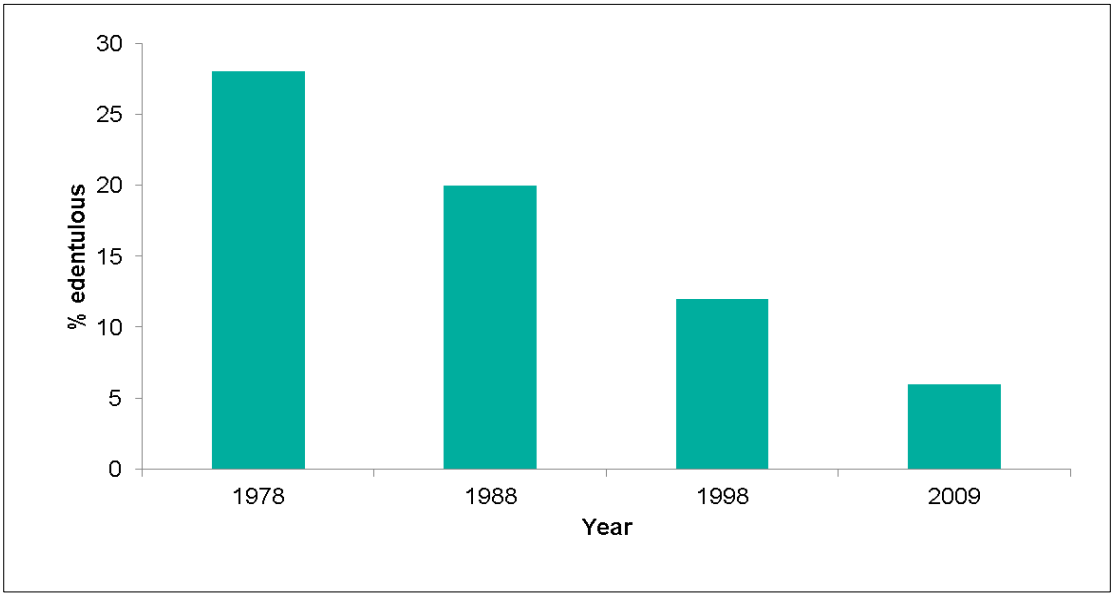
In addition to the national decennial surveys, in 2008 a postal survey of adult oral health was carried out across Yorkshire and The Humber.[93] It aimed to provide information on the self-reported oral health of adults living in the area to inform the commissioning of oral health services and oral health related initiatives. No local clinical survey of adult oral health has been undertaken.

Number of teeth

In the 2009 national survey 6% of adults in England were edentate (had no natural teeth) and 7% were edentate in Yorkshire and The Humber[60]. Edentulousness was found to increase with age and vary by gender (4% male, female 7%) and material deprivation (managerial/professional 2%, intermediate 4% and 10% routine/manual).

There was an overall decline in edentulousness over the last five decades with the proportion of edentate adults falling from 28% in 1978 to 6% in 2009 (Figure 5.31). Trends from national and local surveys show that edentulousness is now uncommon amongst people over the age of 65 years of age. Even the very old (85 years plus) have retained some natural teeth. This has important implications for the future in terms of good oral function but carries service implications related to the continued maintenance and advanced restorative care of older adults who are likely to be increasingly frail with complex medical histories and difficulties accessing dental services.

Figure 5.31 Proportion of adults with no natural teeth in England, 1978 to 2009



Source: ONS, 2010

The presence of 21 or more natural teeth has been used as an additional marker of the health of the population's teeth. In the national 2009 survey 86% of adults in England had 21 or more teeth with 88% in Yorkshire and The Humber. This indicator displayed a clear social gradient with 92% having 21 or more teeth in managerial/professional occupation households and 86% intermediate and 79% from routine and manual occupation households.

The Steele review of NHS dentistry[94] described three distinct cohorts within the adult population. Older age groups (those past retirement) with no teeth at all who will require denture care for many years, a young generation under the age of 30 years who have lower levels of decay than their parents and have low restorative needs and a group between 30 and 65 years who have experienced high levels of disease that has been treated by fillings and other restorations and who will have complex maintenance needs as they age.

In a survey[93] published in 2008 undertaken in Yorkshire and The Humber the majority of respondents reported having 20 teeth or more (Table 5.3).

Table 5.3 How many natural teeth have you got (percentage)?

Area	None	<10	10-19	20+
Yorkshire and the Humber N=10,864	8	4.9	14.3	71.6
North Yorkshire & York N=903	7.9	4.7	13.3	73.7
East Ridings of Yorkshire N=909	7.8	4.4	15.3	71.3
Kingston upon Hull N=670	10	5.9	15.4	67.7
North Lincolnshire N=791	7.8	4.9	17.5	68.6
North East Lincolnshire N=769	9.8	5.7	17.4	66

Source: ONS, 2010

Tooth decay

Between 1998 and 2009 the prevalence of active tooth decay in England fell from 46% to 30%. There were reductions across all age groups but the largest reduction was in those aged 25 to 34 years. The proportion with active tooth decay varied by age with those aged 25 to 34 years having the highest prevalence (36%) and those aged 65-74 years the lowest (22%).

Men were more likely than women to have tooth decay as were those from socially deprived backgrounds. The average number of decayed teeth in adults in England was 0.8. Men experienced higher levels of tooth decay (1.0) than women (0.6).

As adults age the accumulated effects of gum disease may cause exposure of root surfaces, therefore with age the prevalence of decay on the root surface is likely to increase. Seven per cent of adults in England had active decay on one or more root surface, the proportion increasing with age (20% in 75-84 years), being male and social deprivation.[60]

Health of gums

Gum (periodontal) diseases are assessed by measuring the depth of the pockets that form between the inflamed gum and the tooth when the gum attachment to the tooth is lost. The presence of pocketing up to 3.5mm is regarded as generally healthy. It is possible to classify pocketing as mild, moderate and severe. Mild periodontal pocketing reflects pocketing between 4mm and 6mm, moderate between 6mm and 9mm and severe above 9mm.

In 2009, 45% of dentate adults in England had mild periodontal pocketing, 9% of the population had moderate pocketing and 1% had severe pocketing. Since 1998, there was an overall reduction in the prevalence of pocketing of 4mm or more from 55% to 45% signifying an overall reduction in disease. However for more severe forms of disease an overall increase from 6% to 9% was observed.[60]

Proportionately more adults in Yorkshire and The Humber had mild, moderate and severe forms of gum (periodontal) diseases relative to the national average: 42% of adults had mild pocketing, 10% had severe pocketing and 2% had severe pocketing.

Tooth wear

The prevalence of wear is reported and outlined at three thresholds: any wear, wear that has exposed a large area of dentine on any surface (moderate wear) and wear that has exposed the pulp or secondary dentine (severe wear). The 2009 Adult Dental Health Survey reported an increased prevalence of tooth wear in England

from 66% in 1998 to 75%. However, only 15% had moderate wear and 1% had severe wear.

As expected tooth wear increases with age (44% of 75-84 year olds have wear). Men experienced greater levels of tooth wear than women however there were no significant differences with respect to deprivation. Severe wear remains rare but there are increasing proportions of younger adults with moderate wear which is likely to be clinically important. Regional figures are comparable with national averages.[60]

Urgent conditions

Urgent conditions include dental pain, open dental pulps (tooth nerves), oral sepsis infection) and untreated teeth with extensive tooth decay. In the 2009 Adult Dental Health Survey, 9% of dentate adults reported current pain related to their teeth. Older adults and those from routine and manual occupation households were more likely to report current pain.[63]

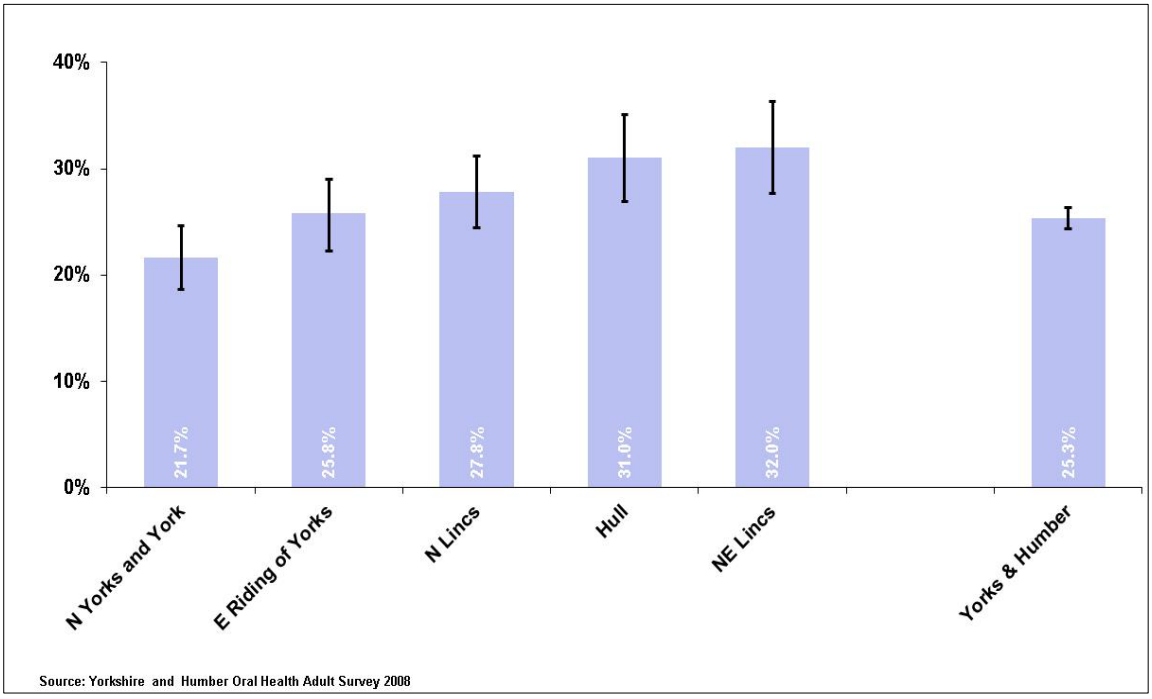
Eight per cent of dentate adults reported that they had experienced pain in their mouths fairly or very often in the previous 12 months. Women were slightly more likely than men to report that they had experienced pain fairly or very often in the previous 12 months. There was untreated or unrestorable tooth decay in 23% of those who reported current dental pain and 20% of those who reported frequent pain or discomfort in the past 12 months.[63] In the local survey, 29% of the residents in Yorkshire and The Humber reported painful aching in the mouth in the last 12 months.[93]

Adults had an increased likelihood of both pain and extensive tooth decay or sepsis if they did not attend a dentist for regular check-ups, never brushed their teeth or brushed less than once a day, were smokers or had high levels of dental anxiety.[63]

Self-reported oral health and oral health impacts

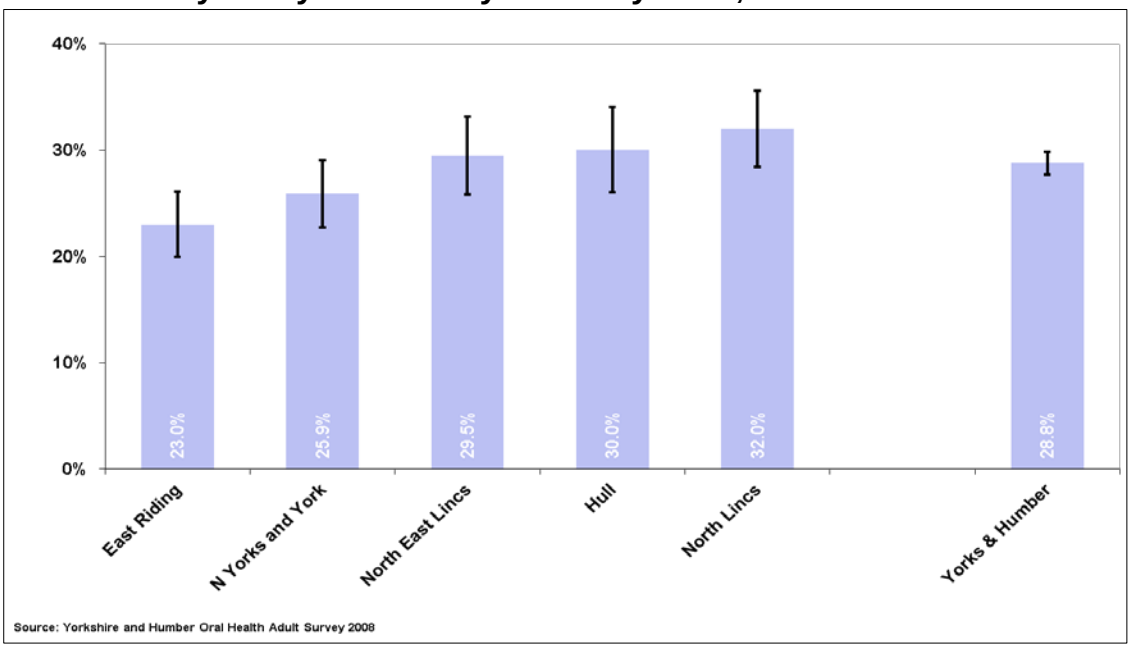
An oral health survey of adults in Yorkshire and The Humber assessed oral health impacts from responses to a self-reported postal questionnaire.[93] Participants were asked to rate their oral health, 25% of adults in Yorkshire and The Humber felt it was fair, poor or very poor (Figure 5.32).

Figure 5.32 Percentage who describe their oral health as fair/poor/ very poor by area, 2008



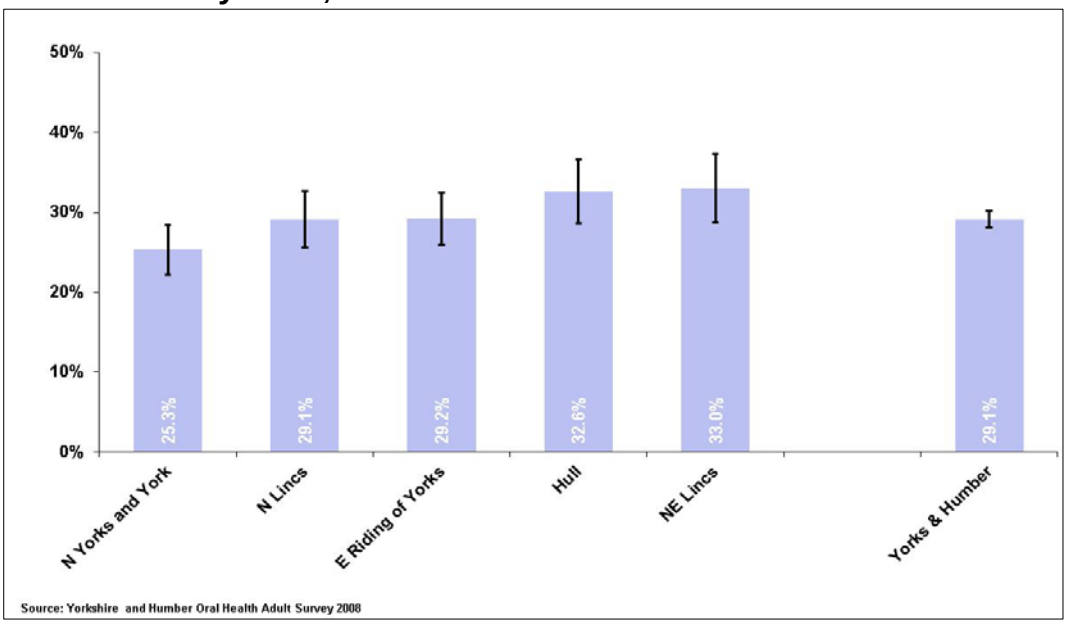
In Yorkshire and The Humber, 29% reported they had painful aching in their mouth in the last 12 months (occasional, fairly often or very often) with those living in the most deprived quintile more likely to report this than those in the least deprived.

Figure 5.33 Respondents reporting painful aching in the mouth occasionally/fairly often/very often by area, 2008



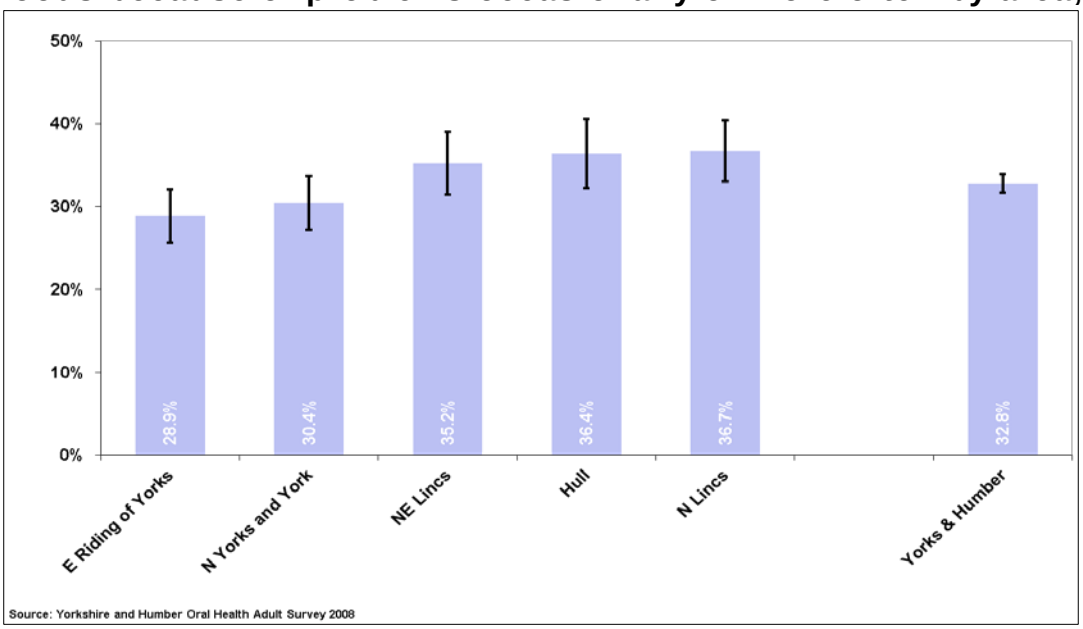
There were 29% of respondents who reported feeling self-conscious occasionally or more often in the last 12 months because of their teeth, mouth or dentures in Yorkshire and The Humber.

Figure 5.34 Percentage who have been self-conscious occasionally or more often by area, 2008



Over one third of respondents from Yorkshire and The Humber(33%) felt discomfort when eating because of problems with teeth, mouth or dentures on an occasional or more frequent basis (figure 5.35).

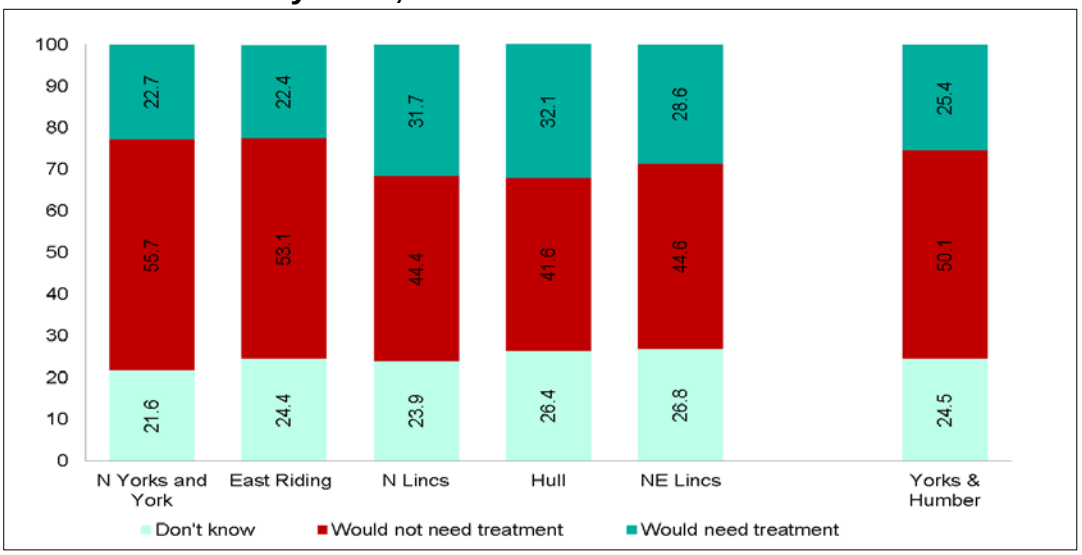
Figure 5.35 Percentage of adults who describe uncomfortable to eat foods because of problems occasionally or more often by area, 2008



Perceived need for treatment

Respondents were asked the global oral health question 'If you went to the dentist tomorrow, do you think you would need treatment?' Within Yorkshire and The Humber 25% felt they would with more men than women and more in the most deprived quintile thinking so (Figure 5.36).

Figure 5.36 Percentage of participants who perceived they would need treatment by area, 2008



Source: Yorkshire and The Humber Oral Health Adult Survey, 2008

Dental health inequalities

Inequalities exist in the oral health of adults both regionally and related to socioeconomic status. The 2009 Adult Dental Health Survey reported that the average number of decayed teeth was higher in Yorkshire and The Humber than the England average. The average number of decayed teeth in people in managerial and professional jobs was 0.6 compared with 1.2 in those with routine and manual jobs. The average number of decayed teeth was 5.2 in people who had never visited the dentist.

Gum (periodontal) disease levels were also higher amongst males and in those from socially deprived backgrounds. People who had never visited the dentist were four times more likely to have severe levels of gum disease.[60]

Levels of restorative care

This section describes levels of commonly carried out dental treatments reported in the 2009 Adult Dental Health Survey.

Fillings and crowns

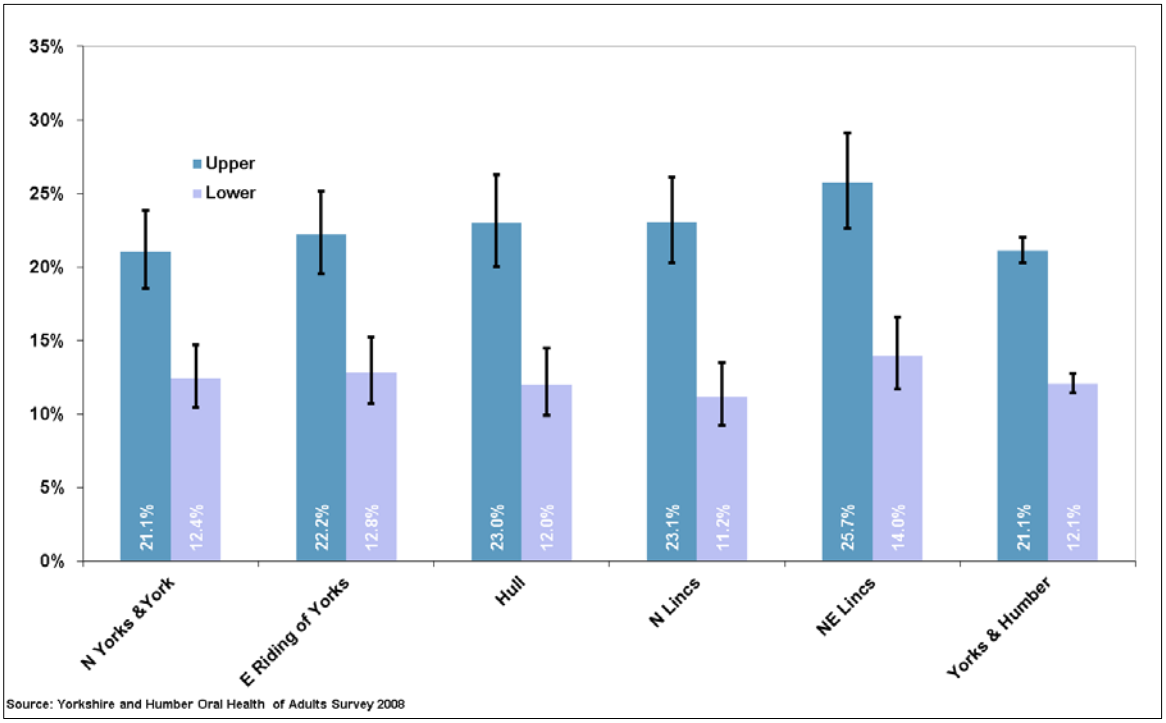
Fillings and crowns are placed on teeth as a form of treatment after dental disease in an attempt to remove the disease and restore the tooth so it is functional. Nationally, the average number of restored teeth fell from 8.1 in 1978 to 6.7 in 2009. However, in 2009 85% of dentate people had restored teeth, either with a filling or a crown, out of which 26% needed some form of further treatment due to secondary disease or the restoration failing.[60]

Dentures

People wear dentures to replace some or all of their missing teeth so that with the decline in the number of people losing all their teeth fewer people are wearing full dentures, although more may wear partial dentures replacing some missing teeth. In 2009, 19% of people in England wore a denture compared with 22% in Yorkshire and The Humber. Women were more likely than men to wear a denture, 21% and 17% respectively in England. Also, people in routine and manual jobs were more likely to wear a denture (27%), than people in professional and managerial jobs (17%).[60]

In the local postal survey in Yorkshire and The Humber respondents were asked if they wore either a complete or partial denture, 21% had an upper denture whilst 12% had a lower denture across the region. Across North Yorkshire and Humber North East Lincolnshire had the greatest proportion of respondents who had an upper and lower denture, however this was not significantly higher than the other areas (Figure 5.37)[93]

Figure 5.37 Percentage of adults who have dentures by upper and lower jaw by area, 2008



Dental bridges

Dental bridges provide an often preferable alternative to dentures. If the space to be filled is small enough and the surrounding teeth are in reasonable condition, bridges are fixed in the mouth. In England, 7% of the adult population had a dental bridge and in the Yorkshire and The Humber people the figure was 6%. Women were more likely to have a dental bridge than men, 7% and 8% respectively. Those in intermediate jobs were most likely to have a bridge (9%), whilst the prevalence was 8% amongst those in professional and managerial jobs and 7% in those with routine and manual jobs.

Dental implants

Dental implants are titanium screws placed in the mouth to support a crown or a denture. They are increasingly becoming a mainstream part of dental care however, they are not routinely available on the NHS. In England and Yorkshire and The Humber 1% of the population had dental implants with the prevalence being equal amongst men and women. However, those with intermediate jobs were twice as likely to have implants as those in routine and manual or professional and managerial jobs.

Mouth cancer

Mouth cancers make up 1-2% of all new cancers in the UK. Historically, mouth cancer has been twice as common in men as in women, with cancer incidence increasing with age. In the UK the majority of mouth cancers (87%) occur in people aged 50 or over, however mouth cancer is increasingly being seen in younger age groups and recently rates have increased from approximately 5,000 cases per year in the UK to more than 7,000. This has been attributed to HPV transmissions and increased excessive alcohol consumption and smoking amongst women. The risk of developing mouth cancer is greater in people living in areas of deprivation. This may be because people living in more deprived areas are more likely to smoke and have excessive alcohol consumption.[95,96] The five-year survival rate for men with mouth cancer is 40% and for women 43%, with highest survival rates for lip cancer (89%).[97]

Age standardised rates take into account that mouth cancer is age related and allow comparison of incidence rates across areas with different age structures. The annual average of new cases (Age Standardised Rate: European) per 100,000 population at risk varied very little across time and was similar to the trends seen in Yorkshire and The Humber (Figures 5.38 and 5.39).[98]

Figure 5.38 Incidence of oral cancers (C00-C14) by local authority (ASR)

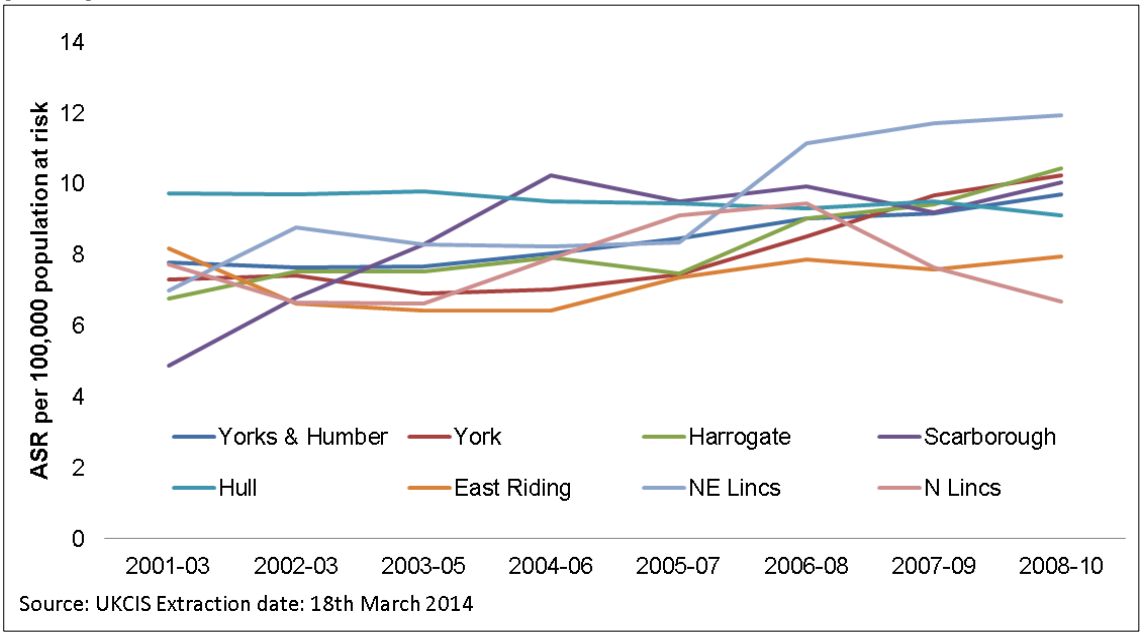
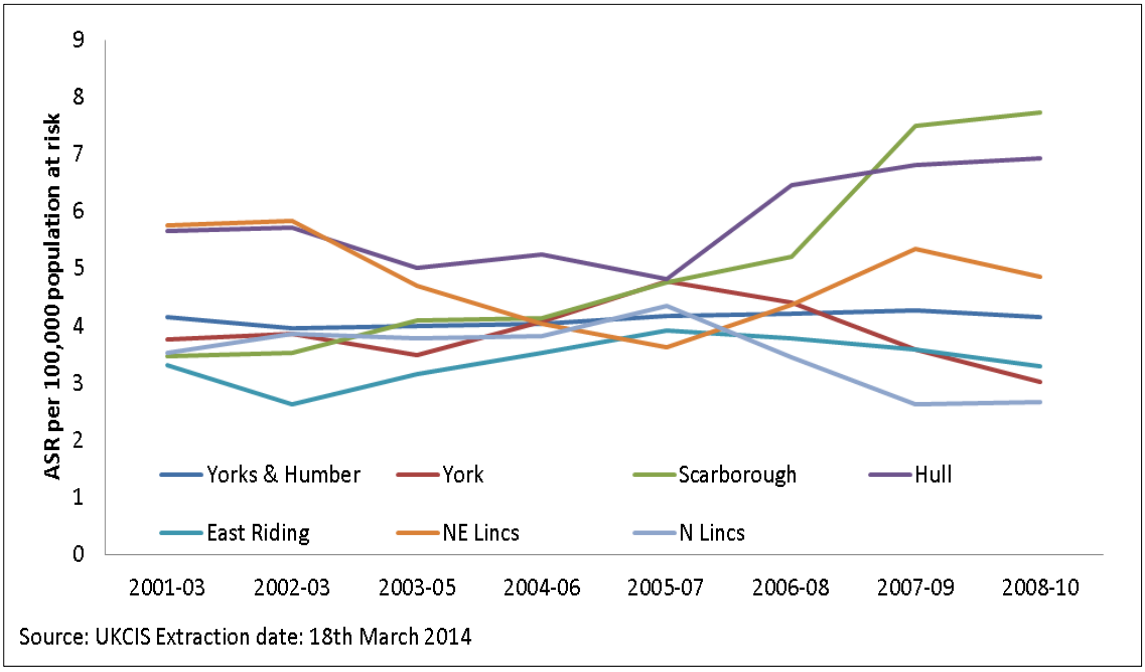


Figure 5.39 Incidence of cancers of the nasal cavity, sinus and larynx (C30-C32) by local authority (ASR)



Summary of the oral health of adults

- the oral health of adults has improved significantly over the last 40 years with more of the population retaining their natural teeth throughout their lifetime
- in Yorkshire and The Humber, 30% of adults had tooth decay and 2% had severe gum disease
- men from materially deprived backgrounds were more likely to experience higher levels of tooth decay and gum disease but least likely to visit a dentist
- people living in North East Lincolnshire and Kingston upon Hull were more likely to report poorer oral health compared with those living in other local authority areas
- people in Hull and North Lincolnshire were more likely to report a perceived need for treatment
- people in Yorkshire and Humber were more likely to wear a denture than nationally
- the incidence of mouth cancer has increased slightly in North East Lincolnshire, Kingston upon Hull and Scarborough

Oral health of vulnerable groups

Vulnerable groups are those people whose economic, social, environmental circumstances or lifestyle place them at high risk of poor oral health or make it

difficult for them to access dental services. It is not possible to provide a comprehensive list of all these groups, but they include people:

- who live in a disadvantaged area or who are from a lower socioeconomic group
- who have physical or mental disabilities
- who have mental health problems
- who are older and frail
- who are socially isolated or excluded
- who are homeless or frequently move, such as traveller communities
- who smoke or misuse substances (including alcohol).
- who have a poor diet
- from some Black, Asian and Minority Ethnic groups for example, people of South Asian origin
- who have dental anxiety or dental phobia
- who are medically compromised
- who are, or who have been, in care[14]

These groups often require treatment in special settings to accommodate their needs. Epidemiological studies such as the ten yearly national dental health surveys of children and adults and the annual children's dental health surveys, have not routinely gathered information from children and adults with special needs.

Older people

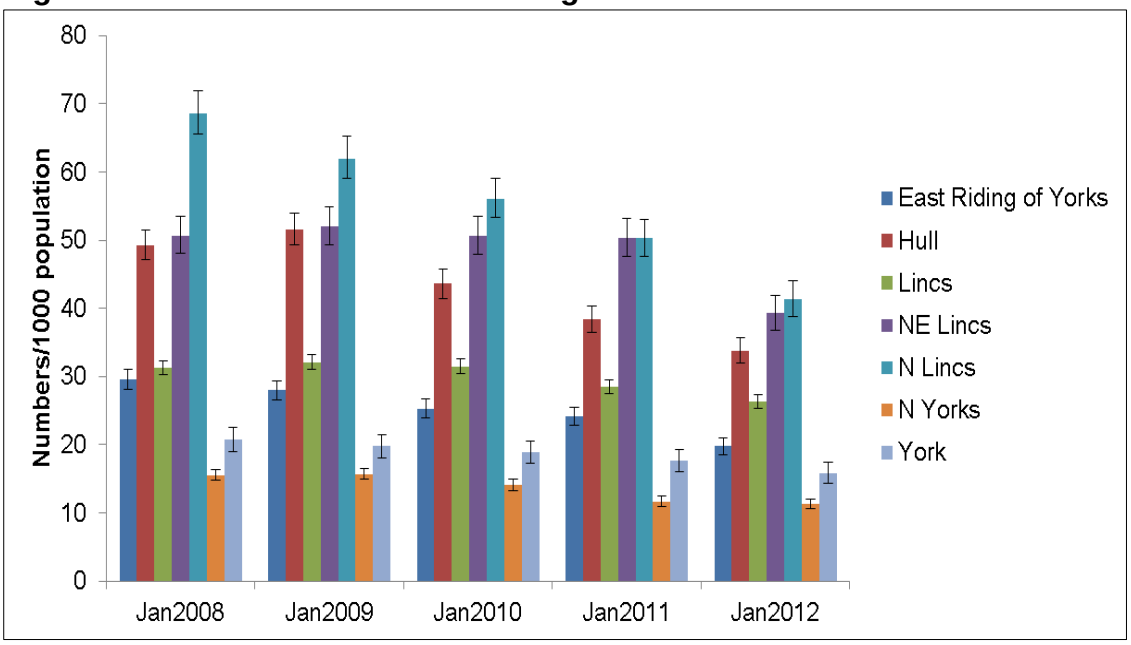
The UK population is ageing. This change is predicted to continue over the next few decades with the largest increase seen in those aged 85 years and over. In England, the proportion of the population aged 65 years and over is expected to increase from 17% in 2010 to 23% in 2035.[99] The future oral health improvement and dental service implications for older people with complex medical and dental needs has been discussed.

People with learning disabilities

There is a national and local increase in the number of children and adults with learning disabilities. However, this may be due to improved reporting. The prevalence of children with a learning disability in England is 24.5 per 1,000 children known to schools. Information for this indicator is reported by schools through their school census. It is based on those children attending primary, secondary and special schools and includes all those children that have a school action plus or a statement of need. Learning disabilities includes those children with moderate, severe, profound and multiple disabilities. These following figures are not based on a medical diagnosis and some children may travel to schools outside their area of residence.

Kingston upon Hull, North East Lincolnshire and North Lincolnshire have proportionately more children with learning disabilities than England (Figure 5.40). North Yorkshire and York have proportionately fewer children with learning disabilities compared with England. This has been consistent since 2010.

Figure 5.40 Children with learning disabilities known to schools

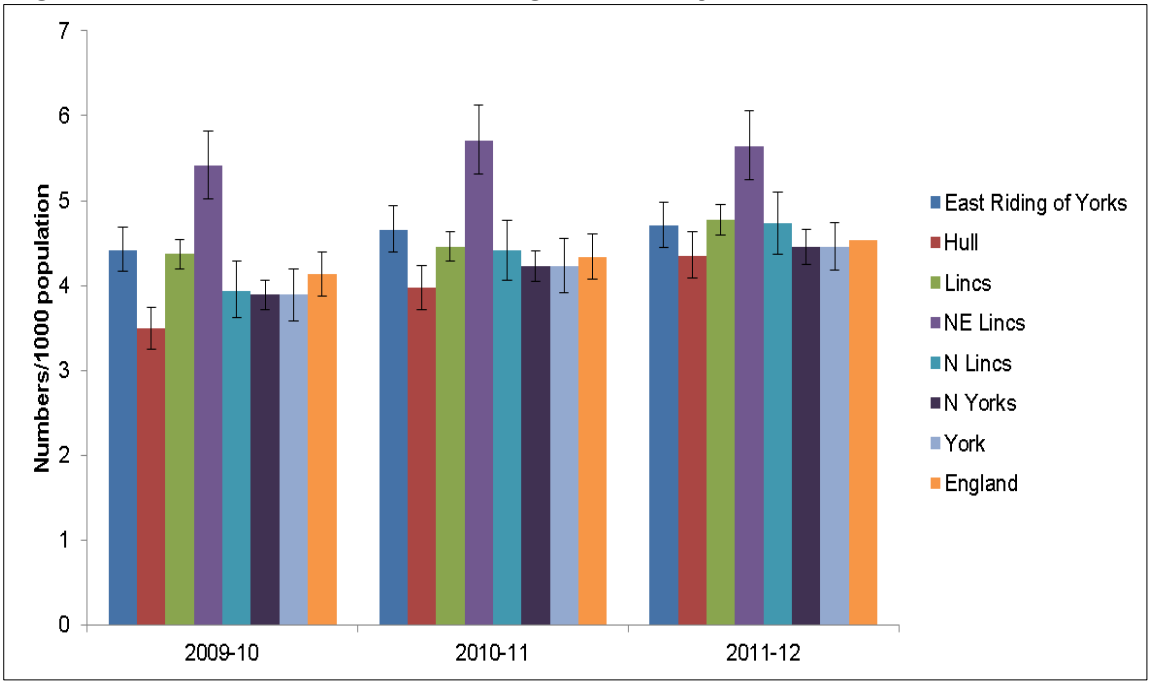


Source: Learning Disabilities Observatory (Improving health and lives)

Children with additional needs, such as learning disabilities have similar tooth decay experience and are more likely to have their teeth extracted than their healthy peers. Children with additional needs are more likely to have poorer gum health. [100, 101] The first national survey of children in special support schools was undertaken in 2013/14. The results are expected to be published during 2015.

Nationally, the prevalence of adults over the age of 18 years with a learning disability is 4.3 per 1,000 people registered with a GP. During the period 2009-12 significantly more adults with learning disabilities were known to their GPs in North East Lincolnshire compared with England (Figure 5.41). As life expectancy of children with disabilities improves it is expected that these figures will increase.

Figure 5.41 Adults with learning disability known to GPs



Source: Learning Disabilities Observatory, 2015

Adults with learning disabilities are excluded from national surveys of oral health. Therefore there are no national data on the oral health needs of this population. However local surveys have been conducted and highlight the poorer oral health and different treatment patterns in adults with learning disabilities compared with the general population.

People with mental health problems

Mental health problems are very common. Approximately a quarter of the population experiences some kind of mental health problem in any one year. The classification of mental health problems remains problematic, as some diagnoses are controversial and there is concern that some people may not get the appropriate treatment. The classification is sub-divided into ‘neurotic’ and ‘psychotic’. ‘Neurotic’ covers those symptoms that can be regarded as severe forms of ‘normal’ emotional experiences such as depression, anxiety or panic. Conditions formerly referred to as ‘neuroses’ are now more frequently called ‘common mental health problems.’ Less common are ‘psychotic’ symptoms, which interfere with a person’s perception of reality, and may include hallucinations such as seeing, hearing, smelling or feeling things that no one else can.

Overall someone with a severe mental health problem can expect to die almost 20 years earlier than the rest of the population. Therefore, there has been a drive to improve mental health services and improves the general health of people with mental health problems. There are no national and local data on the oral health

needs of people with mental health problems. There is a need for dental commissioners to tie oral health into any local commissioning arrangements that are set to improve the physical health of these vulnerable people.

Adults in care homes

The care home resident population for those aged 65 and over has remained largely stable since 2001 with an increase of 0.3%, despite a growth of 11.0% in the overall population at this age. The resident care home population is ageing. In 2011, people aged 85 years and over represented 59.2% of the older care home population compared to 56.5% in 2001 (Table 5.4).[102]

Table 5.4 Care home population aged 65 and over by age in England and Wales, 2011

Age	Care home residents (n)	Proportion of the care home population (%)
65-74	31,000	10.5
75-85	88,000	30.3
85 and over	172,000	59.2
Total 65 and over	291,000	100

Source: 2011 Census - Office for National Statistics (Data from 2011 Census, DC4210EWla: Communal establishment management and type by sex by age).

There are no national or local data on the oral health needs of adults in nursing homes. A local screening survey of residents in nursing and residential homes in Bradford was conducted in 1993. The screening programme indicated that 70% of residents had some treatment need, mainly a reline or remake of the upper or lower denture (16% and 22% respectively). However it was observed that naming of dentures was the main treatment need (72% of full dentures and 75% of partial dentures). Of those residents who were dentate 46% had tooth decay.[103]

In Glasgow, telephone surveys of oral healthcare provision in nursing and residential homes indicated that people were significantly more likely to receive an oral health assessment on admission to nursing homes than residential homes (78% compared with 24%; p=0.001).[104] In addition nursing homes were more likely to have a formal mouth care policy (58% compared with 8%). Oral examination of a sub sample of residents confirmed high levels of disease including oral candidiasis (oral thrush) amongst those examined. Staff confirmed at interview that although mouth care was within their remit it was often not carried out.[104]

A survey conducted by BUPA and the Centre for Policy on Ageing[105] highlighted a high proportion and increasing numbers of residents in nursing homes with dementia. For people with dementia early input regarding their oral health and future treatment wishes should be established. In North Yorkshire and Humber a large

increase in the very old with multiple and complex long term conditions is predicted in North Lincolnshire.[106] A survey of care home managers' views of oral health and care is currently being undertaken in York.

Socially excluded people

Socially excluded people are accommodated in prisons, young offenders' institutes, secure children's homes, police custody suites or courts. They often have chaotic lifestyles and low aspirations for health, making it difficult for them to navigate systems and access healthcare.

Socially excluded people are more likely to smoke, misuse drugs and/or have alcohol problems, report having a disability, self harm, attempt suicide and die prematurely compared with the general population. Health and wellbeing needs of offenders in the community are worse than those in custody and the general population with premature death rates being significantly higher.

Prisoner population

Whilst oral health has improved in the general population over the last forty years, the limited research published on the oral health of prisoners suggests that they have significantly greater needs than the general population with fewer natural teeth, more decayed teeth and higher levels of gum disease.[107] They are also reported to experience more frequent impacts from poor oral health including pain and difficulty eating. Tobacco, alcohol and drug abuse are also more common in the prison population and these behaviours also lead to poorer oral health. Such factors will also impact on oral health and provision of oral healthcare.[108]

There is strong evidence that oral health is related to level of deprivation and a high percentage of prisoners are unemployed before being imprisoned and often come from areas with high levels of deprivation and social exclusion.[108] General health levels are also reported to be poorer in prisoners than among the general population[109] with, for example, higher levels of illicit drug use, blood borne virus infections and mental health problems.[110,111] Such factors will also impact on oral health and provision of oral healthcare

Prisoners have been reported to be demanding customers and this together with high turnover of the prison population, particularly in local prisons, can lead to difficulties in providing care with interrupted treatments and non-attendance common. In addition, demand for dental services within prisons is increasing due to the increasing prison population.[112] This oral health needs assessment does not include detailed information relating to prison population across Yorkshire and The Humber.

NHS England is responsible for directly commissioning health services, including dental services for people who are detained in prison or in other secure accommodation. West Yorkshire locality commissions all prison dental services across Yorkshire and The Humber. This responsibility includes the planning, securing and monitoring of dental services. Importantly, the quality of prison dental services should be equivalent to those in the wider community.

Currently, dental services are commissioned at the following prisons and children secure units:

- Her Majesty's Prison and Young Offenders Institute Askham Grange
- HMP Leeds
- HMP Whelstun
- HMYOI Wetherby
- HMP Wakefield
- HMP New Hall
- HMP and YOI Doncaster
- HMP and YOI Moorlands and Hatfield
- HMP Lindholme
- HMP Kingston upon Hull
- HMP The Humber
- HMP Full Sutton
- Eastmoor Secure Children's Home
- Aldine Secure Children's Home

During 2014, the Yorkshire and The Humber PHE Dental Public Health Team has been working closely with NHS England's Health and Justice Team to complete prison dental service reviews and support the procurement of dental services at HMPs The Humber, Full Sutton, Kingston upon Hull. A prison dental service review was also completed at HMYOI Wetherby. Procurement of the healthcare services including dental services is planned for 2015.

Homeless people

Homeless people are a diverse group comprising of the roofless, but also people living in temporary accommodation. Most research has focussed on the needs of single men especially rough sleepers. There is no information regarding health problems relating to other groups such as families with children. Many of the studies conducted have been convenience samples so data may not be representative.

The expressed and normative dental needs and attitudes of seventy homeless people living in hostels in Birmingham were examined in 2000. Treatment needs were high.[113] Of those that were edentulous, 68% did not wear dentures. The average number of teeth with decay experience of those that were dentate was 15.9.

There were high levels of tooth decay and more than half had one or more teeth with pulpal involvement. The periodontal condition was poor and half had mobile teeth.[114] This supports findings from earlier studies reporting a high level of normative but low levels of perceived need amongst homeless groups.[115]

More recent studies have also considered the impact of oral diseases on the quality of life of homeless people. As well as high levels of dental treatment need with 76% requiring restorative work, 80% oral hygiene or gum care and 38% needing dentures 91% experienced at least one oral health impact, with the average number of impacts being being 5.9. The most common impacts were pain (65%) and discomfort on eating (62%).[116] Similar observations were made amongst homeless people using a healthy living centre in Wales. Rough sleepers experienced significantly higher levels of impact.[114]

The incidence of many cancers is known to be higher amongst men in lower socioeconomic groups. Within the lowest deprivation group there is further excess risk. Consequently, there is a higher incidence of cancers of the mouth amongst homeless men.[117]

Research undertaken in North Lincolnshire through focus group discussions highlighted access to a dentist as being very difficult. Due to the chaotic lifestyle especially of rough sleepers mobile dental services were suggested which might meet the needs of homeless people.[118]

Severely obese people

Severely obese people are those who have a body mass index (BMI) in excess of 40 or 30 with significant health problems. BMIs of 50 or more may render people housebound requiring specialist care and support. Obesity is predicted to rise, with projections indicating that by 2050 there will be around 50% of the population classed as obese (with a BMI of 30 and over) suggesting that numbers of people with a BMI over 40 will also continue to rise.

Severely obese people are in a high risk category for tooth decay due to diets high in refined sugars. They often have co-morbidities such as diabetes that can affect their oral health. However, severely obese people are unlikely to be able to access routine dental care within conventional dental practices due to the lack of suitable facilities. However, severely obese people are often unable to visit conventional dental practices because of lack of disabled access and normal dental chairs will not support the weight or facilitate their size. Dental practices do not have the links with the ambulance service for transporting severely obese people.

Dental services for severely obese people are provided by the community dental services in North Lincolnshire, North East Lincolnshire, Kingston upon Hull and East Riding of Yorkshire. There is no information regarding the oral health needs of severely obese people.

Looked after children

Looked after children tend to have poorer health and well-being than their peers. Although there are some national data to describe the health needs of looked after children, their oral health needs are routinely monitored. In North Yorkshire and Humber there are 1,845 looked after children (Table 5.5).

Table 5.5 Numbers of looked after children, below 18 years old by area, 2014

Area	Looked after children (n)
England	68,840
Yorkshire & The Humber	7,360
North Yorkshire & Humber	1,845
North Yorkshire &York	460
East Riding	310
Kingston upon Hull	640
North Lincolnshire	170
North East Lincolnshire	265

Source: Department of Education, 2014

There is a requirement that all looked after children should have a health and dental check and this requirement from Ofsted requires Local Authority Fostering Services and its health partners to work together to achieve this. There is evidence to suggest that the oral health of looked after children and those entering care is poor.[119,120]

Slovak Roma people

There are an estimated 200,000 Roma people in the UK, with approximately 25,000 to 30,000 Roma people living in Yorkshire and The Humber. Roma people are a diverse group, culturally and linguistically as a result of their settlement across different countries. The oral health needs of this group are unknown.

Higher dental caries experience has been reported in White Eastern European children[121] as there are increasing numbers of Eastern European families settling in parts of The Humber especially in North Lincolnshire, this has implications for the commissioning of culturally sensitive oral health improvement and dental services in an area where access may already be difficult.

There are other potentially vulnerable groups such as travellers, refugees and asylum seekers, the medically compromised, as well as those with dental anxiety and dental phobia. All vulnerable groups have the right to good oral health however these are the very groups in society that are at increased risk of poor oral health. To ensure equality of oral health outcomes additional support is required.

Summary of vulnerable groups

- information describing the oral health of vulnerable groups in North Yorkshire and Humber is limited
- Kingston upon Hull, North Lincolnshire and North East Lincolnshire have significantly more children with learning disabilities relative to the national average
- children with learning disabilities are more likely to have teeth extracted than filled and have poorer gum health
- North East Lincolnshire has significantly more adults with learning disabilities known to general medical practitioners relative to the national average
- adults with learning disabilities are more likely to have poorer oral health than the general population
- adults with learning disabilities living in the community are more likely to have poor oral health than their counterparts living in care.
- approximately a quarter of the population experience some kind of mental health problem in any one year. However there is no local information on the oral health needs of this group
- prisoners experience poorer oral health than the general population. This oral health needs assessment does not consider this group.
- homeless people are more likely to have greater need to oral healthcare services than the general population
- severely obese people may be at higher risk of oral disease. Dental services for severely obese people are available in all the local authority areas apart from North Yorkshire and York
- looked after children are likely to have greater oral health needs than their peers. In North Yorkshire and Humber, most children in care live in Kingston upon Hull

Key issues for consideration

- prevention of tooth decay and identification and restoration of decayed teeth in children’s permanent dentitions should be a priority for dental services

- oral health improvement strategies should include actions to address the increasing incidence of mouth cancer in North East Lincolnshire, Kingston upon Hull and Scarborough
- undertaking a more detailed oral health needs assessment of vulnerable groups should be considered by NHS England and local authorities
- dental services including urgent care should be accessible to people with learning disabilities and provide preventive and treatment services
- NHS England, local authorities, PHE and clinical commissioning groups should work together to ensure access to dental and oral health improvement services for people with mental health problems
- the need for and access to dental services for severely obese people should be reviewed
- the need for and access to dental services for looked after children should be reviewed

6. Oral healthcare services

NHS England currently has a statutory duty to secure all NHS dental services. As the oral health of the population has improved more people are keeping their teeth into old age. At the same time major technical advances are being made enabling provision of more complex care. Both these factors have implications for dental services. It is recognised that dental services are demand led, but that they should be increasingly targeted towards those whose oral health is poor or who are at high risk of developing disease.

The current dental contract was introduced in April 2006 with a greater emphasis on locally commissioned dental care. A consequent benefit of this is that commissioners now have greater flexibility in addressing dental health care needs. The analyses in this report relate to patients resident in an area, as opposed to patients treated by dentists practicing in the area.

This section describes current NHS dental service provision in North Yorkshire and Humber.

Primary care dental services

Dental services are predominantly provided in primary care. In North Yorkshire and Humber, the cost of primary care dental services commissioned by NHS England was £75.98 million in 2013/14. This includes general dental services, community dental services, advanced mandatory services, primary care based specialist services and unplanned dental care. Approximately 25% of this funding revenue is generated from patient charges.

Most primary care dental services are provided in general dental practice however the community dental services have an important role in the provision of primary dental care for vulnerable groups who may need treatment in a setting to accommodate their needs. The community dental services also have important roles in relation to delivering dental public health programmes, advanced mandatory services and some specialist services such as paediatric dentistry and special care dentistry.

Other primary based specialist services in North Yorkshire and Humber consist of orthodontic and oral surgery services.

Unplanned dental care aims to provide primary care dental access to people who require urgent dental care in or out of hours due to pain, infection, swelling, bleeding and dental trauma.

The following sections describe these services in more detail.

General dental services

The current primary care NHS dental contracts, the General Dental Service Contract and Personal Dental Service Agreement, were introduced in 2006. The dental contracting currency is Units of Dental Activity (UDA). A general dental service provider is contracted for an annual agreed number of units of dental activity.

Dental practices provide services according to four different bands of care with the provider awarded a number of UDAs for each band:

- Band 1: includes an examination, diagnosis and advice. If necessary, it also includes x-rays, a scale and polish, application of fluoride varnish or fissure sealants and planning for further treatment (1 UDA).
- Band 1 urgent: includes urgent care a patient may need, such as pulp extirpation, extraction, dressing (1.2 UDAs).
- Band 2: includes all treatment covered by Band 1, plus additional treatment, such as fillings, root canal treatment, extractions and gum (periodontal) treatment (3 UDAs).
- Band 3: includes all treatment covered by Bands 1 and 2, plus more complex procedures, such as crowns, dentures and bridges (12 UDAs).

Fee paying adults contribute towards the cost of NHS dental treatment with the contribution determined by the band (the patient contribution to Band 1 and Band 1 urgent is the same).

In 2013/14 179 dental practices across North Yorkshire and Humber were contracted to provide 2,913,986 UDAs (Table 6.1). The total spend on UDAs across North Yorkshire and Humber was £68.5 million. It has not been possible to describe spend by local authority area. The amount dentists are paid per UDA varies considerably from £18.88 to £45.99 per UDA, the average UDA rate is £26.95. The UDA values were calculated by analysing historical activity data for each practice when the 2006 national contract was introduced. They are no longer reflective of current practice.

In 2013/14, 97.5% of the contracted UDAs were delivered across North Yorkshire and Humber. This information is not described at a local authority level.

Table 6.1 Primary care provision, 2013/14

Locality	Number of Contracts	Number of Practices	Number of performers*
North Yorkshire & York	102	88	401
Kingston upon Hull	29	25	141
East Ridings of Yorkshire	36	36	98
North Lincolnshire	17	14	36
North East Lincolnshire	17	16	64
Total	201**	179	740

Source: NHS England, 2014

*Figures do not include performers who practise in North Yorkshire and Humber settings and are on different Area Team listings

** Includes mixed orthodontic and general dental services contracts

Availability of general dental services in North Yorkshire and Humber

The number of commissioned UDAs per head of population varies by local authority. All local authorities in North Yorkshire and Humber have a lower rate than England with North Lincolnshire having the lowest UDA per patient in both children and adults. Currently information is not available that describes the availability of dental services at ward level across each of the local authorities in North Yorkshire and Humber. The concept of patient registration was discontinued in 2006 although most dental practices maintain a list of regular patients. As people may attend a dental practice anywhere, a health equity audit of service utilisation would determine the equity of provision at ward and local authority level.

Access to care

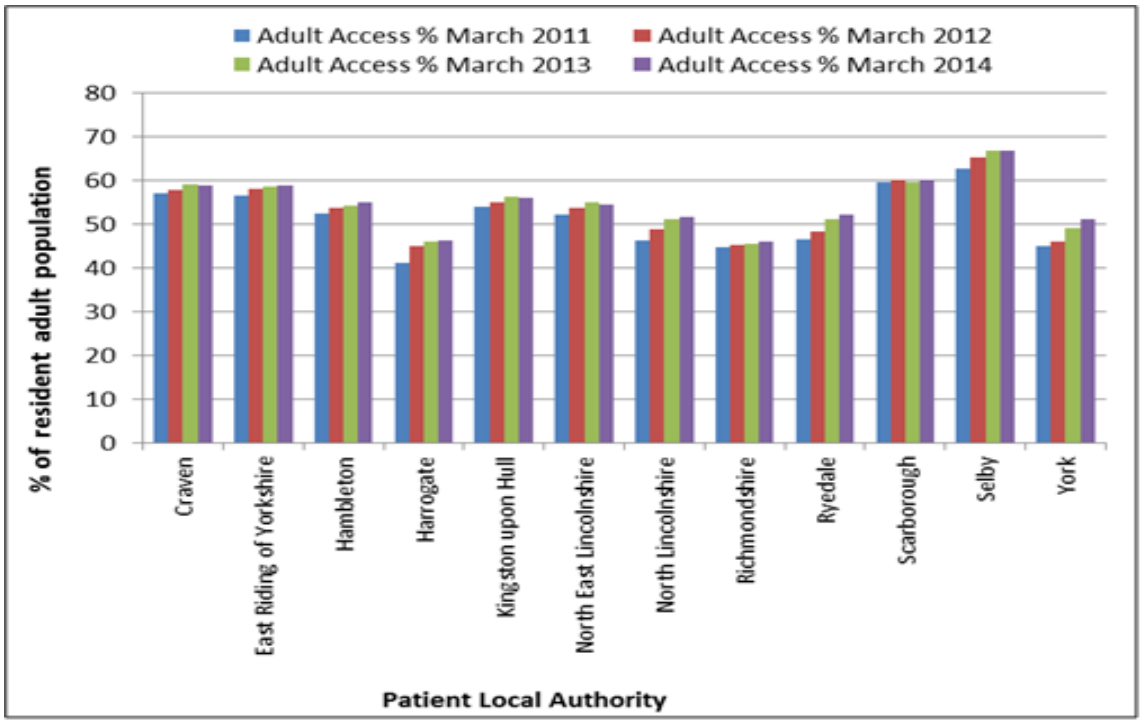
An important aspect of the effectiveness of dental commissioning is the ability of patients to obtain dental care when required. The indicator used to assess dental access is the number of unique patients accessing dental services over the previous 24 months. This metric is based upon NICE guidance which recommends that the longest interval between dental examinations of adult patients is 24 months.[122] To allow comparison, it is often expressed as a percentage of the population. It is referenced to the position in April 2006 when the current dental contract was introduced.

The NHS Constitution states that comprehensive NHS services which include NHS dental services should be available to all.[123] It is important to understand the factors that influence health related behaviour. Whilst NHS dental services for pregnant and nursing mothers up to the time the child is one years of age and children are free,

adults pay for dental care unless they are exempt from payment. Reasons for exemption include low income and cost has been identified as a barrier to accessing care in a number of studies. Moreover there is evidence that people from more deprived backgrounds access dental services less frequently.

The adult access rate between 2011 (52%) and 2014 (55%) showed a year on year increase in the proportion of North Yorkshire and Humber residents accessing an NHS dentist in a 24 month period (Figure 6.1).[123] The highest adult access rates are seen in Selby (66.9%) and the lowest in Richmondshire and Harrogate (46.1% and 46.3% respectively). Across North Yorkshire and Humber adult access is higher than the national average for all age bands except the over 75 year group, where it is very similar to England.

Figure 6.1 Trends in access rates by local authorities, 2011 to 2014



Source: Dental Public Health Report, NHS Business Services Authority, 2014

In children there has been little change over the last four years in dental access and little difference between the local authority areas. Hambleton has the highest child access rate at 78.9% (which is above the national average) and North East Lincolnshire has the lowest at only 62.1% (below the national average). The rate for each local authority area is shown below to enable further comparison between different localities and England (Table 6.2).

Table 6.2 Proportion of population seen in previous 24 months, 2013/14

Area	Adults (%)	Children (%)
Craven	58.9	75.1
East Ridings of Yorkshire	58.9	74.2
Hambleton	55.1	78.9
Harrogate	46.3	65.8
Kingston upon Hull	56.2	72.2
North East Lincolnshire	54.4	62.1
North Lincolnshire	51.8	65.4
Richmondshire	46.1	77.4
Ryedale	52.3	71.7
Scarborough	60.2	73.2
Selby	66.9	77.3
York	51.1	72.4
North Yorkshire & Humber	55.0	71.1
England	51.4	68.0

Source: Dental Public Health Report, NHS Business Authority, 2014

Despite good overall access to dental services, with increasing deprivation access rates fall in both adults and children (Table 6.3). However this gradient is not as steep as for England.

Table 6.3 Adult and child access by level of deprivation, 2010

Level of deprivation (IMD 2010 quartile)	Adults in North Yorkshire & Humber (%)	Adults in England (%)	Children in North Yorkshire & Humber (%)	Children in England (%)
25% most deprived	52.5	50.3	67.0	67.5
12-50% most deprived	55.7	52.0	72.4	69.2
50-75% least deprived	54.5	51.9	72.8	71.1
25% least deprived	55.0	51.0	73.5	72.3

Source: Dental Public Health Report, NHS Business Authority, 2014

Adult and child access rates by ward are shown below (Figures 6.2 and 6.3). Those wards shaded red had the lowest dental attendance and those shaded blue had the highest dental attendance over a 24-month period.

Figure 6.2 Access rate for resident adults by ward, 24-months to March 2014

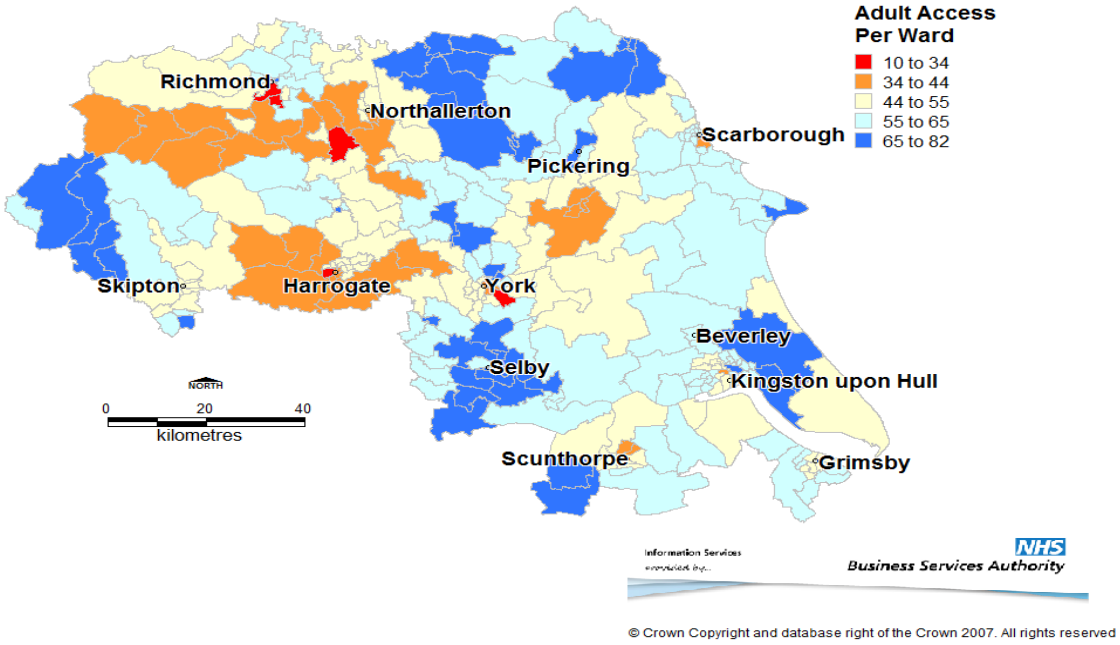
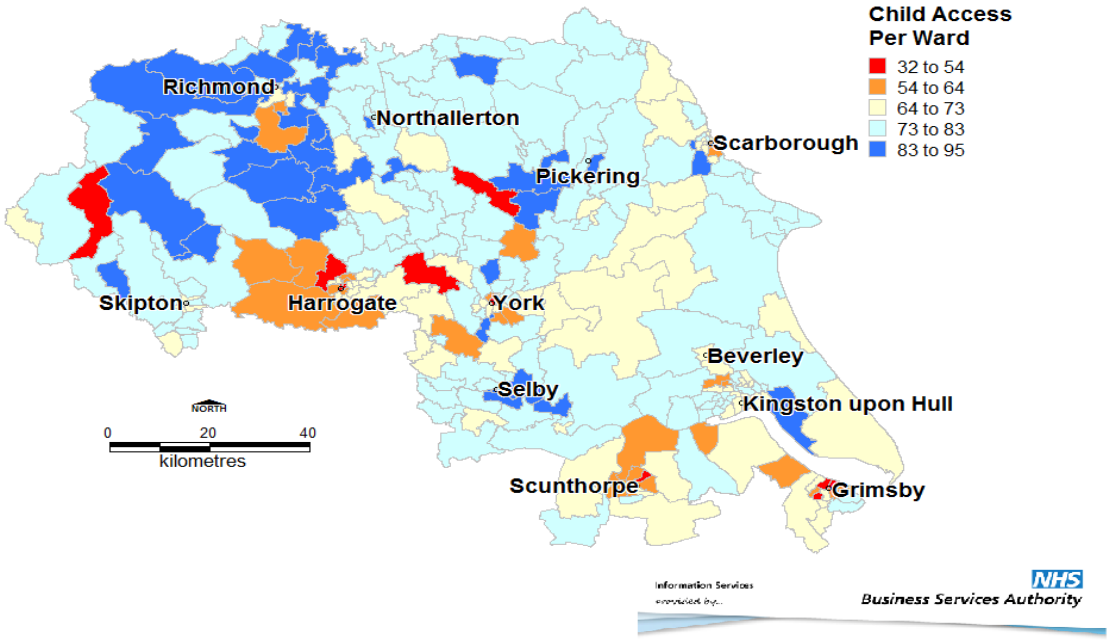


Figure 6.3 Access rate for resident child by ward, 24-months to March 2014



As people may visit a dental practice anywhere in the country, it is useful to look at cross border flows for two reasons. First, large numbers of people accessing services from outside an area can limit access to services for residents. Secondly, such patterns may indicate lack of availability or poor service quality. The majority of North Yorkshire and Humber residents are treated in North Yorkshire and Humber

with a very small proportion accessing care in West Yorkshire (2.6% for both adults and children).

Patient information

It is difficult to present accurate information describing the number of dental practices accepting new NHS patients. People are signposted to the NHS Choices website, however this may not be accessible to everyone and the information may not be up to date.

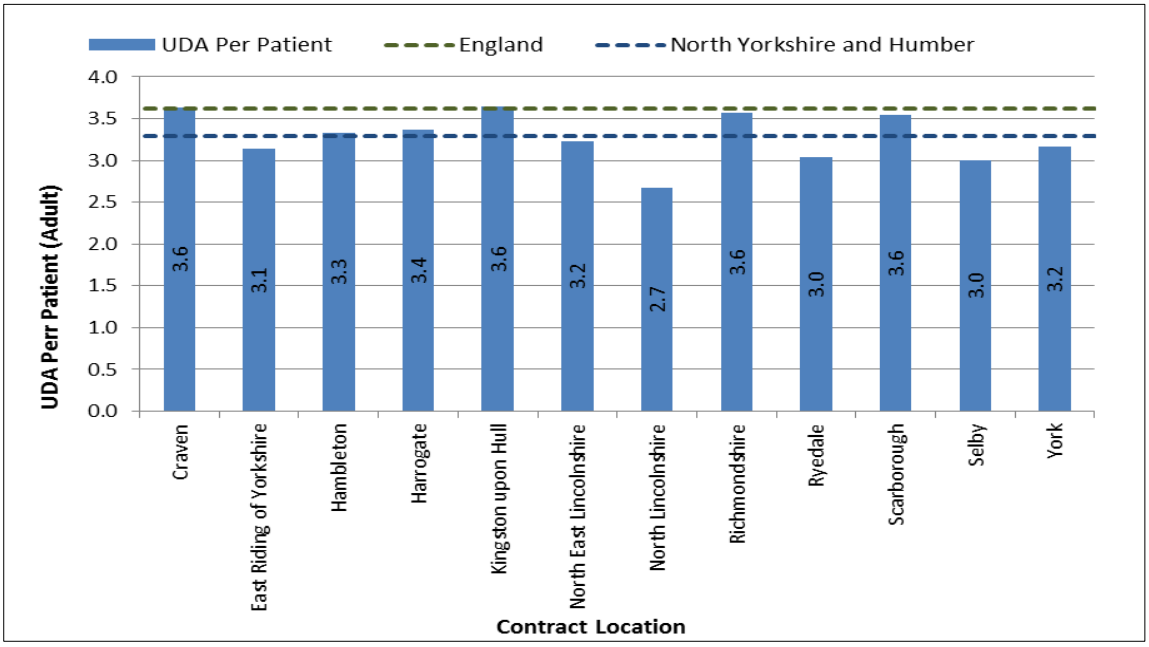
Local Healthwatch organisations provide information and signposting to help people access local health and social care services and it is important that this includes dental services. NHS England need to ensure that they work closely with the local Healthwatch organisations to ensure accurate and up to date information relating to dental services including access is available.

Dental service usage

The average number of UDAs claimed for each patient is a measure of the intensity of resource use. The average UDA claimed per adult patient resident in North Yorkshire and Humber varies across the local authorities. No area is higher than the England average, with most local authorities displaying a lower figure (Figures 6.4 and 6.5). North Lincolnshire has a low UDA claim per patient in both children and adults.

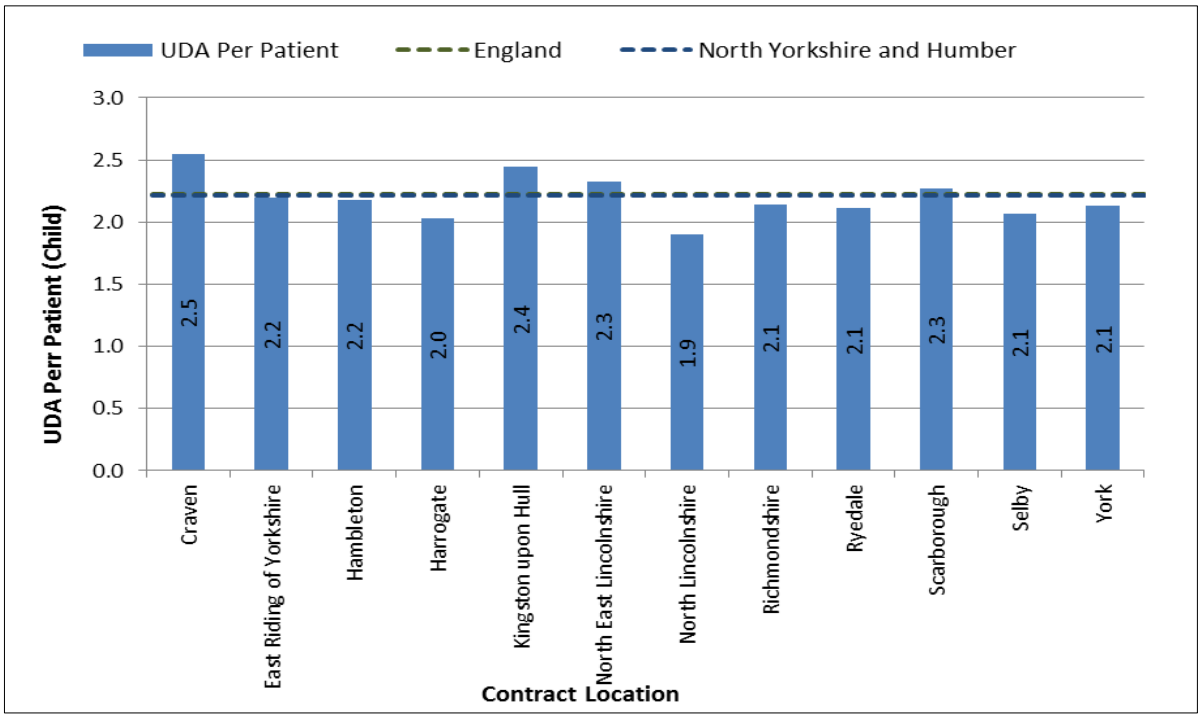
Given the inequalities in oral health in residents across North Yorkshire and Humber, it is important that the more vulnerable groups with high treatment needs are able to receive appropriate dental treatment by encouraging more regular care.

Figure 6.4 UDAs claimed per resident adult patient by local authority, 2013/14



Source: Dental Public Health Report, NHS Business Authority, 2014

Figure 6.5 UDAs claimed per resident child patient by local authority, 2013/14



Source: Dental Public Health Report, NHS Business Authority, 2014

Complexity of care

The proportion of courses of treatment provided in each treatment band in each of the local authority areas in North Yorkshire and Humber during 2013/14 is shown

below (Table 6.4).[124] North Lincolnshire has the highest proportion of people attending for urgent courses of treatment and this may indicate difficulties in accessing routine primary dental care.

Table 6.4 Proportion of courses of treatment in each treatment band by local authority, 2013/14

Locality	Band 1 (%)	Band 2 (%)	Band 3 (%)	Urgent (%)	Other (%)
North Yorkshire	60.4	27.1	4.1	7.8	0.65
York	62.1	26.3	3.6	7.6	0.5
Kingston upon Hull	55.6	27.0	5.5	11.3	0.6
East Ridings of Yorkshire	60.8	26.3	4.8	7.3	0.6
North Lincolnshire	61.0	23.7	3.1	11.5	0.5
North East Lincolnshire	54.3	31.4	4.4	9.6	0.4
North Yorkshire and Humber	59.1	27.3	4.4	8.9	0.3
England	54.5	29.7	5.6	9.7	0.5

Source: NHS Dental Statistics for England 2013-14: Annex 4 (UDA by LA), HSCIC, 2014

Comparison of data from patients by paying status is a useful proxy for comparison by social gradient (Table 6.5). It can be seen that a higher proportion of paying adults receive care in Band 1.

Table 6.5 Proportion of courses of treatment in each band by patient status and local authority, 2013/14

Local authority	Band 1 (%)			Band 2 (%)		
	Paying Adult	Exempt Adult	Child	Paying Adult	Exempt Adult	Child
Kingston upon Hull	52.0	17.6	30.3	42.4	31.9	25.6
East Ridings	59.8	10.8	29.4	64.2	17.0	18.7
North East Lincolnshire	55.3	15.1	29.6	49.2	25.2	25.6
North Lincolnshire	52.4	11.5	36.1	57.5	19.5	23.0
North Yorkshire	56.7	11.4	31.9	60.5	19.0	20.5
York	59.6	10.6	29.8	60.4	19.9	19.8
	Band 3 (%)			Band 1 Urgent (%)		
	Paying Adult	Exempt Adult	Child	Paying Adult	Exempt Adult	Child
Kingston upon Hull	33.3	62.7	3.9	51.5	37.0	11.5
East Ridings	64.5	31.2	3.3	71.7	17.5	10.8
North East Lincolnshire	50.6	45.6	3.7	56.7	31.5	11.8
North Lincolnshire	59.0	38.3	2.7	60.9	28.2	10.9
North Yorkshire	60.2	37.1	2.7	62.2	24.3	13.5
York	58.6	39.0	2.4	62.2	24.9	12.9

Source: NHS Dental Statistics for England 2013-14: Annex 4 (UDA by LA), HSCIC, 2014

Type of treatment provided

The type of clinical treatment provided by local authority area in comparison with North Yorkshire and Humber and England is shown below (Table 6.6).[125] A higher proportion of extractions were carried out in Kingston upon Hull, North East Lincolnshire and North Lincolnshire and more upper dentures were provided in Kingston upon Hull in comparison with the rest of North Yorkshire and Humber and England.

Table 6.6 Percentage of courses of treatment including different interventions by local authority, 2013/14

Local authority	Intervention				
	Scale and polish	Endodontics	Fillings	Extractions	Upper acrylic dentures
Kingston upon Hull	54.1	1.3	24.8	8.5	3.0
East Ridings	59.2	1.9	24.8	5.9	1.8
North East Lincolnshire	48.1	1.8	25.8	9.5	2.2
North Lincolnshire	54.7	1.4	24.9	8.9	1.9
North Yorkshire	55.1	1.7	26.6	6.2	1.8
York	56.5	1.7	24.6	4.8	1.2
North Yorkshire and Humber	55.4	1.6	25.4	7.0	2.0
England	44.7	2.0	26.7	7.8	2.2

Source: NHS Dental Statistics for England 2013-14: Annex 4 (clinical by LA), HSCIC.

Evidence based care

Fluoride varnish application

Evidence from systematic reviews shows that application of fluoride varnish between two and three times a year can reduce tooth decay by 37% in baby teeth and 43% in adult teeth.[69] Therefore evidence based guidance for dental professionals recommends application of fluoride varnish every six months for all children between 3-16 years-old and more frequently for all children (0-16 years-old) at higher risk of tooth decay.

Information describing fluoride varnish rates is dependent on the applications being recorded by dentists. Whilst the number of children receiving fluoride varnish is increasing year on year, a significant proportion of children in North Yorkshire and Humber who visit the dentist do not appear to be receiving fluoride varnish with children in North East Lincolnshire (30%) and Craven (30.6%) having the lowest levels of application (Table 6.7). The highest levels were reported in North

Lincolnshire and Ryedale. Community based fluoride schemes are being delivered in Kingston upon Hull and East Riding of Yorkshire.

For adults with a higher risk of tooth decay, it is recommended that fluoride varnish is applied twice a year. The greatest proportion of adults in North Yorkshire and Humber receiving fluoride varnish applications live in Ryedale (16%).

Appropriately trained, competent dental nurses with additional skills are able to apply fluoride varnish on the prescription of a dentist. Evaluation of the impact of training dental nurses to apply fluoride varnish has shown higher levels of fluoride varnish applications in dental practices with trained dental nurses.[126] Health Education England Yorkshire and Humber have agreed to commission three training courses in Yorkshire and The Humber.

Table 6.7. Fluoride varnish application by age group, 2013/14

Local Authority	Children (3-16 years) (%)	Adult (%)
Craven	30.6	1.9
East Ridings of Yorkshire	42.9	1.5
Hambleton	38.3	2.1
Harrogate	31.2	4.4
Kingston upon Hull	42.2	1.7
North East Lincolnshire	29.6	1.7
North Lincolnshire	49.1	1.3
Richmondshire	31.0	1.2
Ryedale	48.3	16.0
Scarborough	33.4	2.3
Selby	39.0	1.6
York	31.1	1.6

Source: NHS BSA, 2014.

Recall interval

NICE has published evidence based guidelines for dental recall intervals. The guidance recommends adults should be seen at an interval of between three and twenty four months and in children between three and twelve months depending upon their level of risk of oral disease. [115]

Adults with low levels of disease should usually have a recall interval of twenty-four months.[121] It has not been possible to describe the dental recall interval for people with a low risk of oral disease (interval between Band 1 treatments). Extending the dental recall interval for people with a low risk of diseases in line with NICE guidance would increase the availability of dental services.

Primary care activity is also provided by the University of Leeds dental students at an outreach clinic in Kingston upon Hull. This activity data is recorded as teaching rather than service data.

Additional services

Additional services are provided under the standard national general dental service contracts and include domiciliary care, sedation, orthodontics and dental public health services. No dental public health services are commissioned from general dental services in North Yorkshire and Humber.

Domiciliary services

Domiciliary oral healthcare services reach out to people who are unable to attend a service themselves. Oral healthcare which includes treatment, preventative and palliative care is provided within an environment where a patient permanently or temporarily resides.[127] This includes patients' own homes, residential units, nursing homes and day centres. In accordance with the Disability Discrimination Act,[128] the provision of domiciliary dental care ensures dental services are provided via a reasonable alternative route. With an ageing population it is likely that many people will live alone and to maintain their independence may require help and support accessing services due to progressive medical conditions, mental illness or dementia and increasing frailty.

As would be expected, the main age group seen on domiciliary visits are those aged over 75 years. All community dental services provide domiciliary care within their core contract. Domiciliary care provided by general dental practices is not described. The highest proportion of claims for domiciliary visits was in Kingston upon Hull and North East Lincolnshire.

Sedation services

Control of anxiety is an integral part of dental care and requires practitioners to consider the range of non-pharmacological and pharmacological methods of anxiety management when planning treatments. Guidance includes a number of recommendations to ensure that it is provided both safely and effectively.[129] Conscious sedation for children and adults must be provided only by those who are trained and experienced and where the appropriate equipment and facilities are available. In conscious sedation, verbal contact and protective reflexes are maintained. Sedation may be administered by inhalation or intravenous sedation methods. Nitrous oxide/oxygen is usually the technique of choice for conscious sedation of paediatric dental patients, and should be considered as an alternative to general anaesthesia. However, intravenous sedation provides a safe and effective

alternative for adult dental patients. Sedation services are usually expensive and have limited capacity. However, sedation services help to avoid the use of general anaesthetic services and support patients to receive dental care in combination with local anaesthesia.

There are no general dental practices providing care with intravenous sedation although this service is provided by the community dental services in North Yorkshire and Humber.

Unplanned dental care

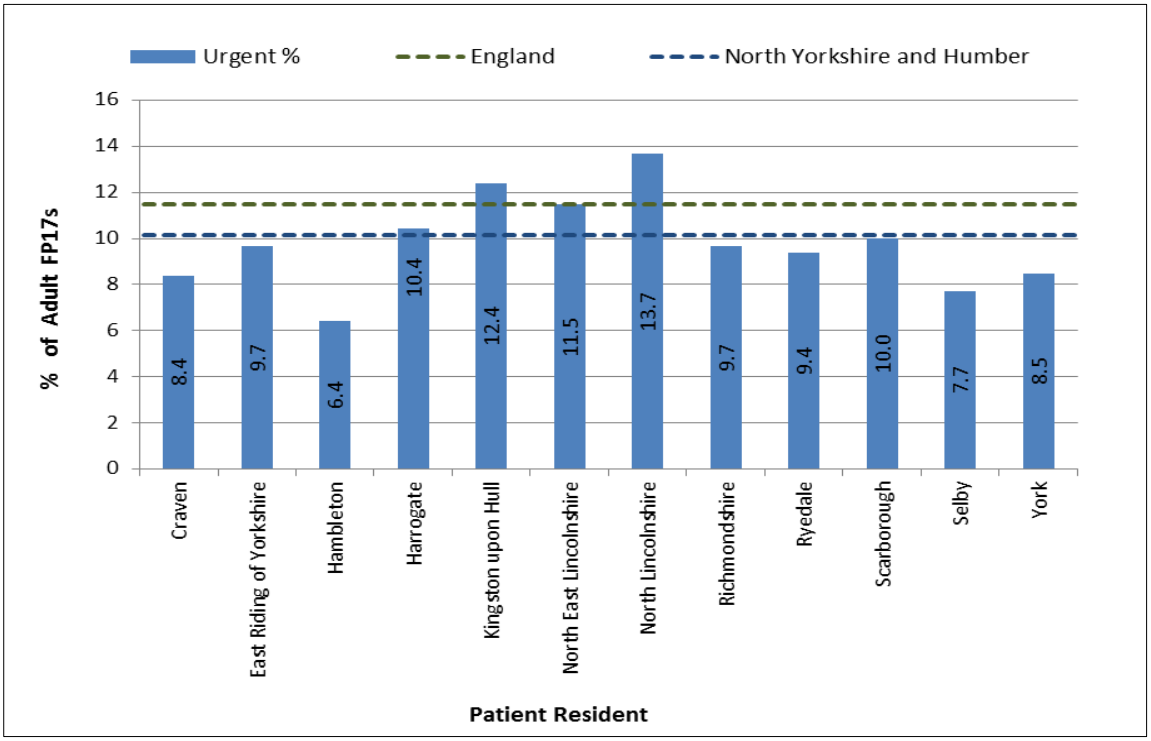
In North Yorkshire and Humber urgent dental care is provided for patients who do not have or choose not to have a regular dentist but have an urgent need for treatment. There are five dental practices that provide out of hours care on weekends and bank holidays.

Since April 2013, all calls for unplanned dental care are triaged through NHS 111. A clinical service is provided from several locations. Out of hours these are Whitecross Dental Care in Skipton, Lawrence St Dental Practice in York, Beech House Dental Practice in Ripon, Scarborough Dental Care and North Park Dental Centre in Harrogate. Out of hours unscheduled care in The Humber is provided by the salaried dental service.

The proportion of adult patients attending for urgent care was highest in North Lincolnshire and Kingston upon Hull (Figure 6.6). High levels of urgent care may indicate that people are not able to access routine dentistry or may be a result of patient choice.

A pilot in South Humber has recently been completed which offered additional in hours urgent care and courses of dental treatment.

Figure 6.6 Percentage of claims for band 1 urgent courses of treatment by local authority, 2013/14



Source: NHS BSA, 2014.

Community dental services

The community dental services (salaried dental services) are the main providers of special care dentistry and specialist paediatric dental services. The services provide primary care for people who cannot be treated in the general dental services. Priority groups may include:

- adults and children with learning disabilities
- children and adults with severe dental anxiety who cannot be managed by a general dental practitioner
- children with complex dental treatment need requiring care from a specialist paediatric dentist.
- adults with mental health problems
- frail older people who cannot receive care in general dental practice
- adults and children who are severely physically and /or medically compromised and are unable to receive their care in general dental practice
- looked after children
- homeless people

The community dental services in North Yorkshire and Humber provide services that are complementary and additional to the services provided by other primary care dental providers and the hospital dental service. Community dental services are

available in a variety of places to ensure that everyone can have access to dental health. Settings include hospitals, health centres and mobile clinics as well as people's own homes and residential nursing and care homes.

NHS England North Yorkshire and Humber Area Team commissions the three community dental services:

- Harrogate and District Hospital Foundation NHS Trust North Yorkshire and York Salaried Dental Service
- Northern Lincolnshire and Goole Foundation Trust Community Dental Service
- City Health Care Partnerships CIC Dental Service

Activity data and waiting times were not available for services in North Yorkshire and Humber. A review of the community dental services is planned and this will inform the future procurement and should describe the services provided at each location and activity data for each clinic The development of a common data reporting schedule will help inform on treatments provided.

General anaesthetic services

Only those people who have been shown to be unable to receive dental care in any other way are considered for treatment under general anaesthetic. General anaesthesia for dental purposes should only take place in a hospital setting that has critical care facilities on site. The anaesthetist must be supported by a team member who is specifically trained and experienced in the necessary skills to help monitor the patient's condition and help in any emergency.[130] Comprehensive dental care under general anaesthetic is available for children and adults with special needs.

Evidence-based guidance has been published on the management of children and young people who are referred for dental extractions under general anaesthesia to support the care pathway from referral to discharge.[131,132]

As well as the community dental services, the hospital oral and maxillofacial surgery departments provide general anaesthetic services. Comprehensive dental care under general anaesthesia is available for children and adults with special needs in North Yorkshire and Humber. All providers report that they are meeting the 18 week referral to treatment waiting times target. Information describing care pathways, service activity and costs was not available.

Hospital admission data for the extraction of teeth under general anaesthesia in children aged up to 19 years is available and describes the rate of hospital admissions of children for the extraction of one or more decayed teeth.[133] Data were derived from the Hospital Episode Statistics dataset which records inpatient care

from NHS hospitals across England. The majority of teeth will have been extracted because of tooth decay. Extractions under general anaesthesia should only be performed where it is considered to be the most clinically appropriate method of management.[131] However it should be noted that in some areas the community dental service may provide this activity using hospital facilities and hence the activity may not be reflected in the hospital data, consequently the data described here may be an underestimate of the number of admissions. In addition differences in coding used between hospital sites may also account for some variation. The hospital admission rates for extractions of teeth in children may act as a marker for the prevalence and severity of tooth decay.[134]

Between 2012/13, 0.5% of 0-19 year old children in England were admitted to hospital for the extraction of one or more decayed teeth, which was slightly lower than the figure for Yorkshire and The Humber (0.7%).[133] In terms of the number of children admitted for extractions, Yorkshire and The Humber was the third highest compared with other regions in England. In North Yorkshire and Humber at local authority level during 2011/12 and 2012/13 more children living in North East Lincolnshire had teeth extracted with general anaesthesia (Appendix 3, Table I).

Quality assurance of primary care dental services

The Dental Assurance Framework is designed to provide a standardised approach for area teams to engage with providers and performers to secure and improve service quality. The framework is presented across four domains:[135]

- delivery, based upon the UDA/UOA currency
- patient safety, based upon discussions with the Care Quality Commission
- patient experience, using patient reported experience as measured in the BSA patient survey, complaints and other information
- quality/clinical effectiveness, including both process and outcome measures

NHE England appraises the quality of dental services against the national Dental Assurance Framework. An assessment of outliers is made quarterly and clinical dental advisors may visit practices that are of concern. The framework may also be used by contractors and performers to reflect on their delivery of care.

Dental practices are also monitored by the Care Quality Commission and must comply with any conditions of registration.

Primary care workforce

The primary care dental workforce consists of dentists and dental care professionals (DCPs). Dental care professionals include dental nurses, hygienists, therapists, orthodontic therapists and technicians including clinical dental technicians. All dentists and dental care professionals must be registered with the General Dental Council to practise. The scope of practice of dental care professionals was recently reviewed and their remit expanded.[136]

The key findings of a dental workforce review in England recommended that reductions in dental student intake would need to be implemented to address the forecasted oversupply and demand for the dental workforce in the future. A review of the future dentist workforce and student intake every three years together with a workforce review of dental care professionals was also recommended. [137]

Greater emphasis on appropriate skill mix, prevention and improved oral health outcomes suggest that increased skill mix utilisation in general dental practice should be encouraged. It is also anticipated that dentists with enhanced skills (DES) will deliver more complex care in future primary care dental contracts. Specifications are being developed by the Royal College of Surgeons for the recognition of dentists with enhanced skills in oral surgery, paediatric and special care dentistry.

A workforce analysis in North Yorkshire and Humber has not been carried out. However, an indication of the number of primary care dentists (performers) working in North Yorkshire and Humber is shown in Table 6.1.

Summary

- the majority of primary care dental services in the area are provided by general dental practitioners
- the cost of a unit of dental activity varies across all local authority areas
- access to care is better across North Yorkshire and Humber as a whole when compared with England however at local authority level there is considerable variation. Access to care is not reflective of need. In more deprived areas where oral health tends to be poorer lower proportions of adults and children access primary care dental services
- a pilot has been undertaken in South Humber to offer more urgent care and courses of treatment
- a prevention pilot in general dental services is ongoing in a number of dental practices across North Yorkshire and Humber

- access to services is inequitable in terms of deprivation and age. It was not possible to assess equity by gender and ethnicity
- the average UDA per resident adult and child population varies across local authorities in North Yorkshire and Humber however it is considerably lower in North Lincolnshire
- adults exempt from paying NHS dental charges are less likely to need care covered by Band 1 treatment
- fluoride varnish application rates are increasing however a significant proportion of children in North Yorkshire and Humber who visit the dentist do not receive fluoride varnish applications with children in North East Lincolnshire and Craven having the lowest levels
- it was not possible to determine if the guidance on recall intervals is being implemented in general dental practice
- there is low provision of domiciliary services in North Yorkshire and North Lincolnshire compared with Yorkshire and The Humber and England. All community dental services provide domiciliary care. Information describing the domiciliary care pathways is unavailable
- a survey of care home managers in York on dental provision for their residents is currently underway
- inhalation and intravenous sedation services are provided by all three community dental services
- a higher proportion of patients accessed urgent dental care in North Lincolnshire and Kingston upon Hull which were well above levels across North Yorkshire and Humber and England
- the community dental services provide primary dental care for vulnerable groups as well as those with more complex special care needs. A review of the services is planned and the development of a common data reporting schedule will help inform treatments provided
- general anaesthetic services are available across North Yorkshire and Humber. The care pathway including costs of services was not described
- the quality assurance process in primary dental care includes reference to the national Dental Assurance Framework, CQC registration requirements and support from clinical advisors
- the primary care dental workforce consists of dentists and dental care professionals. The contract reform programme has highlighted the importance of greater use of skill mix

Specialist services

This section describes the different dental specialities and the provision of specialist dental services in primary and secondary care in North Yorkshire and Humber.

Specialist services in North Yorkshire and Humber are provided primarily in the hospital setting. The district general hospitals provide orthodontics and oral surgery services. Leeds Dental Institute provides the full range of dental specialties. There is also specialist orthodontic provision in primary care in North Yorkshire and Humber and specialist oral surgery provision in The Humber. Quantifying the need for specialist care is difficult as the gateway to care is managed in general by primary care dental practitioners. There is limited opportunity for self-referral to specialist care. Currently all secondary care based specialist activity is provided free from any patient charges whilst specialist activity in primary care will accrue patient charges in line with the NHS dental charges regulations.

Special care dentistry

The speciality of special care dentistry is concerned with the improvement of oral health of individuals and groups in society who have a physical, sensory, intellectual, mental, medical, emotional or social impairment or disability,or more often a combination of these factors making it difficult to access routine dental care. It pertains to adolescents and adults.

Paediatric dentistry

Paediatric Dentistry is concerned with the comprehensive oral healthcare for children from birth to adolescence. It includes care for children who demonstrate intellectual, medical, physical, psychological and/or emotional difficulties. In addition the speciality is concerned with the management of children with oral and dental developmental problems. Paediatric dentists are part of the multidisciplinary teams involved in the management of children with complex problems such as cleft lip and palate and hypodontia. Services are delivered locally where possible in the community dental services. However children with more complex problems are treated at the Leeds Dental Institute.

Oral surgery

Oral surgery deals with the treatment and on-going management of irregularities and pathology of the jaw and mouth that require surgical intervention. A review of oral surgery was published by the Dental Programme Board of Medical Education England. The review recommended that commissioners should review how the oral

surgery services are provided in their area and improve their effectiveness, accessibility and cost efficiency.[138]

Restorative dentistry

The specialty of restorative dentistry involves the study, diagnosis and integrated effective management of people with diseases of the oral cavity, the teeth and supporting structures including the care of those who have additional needs associated with disability. Restorative dentistry is the parent discipline for the mono specialties of prosthodontics, endodontics and periodontics. Prosthodontics involves the replacement of missing teeth and the associated soft and hard tissues by prostheses (crowns, bridges and dentures) which may be fixed or removable, or may be supported and retained by implants. Endodontics involves the cause, diagnosis, prevention and treatment of diseases and injuries of the tooth root, dental pulp and surrounding tissue. Periodontics involves the diagnosis, treatment and prevention of disease and disorders (infections and inflammatory) of the gums and other structures around the teeth.

Oral medicine

The specialty of oral medicine involves the oral healthcare of people with chronic recurrent and medically related disorders of the mouth including their diagnosis and surgical management.

Oral and maxillofacial surgery

Oral and maxillofacial surgery is a specialty requiring dual qualification in medicine and dentistry. Oral and maxillofacial surgeons treat people with conditions that require expertise from both medicine and dentistry such as head and neck cancers, salivary gland diseases, temporomandibular joint disorders, cysts and tumours of the jaws as well as numerous problems affecting the mouth such as mouth ulcers and infections.

Oral and maxillofacial pathology and oral microbiology

Oral and maxillofacial pathology and oral microbiology are clinical specialities undertaken by laboratory based personnel. The speciality of oral microbiology involves the provision of reports and advice based on the interpretation of microbiological samples following the clinical assessment of facial infection. The speciality of oral and maxillofacial pathology involves the diagnosis and assessment made from tissue changes characteristic of disease of the oral cavity, jaws and salivary glands.

Dental and maxillofacial radiology

The specialty of dental and maxillofacial radiology involves all aspects of medical imaging to provide information about the anatomy, function and diseased states of the teeth and jaws.

Orthodontics

The specialty of orthodontics is concerned with the development, prevention and correction of irregularities of the teeth, bite and jaw.

Specialist services in primary care

The specialist services provided in a primary care setting in North Yorkshire and Humber are oral surgery and orthodontics. Special care dentistry and paediatric dentistry are provided by the community dental service as described above.

Oral Surgery

Currently there are four primary care based oral surgery practices in North Yorkshire and Humber and three of the four providers are registered specialists. Two of the providers are located in North Lincolnshire, one in East Riding of Yorkshire and one in North East Lincolnshire. The number of referrals to the service, referral protocols, service specification, activity and waiting times are not described in the needs assessment. An evaluation of these services would demonstrate any cost efficiency savings and their acceptability to the public.

Orthodontics

Specialist orthodontic services in North Yorkshire and Humber are provided in both primary care and in the hospital setting. The majority of cases are treated in a high street practice by specialists or generalists whereas secondary care hospital consultants tend to treat those needing multidisciplinary care, for example children with cleft palates.

Orthodontics in primary care

Orthodontic treatment in primary care is commissioned from specialist and generalist providers using a currency of units of orthodontic activity (UOAs), usually via personal dental service agreements (Table 6.12). A number of units of orthodontic activity are associated with courses of orthodontic treatment:

- 1 UOA – full and comprehensive orthodontic assessment.

- 4 UOAs - orthodontic assessment and case treatment (patient below 10 years).
- 21 UOAs – orthodontic assessment and case treatment (patient aged 10-17 years).
- 23 UOAs – orthodontic assessment and case treatment (patient aged 18 years and over).

There are 25 specialist orthodontics-only contracts and 54 mixed general and orthodontic contracts with a total of 132,456 UOAs commissioned. Table 6.8 describes commissioned orthodontic activity across North Yorkshire and Humber. The total financial value of orthodontic contracts in North Yorkshire and Humber is £7,077,639 and the cost of a UOA varies from £42 to £65**.** The average cost of a UOA in North Yorkshire is £59, in The Humber it is £58 and in North Yorkshire and Humber as a whole it is £58.

Table 6.8 Primary care orthodontic activity by local authority, 2013/14

Locality	Commissioned UOAs	Provider type (specialist or generalist)
Craven	3,300	specialist
East Riding of Yorkshire	23,126	specialist and generalist
Hambleton	11,163	specialist
Harrogate	19,294	specialist and generalist
Kingston upon Hull	14,704	specialist and generalist
North East Lincolnshire	9,616	generalist
North Lincolnshire	3,272	generalist
Richmondshire	0	N/A
Ryedale	1,653	generalist
Scarborough	14,720	specialist
Selby	7,889	specialist
York	23,719	specialist and generalist
Total	132,456	

Source: NHS England, 2014

Only East Riding has key performance indicators (KPIs) included in the contracts to incentivise high quality service provision. Currently a waiting list audit of the primary care orthodontic services is being undertaken.

Providers in Hambleton, Harrogate, Ryedale, Scarborough, and York underdelivered on their contracts in 2013/14. However providers in the other local authorities overdelivered (Table 6.9).

Table 6.9 Proportion of contracted UOA activity delivered in 2013/14

Area	Contracted UOAs delivered (%)
Craven	105
East Riding of Yorkshire	101
Hambleton	92
Harrogate	97
Kingston upon Hull	114
North East Lincolnshire	104
North Lincolnshire	104
Richmondshire	None contracted but 21 UOA delivered
Ryedale	97
Scarborough	89
Selby	111
York	86

Source: NHS England, 2014

Based on the premise that 21 UOAs are awarded to assess and treat one person and 1 UOA is awarded for an assessment alone and that there are two case assessments/reviews for every case start, primary care based orthodontic services in North Yorkshire and Humber should be able to provide orthodontic care to 6,021 people.

As described in chapter 5 the orthodontic need can be established using Stephen's formula. Provision of orthodontic care for 6,021 people equates to 62% of the 12-year-old population in North Yorkshire and Humber that are estimated to be in need of treatment. It should also be noted that Stephen's formula gives the upper limit of predicted orthodontic need in the 12-year-old population and this methodology does not take into account those children who are unsuitable for orthodontic treatment such as those who do not attend a dentist and or have poor oral health. In addition, Stephen's formula includes a factor for adult orthodontics which is not commissioned in primary care in North Yorkshire and Humber. Secondary care activity also needs to be taken into account.

In order to treat all those in need of treatment in North Yorkshire and Humber 204,228 UOAs would need to be commissioned across primary and secondary care, although Payment by Results rather than UOAs is the currency used in secondary care. This may be further inflated by the current commissioning system as additional UOAs may need to be found quickly for transfer cases. Transfer cases can arise when there is a mobile population, for example children who move regularly with military families and subsequently keep changing orthodontist, or in situations where an orthodontist retires at short notice with no successor and cases have to be reallocated to another provider.

Access to primary care orthodontic services

In North Yorkshire and Humber there is variation in access to NHS orthodontic care. Children aged between 6-17 years living in North Lincolnshire and North East Lincolnshire have the lowest access to orthodontic services. Amongst 13 to 17 year olds 11.6% of children in North Lincolnshire and 15.2% of children in North East Lincolnshire had access to primary care orthodontic services compared with 19% in North Yorkshire and Humber and 20% in England. The highest access rates were reported in East Riding of Yorkshire and Richmondshire.[139]

Patient flows affect access to orthodontic services. Ninety-four per cent of patients treated in North Yorkshire and Humber were local residents and 6% were residents of other areas. Significant numbers of patients attending from outside an area can limit access to services for residents. Over 11% of residents in North Yorkshire and Humber accessed treatment outside the area, particularly in South Yorkshire and Bassetlaw, suggesting possible under-provision of primary care services in the area.[139]

Quality of orthodontic services

The quality of orthodontic services is monitored by the NHS Business Services Authority, which provides information to NHS England on whether contracts are outliers in certain areas of performance. The percentage of assessments which lead to fitting an appliance, refusing treatment and review were similar to the average for England (Table 6.10).

A higher proportion of contracts in North Yorkshire and Humber completed Peer Assessment Rating (PAR) scoring relative to the England average. The PAR index is a way of assessing the standard of orthodontic treatment that an individual provider is achieving. Key performance indicators (KPIs) are only being used in contracting in East Riding of Yorkshire.

In all areas of North Yorkshire and Humber with the exception of Craven, Hambleton, Scarborough and Selby orthodontics is being provided by generalists as well as specialists. There is inconsistency in the UOA rates across the region. Specialist providers often have a lower UOA rate than non-specialist providers. This inconsistency may be exacerbated when it is considered that generalists may also need treatment planning and review in secondary care, which further inflates the cost of a course of treatment as in addition to the primary care UOAs the case will also incur additional costs for a hospital appointment when treatment planning is provided by a consultant.

Table 6.10. Outcomes of orthodontic assessments in North Yorkshire and Humber

Outcome	England (%)	North Yorkshire and Humber (%)
Assessments that are assess to fit appliance	42.6	46.2
Assessments that were assess and refuse	12.8	12.3
Assessments that are assess and review	44.6	42.0
Contracts not PAR scoring enough cases	34.2	17
Abandoned or discontinued courses of treatment	10	8.4

Source: NHS England, 2014

There is an orthodontic managed clinical network in North Yorkshire and another in The Humber. All providers in both primary and secondary care are represented. The managed clinical network should support consistency of quality and service provision across the area. NHS England is leading on the development of a national commissioning framework for orthodontics and an orthodontic work stream has been identified in North Yorkshire and Humber to implement a single operating framework in primary care. Provision of services should be reviewed against the national framework which is due to be published in April 2015.

Orthodontics in secondary care

Most orthodontic cases can be treated in a primary care setting by specialists. When the orthodontic treatment or patient management is very complex, orthodontic treatment is carried out in hospital, for example children with cleft palates.

In North Yorkshire and Humber, hospital orthodontic services are provided by hospitals in Scarborough and York (York Teaching Hospital NHS Foundation Trust), Harrogate (Harrogate and District NHS Foundation Trust), Northallerton (South Tees Hospitals NHS Foundation Trust), Kingston upon Hull (Kingston upon Hull and East Yorkshire Hospitals NHS Trust), and Grimsby (Northern Lincolnshire and Goole NHS Foundation Trust).

Orthodontic care may occasionally be provided as an inpatient if the patient's treatment or their condition requires them to stay in the hospital. However most orthodontic secondary care is provided on an outpatient basis. Treatment may involve joint planning with other specialities such as restorative dentistry and oral and maxillofacial surgery.

The majority of residents in North Yorkshire and Humber receive secondary care orthodontic treatment within the area (Table 6.11), however there are some that also access treatment outside the area (Table 6.12).

Table 6.11 Orthodontic activity by provider, 2013/14

Providers within North Yorkshire and Humber	Type of appointment	Activity (n)	Cost (£)
Harrogate and District NHS Foundation Trust	All appointments	1,798	191,377
	Outpatient first appointment (single professional)	304	57,760
	Outpatient follow-up(single professional)	1,367	116,760
	Outpatient procedure	127	16,857
Kingston upon Hull and East Yorkshire Hospitals NHS Trust	All appointments	5,140	652,486
	Outpatient first appointment (single professional)	448	83,328
	Outpatient follow-up (multi professional)	11	1,287
	Outpatient follow-up (single professional)	1,370	112,340
	Outpatient procedure	3,311	455,531
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	All appointments	2,593	398,466
	Outpatient first appointment (single professional)	219	41,315
	Outpatient follow-up (single professional)	364	30126
	Outpatient procedure	2,010	327,025
South Tees Hospitals NHS Foundation Trust	All appointments	5	919
	Outpatient follow-up (single professional)	5	919
York Teaching Hospital NHS Foundation Trust	All appointments	4,543	637,954
	Outpatient first appointment (multi professional)	48	7,511
	Outpatient first appointment (single professional)	1,384	200,954
	Outpatient follow-up (multi professional)	97	11,293
	Outpatient follow-up (single professional)	1,562	171,444
	Outpatient procedure	1,452	246,754
Totals	All appointments	14,079	1,881,202
	Outpatient first appointment (multi professional)	48	7511
	Outpatient first appointment (single professional)	2,355	383,357
	Outpatient follow-up (multi professional)	108	12,580
	Outpatient follow-up (single professional)	4,668	431,589
	Outpatient procedure	6,900	1,046,167

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

Table 6.12 Outpatient secondary care data for orthodontic providers outside of North Yorkshire and Humber

Providers outside of North Yorkshire and Humber	Activity (n)	Cost (£)
Leeds Teaching Hospitals NHS Trust	1,128	149,647
Sheffield Teaching Hospitals NHS Foundation Trust	177	21,835
All other providers	331	35,356
Total	1,636	206,838

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

The spend on outpatient orthodontics in 2013/14 for residents of North Yorkshire and Humber seen in the area was £1,881,202. The cost for those seen outside the area was £206,838. The overall total spend on orthodontics in secondary care for residents was £2,008,040. This was the second highest spend for the dental specialties.

The total spend on orthodontic care for residents seen in North Yorkshire and Humber was £1,881,202. The cost of treating a case consisting of one first appointment (single professional) plus 18 follow-ups (single professional) is £1,641.

An estimation of the number of cases seen in 2013/14 in North Yorkshire and Humber hospitals may be calculated by dividing the total number of follow-up and procedure appointments by 18, giving 649.

As there is an orthodontic retention phase at the completion of each treatment case, the number of retainers fabricated per year or number of cases PAR scored could be used as a more accurate proxy for the number of cases seen in secondary care in the future.

Secondary care activity is not considered at a local authority level.

Orthodontic need and provision in primary and secondary care

It is estimated that 6,021 people received orthodontic care in primary care and approximately 649 people received orthodontic care in secondary care. The total number of cases treated in primary and secondary care is estimated to be 6,670.

In Chapter 5 it is estimated using Stephen's formula that approximately 9,725 people need orthodontic treatment in North Yorkshire and Humber. Therefore there is a possible shortfall in orthodontic provision in North Yorkshire and Humber. However some patients are travelling to other areas to receive treatment and other patients despite needing and wanting treatment may prove unsuitable for treatment due to poor oral health.

A more comprehensive orthodontic needs assessment across North Yorkshire and Humber is required to consider these issues in more detail.

Summary

- there is inconsistent provision of primary care specialist oral surgery services in the area. Currently there is no provision in North Yorkshire and no service evaluations have been carried out. Information describing pathways including tariffs amongst providers is not described. Specialist services are predominantly provided in secondary care
- there are inconsistencies in the commissioning of primary care based orthodontic services across the area including the provision of non-specialist care
- in respect to quality of orthodontic services, some providers are not PAR scoring sufficient cases
- equity of access to orthodontic services could not be established
- the North Yorkshire and Humber commissioning plan includes a review of orthodontic services. Currently a waiting list audit of the primary care orthodontic services is being undertaken across North Yorkshire and Humber. The results of this audit could be used to understand the referral patterns and care pathway for orthodontics
- based upon Stephen's formula only and considering the limitations of this methodology, there may be a shortfall in orthodontic provision in North Yorkshire and Humber

Hospital dental services

In North Yorkshire and Humber, hospital dental services are provided by Leeds Dental Institute, part of Leeds Teaching Hospital NHS Foundation Trust, Harrogate and District NHS Foundation Trust, Kingston upon Hull and East Yorkshire Hospitals NHS Trust, Northern Lincolnshire and Goole NHS Foundation Trust, York Teaching Hospitals NHS Foundation Trust. The district general hospitals primarily provide orthodontic, oral surgery and oral and maxillofacial surgery services. Leeds Dental Institute provides the full range of dental specialties. Specialist services in a secondary care (hospital) setting are accessed on referral only. It has not been possible to describe the referral processes for the secondary care providers in North Yorkshire and Humber.

Care may be provided on an inpatient case, where a treatment or someone's medical condition requires a stay in hospital. Alternatively, care may be provided on an outpatient basis. The episode of care may planned (elective) or unplanned (non-elective).

Under the terms of the Health and Social Care Act 2012, responsibility for currency and tariff design and price-setting rests with NHS England. Payment by results (PbR) is the payment system in England under which commissioners pay healthcare providers for each patient seen or treated, taking into account the complexity of a patient's healthcare needs. The two fundamental features of PbR are nationally determined currencies and tariffs. Currencies are the unit of healthcare for which a payment is made and can take a number of forms covering different time periods from an outpatient attendance or a stay in hospital, to a year of care for a long term condition. Tariffs are the set prices paid for each currency. Within secondary care dentistry, oral surgery, orthodontics, maxillofacial surgery and paediatric maxillofacial surgery have nationally agreed tariffs. The tariffs for outpatient episodes of care are shown below (Table 6.13).[140] There are numerous national tariffs for inpatient care depending on the complexity of care provided. Additional factors determining the tariff include complexities in a patient's medical condition and length of stay in hospital.

Despite nationally agreed tariffs, data shows there are differences between secondary care providers in recording and coding of the classification of patients and the procedures carried out. This prevents commissioners having clarity in understanding the needs of the local population and the activity undertaken. Work being undertaken in Greater Manchester to develop a single operating model to code procedures and classify patients will enable informed commissioning decisions and provide robust benchmarked intelligence data.[141]

Where there are no nationally agreed tariffs, local tariffs are used. A number of case studies show how local health economies have successfully used tariff flexibilities to support innovation.[142] These arrangements facilitate commissioners and providers to develop innovative care pathways, introduce new technologies and negotiate local prices to drive and improve quality. Local tariff information was not available for this needs assessment.

Table 6.13 National tariffs by specialty, 2013/14

Speciality	First appointment (single professional)	First appointment (multi-professional)	Follow-up (single professional)	Follow-up (multi-professional)
Maxillofacial surgery	£191	£381	£135	£268
Paediatric maxillofacial surgery	£115	£181	£75	£75
Oral surgery	£120	£149	£76	£106
Orthodontics	£183	£251	£81	£115

Source: Payment by results guidance for 2013/14, NHS, 2014

Activity and costs of care

In 2013/14, there were 67,018 hospital episodes of care provided at a cost of £14,686,072. The majority of hospital activity was carried out on an outpatient basis (Tables 6.14) however spend on inpatient activity was higher.

Table 6.14 Hospital activity North Yorkshire and Humber, 2013/14

Type	Activity (n)	Cost (£)
Inpatient	10,237	8,076,928
Outpatient	56,781	6,609,144
Total	67,018	14,686,072

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

The main providers of care were Kingston upon Hull and East Yorkshire Hospitals NHS Trust and York Teaching Hospitals NHS Foundation Trust (Table 6.15).

Table 6.15 Activity and costs by provider, 2013/14

Provider	Outpatient Activity (n)	Outpatient Cost (£)	Inpatient Activity (n)	Inpatient Cost (£)	Total Activity (n)	Total Cost (£)
Harrogate and District NHS Foundation Trust	5,580	576,220	659	365,967	6,239	942,187
Kingston upon Hull and East Yorkshire Hospitals NHS Trust	16,448	1,848,093	4,303	3,745,113	20,751	5,593,206
Northern Lincolnshire and Goole NHS Foundation Trust	6,531	834,024	1,968	1,108,104	8,499	1,942,128
York Teaching Hospitals NHS Foundation Trust	20,994	2,417,383	2,976	2,557,398	23,970	4,974,781
Leeds Teaching Hospitals NHS Trust	5,188	691,338	130	120,331	5,318	811,669
Other providers	2,040	242,085	201	180,015	2,241	422,100
Total	56,781	6,609,143	10,237	8,076,928	67,018	14,686,071

Source West and South Yorkshire and Bassetlaw Commissioning Support Unit (2014).

The majority of activity was in the specialty of oral surgery (Table 6.16). Oral surgery also accounted for the majority of spend.

Table 6.16 Activity and costs by specialty, 2013/14

Specialty	Activity (n)	Cost (£)
Oral medicine	333	39,329
Maxillofacial surgery	11,746	1,562,870
Paediatric maxillofacial surgery	18	2,560
Paediatric dentistry	516	101,384
Restorative dentistry	5,188	836,086
Oral surgery	33,325	9,990,520
Orthodontics	15,892	2,153,323
Total	67,018	14,686,072

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

Inpatient care

Ideally hospital care is planned as an elective procedure. However, urgent cases may require non-elective treatment. In 2013/14, there were 10,237 inpatient episodes of care. The majority of inpatient activity was carried out as day case procedures. There was a significant number of non-elective cases (Table 6.17) and this warrants further exploration.

Table 6.17 Inpatient activity, 2013/14

Activity type	Activity (n)	Cost (£)
Day case	8,455	5,102,905
Elective	754	1,529,789
Non-elective	1,028	1,444,234
Total	10,237	8,076,928

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

The majority of inpatient activity and spend was on oral surgery day cases (Table 6.18) and there was a significant spend on elective and non-elective inpatient oral surgery. cases. The inpatient paediatric dentistry activity was likely to be extraction of teeth under general anaesthesia.

Table 6.18 Inpatient activity by specialty, 2013/14

Specialty	Day case (n)	Day case (£)	Elective (n)	Elective (£)	Non-elective (n)	Non-elective (£)
Maxillofacial surgery	447	328,587	32	48,260	17	29,641
Paediatric dentistry	75	47,893	3	1,735	1	0
Oral surgery	7,425	4,583,559	695	1,467,785	1,008	1,413,543
Orthodontics	170	61,881	695	2,352	1	1,050
Restorative dentistry	338	80,986	18	9,657	1	0

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

Outpatient care

Outpatient appointments form the majority of activity in hospital dentistry. In 2013/14, there were 156,781 outpatient appointments at a cost of £6,609,145 (Table 6.19).

Table 6.19 Outpatient activity by appointment type, 2013/14

Appointment type	Activity (n)	Cost (£)
First appointment	20,069	2,572,084
Follow-up appointment	24,800	2,290,269
Follow-up procedure (treatment appointment)	11,912	1,746,792
Total	56,781	6,609,145

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

The majority of outpatient activity is in the specialty of oral surgery, which also accounts for the majority of outpatient spend (Table 6.20).

Table 6.20 Outpatient activity by specialty, 2013/14

Specialty	First (n)	First (£)	Follow -up (n)	Follow-up (£)	Procedure (n)	Follow-up procedure (£)	Total Cost (n)	Total activity (£)
Oral medicine	93	11,034	210	23,128	30	5,168	39,329	333
Maxillo-facial surgery	5,295	628,044	5,637	483,532	318	44,808	1,156,383	11,250
Paediatric dentistry	112	10,118	179	13,884	146	27,754	51,756	437
Restorative dentistry	1,333	219,052	2,245	337,864	1,253	188,526	745,443	4,831
Oral surgery	10,717	1,296,004	11,255	944,598	2,219	285,031	2,525,633	24,197
Orthodontics	2,512	407,635	5,257	484,900	7,946	1,195,505	2,088,040	15,715

Source: West and South Yorkshire and Bassetlaw Commissioning Support Unit, 2014

Quality assurance in secondary care

Commissioning for Quality and Innovation (CQUIN) and Quality, Innovation, Productivity and Prevention (QIPP) provides frameworks to drive quality and cost effectiveness in secondary care. CQUIN monies are used to incentivise providers to deliver quality and innovation improvements above the baseline requirements set out in the Standard NHS Contract. CQUIN for 2013/14 was set at a level of 2.5 % for all healthcare services commissioned through the NHS Standard Contract.[142,143]

NHS organisations at regional and local level have QIPP plans in place to address the quality and productivity challenge. Supporting these are twelve national work-streams designed to help NHS staff successfully deliver these changes. QIPP work-streams relate to running and staffing within NHS organisation as well as commissioning, contracting and digital technology.[142]

Some work has been completed in the North West to support a more consistent approach to coding and production of a more reliable and consistent commissioning data set in secondary care oral surgery and oral maxillo-facial surgery services.[141]

NHS England have agreed that the CQUIN for secondary care providers will be based upon the electronic discharge summaries to all general dental practitioners within 72 hours.

Summary

- most hospital activity is provided on an outpatient basis
- spend on outpatient and inpatient activity is broadly similar
- the majority of activity and spend is on oral surgery
- there are significant numbers of non-elective oral surgery inpatient cases
- there is an agreed CQUIN with secondary care providers
- it is unclear what quality assurance processes are in place for secondary care specialist services

Key issues for consideration

- the feasibility of undertaking a health equity audit of access to dental services should be explored in view of variations in availability of and access to dental services across and within local authority areas and across different groups
- dental practices need to be supported to ensure that ethnicity data is captured on dental service activity forms to inform future needs assessment and health equity audits
- dental practices need to be supported to ensure that evidence-based guidance on fluoride varnish applications and recall intervals is implemented in practices. Key performance indictors to encourage evidence-based practice should be considered for inclusion in any new dental contracts
- current domiciliary provision is likely not to be sufficient to meet current and increasing demand. Equity of provision should be confirmed
- NHS England may wish to consider commissioning or undertaking a more in-depth review of sedation service provision to support the development of a consistent service model for anxious patients that incorporate sedation services and behaviour management techniques
- information should be collated to support commissioning intentions to ensure more vulnerable groups with more complex and special care needs are able to access appropriate care
- to help inform a more in-depth needs assessment for special care dental services in preparation for implementation of the national commissioning guide, robust activity indicators should be considered, for incorporation into current community dental service contracts together with the development of a managed clinical network in special care dentistry

- NHS England may wish to consider commissioning or undertaking a more in-depth review of general anaesthesia service provision to support the development of accessible, high quality, safe and patient centred services
- to identify and help address the gaps in provision of primary care specialist oral surgery services in North Yorkshire and Humber a service review should be considered. This should be in line with the forthcoming NHS commissioning guidance
- NHS England may wish to commission a more detailed orthodontic needs assessment including a review of provision of orthodontic services across North Yorkshire and Humber against the commissioning framework due to be published in 2015. It is important to explore ways of providing more equitable access and to inform the development of a service model with a consistent UOA rate that incorporates key performance indicators including PAR scoring and which is delivered by specialists
- NHS England may wish to consider working with secondary care providers to review secondary care local tariffs and develop and agree standard coding for secondary care dental activity to contain spend on secondary care and ensure value for money
- NHS England may wish to consider working with local clinical networks, PHE and providers to develop and incorporate quality assurance into secondary care contracts and in preparation for implementation of the soon to be published NHS England commissioning guides

7. Dental public health services

Prevention of oral health diseases

Good oral health is essential for general health and wellbeing. Poor oral health can affect the ability to eat, speak and socialise normally. The main oral diseases are dental tooth decay, gum disease, and cancer. These are all largely preventable and are described in detail in chapter 4.

Tooth decay may be prevented by reducing the amount and frequency of consumption of sugary foods and drinks and optimising exposure to fluoride. Gum disease may be prevented by good oral hygiene and stopping smoking; and the risk of oral cancer may be reduced by stopping smoking, drinking alcohol within recommended safe limits, eating a healthy diet and practising safer sex.

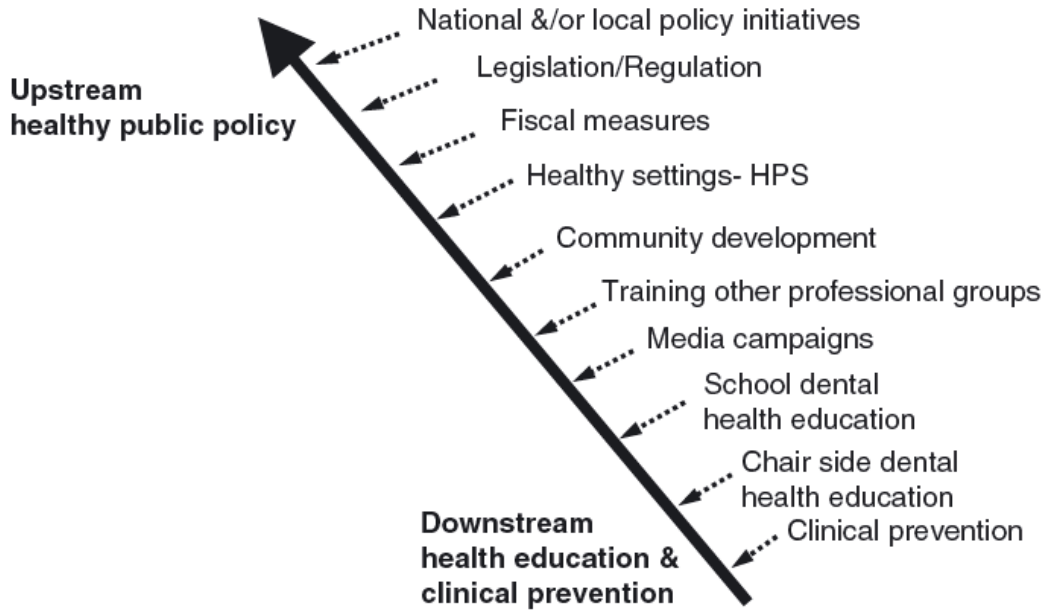
Approach to prevention

Previous government documents have highlighted inequalities in oral health[10,144,145] and emphasised oral health promotion and preventive care for those perceived to be at higher risk of disease. *Choosing Better Oral Health: An Oral Health Plan for England* described a move away from a dental healthcare service focused mainly on treatment to a more preventive model of care.[10] Recent thinking suggests that everyone should be given the benefit of advice regarding their general and dental health, not just those thought to be 'at risk', as not all new disease can be anticipated.[146]

Commissioning Better Oral Health for Children and Young People[13] and *Oral Health: approaches for local authorities and their partners to improve the oral health of their communities*[14] provide guidance for local authorities on commissioning evidence-based oral health improvement programmes. The guidance advocates a population approach with advice and actions for all with additional interventions aimed at those people at higher risk of developing disease.

Population prevention can adopt many different approaches and options. Marmot[4] suggests that focusing solely on the most disadvantaged will not reduce health inequalities sufficiently, as everyone experiences some degree of health inequality. To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. This has been termed proportionate universalism. As described in Chapter 4, actions are needed to tackle the underlying causes of health inequalities. Figure 7.1 highlights the 'upstream' actions that should complement specific 'downstream' interventions (such as the widespread delivery of fluoride) to prevent oral disease.

Figure 7.1 Upstream/downstream: options for oral disease prevention



Source: Watt, 2007[147]

The common risk factor approach, as outlined previously in Chapter 4 integrates general health promotion by focusing on a small number of shared risk factors that can potentially impact a large number of chronic diseases, which includes oral health.

The Ottawa Charter[148] describes five priority areas for health promotion:

- building healthy public policy
- create supportive environments for health
- strengthen community action for health
- develop personal skills
- reorient health services

Population strategies include the whole population and targeted population approach (risk approach). The whole population approach assumes that everyone has some disease risk and so targets interventions at the whole population. An example is water fluoridation. The targeted population approach recognises that some population groups are at higher risk and targets prevention strategies accordingly such as supervised tooth brushing programmes in schools in more deprived areas.

Commissioning oral health improvement

Local authorities became responsible for improving the oral health of their population in April 2013. They are responsible for commissioning oral health promotion programmes and oral health surveys as part of the PHE dental public health intelligence programme. These surveys allow assessment of oral health needs, and

aid the planning and evaluation of oral health programmes and monitoring of water fluoridation schemes.[2] Local authorities also have the power to make proposals regarding water fluoridation schemes, a duty to conduct public consultations in relation to such proposals and powers to make decisions about such proposals.

It is essential that there is an integrated approach to commissioning and delivering oral health improvement programmes between local authorities, NHS England and PHE, and that local oral health needs are considered in joint strategic needs assessments and joint health and wellbeing strategies.[15] In some areas of Yorkshire and The Humber, local authorities have recently established oral health improvement/oral health advisory groups which include key stakeholder representation. The main purpose of these groups is to enable each of the local authorities to fulfil their responsibilities with regards to oral health improvement and addressing oral health inequalities.

Local authorities will be monitored on health improvement through the Public Health Outcomes Framework[6] and Children's and Young People's Health Benchmarking Tool.[149]

Evidence-base for oral health improvement programmes

Smoke Free and Smiling,[17] *Delivering Better Oral Health,*[16] *Commissioning Better Oral Health*[13] and *Approaches for Local Authorities and their Partners to Improve the Oral Health of their Communities*[14] provide the evidence base for oral health improvement interventions. The strategic principles described in the Ottawa Charter to tackle the wider determinants of health and reduce oral health inequalities should be the basis of oral health improvement approaches. Commissioned oral health improvement programmes should be based upon the evidence base and the needs of the population. A summary of the overall recommendations supporting the commissioning of oral health improvement interventions, based upon the strength of evaluation and research evidence, is described in Appendix III. The summary should be considered in the context of the explanatory evidence[13] and published recommendations.[14]

Guidance for local authorities, *Tackling poor oral health in children. Local government's public health role*, provides case studies of oral health improvement activities at local authority level[15].

Commissioning oral health improvement across North Yorkshire and Humber

All the North Yorkshire and Humber local authorities directly commission oral health improvement (Table 7.1) and oral health surveys and this should be supported by comprehensive service specifications. The budget spent on oral health improvement

is variable. It is essential that all local authorities ensure that local oral health needs are considered in joint strategic needs assessments and joint health and wellbeing strategies.

Table 7.1 North Yorkshire and Humber local authority providers for oral health improvement

Local authority	Oral health improvement provider
North Yorkshire	Harrogate and District Hospital Foundation Trust :North Yorkshire Salaried Dental Services
City of York	Harrogate and District Hospital Foundation Trust: North Yorkshire Salaried Dental Services
Kingston upon Hull	City Health Care Partnership CIC - Oral Health Promotion Service
East Ridings of Yorkshire	City Health Care Partnership CIC - Oral Health Promotion Service
North Lincolnshire	Northern Lincolnshire and Goole Foundation Trust Salaried Dental Service
North East Lincolnshire	Northern Lincolnshire and Goole Foundation Trust Salaried Dental Service

Oral health improvement programmes in North Yorkshire and Humber

Local authorities in North Yorkshire and Humber commission a range of oral health improvement programmes with a particular focus on improving the oral health of children and more vulnerable adult groups. ‘Midstream’ interventions include oral health training for the wider professional workforce and public health events held during Oral Cancer Action Month and National Smile Month. Examples of ‘downstream’ interventions include targeted supervised tooth brushing schemes and fluoride varnish schemes which focus on improving the oral health of more vulnerable young children who are at risk of poor oral health. Local authorities should ensure approaches are complimented by ‘upstream’ policies by influencing national government policy and implementing local polices to improve oral health. This may include affordable healthier food/drink in libraries and leisure centres.

Oral health improvement for children and young people

Tackling inequalities requires collaborative and partnership working to improve health outcomes. Oral health pathways should be integrated and embedded in all children services at strategic and operational levels. It is recommended that oral health improvement should incorporate a suite of evidence based programmes which adopt a life course approach and based upon the principles of proportionate universalism’ as outlined previously.[4] Programmes should have a population wide

and targeted elements so from birth to school age, children should pass through each element of the programme receiving a package of evidence based preventive care. The overall level evidence based recommendation for oral health improvement programmes for children and young people aged up to 19 years of age is summarised in Appendix 4 Table II.

Based on the totality of the evidence, health visitor led programmes where young children are provided with dental packs including fluoridated toothpaste; toothbrush and a supporting dental information leaflet are recommended and are commissioned by North Lincolnshire and North East Lincolnshire local authorities. Similarly, supervised tooth brushing with fluoridated toothpaste delivered over a two year programme in targeted childhood settings to prevent tooth decay is recommended and is delivered in Kingston upon Hull and East Ridings of Yorkshire. Hull City Council currently commissions and delivers an extensive programme of supervised daily tooth brushing in nurseries and primary schools, targeting children aged between 3-11 years old. In addition, Team Teeth, a collegiate of three dental practices in partnership with a dental product supply company, BP Chemicals and a dental software company delivers a similar programme to some nurseries and schools across Hull. The programme involves annual dental assessments, twice yearly fluoride varnish applications and provision of oral health education sessions. Supervised tooth brushing programmes in special schools are commissioned in North Yorkshire, Hull and North Lincolnshire.

Targeted community fluoride varnish schemes, where varnish is applied to children within a two year programme with at least twice yearly applications are recommended. Team Teeth currently provide twice yearly fluoride varnish applications within two primary schools in the East Ridings of Yorkshire which they support as part of a dental examination.

Oral health training of the wider professional workforce working with families and young children is also recommended and programmes are commissioned by all the local authorities in North Yorkshire and Humber. Table III in Appendix 4 describes the range of oral health improvement programmes focusing on children and young people which are commissioned by each of the local authorities in North Yorkshire and Humber. The strength of evidence is included.

Oral health improvement programmes for vulnerable adults in North Yorkshire and Humber.

Certain circumstances may place people at higher risk of poor oral health including:

- frail elderly and housebound
- medical conditions which have a direct effect on the oral cavity or side-effects of medications eg dry mouth

- disabilities which affect the ability to maintain good oral hygiene
- homelessness
- traveller communities
- prison communities
- drug and alcohol misuse

Maintaining good oral and general health in later life is also important. Oral health improvement programmes for vulnerable groups should reflect the changing needs of society including the expectations of ageing adults who retain natural teeth throughout life. Many frail or dependent adults may also have potentially complex oral healthcare needs. Improved oral health may contribute to older people enjoying independent living.

Regular training for frontline health and social care professionals working with adults at high risk of poor oral health and incorporation of oral health promotion into existing services for adults at high risk of poor oral health are both recommended in new guidance. Community health and social care service specifications should ensure oral health is included in care plans and is in line with safeguarding policies.[15] Oral health training for the wider health and social care professional workforce working with more vulnerable adult groups including older people and those with additional needs is commissioned by all the local authorities in North Yorkshire and Humber.

A survey of care home managers on the oral health of their residents is currently being undertaken in York. It is planned to offer an e-learning package for carers and the possibility of a prevention pilot is being explored with Vale of York Clinical Commissioning Group.

Currently commissioned oral health improvement programmes in each of the local authorities in North Yorkshire and Humber that focus on improving the oral health of more vulnerable groups are summarised in Appendix 4 Table III.

Developing capacity of the oral health improvement workforce

The most effective way to improve oral health is to embed it within existing services at strategic and operational levels. Across the region in many districts, oral health promotion teams predominantly from the community and salaried dental services are commissioned to provide oral health promotion training, expertise and support to a range of groups including health, social care and education professionals. This enables evidence based oral health improvement programmes to be delivered through multiple interventions by non-dental professionals.

Transfer of the commissioning of the Healthy Child Programme 0-5 years to local authorities provides opportunities to integrate oral health in local service specifications for health visitors and school nursing.

Dental nurses can apply fluoride varnish to teeth either on prescription from a dentist or as part of a structured dental health programme. Training dental nurses to apply fluoride varnish may support community programmes and dental practices to deliver this intervention and increase the availability of fluoride to priority groups. Previously, dental nursing training in fluoride application has been provided in Bradford. Health Education England Yorkshire and Humber has agreed to commission training in Leeds, York and Sheffield during 2015.

Reorienting dental practices towards prevention

Oral health promotion teams have been working with local general dental practices in some parts of Yorkshire and The Humber to promote prevention in practice in line with *Delivering Better Oral Health*.[16] This guidance describes evidence based interventions to prevent oral disease including application of fluoride varnish and fissure sealants as well as dietary advice and advice regarding alcohol and tobacco use with signposting to relevant services when indicated. It is important that clinical care provided by primary care dental teams is underpinned by evidence based prevention.

Dental practice data demonstrates that whilst fluoride varnish rates are increasing, large proportions of children in North Yorkshire and Humber do not receive fluoride varnish applications (Chapter 6), fissure sealant rates are low and limited data are available on dental practice referrals to NHS stop smoking services. These clinical prevention based interventions are funded by NHS England through the general dental services contracts. However, some local authorities in Yorkshire and The Humber fund additional practice based prevention programmes. During 2015, Health Education England Yorkshire and Humber are commissioning training for primary care dental teams to support the implementation of *Delivering Better Oral Health*.

A new NHS dental contract is being developed and will be weighted towards prevention and oral health improvement which will facilitate preventively orientated healthcare.

Three prevention in practice pilots developed by NHS England and North Yorkshire and Humber Local Dental Network have been established to support improvements in the oral health of children aged between 0 to16 years accessing dental care who are at high risk of tooth decay. The pilot practices provide evidence based prevention messages to children and parents/carers and fluoride varnish applications. Part of the pilot is specifically aimed at parents of children who have had a general

anaesthetic. The pilot involves the use of dental care professionals not dentists. The pilots are running between March and August 2015.

Making Every Contact Count is a long-term strategy to ensure that all NHS staff take every opportunity to help people make informed choices about their health related behaviours, lifestyle and health service utilisation. In The Humber a tailored primary dental care team level 1 *Making Every Contact Count* training programme has been developed. This training, now commissioned by The Humber local authorities, recognises that dental teams are well placed to help people adopt healthier lifestyles thereby contributing to improving and reducing inequalities in health by providing 'healthy chats' to their patients.

Taking forward local oral health improvement within local authorities

As described previously, some local authorities in North Yorkshire and Humber have developed oral health improvement advisory groups. These include representatives from key stakeholder groups. They provide a forum in which oral health improvement strategies and programmes can be developed and monitored. A joint oral health partnership group has established in North East Lincolnshire and North Lincolnshire. Kingston upon Hull and East Ridings of Yorkshire local authorities have also agreed to set up an oral health advisory group in early 2015.

The majority of the current oral health improvement programmes in North Yorkshire and Humber follow a targeted population approach. As described previously, whole population prevention approaches are also important to further reduce inequalities in oral health in line with the Marmot principle of universal proportionality.

Water fluoridation is considered as a whole population approach to improving oral health and is associated with reductions in tooth decay in populations.[150-154] It was also found to have an effect over and above that of other sources of fluoride, particularly toothpaste. The Lincolnshire water fluoridation scheme supplied by Anglian Water supplies water to communities living in Scunthorpe and Barton- upon-the Humber in North Lincolnshire and the rural communities to the West of Grimsby in North East Lincolnshire.

In light of their statutory role and responsibilities, local authorities should only consider the case for water fluoridation in the context of local needs and the range of oral health improvement programmes currently commissioned and with reference to *Commissioning Better Oral Health.*[13] The legal aspects and the technical issues regarding the introduction of water fluoridation schemes should be considered also. Local authorities can also influence local and national government including local fiscal policies to improve oral and general health.

Currently, there is a limited support network available for local authorities to fulfil their statutory dental public health functions. Developing a Yorkshire and The Humber oral health improvement commissioners' network to facilitate learning and sharing of good practice across the region may improve outcomes.

Dental Public Health Intelligence Programme

Standardised and nationally co-ordinated surveys of oral health have been undertaken annually since 1985, which means that England has one of the best oral health databases in the world. The most recently completed survey (2013/14) focussed on children aged five and 12-year-old children attending special support schools and the 2014/15 survey will focus on five-year-old schoolchildren.

The *NHS Bodies and Local authorities (Partnership Arrangements, Care Trusts, Public Health and Local Healthwatch) Regulations 2012 SI 3094*[2] outlined the responsibilities of Local authorities to secure the provision of oral health surveys to facilitate:

- the assessment and monitoring of oral health needs
- the planning and evaluation of oral health promotion programmes
- the planning and evaluation of the arrangements for the provision of dental services
- the reporting and monitoring of the effects of any local water fluoridation schemes

The surveys are now undertaken on an annual basis as part of the Dental Public Health Intelligence Programme to provide detailed estimates of disease prevalence and severity. Data are provided at lower tier local authority level. The surveys of five-year-old schoolchildren, undertaken every two years, provide data for the dental indicator included in the Public Health Outcomes Framework. The National Dental Public Health Intelligence Programme is coordinated by PHE, which has a national lead and the North West PHE Knowledge and Intelligence team are responsible for developing the national protocols and quality assuring the programme. The national lead for the programme is supported locally by a team of dental epidemiology coordinators at PHE Centre level.

Local authorities are also required to participate in any oral health survey conducted or commissioned by the secretary of state. National surveys of both child and adult dental health are used by the Department of Health and the NHS to set both national and local targets for health improvement to target preventive resources to areas of highest need and to assist in workforce planning and research.

All local authorities in North Yorkshire and Humber commission oral health surveys. The details are described below (Table 7.2). It is essential that service specifications are in place to support the planning and delivery of oral health surveys. Survey

protocols recommend that a minimum sample size of 250 examined children is required per lower-tier local authority from a minimum of 20 schools. This is unlikely to produce a sufficiently large sample to facilitate local planning for many areas and larger samples will be required. Discussions between local authority commissioners and consultants in dental public health (Yorkshire and The Humber PHE Centre) to establish the size and type of sample that is required to meet local needs will be helpful. For the latest survey of three-year-old children, the number of children examined in some local authority areas was too small to give reliable population estimates and service specifications should include performance indicators to ensure providers are delivering the surveys in line with the national protocols.

Table 7.2 North Yorkshire and Humber local authority dental survey providers

Local Authority	Provider
North Yorkshire	Harrogate and District Hospitals Foundation Trust: North Yorkshire and York Salaried Dental Services
City of York	Harrogate and District Hospitals Foundation Trust: North Yorkshire and York Salaried Dental Services
Kingston upon Hull	City Health Care Partnership CIC – Dental Service
East Ridings of Yorkshire	City Health Care Partnership CIC – Dental Service
North Lincolnshire	Northern Lincolnshire and Goole Foundation Trust Community Dental Service
North East Lincolnshire	Northern Lincolnshire and Goole Foundation Trust Community Dental Service

Summary

- local authorities are responsible for improving the oral health of their population. They have responsibility for commissioning oral health improvement programmes and oral health surveys. They also have powers relating to making proposals regarding water fluoridation for their local population
- all local authorities have a specified budget for commissioning oral health improvement programmes except North East Lincolnshire
- a range of universal and targeted oral health improvement programmes are implemented by local authorities in North Yorkshire and Humber most of which have some, sufficient or strong evidence base
- the majority of oral health improvement programmes are directed towards children

- local authorities are responsible for commissioning care homes and school nursing services and soon will be responsible for commissioning health visiting service. This will provide an opportunity for integration of oral health into these services
- local authorities in North East Lincolnshire, North Lincolnshire, Kingston upon Hull and East Riding of Yorkshire have established oral health advisory/partnership groups
- all local authorities commission oral health surveys although sample sizes vary and may not be adequate to provide valid data at sub local authority level

Key issues for consideration

Dental public health services

- local authorities should consider including oral health in joint strategic needs assessments and health and wellbeing strategies
- all local authorities should consider reviewing their oral health improvement programmes in line with *Commissioning Better Oral Health and* NICE guidance
- local authorities may wish to consider engaging with partners integrating commissioning across organisations and across bigger footprints to support the efficient management of limited resources
- all local authorities should ensure that contracts are supported by service specifications which detail a process of assuring quality of programmes
- a combination of evidence based universal and targeted activities are required to support reducing inequalities in oral health. Upstream interventions should be complemented by downstream interventions
- local authorities should consider the case for water fluoridation in the context of local needs and the range of oral health improvement programmes currently commissioned and with reference to *Commissioning Better Oral Health* and NICE guidance
- consideration should be given to ensuring programmes support oral health improvement for more vulnerable adults group
- evaluation should be an integral part of all oral health improvement programmes to guide future commissioning
- local authorities should consider integrating oral health improvement into existing commissioned programmes
- oral health improvement should be an integral part of the work of health visitors and schools nurses and should be included in the service specification for these services

- service specification for care homes should include a responsibility for oral health that incorporates an oral health assessment on entry, daily mouth care in care plans for residents and regular access to an NHS dentist
- a *Making Every Contact Count* trained dental workforce should be developed across North Yorkshire and Humber
- local authorities may wish to explore using cost benefit analysis tools to evidence effective use of resources to support improvements in oral health
- local authorities, who have not already done so, may wish to consider establishing an oral health advisory or partnership group
- PHE should explore developing a Yorkshire and The Humber oral health improvement commissioners' network to facilitate learning and sharing of good practice
- all local authorities should continue to commission oral health surveys, including surveys to support the public health outcomes framework
- service specifications should be in place to support the planning and delivery of the surveys. This should include robust performance monitoring arrangements to ensure that the survey is completed in line with the national protocol
- where appropriate, consideration should be given to increasing consent rates and sample sizes to provide reliable data to support the planning and evaluation of dental services and oral health improvement programmes

8. Patient and public engagement

The views of the residents of North Yorkshire and Humber are pivotal when assessing the need and demand for NHS dental services and also in planning these services. The Health and Social Care Act 2012 describes the legal duty of NHS England[1] to enable both patients and carers to participate in the commissioning process. Dental services should reflect the needs of local people and be focused on improving patient outcomes. Engaging communities in the planning, design, delivery and review of dental services promotes the commissioning of more co-ordinated and efficient services that are more responsive to the needs of the local community, addressing both the local priorities and rights that people have as described in the NHS Constitution.[9,122] Service reviews should seek public views and provides an opportunity to understand how services can be improved in the interest of patients.[9,122]

Regulation states that commissioners should secure high quality and efficient NHS services that meet the needs of service users. This should include consulting publicly on procurement proposals, engaging with patients, patient groups and carers.[156]

Using a number of sources of information this chapter looks at residents' views of access and experience of NHS dental services in North Yorkshire and Humber.

North Yorkshire and Humber adult residents' views and experiences of NHS dental services

The following section summarises the results from the GP patient surveys[156] and the Yorkshire and Humber Adult Oral Health Survey.[93]

The GP patient survey

The GP patient survey provides information to commissioning organisations, GP practices and patients on patients' experiences of their local primary care services including GP and dental services. The results are provided at national, regional and CCG level[156] however the results below are shown at North Yorkshire and Humber level.

The dental access indicator assesses the proportions of the population that have tried to get an NHS dental appointment and those who have been successful in getting an appointment. Due to changes to the questionnaire and methodology comparisons cannot be made prior to 2011/12.

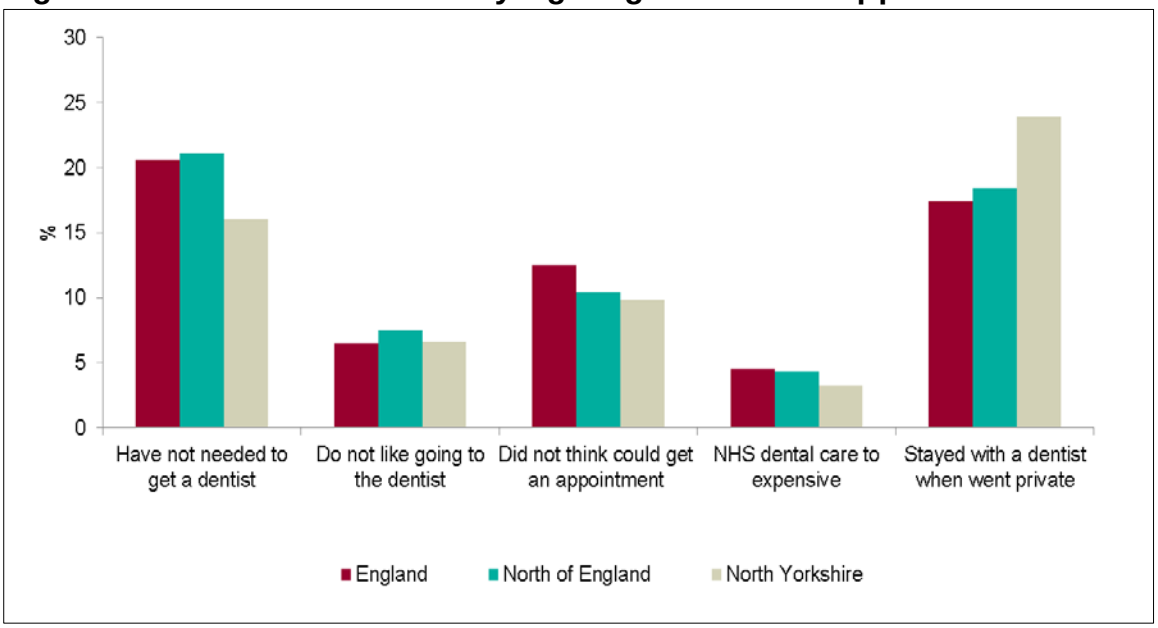
For the period January to March 2014, the GP patient survey response rate was 40% for North Yorkshire and Humber, which was higher than the North of England (34%) and England (35%).

Ninety-four per cent of North Yorkshire and Humber residents who tried to get a dental appointment and were successful was slightly higher than the corresponding figures for the North of England (93%) and England (93%). Overall experience of NHS dental services was rated positive by 87% of North Yorkshire and Humber respondents (North of England 86 %, England 84%). In North Yorkshire and Humber, 6% of the respondents rated their experience as fairly poor and very poor. This compared to 7% in North of England and 7% nationally.

In response to the question 'When did you last try to get an NHS dental appointment?' 64% of North Yorkshire and Humber residents tried to get an NHS appointment in the last two years compared to 65% in the North of England and 61% nationally. Twenty per cent of residents in North Yorkshire and Humber had never tried to get an NHS dental appointment compared with 18% in the North of England and 21% nationally.

The most common reasons given for why respondents in North Yorkshire and Humber had not tried to get an NHS dental appointment was because they had not needed to visit a dentist (16%) or that they stayed with their dentist when they went private (24%). Ten per cent did not think that they could get an NHS dentist and 7% of patients said that they did not like going to the dentist. Three per cent of respondents said that NHS dental care was too expensive.

Figure 8.1 Reasons for not trying to get a dental appointment



NHS Yorkshire and The Humber postal adult dental survey 2008[93]

This survey explored residents experience of accessing NHS dental services. The key finding included:

- a high proportion of adults across North Yorkshire and Humber (80%) reported attending the dentist within the past two years. However there was some variation with adults in North Yorkshire and York reporting higher (85%) levels of attendance and Kingston upon Hull and North Lincolnshire reporting the lowest levels (72% and 73% respectively)
- the most commonest reason for visiting a dentist in Yorkshire and The Humber was for regular check-ups (almost 69%), higher levels were reported in North Yorkshire and Humber (75%) and significantly lower levels in Kingston upon Hull and North Lincolnshire (57% and 64%)
- difficulties regarding accessing routine care followed a similar pattern. In comparison with Yorkshire and The Humber significantly more people in North Lincolnshire (30%) and in Kingston upon Hull (30%) found it difficult to access routine care compared with 23% in Yorkshire and The Humber. However the lowest levels were reported in North Yorkshire and York (almost 21%)
- with respect to urgent care 18% of adults experienced difficulties across Yorkshire and The Humber. More residents of North Lincolnshire (22.9%) and Kingston upon Hull (22.7%) reported difficulties
- a number of barriers were highlighted when accessing both routine and urgent care which included lack of NHS dentists, costs, opening hours and fear

Friends and Family Test

From April 2015, dental practices will be required to implement the Friends and Family Test. This will provide an opportunity for patients to provide feedback on their experience of dental services which can then be used to improve services. The results will be displayed by dental practices and published on the NHS Choices website.[157]

Other patient and public engagement activities in North Yorkshire and Humber

The following section describes adults, children and young people and vulnerable people's views on access and experience of NHS dental services in some parts of North Yorkshire and Humber.

Kingston upon Hull

NHS Kingston upon Hull commissioned three separate health and lifestyle surveys during 2011-2012.[158] The surveys included a main survey, a Black and Minority Ethnic group and a Gypsy and Traveller survey. The survey included questions exploring reported access to dental services. Individuals were approached through interviewers knocking on doors and a questionnaire left for self-completion which was collected at a later date. A total of 13,367 questionnaires were completed representing an overall sample of approximately 6**%**.

A summary of the key findings is described below:

- three-quarters of respondents reported that their last dental visit had been to an NHS dentist and was higher amongst women than men (80% and 72% respectively). A further 13% of women and 18% of men stated that they were seen by a private dentist at their last visit
- at Area Committee area level, Wyke had the lowest percentage of respondents reporting they had seen an NHS dentist last time they visited the dentist (70%) and the highest percentage reporting they had seen a private dentist at their visit (21%). In contrast, residents of East Area Committee area were the most likely to have seen an NHS dentist last time (81%) and the least likely to have seen a private dentist (12%).
- a higher proportion of respondents living in the most deprived quintile in Kingston upon Hull (79%) had seen an NHS dentist at their last visit which decreased to 73% of those living in the least deprived quintile. The proportion of residents who saw a private dentist at their last visit reduced as deprivation increased
- compared with the 2007 health and lifestyle survey the percentage of residents who last saw an NHS dentist increased by almost 8% among both men and women, although not uniformly by age. The largest increase was in the 25-34 year age group and a small decrease (less than 2%) was seen in older respondents. Given the increase in the availability of NHS dentists in Kingston upon Hull in recent years, it is difficult to establish the reason for this and this required further exploration.

North East Lincolnshire

An Adolescent Lifestyle Survey was completed in 2011/12 and was the third survey of this kind completed in North East Lincolnshire.[159] The survey aimed to quantify and report existing and emerging trends in health and lifestyle behaviours of adolescents (11-16 year olds) and included two dental health questions. For the first

time, the survey was completed electronically using Survey Monkey, an online survey tool in school. Half of the mainstream secondary schools/ academies in North East Lincolnshire participated in the survey (N=10).

Two dental health questions were asked in the survey relating to when the last visit to the dentist was and the reason for this visit. The results are summarised below (Tables 8.1 and 8.2).

Table 8.1 When was the last time you visited the dentist?

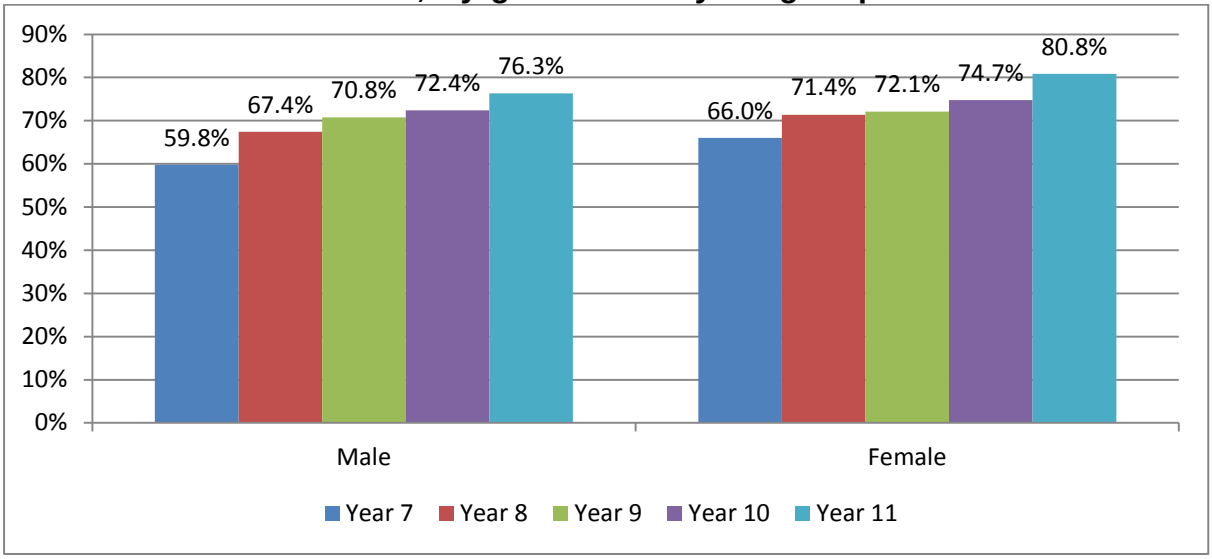
Last visit	Year 7		Year 8		Year 9		Year 10		Year 11		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
In the last six months	323	62.8	466	69.2	340	71.4	274	73.7	404	78.4	1,807	70.9
In the last year	53	10.3	48	7.1	50	10.5	36	9.7	47	9.1	234	9.2
In the last two years	6	1.2	14	2.1	8	1.7	7	1.9	12	2.3	47	1.8
Over two years ago	10	1.9	11	1.6	3	0.6	6	1.6	7	1.4	37	1.5
I can't remember	88	17.1	120	17.8	56	11.8	39	10.5	26	5.0	329	12.9
I haven't got a dentist at the moment	10	1.9	6	0.9	5	1.1	3	0.8	7	1.4	31	1.2
I've never been to the dentist	24	4.7	8	1.2	14	2.9	7	1.9	12	2.3	65	2.5
Total	514	100	673	100	476	100	372	100	515	100	2,550	100

Source: ALS, 2011/12

The results highlight that a high proportion (80%) of young people claimed that they had accessed dental services within the past year, the majority almost 71% having attended within the previous six months.

Figure 8.2 shows the proportion of students who reported that they had visited the dentist within the last six months by gender and year group. On average, the proportions are similar across both gender and year groups.

Figure 8.2 Proportion of males and females who had visited a dentist within the last 6 months, by gender and year group



Source: ALS, 2011/12

The majority of students reported having had a check-up (67.9%) the last time they visited the dentist and a fifth (19.5%) stated that they had treatment carried out (e.g. fillings, orthodontic treatment) (Table 8.2).

Table 8.2 On your last visit to the dentist, why did you go?

Reason	Year 7		Year 8		Year 9		Year 10		Year 11		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
I was having a check-up	350	71.1	458	68.3	309	66.3	228	62.3	349	69.7	1694	67.9
I was having problems with my teeth or gums	40	8.1	60	8.9	31	6.7	25	6.8	25	5.0	181	7.3
I was having work done e.g. a brace or filling	70	14.2	112	16.7	102	21.9	92	25.1	110	22.0	486	19.5
I can't remember	32	6.5	41	6.1	24	5.2	21	5.7	17	3.4	135	5.4
Total	492	100	671	100	466	100	366	100	501	100	2496	100

Source: ALS, 2011/12

North Lincolnshire

'Who Cares', the health and social care local involvement network for North Lincolnshire, undertook a significant piece of research to investigate access to local NHS dental services in 2011-12.[160] This piece of work included:

- approaching North Lincolnshire primary care trust with a view to describing current NHS dental service provision
- approaching all local NHS dental service providers to seek their views with regards to current provision and suggestions for improvements
- seeking the views and concerns of the residents of North Lincolnshire. This involved the completion of a questionnaire by email, post, via 'Who Cares' website and face to face structured interviews

Over 500 questionnaires were completed. Almost 60% of respondents were aged between 25 and 65 years with the following wards being represented: Axholme (14%), Barton and Winterton (20.5%), Brigg and District (19.6%), and Scunthorpe North (14.3%) and Scunthorpe South Wards (31.6%). The key findings are summarised below:

- approximately 50% of respondents reported that they were registered with an NHS dentist, whilst 30% stated that they were not registered
- approximately 50% of respondents reported that their last visit to the dentist was within the past six months and 18% of respondents stated that their last visit was between 6-12 months ago. However, 32% of respondents stated that they last visited the dentist over twelve months ago
- nearly 60% of respondents reported that they had been offered the option of seeing a dental hygienist
- seventy percent of respondents reported that they had accessed NHS emergency dental treatment
- over half of respondents (66%) requested more readily available information on how to access NHS dental services.
- a significant proportion (87%) requested that more oral health education should be incorporated into health education lessons at schools and colleges

The following recommendations were included in the report:

- more information and better communication regarding access to NHS dentistry should be provided
- integrating of key oral health messages into health education lessons across education settings
- to address access difficulties in North Lincolnshire, additional funding should be made available for the provision of primary dental care or there should be improved implementation of NICE recall guidelines. This would result in longer intervals between check-ups

for individuals with better oral health and provide capacity for more high risk patients to be seen in line with national guidance

In 2011/12, 281 people participated in 28 community engagement exercises across the five localities of North Lincolnshire (Barton and Winterton, Brigg and Wolds, Isle of Axholme, Scunthorpe North and Scunthorpe South) to provide locality-specific information to inform the refresh of the North Lincolnshire Joint Strategic Needs Assessment of Health and Wellbeing 2012.[161] The findings were disseminated at an area-wide conference for stakeholders. Participants were asked to share their experiences of health and wellbeing, their views on access to and quality of current services including dental services and where they accessed information about health and wellbeing.

All the older participants reported being able to access NHS dental services and were very satisfied with dental services. However residents in Barton and Winterton, and Brigg and Wolds localities in particular said they were unable to find an NHS dentist. The findings from the community engagement were shared at the stakeholder conference with the public, third sectors and elected members where difficulties getting an NHS dentist were acknowledged

More recently Healthwatch North Lincolnshire published a report *Insights into Local Health and Social Care*.[162] The initial Local Issues survey was completed by 494 people followed by a more in depth Experience Survey involving 195 people. The majority of people rated dental services as either good or very good (49% and 24% respectively), however access was highlighted as impossible. The Experience Survey showed that most comments were positive but lack of access to NHS dentistry was emphasised by the need to secure private care as NHS care is unavailable, the lack of availability of appointments at convenient time, the need to travel out of area and that some practices would only see children.

Summary

- the majority of adult residents in North Yorkshire and Humber reported not having problems accessing NHS dental services. A lack of accurate signposting information to NHS dental services, patient charges and NHS treatments has been highlighted
- the literature reports that vulnerable groups experience poorer oral health and have difficulties accessing dental services. There is limited information on the views and experiences of children, young people, parents and carers and vulnerable patient groups and for those living in more rural areas in North Yorkshire and Humber regarding NHS dental services

- local surveys have been conducted in Kingston upon Hull, North East Lincolnshire and North Lincolnshire. These surveys highlight that dental access remains a concern for people living in North Lincolnshire

Key issues for consideration

- NHS England, local authorities and PHE should engage with local Healthwatches to ascertain public views regarding access to and quality of dental services. Local people's views should be reflected when commissioning services and developing oral health improvement strategies
- NHS England, PHE and local Healthwatch organisations should work together to ensure people receive accurate information on accessing dental services and which practices are accepting new NHS patients
- PHE should ensure the views of the public are sought in the consultation process for this oral health needs assessment

9. Next steps

This needs assessment is an on-going shared planning resource to enable locally prioritised actions. The next stage is for NHS England, local authorities and PHE to develop a prioritised list of actions based on the evidence of effectiveness, local organisational structures and the potential for greatest impact. Review of the actions should be planned from the outset to evaluate their impacts.

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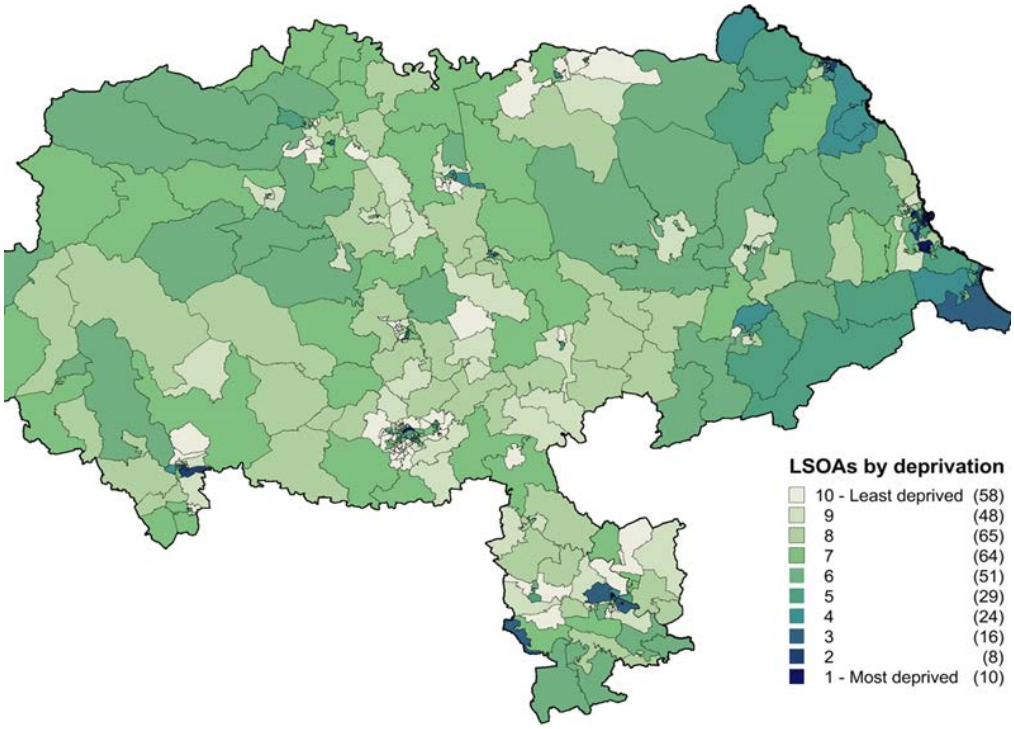
Appendix 1

Figure I Deprivation by decile (national) LSOA in North Yorkshire



Source: English indices of deprivation 2010, DCLG
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire
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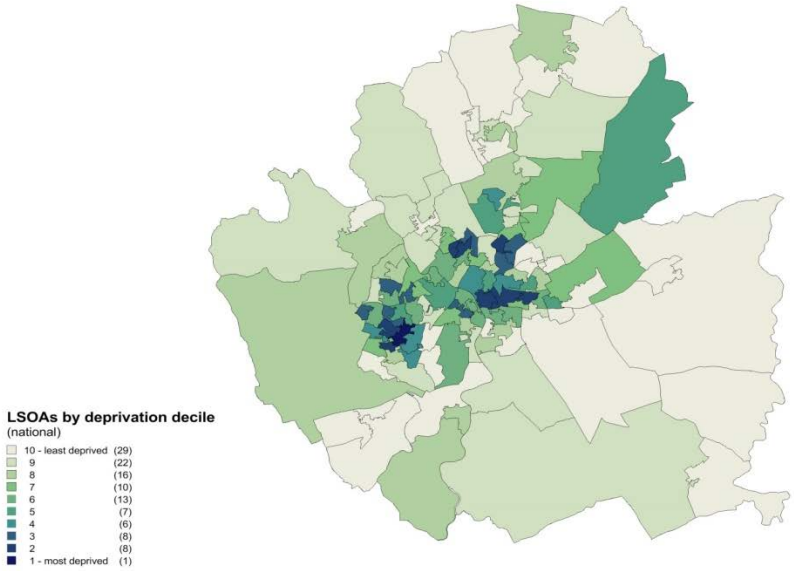
Contains National Statistics data © Crown copyright and database right 2014

Figure II Map of York LA showing national deprivation decile at LSOA (IMD 2010)



Source: English indices of deprivation 2010, DCLG
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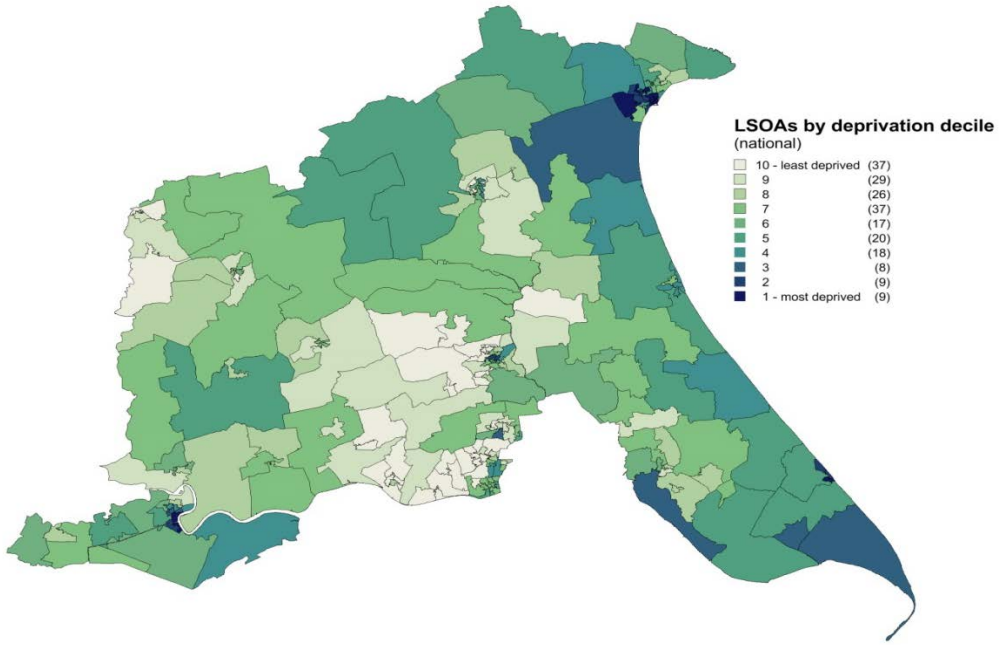
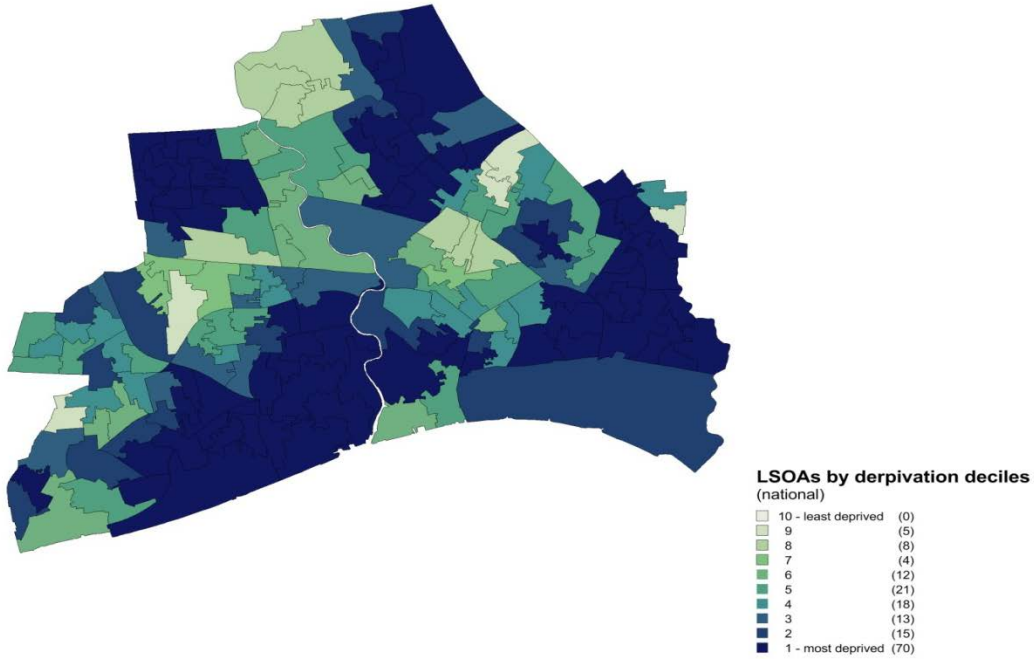
Figure III Map of East Riding of Yorkshire LA showing national deprivation decile at LSOA (IMD 2010)



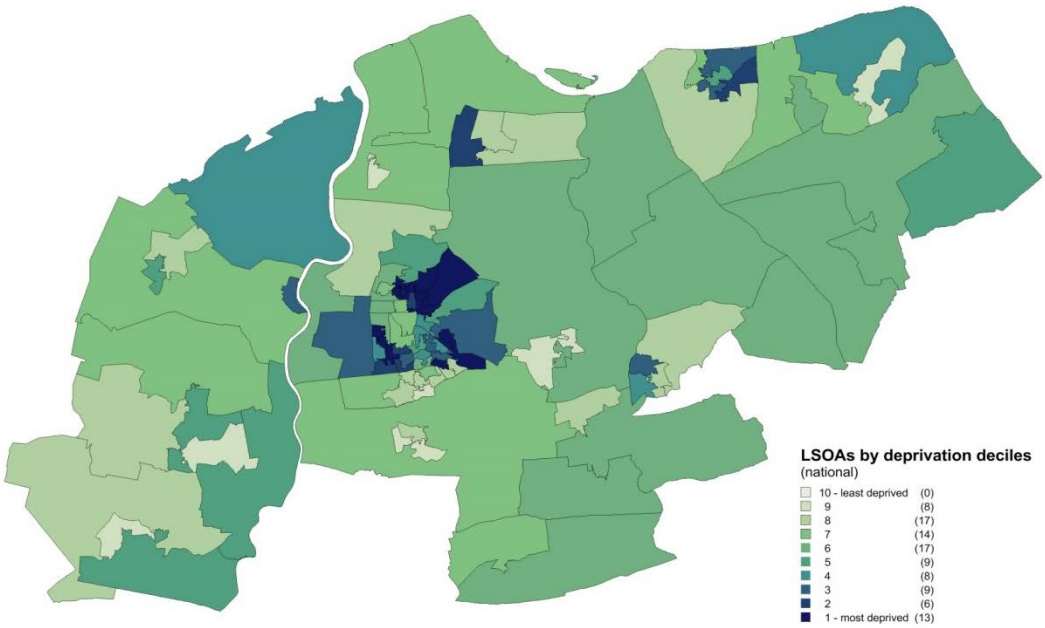
Source: English indices of deprivation 2010, DCLG
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure IV Map of Kingston upon Hull LA showing national deprivation decile at LSOA (IMD 2010)



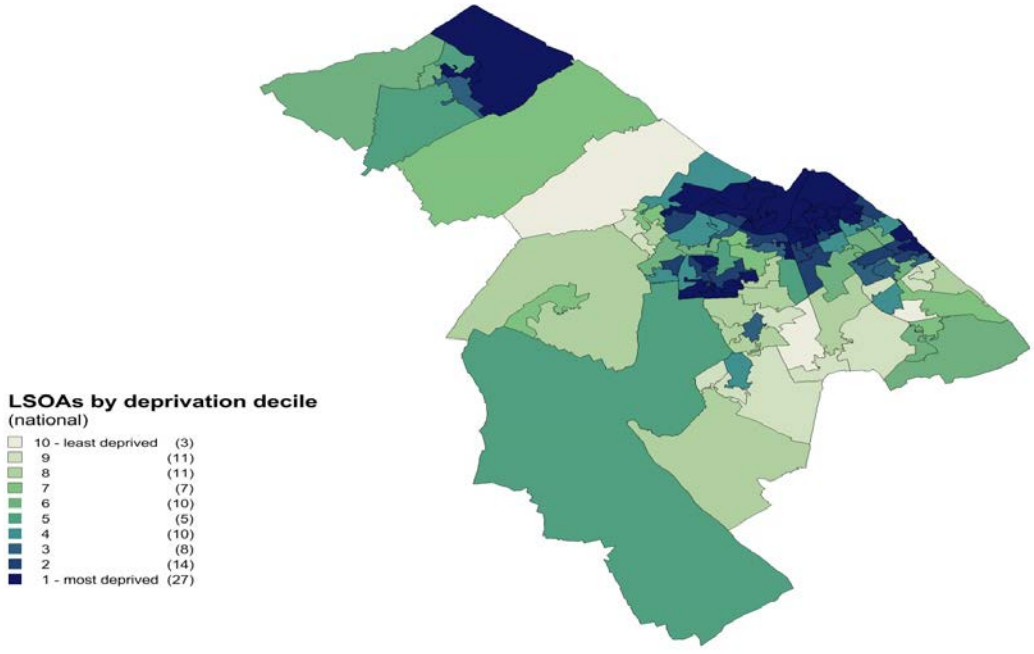
Source: English indices of deprivation 2010, DCLG
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure V Map of North Lincolnshire showing national deprivation decile at LSOA (IMD 2010)



Source: English indices of deprivation 2010, DCLG
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Figure VI Map of North East Lincolnshire LA showing national deprivation decile at LSOA (IMD 2010)



Source: English indices of deprivation 2010, DCLG
Map produced by PHE Knowledge and Intelligence Team Northern and Yorkshire

Appendix 2 Table I Summary of five-year-old oral health in Yorkshire and The Humber

Local Authority	Severity of tooth decay experience in 5-year-olds	Pevalence of tooth decay experience in 5-year-olds	Severity of tooth decay in 5-year-olds experiencing decay	The proportion of teeth with tooth decay that have fillings or crowns	95% Confidence intervals							
	Mean $d_3$mft	(% d3mft > 0)	Mean d3mft (% d3mft > 0)	Care Index %	Lower $d_3$mft	Upper $d_3$mft	Lower % $d_3$mft > 0	Upper % $d_3$mft > 0	Lower $d_3$mft > 0 (mean)	Upper $d_3$mft > 0 (mean)	Lower Care Index %	Upper Care Index %
Leeds	1.19	33.7%	3.54	9.8%	1.07	1.32	31.2%	36.2%	3.27	3.81	9.3%	10.4%
Bradford	1.98	46.0%	4.30	9.9%	1.80	2.15	43.2%	48.7%	4.02	4.57	9.5%	10.3%
Kirklees	1.75	43.6%	4.03	7.2%	1.42	2.09	37.7%	49.4%	3.50	4.56	6.7%	7.7%
Calderdale	1.88	39.2%	4.80	17.7%	1.48	2.28	32.9%	45.5%	4.16	5.44	16.9%	18.6%
Wakefield	1.66	40.6%	4.08	6.4%	1.27	2.04	33.5%	47.6%	3.43	4.73	5.9%	7.0%
Barnsley	1.61	41.0%	3.94	6.3%	1.29	1.94	35.0%	47.0%	3.41	4.46	5.6%	7.0%
Doncaster	1.33	33.6%	3.95	10.3%	1.05	1.61	28.3%	39.0%	3.40	4.50	9.5%	11.1%
Rotherham	1.44	40.4%	3.56	7.2%	1.15	1.73	34.5%	46.4%	3.03	4.08	6.5%	8.0%
Sheffield	1.30	35.8%	3.62	8.1%	1.22	1.37	34.3%	37.3%	3.47	3.77	7.6%	8.7%
Bassetlaw	0.43	20.3%	2.10	19.2%	0.30	0.55	15.8%	24.8%	1.71	2.50	15.7%	23.5%
East Riding of Yorkshire	0.75	22.7%	3.29	11.2%	0.53	0.96	18.1%	27.3%	2.63	3.95	10.0%	12.5%
Kingston upon Hull, City of	1.54	43.4%	3.56	10.1%	1.21	1.88	36.7%	50.0%	3.01	4.12	9.4%	11.0%
North East Lincolnshire	1.19	31.4%	3.78	5.9%	1.05	1.32	28.6%	34.2%	3.49	4.07	5.0%	6.9%
North Lincolnshire	0.60	20.8%	2.89	10.3%	0.50	0.71	18.4%	23.3%	2.52	3.27	8.7%	12.3%
York	0.81	24.7%	3.27	13.8%	0.57	1.05	19.5%	29.9%	2.61	3.94	12.2%	15.7%
Ryedale	0.30	11.7%	2.52	14.2%	0.16	0.43	7.6%	15.9%	1.75	3.29	9.3%	21.8%
Scarborough	0.78	26.2%	2.97	11.7%	0.57	0.98	20.6%	31.8%	2.49	3.44	9.7%	14.3%
Selby	0.62	21.7%	2.84	6.6%	0.42	0.81	16.8%	26.7%	2.19	3.48	4.9%	9.0%
Richmondshire	1.40	43.8%	3.21	4.9%	1.04	1.77	36.6%	50.9%	2.57	3.85	3.6%	6.7%
Hambleton	0.87	29.2%	2.97	8.3%	0.65	1.08	23.9%	34.6%	2.49	3.44	6.5%	10.4%
Harrogate	0.55	24.2%	2.27	16.1%	0.38	0.72	18.8%	29.7%	1.80	2.75	13.8%	18.8%
Craven	0.64	23.0%	2.79	14.3%	0.47	0.81	18.2%	27.8%	2.32	3.27	11.0%	18.7%
Yorkshire and The Humber	1.23	33.6%	3.65	9.0%	1.18	1.27	32.8%	34.4%	3.56	3.73	8.8%	9.2%
England	**0.94**	**27.9%**	**3.38**	**11.2%**	**0.93**	**0.96**	**27.7%**	**28.1%**	**3.36**	**3.41**	**11.1%**	**11.3%**

Table II Summary of 12-year-old oral health in Yorkshire and The Humber

Local Authority	Severity of tooth decay experience in 12-year-olds	Pevalence of tooth decay experience in 12-year-olds	Severity of tooth decay in 12-year-olds experiencing decay	The proportion of teeth with tooth decay that have fillings or crowns	95% Confidence intervals							
	Mean D_3MFT	% $D_3MFT > 0$	Mean D_3MFT (% $D_3MFT > 0$)	Care Index %	Lower D_3MFT	Upper D_3MFT	Lower % $D_3MFT > 0$	Upper % $D_3MFT > 0$	Lower D_3MFT (% $D_3MFT > 0$)	Upper D_3MFT (% $D_3MFT > 0$)	Lower Care Index %	Upper Care Index %
Leeds	1.08	45.8%	2.37	38%	0.99	1.18	42.8%	48.8%	2.22	2.52	37%	39%
Bradford	1.37	52.0%	2.62	45%	1.21	1.52	47.8%	56.2%	2.41	2.84	45%	46%
Kirklees	0.90	36.1%	2.49	57%	0.72	1.08	30.6%	41.5%	2.17	2.81	55%	58%
Calderdale	1.29	44.4%	2.91	41%	1.02	1.56	38.3%	50.5%	2.46	3.35	40%	43%
Wakefield	1.10	40.0%	2.74	45%	0.90	1.29	34.7%	45.4%	2.42	3.07	44%	47%
Barnsley	1.01	43.4%	2.32	39%	0.83	1.18	38.2%	48.6%	2.01	2.62	38%	41%
Doncaster	1.24	53.5%	2.32	40%	1.07	1.42	48.2%	58.8%	2.10	2.55	39%	41%
Rotherham	0.99	44.7%	2.21	45%	0.81	1.16	38.7%	50.6%	1.96	2.46	44%	47%
Sheffield	0.97	41.4%	2.35	46%	0.78	1.16	35.6%	47.2%	2.03	2.66	44%	47%
Bassetlaw	0.62	31.6%	1.97	51%	0.48	0.76	25.7%	37.5%	1.70	2.24	47%	56%
East Riding of Yorkshire	0.78	37.7%	2.06	50%	0.62	0.93	31.2%	44.3%	1.82	2.29	48%	52%
Kingston upon Hull, City of	0.84	38.8%	2.15	23%	0.63	1.04	31.4%	46.2%	1.83	2.47	21%	25%
North East Lincolnshire	1.16	51.6%	2.25	20%	0.94	1.37	45.0%	58.2%	1.93	2.56	19%	22%
North Lincolnshire	0.72	34.2%	2.12	40%	0.55	0.90	27.9%	40.4%	1.79	2.45	37%	43%
York	0.98	40.6%	2.41	50%	0.73	1.23	33.8%	47.4%	1.96	2.86	47%	52%
Ryedale	0.87	40.8%	2.13	55%	0.67	1.07	33.5%	48.0%	1.82	2.44	51%	60%
Scarborough	1.42	56.2%	2.52	46%	1.18	1.65	49.3%	63.0%	2.24	2.80	45%	47%
Selby	0.71	35.2%	2.01	69%	0.52	0.90	28.0%	42.5%	1.66	2.36	64%	74%
Richmondshire	1.30	48.4%	2.69	27%	0.97	1.63	40.1%	56.7%	2.20	3.19	25%	30%
Hambleton	1.23	51.0%	2.42	27%	0.98	1.48	43.0%	59.0%	2.10	2.73	25%	30%
Harrogate	0.67	35.7%	1.89	74%	0.49	0.86	27.7%	43.8%	1.57	2.20	70%	78%
Craven	0.75	37.9%	1.98	72%	0.64	0.87	33.3%	42.5%	1.80	2.17	67%	78%
Yorkshire and the Humber	1.07	44.7%	2.40	43%	1.03	1.11	43.5%	45.9%	2.33	2.46	43%	43%
England	**0.74**	**33.4%**	**2.21**	**47%**	**0.73**	**0.75**	**33.1%**	**33.7%**	**2.19**	**2.23**	**47%**	**47%**

Appendix 3

Table I Number of hospital admissions for removal of teeth in 0-19 year olds in North Yorkshire and Humber 2012/13

Age Area	0-4 years	5-9 years	10-14 years	15-19 years	Total	Admissions % of 0-19 years population
Craven	8	24	11	14	57	0.5
East Ridings	13	58	69	67	207	0.3
Hambleton	19	54	35	18	126	0.7
Harrogate	30	81	43	24	178	0.5
Kingston upon Hull	24	67	50	79	220	0.4
North East Lincolnshire	68	262	53	29	412	1.1
North Lincolnshire	36	102	68	53	259	0.7
Richmondshire	13	24	26	6	69	0.6
Ryedale	7	17	9	9	42	0.4
Scarborough	11	47	21	15	94	0.4
Selby	11	53	25	12	101	0.5
York	35	109	58	24	226	0.5

Appendix 4

Table I Evidence-based oral health improvement interventions (Commissioning Better Oral Health, 2014)

Ottawa Charter Principle	Oral health improvement intervention	Overall level evidence-based recommendation
Reorienting health services	Targeted community-based fluoride varnish programmes	Recommended
	Targeted provision of toothbrushes and toothpaste (ie postal or through health visitors)	Recommended
	Targeted community-based fissure sealant programmes	Limited value
	Targeted community-based fluoride rinse programmes	Limited value
	Facilitating access to dental services	Limited value
	Using mouth guards in contact sports	Limited value
Developing personal skills	Oral health training for the wider professional workforce (eg health education)	Recommended
	Integration of oral health into targeted home visits by health/social care workers	Recommended
	Social marketing programmes to promote oral health and uptake of dental services by children	Limited value
	Person-centred (one-to-one) counselling based on motivational interviewing outside of dental practice settings	Limited value
	One off dental health education by dental workforce targeting the general population	Discouraged
Creating supportive environments	Supervised tooth brushing in targeted childhood settings	Recommended
	Healthy food and drink policies in childhood settings	Recommended
	Fluoridation of public water supplies	Recommended
	Provision of fluoridated milk in schools	Limited value
	Fluoride toothpaste and toothbrushes provided in food banks	
Build healthy public policy	Influencing local and national government policies	Recommended
	Fiscal policies to promote oral health	Emerging
	Infant feeding policies to promote breast feeding and appropriate complementary feeding practices	Emerging
Strengthening community actions	Targeted peer (lay) support group/peer oral health workers	Recommended
	School or community food cooperatives	Emerging

Table II Oral health improvement programmes children and young people in North Yorkshire and Humber

Local authority	Intervention	Strength of evidence	Target group
North Yorkshire and York			
	Children's Centre programme – includes staff training in oral health	Some	Vulnerable families
	Supervised tooth brushing in Special Schools	Strong/sufficient	School children
	Loan of oral health resource boxes to primary schools and oral health training for wider professional workforce	Some	School children
Programmes provided in some areas of North Yorkshire and York	Paediatric Cardiology Clinics – key evidence based on oral health advice given	Limited	Medically compromised children
	Facilitating access to dental care for vulnerable groups (travellers)	Limited	Venerable families
	Oral health training for staff in Cancer Care Unit	Some	Medically compromised children
Hull and ER of Yorkshire	Brush Bus – supervised tooth brushing	Strong/sufficient	Pre and school children
	'Teeth Team' – supervised tooth brushing and Fluoride varnish application* in some schools	Strong	School children
	Loan of Resource boxes to primary schools and some training of wider workforce in early years settings	Some	School children
North Lincolnshire	Brushing for Life – targeted provision of toothbrushes and fluoride toothpaste through health visitors	Some	Pre- school children
	Supervised tooth brushing in Special Schools	Strong/sufficient	School children
	Loan of oral health resource boxes to primary schools and oral health training for wider professional workforce	Some	School children
	Prevention in Practice	Strong	At risk groups
North East Lincolnshire	Brushing for Life – targeted provision of toothbrushes and fluoride toothpaste through health visitors	Some	Pre-school children
	Oral health training (Health and	Some	Young families and

Local authority	Intervention	Strength of evidence	Target group
	social care professionals and carers		vulnerable groups
	Loan of oral health resource boxes to primary schools and oral health training for wider professional workforce	Some	School children
	Prevention in Practice	Strong	At risk groups

Table III Oral health improvement programmes for adults and vulnerable groups in North Yorkshire and Humber

Local authority	Intervention	Strength of evidence	Target group
North Yorkshire and York	Carers training (older people)	Some	Older people
Programmes provided in some areas of North Yorkshire and York	Women's Refuge	Inconclusive	Vulnerable women
	Vulnerable groups (travellers) Key oral health messages; facilitating access to dental care	Limited	Vulnerable families
	Cancer Care Unit: 1 to 1 and staff training in oral health	Some	At risk groups
	Programmes in Homeless Centres: key oral health messages and distribution of toothbrushes and toothpaste	Some	Homeless people
	Adult mental health Rolling programme within hospital: Key oral health messages co-delivered as part of Well Women/Man session	Sufficient	Vulnerable groups
	Askham Grange prison programme (Y&H) Key oral health messages	Inconclusive	Mother and baby unit
	Vulnerable groups (migrants)	Limited	Vulnerable adults
Hull and ER of Yorkshire	Prevention in Practice	Strong	At risk groups
	Oral Health Training (social care and other professional)	Some	Vulnerable groups
	Annual public health events No Smoking day; National Smile Month; Oral Cancer Month	Weak / Inconclusive	Wider population including at risk groups
North Lincolnshire	Prevention in Practice	Strong	At risk groups
	Oral Health Training (social care and other professional)	Some	Vulnerable groups
	Annual public health events No Smoking day; National Smile Month; Oral Cancer Month	Weak / Inconclusive	Wider population including at risk groups

Local authority	Intervention	Strength of evidence	Target group
North East Lincolnshire	Prevention in Practice	Strong	At risk groups
	Oral Health Training (Health and social carer professionals and Carers)	Some	Young families and vulnerable groups
	Annual Public Health Events – No Smoking Day; Oral Cancer Action Month; National Smile Month.	Weak/ inconclusive	Wider population

Appendix 5

Feedback from consultation on the oral health needs assessments

Feedback on the final drafts of the oral health needs assessment documents for North Yorkshire and Humber, West Yorkshire and South Yorkshire and Bassetlaw was sought through a PHE online survey of stakeholders and an online survey of the public administered by local authority Healthwatch teams between March and April 2015.

Professional consultation

The consultation feedback on the final drafts of the OHNAs fell into two themes:

- aspects that needed to be looked at in more detail
  - access and availability
  - vulnerable groups
  - service information
- accuracy of information

The feedback informed and strengthened key issues identified in the OHNAs and accuracy details have been addressed.

We are grateful to the following stakeholders for their comments:

Hull and East Riding of Yorkshire LDC, North Yorkshire and Humber Area Team, Teeth Team Limited, North Lincolnshire Council, North East Lincolnshire Council, School of Clinical Dentistry, University of Sheffield, Charles Clifford Dental Hospital, Michael and Margaret Naylor and Associates, Healthwatch Kirklees, Leeds City Council, Community Dental Service, Clinical Advisor (NHS England), Wakefield Local Dental Committee, Bradford District Care Trust and Wakefield Council.

Public consultation

The consultation feedback on the OHNAs collated by Healthwatch fell into three themes:

- difficulty in accessing up to date information about NHS dental practices taking on new NHS patients
- difficulty in accessing NHS dental care
- confusion about registration status, recall status and patient payment charges

These issues have informed and strengthened the key issues identified in the OHNAs.

We are grateful to the Healthwatch teams for administering the consultation survey and reporting on the results and to members of the public who participated in the survey.