Nottinghamshire Health & Wellbeing Board

NOTTINGHAMSHIRE JOINT STRATEGIC NEEDS ASSESSMENT

Oral Health

January 2020

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Executive summary

Introduction

The previous JSNA chapter for oral health in Nottinghamshire focused on children and young people's oral health. It has been nearly five years since that chapter was last amended. The refreshed chapter seeks to understand current and future demands, trends and pressures, looking at oral health across the whole life course. The JSNA chapter will be used to inform local oral health strategy via the Nottinghamshire Oral Health Strategy Group.

Definitions and overall approach

The World Health Organisation (WHO) defines oral health as "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing."[1]

National surveys of both adults' and children's oral health indicate improvements in dental health over time, shown by reductions in decayed, missing and filled teeth in children, and by adults keeping teeth longer as they age. However, inequalities persist associated with socio-economic background. For example, more people from managerial and professional occupation households had good oral health (91%) compared with people from routine and manual occupation households (79%) (Adult Dental Health Survey (ADHS), 2009).[2] In children, those eligible for free school meals were less likely to be in good overall oral health (29%) compared to those not eligible (40%) (Children's Dental Health Survey (CDHS), 2013).[3]

Overall Nottinghamshire County is generally similar or better than the rest of the country when considering oral health outcomes; however, there are variations at a sub-county level. For example, five-year-old children in Broxtowe and Rushcliffe had better oral health than the England average. Five-year-old children in Mansfield and Ashfield showed greater prevalence of tooth decay compared with other districts in Nottinghamshire (National Dental Epidemiology Programme, 2017). There were larger numbers of child admissions for hospital dental extractions for districts in the north of the County than for the districts in the south (PHE, 2018).

Oral health diseases continue to be widespread despite being highly preventable. Simple measures such as improved oral hygiene practices, improved diet, use of and access to fluoride, along with attending the dentist for regular check-ups to identify problems early, can all help to prevent, or at least reduce, the burden of oral diseases. A common risk factor approach also supports oral health improvement, because the most common oral diseases – tooth decay and gum disease – as well as oral cancers, share many of the same common risk factors (e.g. smoking, alcohol misuse, obesity and poor diet) as other common diseases, such as cardiovascular disease and other cancers – so addressing these risk factors can benefit more than one aspect of health.

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Unmet need and gaps

The following unmet needs and service gaps have been identified:

- Certain groups have been identified as having particularly poor oral health, being at increased risk of oral health problems, experiencing difficulties in accessing services, or being less likely to visit the dentist. Groups identified as having poor oral health include children from deprived backgrounds, who are less likely to visit the dentist than children from less deprived backgrounds, and older people. Groups at increased risk of oral health problems include people with learning disabilities and with serious mental illness, people who are homeless or who frequently relocate, such as gypsy, Roma and traveller (GRT) communities, people who misuse drugs or who drink alcohol at levels posing a risk to health, prisoners, and frail older people who may have difficulties maintaining good oral hygiene. Some of these groups also experience difficulties accessing dental services, such as GRT communities, homeless people, and frail older people.
- Anticipated changes in demography and in the way in which older people's care is delivered are likely to lead to increased need for older people's dental services and potential changes to the way in which services are delivered.
- There is a need to integrate oral health promotion within wider social policies (e.g. housing, planning) and other care pathways, to maximise the opportunities for delivering oral health messages.
- There is a need to systematically follow up children who are admitted to hospital for oral health problems, to reduce the risk of problems occurring in the future.

These are explored further in section 8 of this JSNA chapter

Recommendations for consideration by commissioners

The recommendations below are reproduced from section 10 and identify key changes needed to address the oral health needs of people in Nottinghamshire.

	Recommendation	Lead(s)
Strategy		
1	Oral health impact assessments relating to any intended relevant policy decisions should be systematically considered as part of a Health In All Policies approach.	All public sector agencies
2	Integrate oral diseases into policies addressing non-communicable diseases and general health more broadly to secure health and wellbeing throughout life.	All public sector agencies
Public Health Intelligence and Data Improvement		
3	Include examination of effectiveness of oral health questions in evaluation of Learning Disability Health Checks.	NHS commissioner of LD health checks (NHS England)
Prevention		
4	The approach to delivery of future oral health promotion interventions must consider reducing inequalities in our	All commissioners

	most vulnerable groups by taking a proportionate universalism approach.	
5	Explore how to mitigate the risks associated with the proposed reduction of the oral health commissioned service due to budget constraints, especially in relation to vulnerable adults and older people.	Nottinghamshire County Council
6	Improve the oral health care of older people living in care homes through working with care homes to promote the use of NICE and CQC guidance.	Local authority: Adult Social Care and Public Health commissioners, Public Health England (PHE), Health Education England, care home providers / associations and carers' organisations
7	Integrate oral health within adults' and children's services, for example embedding oral health within the frailty pathway for older people, ensuring oral health is integrated within the early years' service, ensuring dental trauma is considered in the context of avoidable injuries.	Statutory bodies and providers with responsibility, Integrated Care System (ICS) leads
8	Scope how systematic processes for following up children who experience hospital admission because of tooth decay could be established. These should comprise follow up for regular dental treatment and appropriate information sharing with other professionals including social care, to ensure that children are safeguarded, as dental neglect may be a feature of wider neglect.	Local authority with support from NHS England and PHE
Service Quality and Accessibility		
9	Plan for anticipated changes to demography and operating context e.g. need for complex treatments in older people, as more people retain their natural teeth for longer, consideration of how best to make oral health services accessible to vulnerable people who have difficulty accessing routine care.	NHS England
10	Improve access for older people to oral health care through further provision of training for care home staff on how to recognise urgent dental problems and how to access urgent dental care for residents, and for dental professionals on treatment of people in care homes.	Local authority with support from care providers, PHE, Health Education England and carer/care home associations
11	Seek to improve access to dental services for other vulnerable groups e.g. continuity of oral health care for people coming out of places of detention; integrate oral health promotion into substance misuse pathway; promote NHS low income scheme and equity of access for those without a fixed address, integrate oral health into Learning Disability care pathways.	Local authority, PHE and NHS

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Full JSNA report

What do we know?

1. Who is at risk and why?

1.1. Definition

WHO defines oral health as "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing." (WHO, 2003)

Oral health problems include tooth decay, gum disease, oral cancers, injuries and trauma, and tooth loss. Tooth decay (dental caries) is the most common dental disease, affecting most of the population, but is highly preventable. It results from the destruction of the hard tissues of the tooth by acids produced in the mouth when bacteria in dental plaque metabolises dietary sugars. Repeated and prolonged acid attacks will eventually cause the tooth surface to weaken and a hole or cavity will form which may lead to pain and infection, as well as tooth loss.

1.2. Risk factors for poor oral health

The population as a whole is at risk of developing poor oral health. The table below sets out the main risk factors for specific oral health problems.

Table 1: Risk factors for oral diseases

Oral Diseases	Risk factors
Tooth decay (dental caries)	• Diet – especially where high in sugars • Poor oral hygiene • Lack of fluoride exposure e.g. not using fluoride toothpaste • Socio-economic status
Gum (periodontal) disease	• Poor oral hygiene • Smoking / tobacco use • Other medical conditions e.g. diabetes • Stress responses
Oral cancers - cancers of the tongue, lips, inside lining of the mouth and cheeks and the oropharynx	• Smoking / tobacco use • Alcohol use ○ When both smoking and alcohol use occur together, the risk is increased. Heavy drinkers and smokers have 38 times increased risk of developing oral cancer compared with those who abstain from both products.[4] • Human papillomavirus (HPV) infection

	• Sun exposure (for cancers of the lips)
Oral injuries / trauma	• Accident and injury (e.g. in playgrounds, or when undertaking activities which carry a risk of injury such as. contact sports) • Violence
Tooth loss	• Untreated tooth decay or gum disease • Access to dental services • Trauma to teeth • Severe tooth wear

1.3. Inequalities within oral health

Every child whose teeth have erupted is at risk of tooth decay. Other types of oral diseases, such as periodontal disease and oral cancers, are rare in children, becoming more common as people age. It is important for children to look after and retain their first (baby) teeth to term, in order to reduce the need for future orthodontic treatment, as permanent teeth need the first teeth to maintain space for them to come through in the correct position.[5] Care of baby teeth also helps to avoid pain, avoidable treatment and psychological and social harms caused by appearance issues from early loss of primary teeth.[6]

Children are more at risk of developing tooth decay if they are:

- eating a poor diet
- brushing their teeth less than twice per day with fluoride toothpaste
- from deprived backgrounds. Prevalence of decayed, missing and filled teeth (dmft) is 33.7% among the most deprived compared with 13.6% for the least deprived children (2017)[7]
- from some specific cultural groups. Nationally, the highest percentage of five-year-olds with dmft was in Eastern European children (49.4%). The lowest was in the ethnic group Black / Black British (19.6%) (2017)[ibid]

People are more likely to experience poor oral health as they get older. Tooth loss increases as people age with 29% of 75-84-year olds and 45% of people aged over 85 having no natural teeth (2009).[8] More middle-aged people have their own teeth but many of these teeth have been filled and these fillings will need maintenance and repeated repair. In later life, reduced salivary flow, gum recession and reduced manual dexterity can increase the risk of oral diseases. Other conditions such as dementia, Parkinson's disease, or drugs that lead to dry mouth can also affect oral health in older adults. Older people are more likely to have general health complications that make dental treatment more difficult to plan and may require modifications of services.[9]

Some vulnerable groups have increased risk of poor oral health, specifically:

- people with a learning disability or with serious mental illness. These groups tend to have fewer teeth, more untreated decay and more periodontal disease[10] [11]
- people who are homeless[12] or who frequently relocate, such as gypsy, Roma and traveller communities[13]

- people who misuse drugs or who drink alcohol at levels posing a risk to health[14]
- prisoners[15]
- frail older people who may have difficulties maintaining good oral hygiene or who have difficulties accessing oral health services[16]

More information about the oral health of these vulnerable groups is contained in Section 2.2.

There is also some evidence of a bi-directional link between gum disease and diabetes, with diabetes affecting gum health, but poor gum health itself having an adverse effect on diabetes[17].

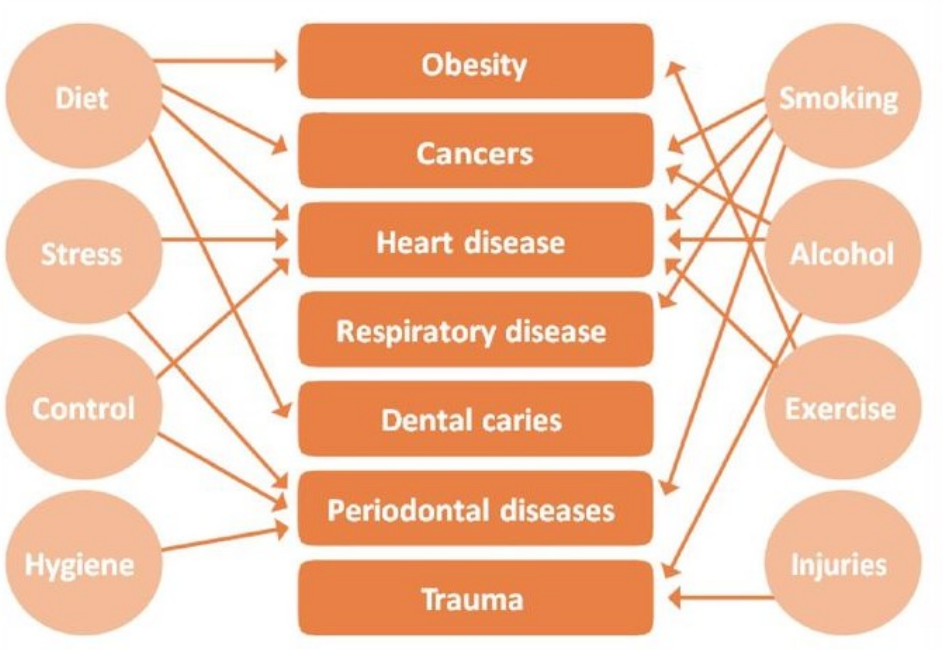
1.4. Common Risk Factor approach

Broadly, the main risk factors for poor oral health – diet, smoking, alcohol use, hygiene, stress and trauma – are the same as those for many chronic conditions (Watt and Sheiham 2012)[18]. The Common Risk Factor Approach to health promotion targets risk factors common to many conditions, an approach which is resource-efficient because:

- many chronic diseases have multiple risk factors
- one risk factor can impact on several diseases
- some risk factors cluster in groups of people
- risk factors can interact – in some instances synergistically – with each other

The diagram below illustrates how risk factors associated with oral health are also linked to other health conditions.

Figure 1: The Common Risk Factor Approach, modified from Sheiham and Watt, 2000[19]

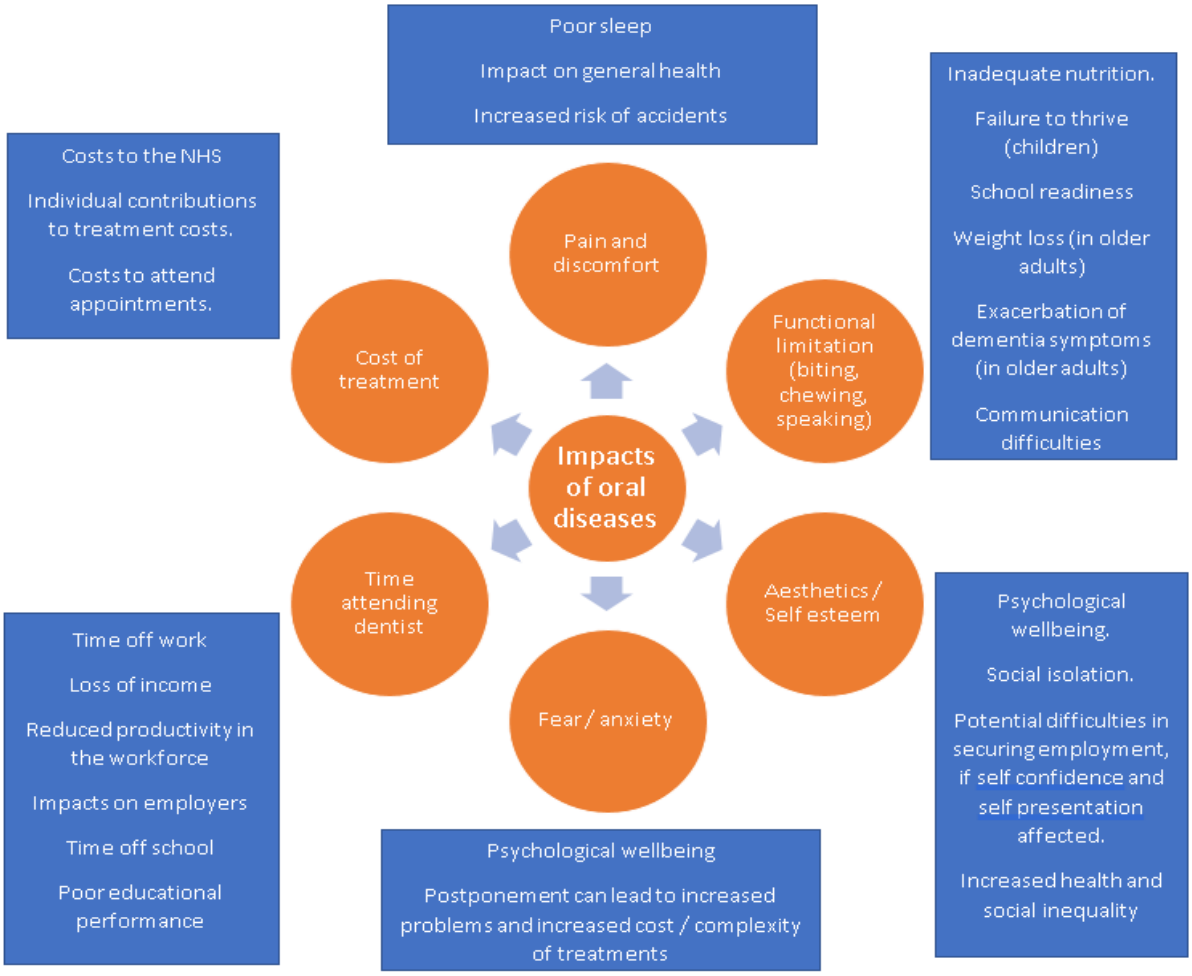


The common risk factor approach provides a rationale for developing partnership work between health professionals, statutory, voluntary and commercial bodies and the public.

1.5. Impacts and consequences of oral diseases

A healthy mouth enables not only nutrition of the physical body, but also enhances social interaction and promotes self-esteem and feelings of well-being. Poor oral health impacts on not just the individual's health but also on their wellbeing and that of their family. It also has wider social and economic consequences, as summarised in Figure 2 below.

Figure 2: Summary of impacts of oral diseases, modified from Daly et al, 2013[20]



Oral health diseases have economic consequences for the public sector, for wider society and for individuals. Advances in dental treatment make it possible to address many oral health problems but this has an associated cost. The most recent NHS annual accounting report gives the total costs of NHS dental treatment for all ages at £2.944 billion in 2017/18.[21] Income of £807 million towards these costs was received in the form of dental charges. Dental NHS charges for individuals as of 1 April 2019 ranged from £22.70 for a

simple examination, to £269.30 for complex treatments. This summary of costs excludes any costs of dental treatment provided privately, outside the NHS system.

In the financial year 2015/16, the cost to the NHS of tooth extractions in children aged 0-19 years was approximately £50.5 million. Most of these extractions were for tooth decay. Among children under 5 there were 9,306 admissions for tooth extractions (with 7,926 identified as being due to tooth decay), at a cost of approximately £7.8 million.[22] The most common dental diseases of tooth decay and gum disease are almost always preventable, so these costs represent avoidable expenditure. Cost information on NHS tooth extractions in children is not available for more recent years but in 2017/18, in England there were 14,545 Finished Consultant Episodes (representing hospital admissions for dental extractions) for children under five, of which 12,783 (88%) were extractions associated with tooth decay.[23]

2. Size of the issue locally

This section considers the evidence of local oral health need in Nottinghamshire County. This includes oral health of children, older people, and of vulnerable groups. For adults, limited local data is available and so national surveys have been used where no local data exists.

2.1. Children's oral health

Nottinghamshire participates in the National Dental Epidemiology Programme (NDEP) surveys of children in England. These are performed on a sample basis in mainstream, state-funded schools every two years on five-year olds, with alternative years on other selected groups, such as three-year olds, twelve-year olds, or children attending special schools. A sample survey can only be an estimate; it could be different to the value if the whole population had been surveyed. Because of this, analysis often includes Confidence Intervals (CIs), as a way of expressing how certain we are about a figure. CIs define a range of values which we are 95% certain contains the true value. They are shown on the charts as a shape like a capital I over the associated bar.

The consent basis of the children's NDEP surveys was changed in 2007 to active written parental consent for children to be examined, instead of a passive approach, in which consent was assumed if a letter had been sent to parents/guardians and no objection was received. The revised consent arrangements suggest a bias towards participation of those who are less likely to have tooth decay (Davies et al, 2011)[24] so the level of dental caries in surveys since 2008 may be underestimated.

2.1.1. Three-year olds

The first national survey of three-year olds in England was undertaken in 2012/13. In Nottinghamshire, 913 children were examined in the district areas of Ashfield, Bassetlaw, Broxtowe, Gedling, Mansfield and Rushcliffe. Newark and Sherwood district did not participate. The results are shown below.

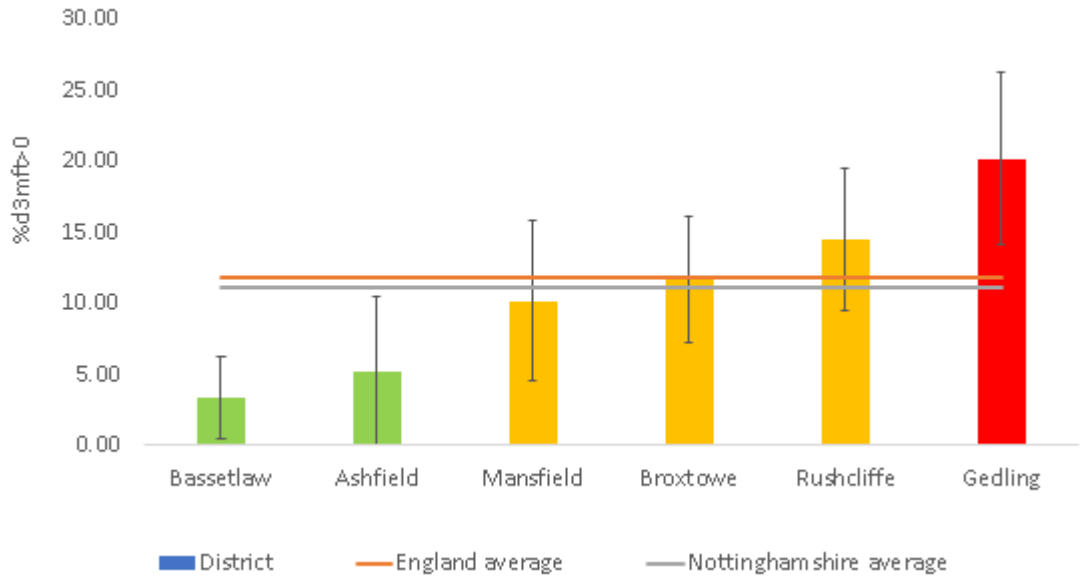
Table 2: Oral Health of Three-Year Old Children 2012/13 [25]

	Nottinghamshire County	East Midlands	England
Percentage with decay experience	11.1%	15.3%	11.7%
Percentage with active decay	9.5%	14.7%	11%
Percentage with early childhood caries	2%	3.7%	3.9%

Source: PHE, 2015, Oral Health Survey of 3 years olds 2013

Within the County, whilst Bassetlaw and Ashfield were lower than the England average, and other parts of the County were similar to it, Gedling was significantly higher than the England average (Figure 3). The samples were however small – 169 children were examined in Gedling. It is possible that water fluoridation in areas within Bassetlaw, Ashfield and Mansfield may have contributed to the good oral health outcomes reported in the survey, although the sample sizes were small in all of the districts.

Figure 3: Proportion of 3-year old children in Nottinghamshire with any decay experience, 2013, showing 95% confidence intervals



Notes:
No data was collected in Newark and Sherwood district. The Notts average excludes Newark and Sherwood district.
Green bars are statistically lower than England average, amber bars are similar to England average, red bar is statistically higher than England average.
Source: PHE Dental Public Health Epidemiology Programme for England: oral health survey of three-year-old children 2013

2.1.2. Five Year Olds

The 2017 survey examined 1,289 children in Nottinghamshire. The percentage of five-year-old children with dmft, and the average number of dmft per child, were lower in Nottinghamshire than in England, but there were variations within the County. Broxtowe and Rushcliffe districts were lower than both England and Nottinghamshire averages (Figures 4a and 4b).

Figure 4a: Percentage of 5-year old children with decay experience in 2016/17, showing 95% confidence intervals as vertical bars

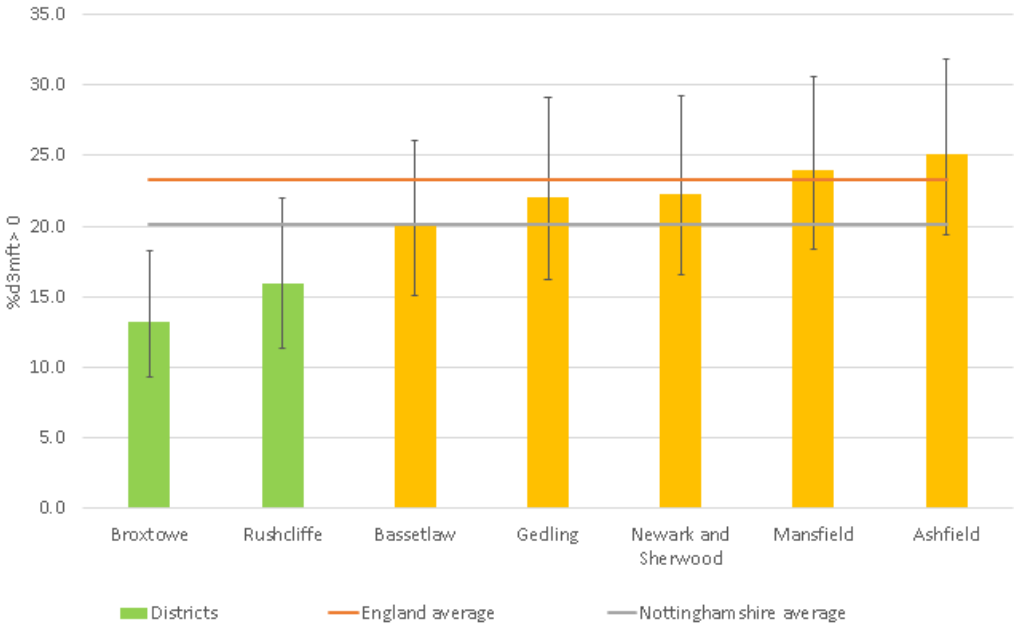
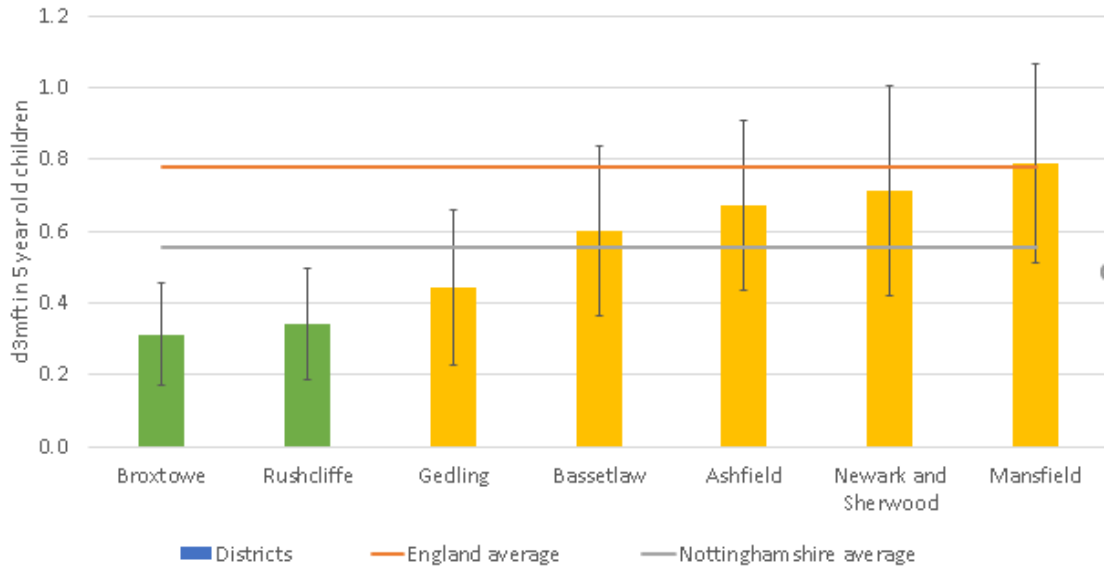


Figure 4b: Average number of decayed, missing or filled teeth in five-year olds within Nottinghamshire in 2016/17, showing 95% confidence intervals as vertical bars



Notes: In the above two graphs, green bars are statistically lower than, and amber bars are statistically similar to, the England average.
Source: PHE National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2017

The 2017 survey identified proportion of five-year old children with substantial plaque, sepsis (infection) and incisor caries (visible decay of front teeth). Presence of substantial plaque provides a proxy measure of children who do not brush their teeth, brush them ineffectively or irregularly. Infection in five-year olds is most likely to be the result of tooth decay rather than gum problems, with a small number linked to traumatic injury. Incisor caries is the most severe form of tooth decay, visible decay to the front teeth. In 2017, Nottinghamshire had significantly lower rates than East Midlands and England for substantial plaque and incisor caries. The rate of sepsis was above the East Midlands and England average, but the difference was not statistically significant (Table 3).

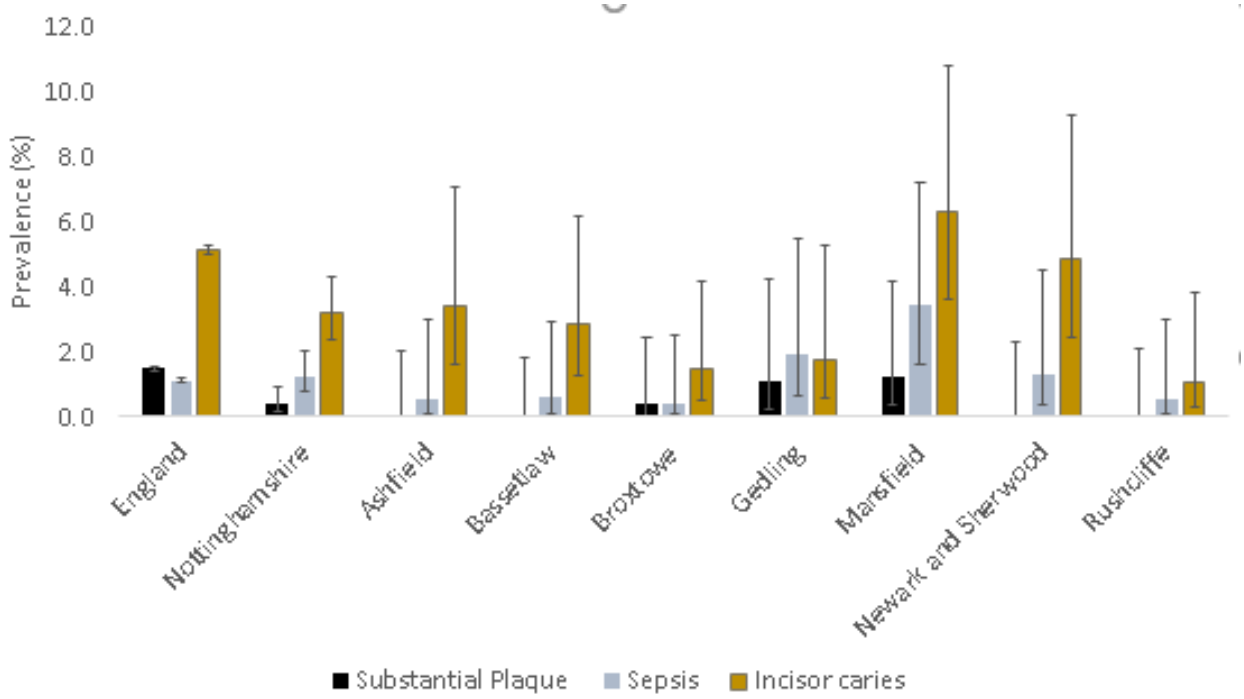
Table 3: Five-year olds with plaque, sepsis or incisor caries: Nottinghamshire compared with East Midlands and England, 2017

Indicator	*Nottinghamshire*	*East Midlands*	*England*
Substantial plaque	0.4%	1.1%	1.5%
Sepsis (infection)	1.3%	1.1%	1.1%
Incisor caries	3.2%	5.4%	5.1%

Source: PHE National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2017

Within the County, there were variations, with incisor caries above the national average in Mansfield, and lower than the national average in Broxtowe and Rushcliffe. (Figure 5)

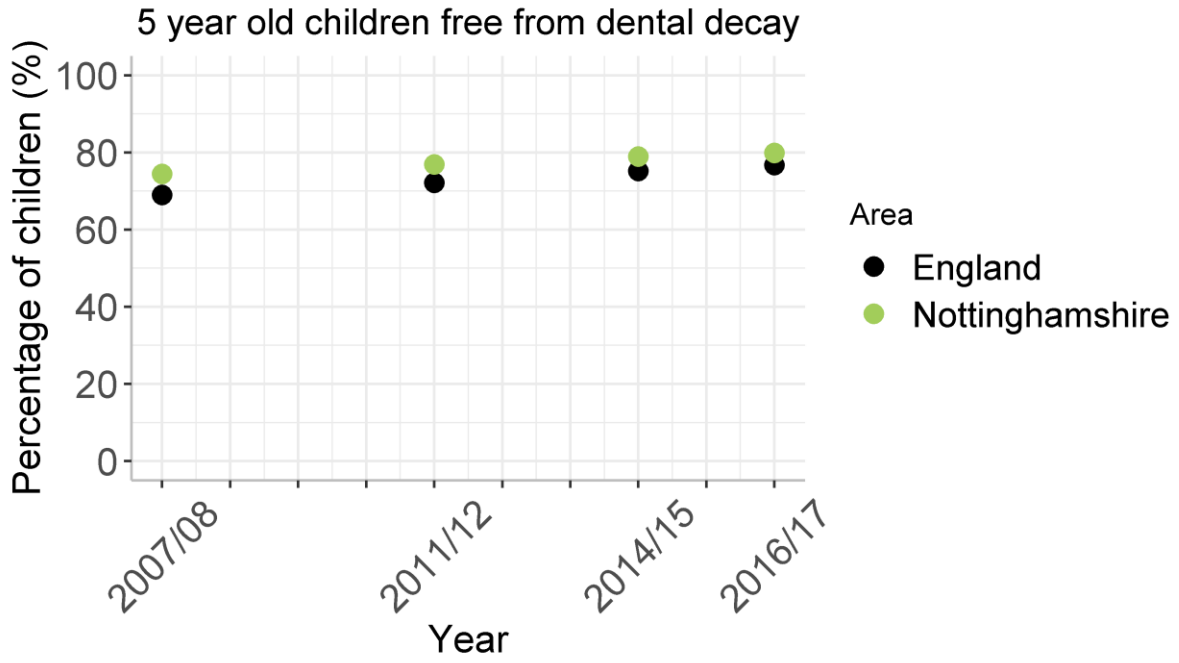
Figure 5: Prevalence of plaque, sepsis and incisor caries in five-year old children within Nottinghamshire, 2017, showing 95% confidence intervals



Source: PHE National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2017

Despite overall improvement in oral health of five-year olds over time, tooth decay remains a significant issue, and is the most common reason for admission to hospital for 5-9-year olds nationally.[26] At the last survey in 2016/17, 20.1% of Nottinghamshire five-year-olds – approximately a fifth - had experience of dental decay (England average 23.4%).
Trend information is available by looking at the last four surveys of five-year olds, which were all conducted on the same consent basis. These show improvement over time, with the proportion of five-year olds free from dental decay in Nottinghamshire increasing from 74.4% in 2007/8 (compared to England average 69.0%) to 79.9% by 2016/17 (England average 76.6%).[27]

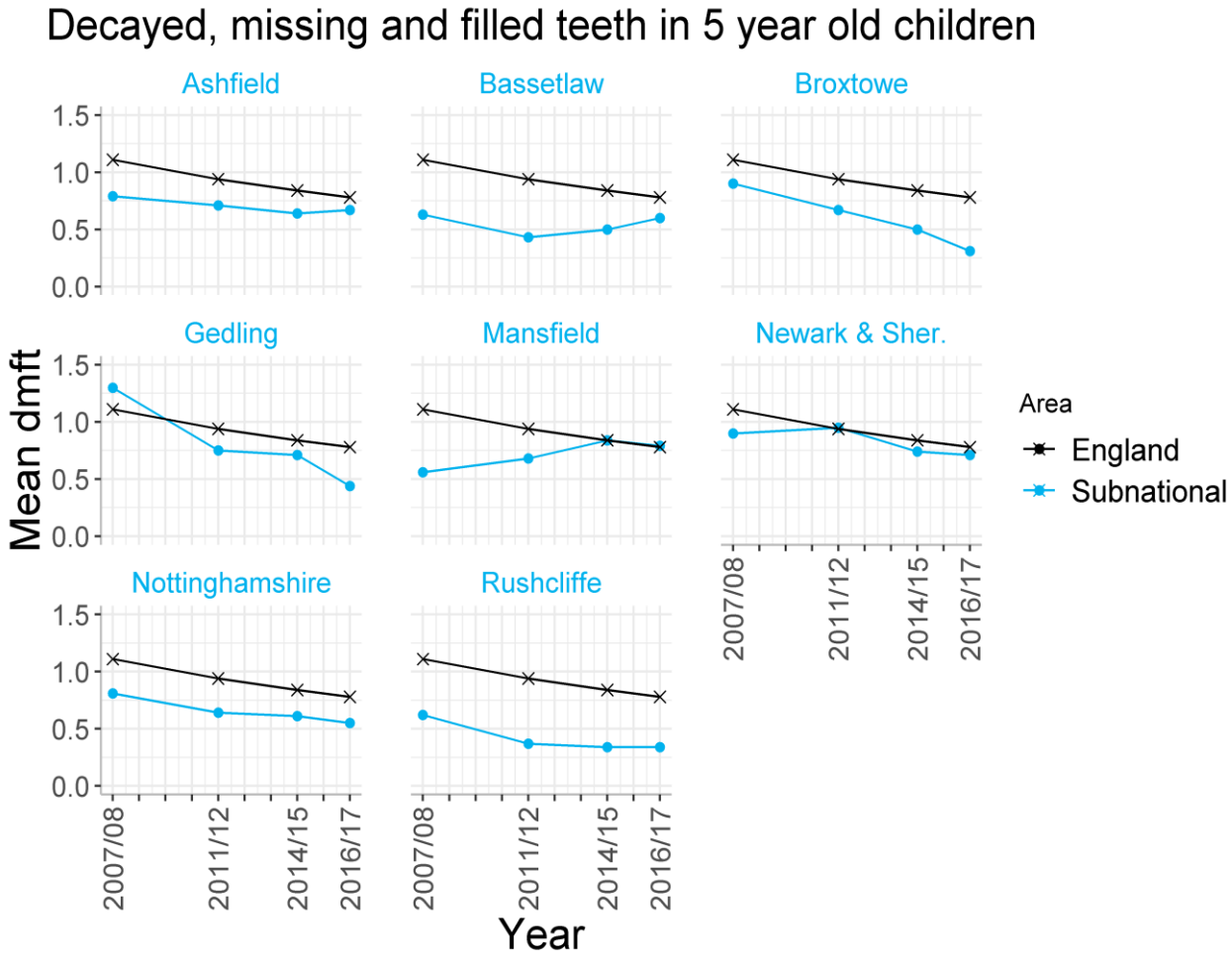
Figure 6: Proportion of five-year-old children free from dental decay in Nottinghamshire, 2007/8 – 2016/17



Source: PHE Fingertips, 2019[28]
(Details contained in Summary Table Appendix 1: Figure A1)

Local information exists for district areas within Nottinghamshire, but this information needs to be treated with caution because of the comparatively small samples and wide confidence intervals within each local district area. Figure 7 below therefore should be viewed as providing an illustration of potential local trends, assuming that the results from the samples surveyed accurately reflect the local population. It shows that the national trend of reducing dmft over time may be reflected locally, except in Mansfield. Local areas Gedling and Broxtowe suggest a more marked improvement in the number of decayed, missing and filled teeth in five-year olds than the national picture.

Figure 7: Local variations in dmft among five-year olds showing trends over time, 2007/8 to 2016/17



Source: PHE, National Dental Epidemiology Surveys, 2008 / 2012 / 2015 /2017
(Details contained in Summary Table Appendix 1: Figure A2)

During 2017/18 in Nottinghamshire there were 768 hospital admissions in children under 19 for hospital dental extractions, of which 165 were in children under five. 476 of the 768 extractions were categorised as primarily due to dental caries (tooth decay) with 124 of these being in children under five. [29] Within the County, there were larger numbers of child admissions for hospital dental extractions for districts in the north of the County than for the districts in the south.[1] There may be some under-reporting associated with the above figures due to not all hospital extractions being recorded on the Hospital Episode Statistics system, with variation between areas. The numbers are likely to be an underestimation. This data quality issue is improving with more accurate figures expected in future.

[1] Not all the reported figures for admissions related to individual districts are available owing to disclosure control, which prevents the release of numbers below 6.

2.1.3. Twelve-year olds

The last national survey of 12-year-old children took place in 2008/9. 1,424 children in Nottinghamshire were examined. The results are shown below.

Table 4: Oral Health of Twelve-Year Old Children 2008/09 [30]

	Nottinghamshire County	East Midlands	England
Percentage with decay experience	29.9%	33.2%	33.4%
Percentage with active decay	18%	17.9%	17.5%
Proportion of teeth with caries experience which have been filled	45%	48%	47%

Source: NHS Dental Epidemiology Programme for England: Oral Health Survey of 12-year-old Children 2008 / 2009

As well as the dental epidemiology surveys of specific age cohorts previously described, a national Children's Dental Health Survey (CDHS) is carried out every ten years. The last CDHS (2013) identified national improvements over time in oral health for 12-year-olds and for 15-year olds. The 2013 CDHS also investigated dental trauma in children. It found that significant numbers of front teeth are permanently damaged as a result of trauma with around one in ten children having sustained dental trauma to their incisors (12% at age 12 and 10% at age 15). In all age groups boys tended to damage their teeth more often than girls. 12-year-old boys were twice as likely as the same age girls to sustain damage to their teeth, with the most commonly damaged teeth being the upper incisor teeth.[31]

2.1.4. Children attending special schools

In 2014, the PHE Dental Public Health Intelligence Programme carried out a survey of 5- and 12-year olds who attend special schools in England, using the same criteria / methodology used as for the surveys of children attending mainstream schools. Only 14 local authorities had sufficient 5- and 12-year olds examined to produce a valid estimate, therefore Nottinghamshire is compared with England. The mean number of dmft in the sampled children in Nottinghamshire was 0.76, compared with 0.69 in England.[32]

2.2. Adults' oral health

Most information on oral health of adults is collected in the national Adult Dental Health Survey (ADHS) undertaken every ten years. No comparable local information is collected. The most recent ADHS was undertaken in 2009. This showed a national improvement in oral health over time, but also identified oral health inequalities, particularly linked to socio-economic status.

Key findings for England from the 2009 survey were:

- The proportion of adults with no natural teeth fell from 37% in 1968 to 6% in 2009

- For adults with teeth, periodontal (gum) disease remains a significant problem with only 17% of adults having “very good” periodontal health
- 23% of adults reporting dental pain had one or more teeth affected
- The highest prevalence of active decay was in the age-group 25 to 34 years (36%)

2.2.1. Adults with learning disabilities and adults in contact with domiciliary care dental services

Surveys of adults with learning disabilities and of adults in contact with domiciliary care dental services were undertaken in 2010/11 by PHE. Domiciliary care dental services are dental treatments provided in a patient’s home, for people with severe mobility problems that make it very difficult for them to leave their home for treatment. These were national surveys; local comparator information is not available. A summary of the results, comparing these with the adult population as shown by the 2009 ADHS, is given in Table 5 below.

Table 5: Summary comparison of national survey results: Adults

	Adults with learning disabilities 2010/11[33]	Adults in contact with domiciliary dental care services 2010/11[34]	National Adult Dental Health Survey 2009
Respondents with no natural teeth	5%	31%	6%
Mean number of teeth present	23	15	25
Reporting problem / pain in the mouth at time of examination	9%	14%	9%
Symptoms of untreated tooth decay	8%	9%	7%
Brush teeth at least twice per day	63%	43%	75%
Brush teeth less than once per day (including never)	10%	14%	3%
Presence of calculus (hardened plaque)	75%	71%	69%
Difficulties with eating, speaking, relaxing, being sociable, working	41%	48%	33%

Sources: PHE Dental health among adults with learning disabilities in England 2010/11; PHE, Dental Health among Adults in contact with domiciliary dental care services in England 2010/11; NHS Adult Dental Health Survey 2009

Adults with learning disabilities had fewer teeth present on average than their same-age ADHS respondents and this difference increased in older age groups. A slightly higher proportion of adults with learning disabilities had calculus (hardened plaque on their teeth) compared with ADHS respondents. A lower proportion of adults with learning disabilities reported brushing twice daily or receiving advice on self-care from the dentist compared with ADHS respondents.

Users of domiciliary care dental services are predominantly older people. 79% of these survey respondents were aged over 65. Reflecting this, the survey found a lower average number of natural teeth present and a higher proportion of respondents with no natural teeth (31%, compared to 6% in the ADHS). Adult users of domiciliary dental care had fewer teeth present than same age ADHS peers, reported having pain fairly or very often, had signs of untreated teeth decay, and reported having at least one oral health problem that caused difficulties.

2.2.2. Mildly dependent older people

In 2016, PHE undertook the first oral health survey of mildly dependent older people. Mildly dependent older people are those who live in the community but have chosen supported housing for a variety of reasons. This group of older people have particular health and social care needs. The survey used a random sample of older people living in supported housing.

This survey identified some local information. Key findings were:

- Poorer oral health tended to be found among older participants and those who reported an increased length of time since the last dental visit, being restricted in their ability to attend a dental practice or being in receipt of services in their home.
- People with reduced cognitive recall or with a lower level of education tended to have worse oral health.
- Some measures of oral health were found to be worse in the youngest age group. It is hypothesised that this relates to circumstances surrounding admission to supported housing which may have changed over time.

Table 6: Results of 2016 oral health survey of mildly dependent older people: Nottinghamshire compared with East Midlands and England [35]

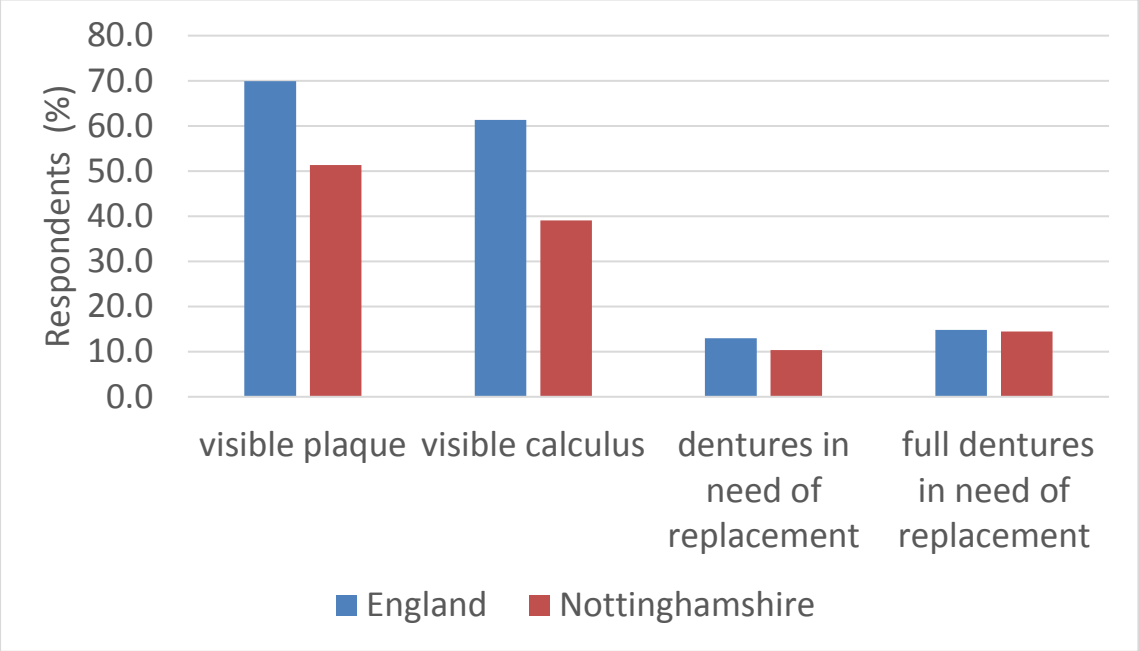
	Nottinghamshire	East Midlands	England
% respondents who reported that poor oral health had impacted on their daily lives [2] fairly or very often	8.5%	14.7%	17.7%
% who have not seen a dentist within last two years	33.6%	37.5%	34%
% with no natural teeth	29.2%	26.1%	27%
% with visible plaque	51.3%	69.2%	69.9%

Source: PHE, 2016, Dental Public Health Epidemiology Programme: mildly dependant older people

Results for the Nottinghamshire respondents in the survey were lower than the England average for presence of visible plaque and calculus, as shown in the chart below. 51.3% of Nottinghamshire respondents had visible plaque (England average 69.9%). 39.1% of Nottinghamshire respondents had visible calculus (England average 61.3%).

[2] Impacts described included pain, difficulties with eating and talking, and self-consciousness.

Figure 8: Oral health of mildly dependent older people in Nottinghamshire compared to England averages, 2016



Source: PHE, 2016, Dental Public Health Epidemiology Programme: mildly dependant older people

2.2.3. Older people in residential care

In 2015, PHE undertook a review of data from a range of surveys in England and Wales on oral health of older people who live in residential and nursing care homes.[36] This represents a minority of older people, as a much larger and increasing proportion of older people are living independently at home or being cared for by friends, family, or through formal home care arrangements. The main findings which applied across all the reviewed surveys were:

- Older adults in residential care settings are less likely to have their own teeth
- Untreated decay is more prevalent than in the general adult population and appears to be more severe in the oldest age groups
- Older adults in care are less likely to rate their oral health as good than the general adult population
- Care home managers report more difficulty in accessing dental care for their residents compared to household resident older adults

A CQC report published in 2019, *Smiling Matters,*[37] concluded that care home residents were not being supported to maintain and improve their oral health. This report was based on fieldwork in which dental professionals accompanied adult social care inspectors on 100 routine inspections. The report's main findings were:

- most care homes had no policy to promote and protect people's oral health (52%).
- nearly half were not training staff to support daily oral healthcare (47%).
- 73% of care plans reviewed only partly covered or did not cover oral health.
- it could be difficult for residents to access dental care.
- 10% of homes had no way to access emergency dental treatment for residents.

2.2.4. Other vulnerable groups

Homeless people are a diverse group comprising rough sleepers and people living in temporary accommodation. Most research has focussed on the needs of single men especially rough sleepers. The oral health of homeless people is often poor. Identified conditions include tooth decay, gum disease, trauma to teeth (due to accidents and violence), and soft tissue conditions which include cancers. Risk factors include chaotic lifestyles, low priority given to oral hygiene and healthy eating, limited access to hygiene facilities, low income, lack of awareness of diet / oral hygiene issues, mental health problems and substance misuse.[38] A peer-led study undertaken in London in 2017[39] found that the oral health of participants was very poor and significantly worse than the general population.

- 90% have had issues with their mouth since becoming homeless. Particularly common were bleeding gums (56%), holes in teeth (46%) and dental abscesses (26%).
- Many participants had experienced considerable dental pain. 60% had experienced pain from their mouths since they had been homeless. 30% were currently experiencing dental pain.
- 70% reported having lost teeth since they had been homeless and 7% had no teeth at all. 35% had teeth removed by a medical professional, 17% lost teeth following acts of violence and 15% of participants pulled out their own teeth.

The report identified some key factors underlying poor oral health in homeless people

- High levels of sugar consumption
- High rates of drug and alcohol misuse and smoking tobacco
- Rates of cleaning teeth were significantly lower than the advised minimum levels
- Rates of attendance and "sign up" at dentists were far lower than in the general population.

Alcohol and drugs were commonly used in an attempt to manage oral health issues. 27% of participants have used alcohol to help them deal with dental pain and 28% have used drugs. Substance misusers comprise another group with significant oral health needs. Prevalent diseases of the mouth in alcohol users include dental caries, dental trauma, gum diseases and cancers. Drug abuse is associated with oral health problems including tooth decay, gum disease and other oral diseases. Lifestyles of drug users may contribute to oral health problems and low use of services.[40]

A 2015 study of oral health among UK prisoners found that prisoners were more likely than the general population to have dental diseases. Prisoners had pre-existing poor access to health care, low levels of health literacy and poor health behaviours. Whilst in prison, prisoners reported poor access to dental health services and to oral health products. Prison dentists reported difficulties with prescribing medication, completion of treatment, and organisational factors making it difficult to offer dental healthcare in a timely and effective manner.[41]

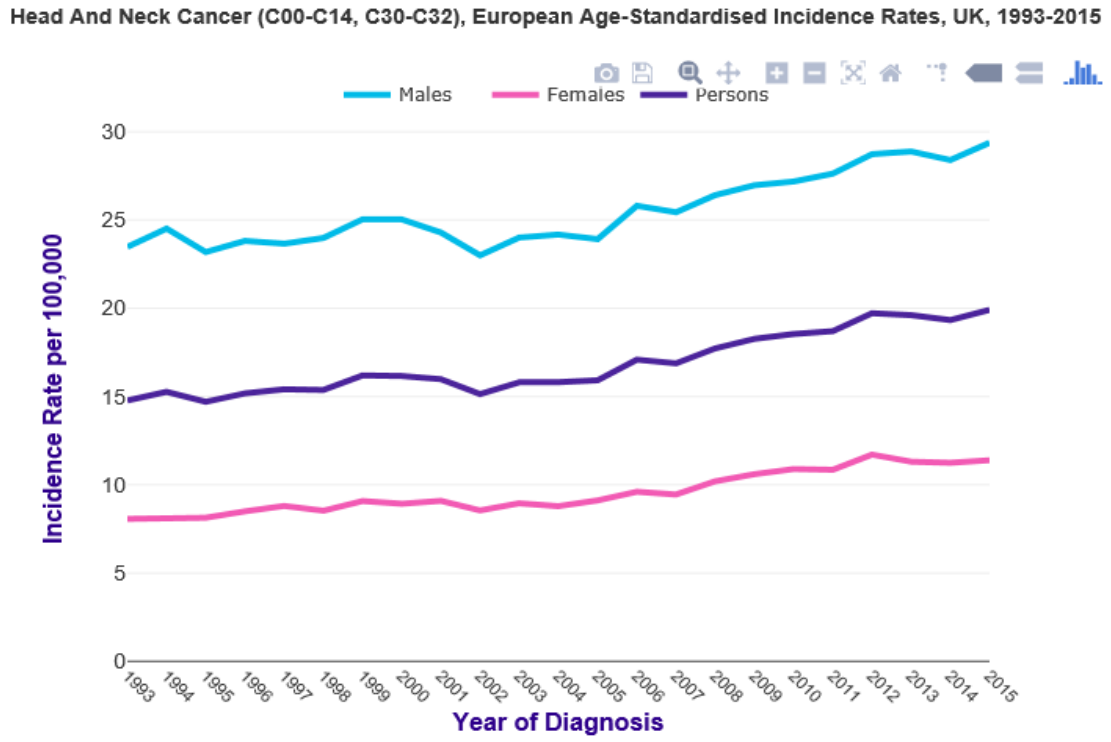
A systematic review of studies over the last 25 years regarding oral health of people with severe mental illness (SMI) found that people with SMI were more likely to have no teeth compared with the general population and also had significantly higher decayed, missing and filled teeth (DMFT). The study identified oral health risk factors in people with SMI including lifestyle factors and dry mouth induced by medication.[42]

Another vulnerable group is Gypsy, Roma and Traveller (GRT) people. An international systematic review of GRT access to and engagement with health services found a lack of access to or uptake of services, including dental care. Roma people were identified as less likely to access dental services, identifying lack of documentation and affordability as barriers.[43]

2.3. Oral Cancers

Incidence of head and neck cancers is increasing in the UK. Between 2003-2005 and 2013-2015 head and neck cancer age-standardised (AS)[3] incidence rates for males and females combined increased by 24%.

Figure 9: Head and Neck Cancer in UK 1993-2016, age standardised incidence rates



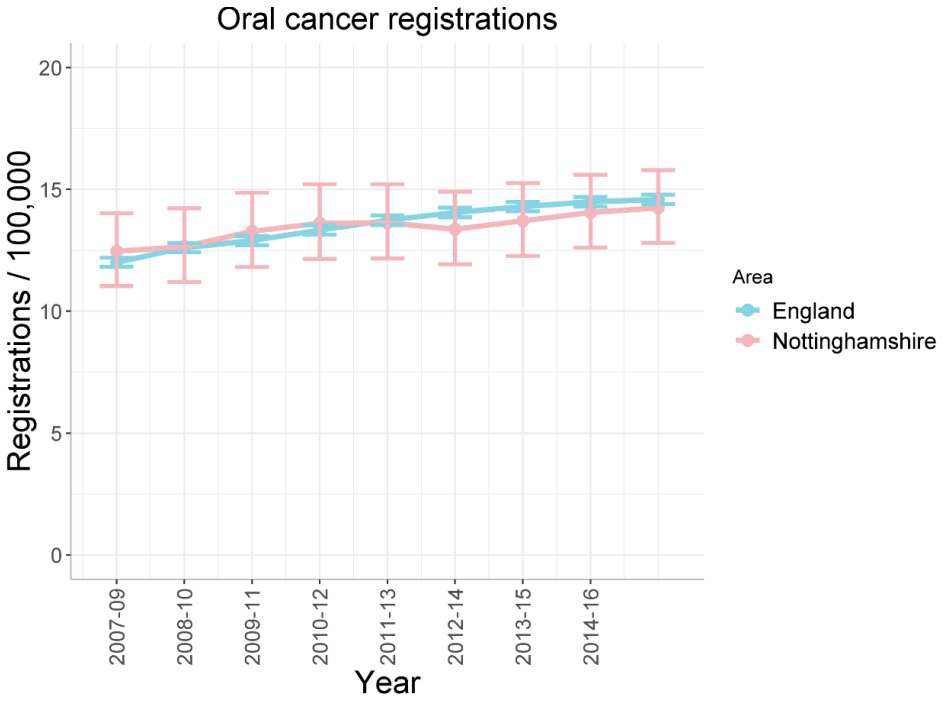
Source: Cancer Research UK,[44]

Head and neck cancers account for 3% of total UK Cancer Cases (2015). By age groups, rates in 25-49s have increased by 36%, in 50-59s by 42%, in 60-69s by 35%, in 70-79s by

[3] Age standardisation is a technique used in epidemiology and demography. It allows populations over time to be compared when the age profiles of the populations at different dates are different.

7%, and in 80+s have remained stable. Oral cancers are very rare in children. Incidence trends largely reflect changing prevalence of risk factors and improvements in diagnosis and data recording. Recent incidence trends are influenced by risk factor prevalence in years past, and trends by age group reflect risk factor exposure in birth cohorts. (ibid)
Local information indicates that Nottinghamshire is similar to England when it comes to presentation of oral cancer (Figure 10).

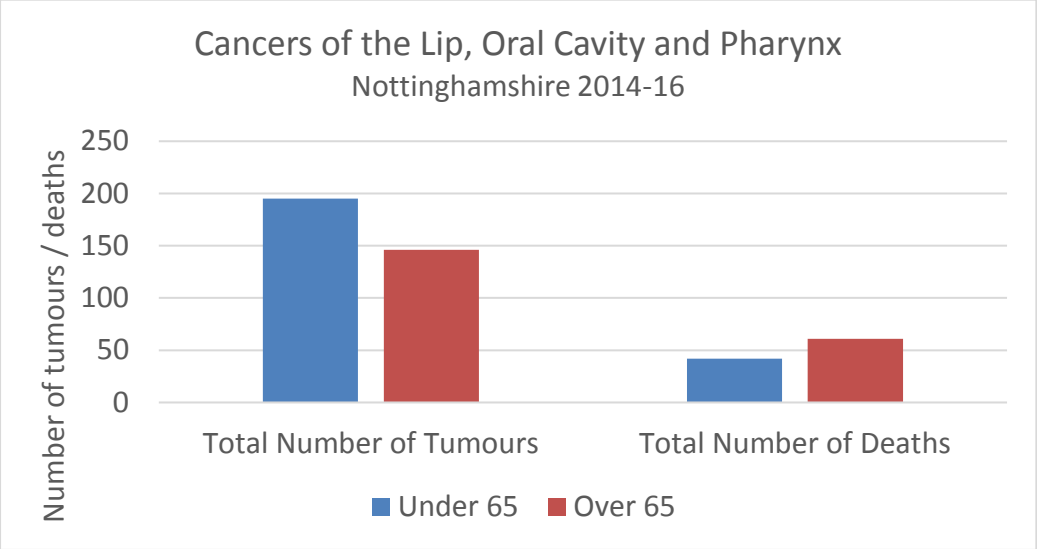
Figure 10: Age-standardised oral cancer registrations in Nottinghamshire compared to England, showing 95% confidence intervals



Source: PHE Fingertips

Within Nottinghamshire, the total number of oral cancer tumours in the period 2014-16 was 341, and the total number of deaths was 103. Figure 11 shows the breakdown by age.

Figure 11: Oral cancer in Nottinghamshire – tumours and reported deaths, 2014-16



Source: PHE National Cancer Registration and Analysis Service (NCRAS), snapshot CAS1712, URL: https://nww.cancerstats.nhs.uk (last accessed June 2019)

3. Targets and performance

The Public Health Outcomes Framework (PHOF) reports on the following oral health indicators:

- Proportion of five-year olds free from dental decay
- Decayed, missing or filled teeth (dmft) in five-year olds
- Incisor caries prevalence in three-year-olds
- Proportion of three-year olds free from dental decay
- Decayed, missing and filled teeth (dmft) in three-year-olds
- Proportion of twelve-year olds free from dental decay
- Children with one or more decayed, missing or filled teeth
- Hospital admissions for dental caries 0-5 years

The latest PHOF information, the timeframe of which varies according to the indicator, shows that Nottinghamshire is better than England for all the above indicators except for proportion of three-year olds free from dental decay / dmft in three-year-olds, where it is similar to England, and for the hospital admissions for dental caries 0-5 years, where no comparison is given.

The NHS Outcomes Framework reports on the following oral health indicators

- Tooth extractions due to decay for children admitted as inpatients to hospital, aged 10 years and under. Latest data for 2017/18 for Nottinghamshire is 326.2 per 100,000 population (England average 424.6)

- Access to NHS dental services - Data for Jan – March 2017/18 shows 95% of the Nottinghamshire population who requested one gained an NHS dental appointment within the last two years (England average 94.6%)

4. Current activity, service provision and assets

4.1. NHS Dental Services in Nottinghamshire

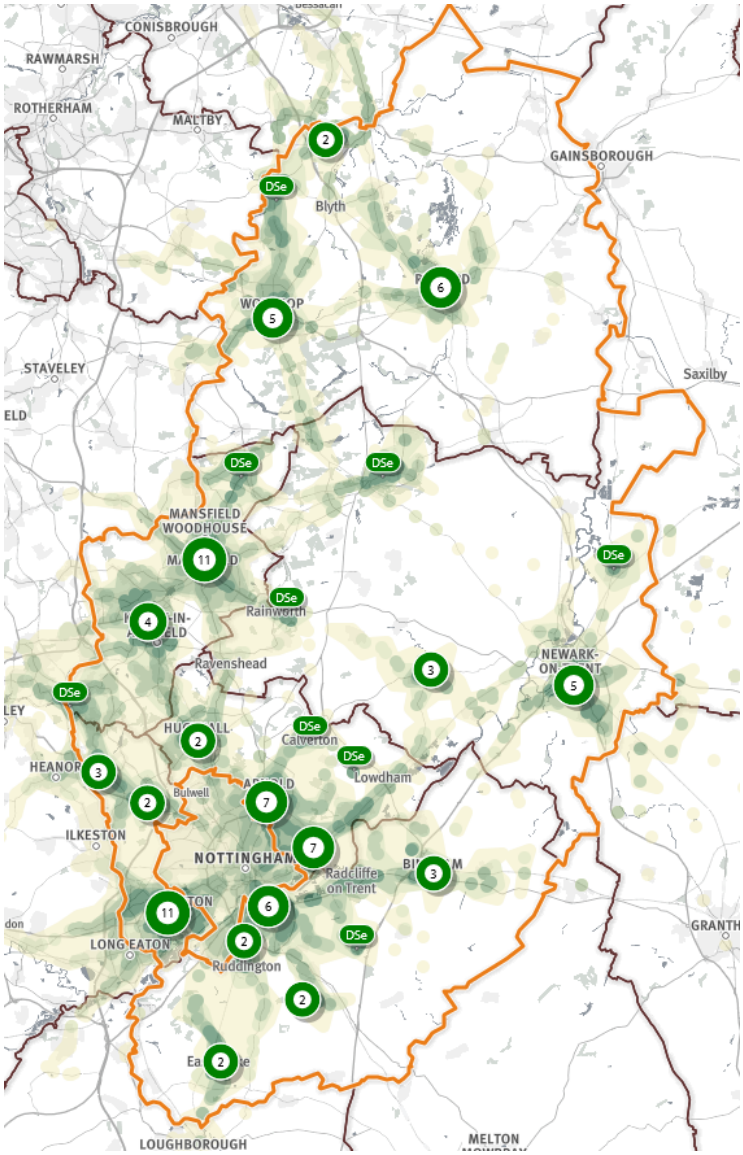
NHS dental care for all ages includes free access to dental care for children and young people aged up to 18, or 19 if in full-time education, domiciliary services for those unable to attend dental surgeries, emergency dentistry and orthodontic services.

NHS England commissions dental practices, orthodontic services, emergency dental services, and domiciliary dental care. During 2019 NHS England procured orthodontic, urgent care and community dental services for the Nottinghamshire area.

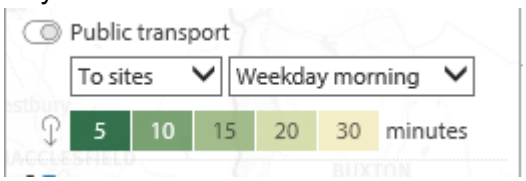
There are 89 dental practice locations in the County of Nottinghamshire (including 11 in Bassetlaw). Reported access to dental services in Nottinghamshire is better than England average, as outlined in Section 3 above.

The maps below show the locations of dental services within the County of Nottinghamshire (excluding those in the Nottingham City area), mapped against access by public transport, deprivation, and presence of children in the local population.

Map 1: Location of NHS dental services in Nottinghamshire with public transport access



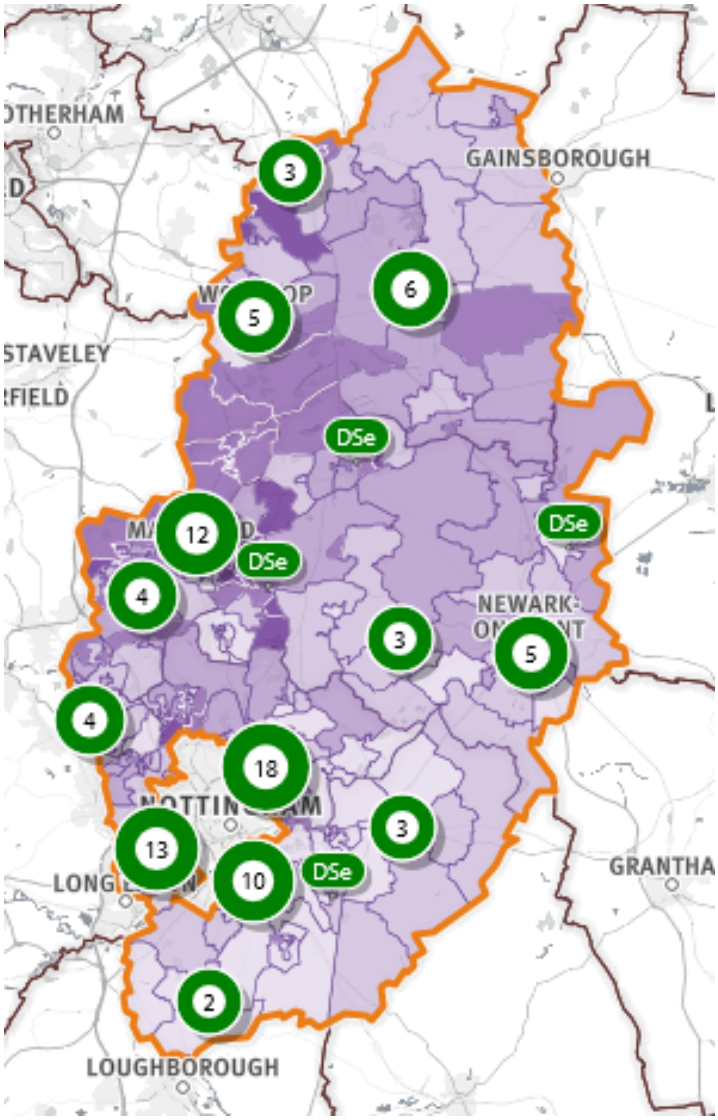
Key:



Source: PHE Shape Tool, accessed 23.9.2019

There is a geographic spread of practices across the County. Rural parts of the County have fewer dental practices than the urban areas, but this also reflects population distribution. Dental practices in Nottinghamshire are accessible by public transport links, although there are areas, particularly in the rural areas of Bassetlaw and Newark and Sherwood, without good public transport links.

Map 2: Location of NHS dental services in Nottinghamshire compared with deprivation



Key: Darker colours indicate higher levels of socio-economic needs, by quintiles (fifths) using the Index of Multiple Deprivation (IMD) from the English Indices of Deprivation 2015

Values for LSOAs within the selected boundary are shown.

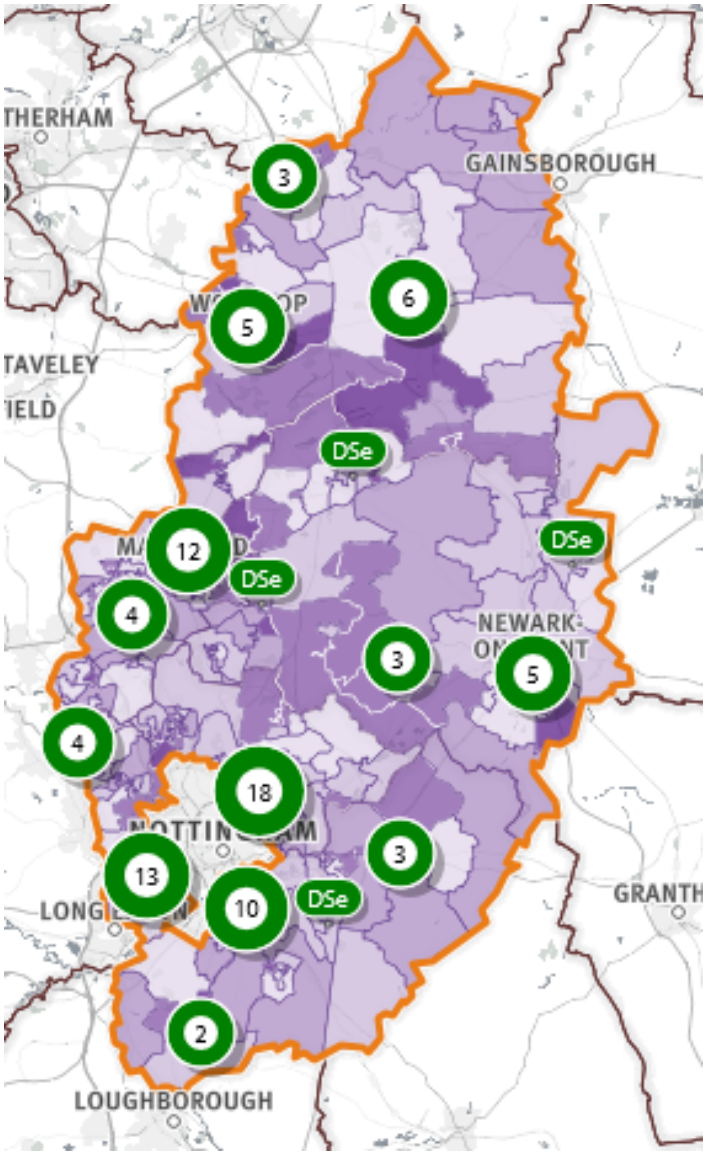
The colours represent the quintiles:

- 33.89 to 92.6
- 21.44 to 33.88
- 13.93 to 21.43
- 8.38 to 13.92
- 0.48 to 8.37

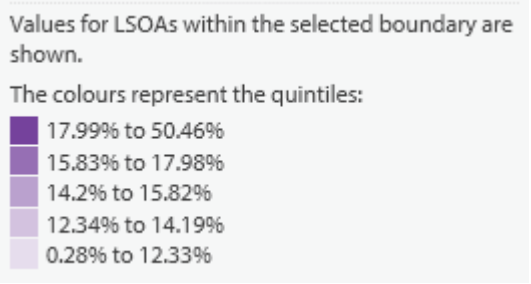
Source: PHE SHAPE tool, accessed 23.9.2019

Dental practices located in the City area are not shown. In the County area, there is a reasonable distribution of practices including in areas of greater socio-economic need.

Map 3: Distribution of NHS dental practices compared to presence of children in the population, age 5-17



Key: The darker colours represent a higher proportion of children age 5-17 in the local population.



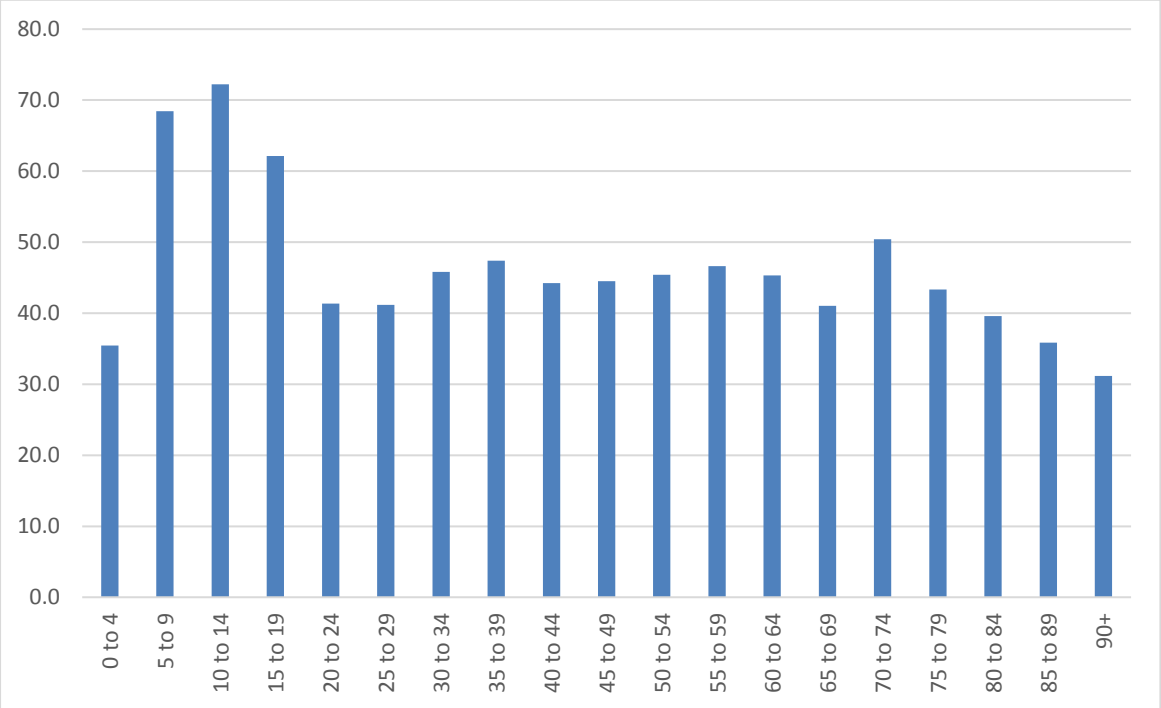
Source: PHE Shape tool, accessed 23.9.2019. Population figures are based on ONS mid-year estimates from 2017.

There is a reasonable spread of dental services relative to the school-aged population. There are some areas with comparatively high proportions of children in the population

where there are no local dental services, most notably in parts of Bassetlaw and Newark & Sherwood. However, these are areas of low population density, so although there is a comparatively high percentage of children in the population, the numbers involved may be small.

Service usage information with regards to NHS dental services is compiled by the NHS Business Services Authority and reported to PHE, using a 24-month reporting period in line with NICE guidelines which recommend that the longest interval between oral reviews for adults should be 24 months. The graph below shows attendances by Nottinghamshire County residents (including residents in Bassetlaw) at NHS dentists between 2016/17 and 2017/18. No information is available on attendance at private dental practices, as the attendance information is based on claims made by dentists for NHS payments.

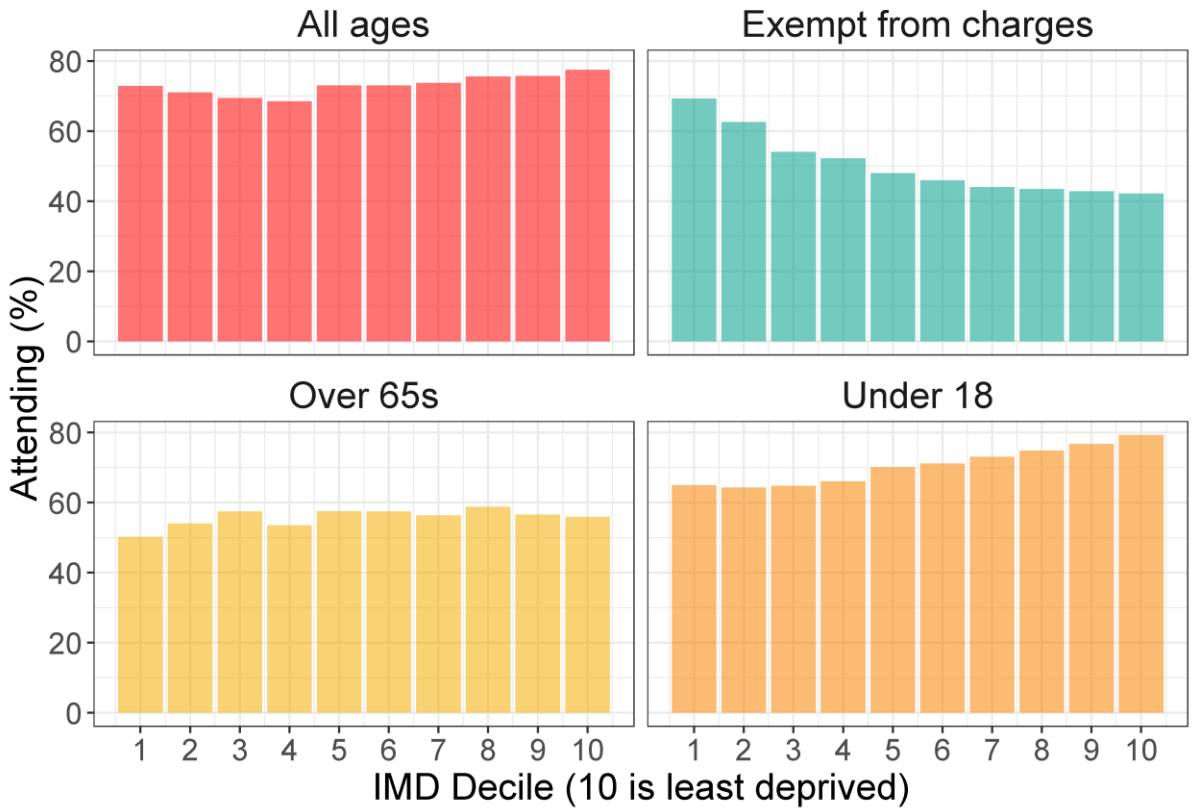
Figure 12: Nottinghamshire % of resident population attending an NHS dentist by age, 2016/17 and 2017/18



Source: PHE East Midlands Local Knowledge and Information Service using data obtained from NHS Business Services Authority and PHE Dental Public Health Intelligence Team 2016-18

There are some inequalities associated with attendance at NHS dentists, as shown in Figure 13 below:

Figure 13: Attendance at NHS dentists in Nottinghamshire by % of resident population, 2016/17 and 2017/18, by deprivation index



Note: in the above four charts, 10 is the least deprived 10% of the population and 1 is the most deprived 10%.

Source: PHE East Midlands Local Knowledge and Information Service using data obtained from NHS Business Services Authority and PHE Dental Public Health Intelligence Team 2016-18

All children aged under 18, or under 19 if in full time education, all pregnant and nursing mothers, and those with means-tested benefits, are exempt from NHS charges. Alongside increased autonomy, loss of exemptions likely explains lower attendance amongst adults (Figure 12). Despite access to free dental care, a social gradient still exists for attendance in under 18 years (Figure 13). Socio-economic patterns in attendance are less clear in other age groups. Regular visits to the dentist are an important part of prevention, as this is where problems can be identified and treated early, avoiding more complex and costly treatment later, and also offers opportunity for advice on maintaining good oral hygiene. Campaigns such as the "Dental Check by One"[4] look to increase the number of children age 0-2 who access dental care regularly, by encouraging parents to bring their young child to the dentist.

4.2. Oral Health Promotion Service

Nottinghamshire County Council currently commissions an award-winning Specialist Oral Health Promotion Service that provides a comprehensive range of oral health promotion

[4] Sometimes referred to locally as the "Little Trip to the Dentist".

services and interventions to people within Nottinghamshire, based on the recommendations from the Public Health England document *Local authorities improving oral health: commissioning better oral health for children and young people*.

Oral health promotion is a key part of ensuring that risk factors that influence poor oral health outcomes are addressed. However, for oral health promotion messages to be really effective, all health, children's and adults' services including dental practices should be responsible for actively promoting key oral health messages.

The commissioned oral health service delivers the following activities:

- Targeted, evidence-based oral health promotion to those at high risk of poor oral health
- Training for health, social care and education professionals and other key stakeholders, so that they can deliver oral health promotion advice to target groups
- Development and dissemination of evidence-based oral health resources
- A supervised tooth brushing programme within schools, targeted to areas of identified need
- Participation in national and local oral health campaigns (oral health messages, dental impact through work with the General Dental Practice oral health network, and community development activities) and Tools for Teeth (schools-based programme with resources for use in primary schools)
- Oral health alliance scheme with dental practices, a platform for sharing good practice, current messages, local information and health trends
- Working in partnership to deliver these activities and objectives, with other organisations, professionals, and partners, for example by using the newly developed Health4Teens and Health4Kids websites to deliver oral health information for children and young people, or by working with social care commissioners to deliver information for people providing social care to older people or vulnerable groups.

Performance of the service is as shown in the table below.

Table 7: Oral Health promotion commissioned service performance 2018/19

Performance measure	Target	Actual
One-year olds receiving oral health advice and resources at 1-year health review	75%	87%
Service user satisfaction – percent report as "useful"	80%	96%
Service user satisfaction – percent report service was "good to excellent"	80%	97%
Service user satisfaction – percent report increased knowledge	80%	98%
Number of front-line staff trained to deliver appropriate oral health brief advice – children's services	200	278
Number of front-line staff trained to deliver appropriate oral health brief advice – adults' services	200	221

4.3. Delivery of oral health messages as part of the Healthy Child Programme

The Healthy Families Programme 0-19 promotes oral health messages for babies, pre-school children, at school entry and throughout school life, including for adolescents. The programme distributes oral health resources, and promotes campaigns, working in partnership with the oral health promotion commissioned service described above. A caries risk assessment tool is being developed for Health Visitors across the East Midlands by PHE, which should help Health Visitors to identify children at risk and promote the Dental Check by One.

4.4. Water fluoridation

Fluoride is known to prevent and reduce dental decay. Fluoride occurs naturally in some water sources and is added to water supplies in some areas – including some areas of Nottinghamshire. Fluoride is also found in many toothpastes.

A recent monitoring report[45] by Public Health England (PHE) found the following:

- Five-year olds in areas with water fluoridation schemes were much less likely to experience tooth decay than in areas without schemes.
- The chances of having teeth removed in hospital because of decay were also much lower in areas with water fluoridation schemes.
- Children from both affluent and deprived areas benefitted from fluoridation, but children in relatively deprived areas benefitted the most.
- Dental fluorosis was observed in 10.3% of children examined in two fluoridated cities compared to 2.2% in two non-fluoridated cities. However, there was no significant difference between children surveyed in fluoridated and non-fluoridated areas when asked their opinion about the appearance of their teeth, taking into account concerns that have resulted from any cause (e.g. poor alignment, decay, trauma etc.).
- There is no convincing evidence of higher rates of hip fracture, Down's syndrome, kidney stones, bladder cancer or osteosarcoma (a cancer of the bone) due to fluoridation schemes.

In Nottinghamshire, water fluoridation arrangements date back to the 1970s and serve around 320,000 people in parts of Ashfield, Bassetlaw and Mansfield. Due to water distribution arrangements, some of these areas receive blended water from both fluoridated and non-fluoridated supplies. Water companies that operate schemes must comply with the requirements of the code of practice published by the Drinking Water Inspectorate, which includes systems to monitor equipment used to add fluoride to water, and they have a duty to monitor the fluoride concentration of public water supplies.

Fluoridation schemes aim to achieve a level of one part of fluoride per million parts of water (1ppm or 1 milligram of fluoride per litre of water). However, on occasions water fluoridation performance (the actual amount of fluoride coming out of the tap) may not be optimal. Disruption to the supply of fluoridated water can occur if maintenance work becomes

necessary or technical problems prevent operation. Schemes are monitored closely by PHE working with water companies to minimise suboptimal performance.

4.5. Participation in the NHS Dental Epidemiology Programme for England

Participation in and commissioning of the NHS Dental Epidemiology Programme for England, which coordinates surveys of dental health of children, is a statutory duty of the local authority.

Changes to the consent methodology outlined previously, alongside other changes in the operating environment, such as a new provider of dental epidemiology surveys, revised data protection legislation and changes to the individual legal responsibilities of schools following academisation, led to more hesitant engagement among some Nottinghamshire schools in 2019.

4.6. Other assets

Other Public Health interventions indirectly impact on oral health, by addressing common risk factors associated with oral diseases. Examples are services to support people to reduce sugar consumption as part of a healthy diet, to cease smoking, or reduce alcohol use.

The HPV vaccination programme has potential to impact on a number of non-cervical cancers including oral cancer. Originally aimed at reducing the burden of HPV-associated cervical cancer, this vaccination has been offered to girls aged 12-13 since 2008. Vaccination is also being offered to 12- and 13-year old boys from September 2019.[46]

5. Local Views

The oral health promotion commissioned service routinely collects service user feedback as part of its performance and quality monitoring. In 2018/19, 96% of service users reported that they found the service “useful”, 97% rated the service as “good to excellent” and 98% reported increased knowledge after using the service.

The service also collects comments and testimonials from its users, two recent examples of which are given below:

- (Comment dated February 2019 in respect of training for managers working in care homes, on oral health promotion for older people) “I never realised how much I did not know! It is great to have the opportunity to learn how to make a difference. I will definitely go back and share what I have learnt today. I did not know about the non - foaming toothpaste or the flavour free products. I will use the toothpaste on the lip technique with our clientele with dementia. It was good to know about the range of products available to us to help and support our clients. I did not realise how important it is to record all of our activities and special instructions for our clients.”

- (Comment dated October 2018 in respect of supervised tooth brushing, from newly accessing school) “We are now at the end of week 2 and 100% of children have permission and we are brushing daily and currently loving it!! The kids really, really enjoy tooth brushing and ask when we are doing it! Parents were all really positive and got on board with this!”

The service undertook a detailed evaluation of the supervised tooth-brushing element in 2019. This evaluation included seeking comments from teachers, parents, and children participating in the scheme. Teacher and parent comments demonstrated that the scheme was valued, with both reporting positive impacts for the children. For example, one father wrote: “My little girl hated tooth-brushing before, but now she encourages the whole family to tooth-brush”. Obtaining feedback from the young children themselves was done imaginatively by asking the children to draw pictures of themselves tooth-brushing. Year 1 children (aged 5-6) were also asked some simple questions, for example whether they brushed their teeth that morning or whether they had ever visited the dentist. Responses showed that the Year 1 children understood why brushing their teeth is important. These service user views should be considered when planning for changes to the oral health promotion commissioned service in the future.

As part of the 2016 survey of mildly dependent older people, PHE asked for views on access to dental services. This survey was of a random sample of older people living in supported housing. Respondents in this survey who had not seen a dentist within the last two years were asked what the reasons were for this. Compared with the England averages, more people in Nottinghamshire said they could not find an NHS dentist (8.8% compared to 7.3%) or said that it was difficult to get to and from the dentist (19.1% compared to 12.9%). Fewer people in Nottinghamshire said that they could not afford the NHS charges as a reason for not seeing a dentist (2.9% compared to 7.2% England average). [47]

In December 2018, Healthwatch Nottingham and Nottinghamshire ran a Question of the Month survey seeking local views about dental services. Although this survey covered both City and County residents, overall, County residents accounted for 64% of the total 372 responses received.19 responses were from out of area and were excluded from the analysis.

71% of respondents said they had visited an NHS dentist within the last year, with another 8.5% within the previous year, so a total of 79.5% of respondents stated they had visited a dentist within the past two years. 72.8% of respondents had attended for routine treatment with 14.2% attending for emergency treatment. 13% did not provide an answer.

Generally, most participants appear to have had a good experience of dental services. Participants were asked about ease of booking appointments, suitability of appointment times, clear explanation of treatment, feeling of being cared for. Most ratings were 4- or 5-star (on a scale of 1-5).

Participants who had not attended an NHS dentist within the last two years was 15.3%. Out of these, 27.8% had received private treatment, 18.5% had a fear of the dentist/being told off and 16.7% found it too expensive to seek dental treatment. 9.3% of respondents stated that they had experienced difficulty in accessing NHS treatment in the last two years. Stated reasons included difficulty finding an NHS dentist (no NHS service, couldn't get in to NHS dentist, practice no longer offering NHS appointments), difficulties in scheduling appointments (no appointments at appropriate times, not enough appointments, dentist cancelled appointments, dentist works limited hours so hard to get an appointment); financial reasons (Personal Independence Payment – not entitled to free NHS treatment, previously Employment and Support Allowance was no longer entitled) and mobility issues (need full wheelchair access, mobility/pain issues – struggle to get there)

6. Evidence of what works

The oral health of local communities is important for their general health and wellbeing and their quality of life. It may be improved by adopting a 'common risk factor' approach and by providing evidence-based oral health promotion programmes and interventions, with the aim of improving people's:

- diet – including reducing the amount of sugar in diet and how frequently it is consumed
- oral hygiene
- access to and use of fluoride products
- access to a dentist.

Tables 8 and 9 below summarise the current evidence.

Table 8: NICE Guidance

Guidance	*Overview*	*Recommendations*
PH55 Oral Health: local authorities and partners (2014) (Reviewed 2018) NICE Guidance PH55 2014 Recommendations	how local authorities and partners they work with can improve oral health in local populations	Encourage identified individuals, groups and communities to improve their oral health by: increased use of fluoride; reducing the frequency of sugar consumption; effective daily oral hygiene; seeking regular dental care; smoking cessation and oral cancer awareness. Recommendations for local authorities and partners: • undertake oral health needs assessment, • include oral health as a key health and wellbeing priority and in local health and wellbeing policies, • ensure that public service environments promote oral health. • Specific recommendations around oral health promotion commissioned services.
NG48: Oral Health for adults in care homes (2016) (reviewed June 2018) NICE Guidance PH48 2016 Recommendations	maintaining and improving oral health of adults in care homes.	Recommendations for care home staff, people providing oral health services to this group, commissioners, and organisations concerned with quality of care. • care homes have policies on oral health in place • care homes provide residents with support to access dental services • provide appropriate training for staff to be able to assess oral health and plan / implement mouth care • ensure local oral health services (whether oral health promotion or dentistry) address the needs of people in care homes.
NICE Guidance NG30: Oral Health promotion: general dental practice	how general dental practice teams can convey advice about oral hygiene, the use of fluoride, diet,	Recommendations for dentists and dental care professionals: • give all patients oral health advice during dental examinations • adopt a patient-centred approach in order to develop good relationships with patients so they can help them maintain good oral health.

(2015) (reviewed June 2018) NICE Guidance NG30 2015 Recommendations	smoking / smokeless tobacco and alcohol intake.	

Table 9: Other evidence

Publication	Overview	Recommendations
Public Health England (2014) *Local authorities improving oral health: commissioning better oral health for children and young people*	Review of the evidence and offers guidance to local authorities on commissioning better oral health for children and young people	Integrated approaches to oral health improvement, through partnership, leadership and advocated vision. Commissioning for oral health improvement across the life course, giving every child the best start in life and adopting the principle of proportionate universalism. This means balancing targeted and universal (for everyone) perspectives, through action proportionate to needs and levels of disadvantage in a population. Support CYP through families, childhood and community settings and CYP workforce Recommended interventions: • Oral health training for wider workforce • Integration of oral health into targeted home visits by health / social care workers • Targeted community-based fluoride varnish programmes • Targeted provision of toothbrushes and toothpaste (i.e. postal or through health visitors) • Supervised toothbrushing in targeted childhood settings • Healthy food and drink policies in childhood settings • Fluoridation of public water supplies • Targeted peer [lay] support groups / peer oral health workers • Influencing local and national government policies

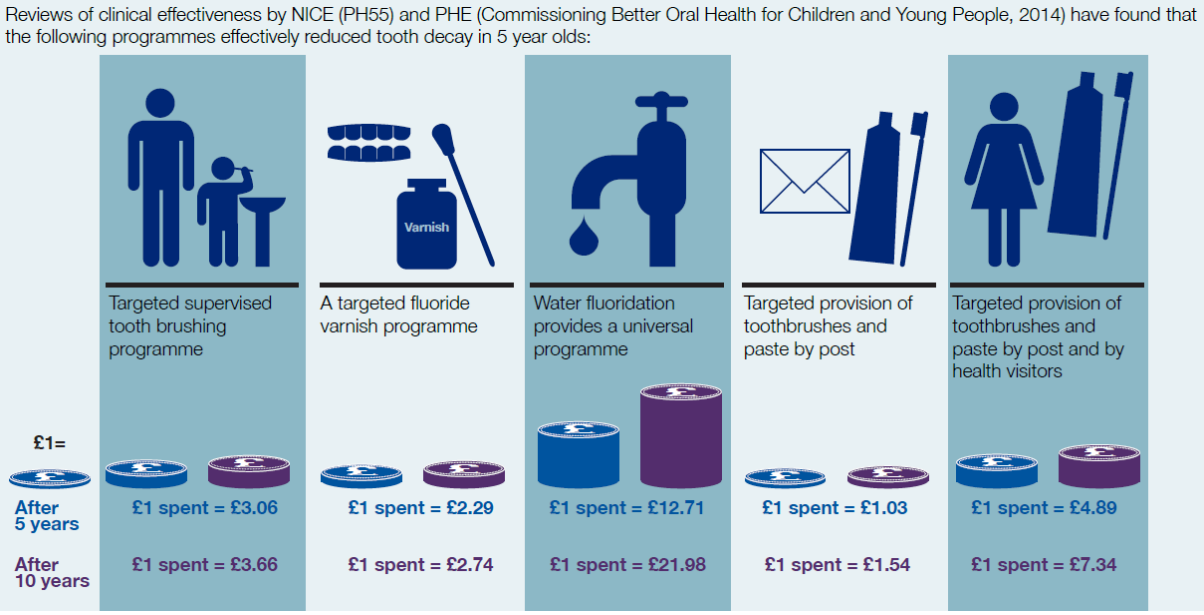
Local Government Association (2016) *Tackling poor oral health in children: local government's public health role*	Guidance and case studies to support local government in their oral health improvement duty	• JSNA to consider oral health needs, reference current NICE guidelines (PH55), and influence oral health's inclusion in local Health and Wellbeing Strategy • Locally tailored oral health strategy; leadership and advocacy; collaborative and partnership working; joined up approaches across the LA. • Integrate oral health improvement into all services for children; adopt a life course approach; involve CYP and families in commissioning decisions; adjust early years' service specifications to promote oral health; provide training for staff in oral health promotion • Everyone should receive some support through universal interventions with additional interventions for vulnerable children • Involve private sector in relevant schemes e.g healthy eating awards to change menus, limit sugar and adopt a common risk factor approach to impact on oral and general health
Public Health England (2016) *Improving oral health: community water fluoridation toolkit*	Toolkit to help local authorities make informed decisions on whether to implement, vary or terminate a water fluoridation scheme	Making decisions about fluoridation: • Consider in the context of: dental health need; effectiveness of fluoridation; safety; benefits; public demand / acceptability; ethics; and cost-effectiveness. • Consult with professionals and with LAs with experience of fluoridation schemes • Develop a communications plan and consult with a diverse range of local people Managing established schemes: • Monitor scheme performance and costs • Commission appropriate dental surveys to monitor local dental decay levels • Review health monitoring reports published by PHE • Be able to discuss health effects and respond to residents' enquiries • Work collaboratively with partner LAs involved with same scheme
Public Health England (2017) *Delivering better oral health: an*	Guidance to dental teams about the advice they should give and the actions they should take	• Summary guidance for primary dental care teams • Principles of toothbrushing for oral health • Increasing fluoride availability including guidance for use of fluoride varnish and recommended concentrations of fluoride toothpaste

evidence-based toolkit for prevention	to be sure they are doing the best for their patients in preventing disease	• Healthy eating advice to prevent dental caries • Use sugar free medicines • Improving periodontal health and prevention of erosion • Reducing smoking and alcohol use • Helping patients to change their behaviour
Public Health England (2018) *Commissioning better oral health for older vulnerable adults: a toolkit for local authorities*	Overview of the impact of oral diseases in vulnerable older people, the evidence on what works to improve oral health in this group, and advice to commission services.	• Daily use of high fluoride toothpastes (2,800 or 5,000 parts per million fluoride) as part of daily effective tooth brushing • Quarterly application of fluoride varnish as well as effective daily tooth brushing • Supporting vulnerable older people and their carers to maintain daily oral hygiene routine • Training in oral health for care staff and carers • Protocols for oral care in care settings • Routine denture identification marking • Community water fluoridation
Royal College of Paediatrics and Child Health, (2015) *Child Protection Evidence – Dental Neglect*	Review of the evidence on effects of dental neglect and implications for future practice	• Failure to attend appointments when a child is experiencing pain, or failure to adhere to a recommended treatment plan, should prompt a full investigation of the explanation for this • Given varying prevalence of caries among young children, it is impossible to define a precise threshold for dental neglect, but a child who is experiencing pain, discomfort, social embarrassment or medical complications as a result of caries should be attending for appropriate treatment • Dentists are strongly encouraged to collaborate with local safeguarding/child protection teams to ensure that appropriate referrals are made when concerns regarding dental neglect arise

Cost effectiveness of oral health preventative interventions

A review of the cost effectiveness of preventative interventions for 0-5-year olds was undertaken in 2016 by York Health Economics Consortium for PHE.[48] For targeted supervised tooth brushing programmes, return on investment (ROI) for every £1 spent was calculated at £3.06 after 5 years and £3.66 after 10 years. For targeted provision of tooth brushes and tooth paste by post and by health visitors, ROI was calculated at £4.89 after 5 years and £7.34 after 10 years. For a universal water fluoridation scheme, the estimated return for £1 investment was £12.71 after five years and £21.98 after ten years.

Figure 14: Analysis of return on investment of oral health programmes for 0-5-year olds



Source: PHE, 2016

Health in All Policies

The Health in All Policies (HiAP) agenda is based on the recognition that our greatest health challenges – for example, non-communicable diseases, health inequalities, spiralling health care costs and environmental sustainability – are highly complex and often linked through the social determinants of health. No single sector will have all the tools, knowledge, capacity or budget to address this complexity. HiAP therefore aims to ensure that all decision-makers are informed about the health, equity and sustainability consequences of various policy options during the policy development process. A HiAP approach involves systematic consideration of oral health impacts in any intended relevant policy decisions. These could be noted in a dedicated Oral Health Impact Assessment (OHIA) document, or oral health could be explicitly mentioned in a general Health Impact Assessment documentation with respondents actively prompted to consider oral health impacts. HiAP engages a range of partners to work together to improve health and reduce inequalities and, at the same time, advance other goals, such as educational attainment, improved housing and green spaces, environmental sustainability, promoting job creation and economic stability.

Whereas improving the oral health of individuals is best achieved through targeted, individualised preventative interventions, improving the oral health of whole communities can be achieved through so-called 'upstream' public health interventions. These focus on the social, legal and policy environment that affect the health and wellbeing of both individuals and communities - the "wider determinants" of health. While preventative interventions in the clinical setting are determined mainly through access to dental services and can be targeted at vulnerable groups or individuals at risk of poor oral health, sustainable improvement at a community level is best achieved through social policy approaches that create environments and social conditions to support and promote better oral and general health.

PHE's *Local Authorities improving oral health: commissioning better oral health for children and young people toolkit*[49] contains examples of Oral Health in All Policies interventions, illustrated in the table below. For more examples, please refer to the PHE document.

Table 10: Examples of Oral Health in All Policies interventions

Intervention	Examples
Introduction of healthier food and drink policies in childhood settings to create a health promoting environment –impacts on oral health through reduction of sugar consumption	Nutritional standards in school canteens, school policies on snack, celebration and reward foods, providing drinking water in schools and early years' settings
Influencing local and national government policy to improve oral and general health	Local public health input into planning decisions (e.g. restrict food take-away outlets near schools), establishing safe play areas. National policies advocating tighter controls on advertising, promoting and labelling of sugary food and drink
Introducing fiscal policies which promote oral health	Local policies on affordable healthier food/drinks in public settings (e.g. libraries, leisure centres); national policies e.g. minimum unit pricing for alcohol, increased taxation on tobacco; sugar tax on soft drinks leading to product reformulation and reductions in sugar content

Source: PHE, 2016, Local authorities improving oral health: commissioning better oral health for children and young people toolkit

7. What is on the horizon?

Trend monitoring indicates that dental caries is continuing to decline in children and young people, although children in less affluent areas still experience greater prevalence of tooth decay than those in more affluent areas. Some of this inequality is mitigated through availability of fluoridated water.

Sugar consumption is an important factor in tooth decay. Information from the National Diet and Nutrition Surveys [50] shows that free sugar intake has been reducing over time, with mean intakes of free sugars in children aged 4-10, aged 11-18 and in adult men significantly lower in 2016-17 when compared to 2008-10. There was also a downward trend over this period in consumption of sugar-sweetened soft drinks in all age groups. Despite these decreases, average intakes for all age groups still exceed the current recommendation of no more than 5% of energy from free sugars, across all socio-economic groups. Sugar consumption therefore continues to be a risk factor for poor oral health. The UK Government's Child Obesity Action Plan[51] set a target to reduce children's sugar consumption by 2020, through working with food manufacturers to reduce sugar content of certain products by 20%.

The current oral health promotion commissioned service contract expires in March 2021. One option for the future is to transfer a reduced budget envelope into the Healthy Families Programme 0-19 in Nottinghamshire, to undertake oral health promotion activity aimed at children. If this option were adopted, it would be necessary to undertake work to mitigate the risk of no longer commissioning oral health promotion activity for vulnerable adults and older people.

In Nottinghamshire, by 2030 the number of people aged 65-84 is expected to increase by over 30% and people aged 85+ by over 90%. The number of older people living alone in Nottinghamshire is expected to increase by 21% between 2017 and 2026.[52] The Nottinghamshire Adult Care Strategy[53] aims to promote independence and support people to live in their own homes for as long as possible, reducing reliance on permanent residential care in favour of home care services and informal care. These changes will result in a care home population which is becoming older with higher care needs, alongside an increased number of older people being cared for in their own home, who may not be able to easily access routine dental services due to functional limitations, transport difficulties and multiple long-term conditions. Coupled with this, as more people keep their teeth for longer, the range of dental treatment required will become more complex and more likely to demand the specialised facilities of a dental surgery.

The recently published NHS Long Term Plan[54] contains several references to the importance of oral health. Section 1.15 refers to oral health in care homes. Children and young people's oral health is mentioned in the context of emergency department admissions (section 3.44), importance of holistic care including oral health across local authority and health services, and the Starting Well Core initiative supporting dentists to see more children from a young age to form good oral health habits, for example via the Dental Check by One initiative referred to elsewhere in this JSNA chapter, to establish and maintain a whole family preventative approach to oral health as early as possible. Finally, at section 2.31, the Plan refers to including dental checks as part of provision for children with learning disabilities and autism.

In July 2019, the Government published a consultation entitled *Advancing our health: prevention in the 2020s,* which refers to addressing inequalities related to oral health. In

2020 the government intends to consult on proposals to roll out a school toothbrushing scheme in more pre-school settings and primary schools in England, based on evidence that suggests these programmes have the ability to reduce tooth decay, mitigate inequalities and establish lifelong behaviour to improve oral health. The aim would be to focus on the most deprived 3 to 5-year olds, reaching 30% by 2022.

The consultation document also references evidence that areas with fluoridated water have lower levels of dental disease that similar areas without fluoridation. For five-year olds living in the most deprived areas, fluoridation reduces the likelihood of tooth decay by a third. The consultation document refers to future exploration of ways of removing the funding barriers to water fluoridation, including a mechanism to reward councils for fluoridation by receiving a share of the savings from fewer child fillings and extractions.

What does this tell us?

8. Unmet needs and service gaps

Overall, Nottinghamshire is similar to the rest of the country when considering oral health outcomes. However, local data shows variations in children's oral health in different areas of the County, so addressing poor oral health in some areas continues to be a concern. Certain groups of vulnerable adults and older people are also identified as having particularly poor oral health, being at increased risk of oral health problems, experiencing difficulties in accessing services, or being less likely to visit the dentist. The scope for improving oral health by concentrating future resources on areas or population groups with greatest identified oral health need should be considered when planning oral health promotion and treatment activity in the future, particularly in the context of budgetary constraints. Seeking to integrate oral health promotion within wider policies and other care pathways can also maximise the opportunities for delivering oral health messages.

Options being explored for delivery of oral health promotion activity with a proposed reduced budget in the future include integrating provision related to children and young people within the Healthy Child Programme, with oral health promotion advice included within the Health 4 Kids and Health 4 Teens websites. Work will need to be undertaken to mitigate the risks associated with changes to oral health promotion service, especially related to oral health improvement for vulnerable adults and older people.

Anticipated demographic changes and changes in the way care is provided in the future, with an ageing and increasingly isolated population, and increased use of home care, need to be considered in future oral health services planning and delivery. These changes are likely to lead to increased need for older people's dental services - for example, increased need for complex treatments in older people, as more people retain their natural teeth for longer. Dental service workforce planning will need to factor in these potential changes. There could also be implications for the way dental services are delivered, with consideration being needed of how to make services accessible for people being cared for in their homes.

The CQC report on oral health in care homes nationally, and the NHS Long Term Plan, both refer to oral health needs among older people. The CQC report identifies that for older people in care homes, current oral health needs assessment and staff training focus mainly on presence of teeth and dentures, and on oral hygiene or denture cleaning skills. It identifies requirements for training on the recognition of urgent problems in residents and how to access urgent or emergency dental care. The specific recommendations are:

- People who use services, their families and carers need to be made more aware of the importance of oral care.
- Care home services need to make awareness and implementation of NICE guideline NG48 a priority.
- Care home staff need better training in oral care.
- The dental profession needs improved guidance on how to treat people in care homes.
- Dental provision and commissioning need to improve to meet the needs of people in care homes.
- NICE guideline NG48 needs to be used more in regulatory and commissioning assessments.

The most recent dental epidemiology surveys of children in Nottinghamshire indicated that 2% of 3-year olds had early childhood caries, and 3.2% of 5-year olds had incisor caries. These children may need to be admitted to hospital for tooth extractions. In 2017/18, in Nottinghamshire there were 768 hospital admissions in children under 19 for hospital dental extractions, of which 165 were in children under five. 476 of the 768 extractions were categorised as primarily due to dental caries (tooth decay) with 124 of these being in children under five. Relevant local hospital services provide oral health information for patients and their carers using the facilities, for example in waiting areas. However, more could be done to follow up the children who experience hospital admission for the reason of tooth decay, for example by systematically offering subsequent regular dental treatment and/or by making safeguarding referrals where appropriate, as extreme tooth decay may contribute to a wider pattern of parental neglect. Systematically following up children who are admitted to hospital for oral health problems in this way could help to reduce the risk of problems occurring in the future. The British Society of Paediatric Dentistry defines dental neglect as ”the persistent failure to meet a child's basic oral health needs, likely to result in the serious impairment of a child's oral or general health or development.”[55] The British Dental Association also gives comprehensive guidance for professionals around managing dental neglect. This guidance should be considered in cases of dental neglect, and local safeguarding children procedures should be followed in such cases.

Local data show that within Nottinghamshire, attendance rates by children at the dentist are lower in the areas of greater socio-economic need. Attendance at the dentist is an important part of oral health improvement for all age groups, partly because it gives an opportunity for delivery of oral health messages. Integration of oral health promotion within care pathways is important to maximise the opportunities for delivering oral health messages and encourage regular visits to the dentist.

9. Knowledge gaps

There is a lack of local data related to adult dental health. Much information comes from national surveys: the Adult Dental Health Survey conducted once every ten years, and occasional surveys of selected groups, such as people with learning disabilities or residents of care homes. Information on oral health of some vulnerable groups, such as homeless people, people with serious mental illness, or people from gypsy, traveller and Roma communities, has come from other areas or international surveys, as no national or local survey information could be located.

For children's oral health, information is available at a local level, through the National Dental Epidemiology Programme which surveys five-year-olds every two years and other selected age groups in the alternate years. It is important to secure engagement from all schools and early years settings in the National Dental Epidemiology Programme, to ensure that data is collected systematically and consistently. As the data earlier in this chapter show, not all areas participated in the last survey of three-year olds in Nottinghamshire. More recently, some settings expressed reservations relating to data sharing and impact on their workload.

Based on national surveys, people with learning disabilities are a specific cohort known to have worse than average oral health. From age 14, young people and adults with learning disabilities are entitled to an annual health check with their GP. Learning Disability (LD) annual health checks include questions about whether the participants are accessing dental care, which should result in participants being advised to make an appointment with the dentist if they have not recently had a dental check. The next step would be to find out how well these oral health questions in the LD health checks questionnaires are working in terms of increasing dental access and outcomes. The NHS Long Term plan reference implies that this needs to be improved; it would be useful to seek evaluation of how these questions are being answered and what LD nurses and GPs are doing with the information to help improve oral health care access and outcomes.

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What should we do next?

10. Recommendations for consideration

	Recommendation	Lead(s)
Strategy		
1	Oral health impacts assessments relating to any intended relevant policy decisions should be systematically considered as part of a Health In All Policies approach.	All public sector agencies
2	Integrate oral health into policies addressing non-communicable diseases and general health more broadly to secure health and wellbeing throughout life.	All public sector agencies
Public Health Intelligence and Data Improvement		
3	Include examination of effectiveness of oral health questions in evaluation of Learning Disability Health Checks	NHS commissioner of LD health checks (NHS England)
Prevention		
4	The approach to delivery of future oral health promotion interventions must consider reducing inequalities in our most vulnerable groups by taking a proportionate universalism approach	All commissioners
5	Explore how to mitigate the risks associated with the proposed reduction of the oral health commissioned service due to budget constraints, especially in relation to vulnerable adults and older people	Nottinghamshire County Council
6	Improve the oral health care of older people living in care homes through working with care homes to promote the use of NICE and CQC guidance	Local authority: Adult Social Care and Public Health commissioners, PHE, Health Education England, care home providers and associations and carers' organisations
7	Integrate oral health within adults' and children's services, for example embedding oral health within the frailty pathway for older people, ensuring oral health is integrated within the early years' service, ensuring dental trauma is considered in the context of avoidable injuries.	Statutory bodies and providers with responsibility, ICS leads

8	Scope how systematic processes for following up children who experience hospital admission because of tooth decay could be established. These should comprise follow up for regular dental treatment and appropriate information sharing with other professionals including social care, to ensure that children are safeguarded, as dental neglect may be a feature of wider neglect.	Local authority with support from NHS England and PHE
Service Quality and Accessibility		
9	Plan for anticipated changes to demography and operating context e.g. need for complex treatments in older people, as more people retain their natural teeth for longer, consideration of how best to make oral health services accessible to vulnerable people who have difficulty accessing routine care.	NHS England
10	Improve access for older people to oral health care through further provision of training for care home staff on how to recognise urgent dental problems and how to access urgent dental care for residents, and for dental professionals on treatment of people in care homes.	Local authority with support from care providers, PHE, Health Education England and carer/care home associations
11	Seek to improve access to dental services for other vulnerable groups e.g. continuity of oral health care for people coming out of places of detention; integrate oral health promotion into substance misuse pathway; promote NHS low income scheme and equity of access for those without a fixed address, integrate oral health into Learning Disability care pathways.	Local authority, PHE and NHS

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Glossary of terms

Calculus	Hardened form of *plaque* on teeth
Confidence interval	Confidence Intervals (CIs) are a way of expressing how certain we are about a figure, such as an estimated prevalence based on results for a small sample of the population. CIs define a range of values which we are 95% certain contains the true value. They are shown on the charts as a shape like a capital I over the associated bar.
dmft / DMFT	Decayed, missing or filled teeth. In lower case (dmft) refers to baby teeth, in upper case (DMFT) refers to adult teeth. Surveys of three- and five-year olds refer to dmft; surveys of twelve-year olds refer to DMFT.
Dental caries	Tooth decay
Free sugars	Free sugars include all added sugars in any form; all sugars naturally present in fruit and vegetable juices, purees and pastes, and similar products in which the structure has been broken down; all sugars in drinks (except for dairy-based drinks) and lactose and galactose added as ingredients.
Fluoride	A mixture of chemicals, which can occur naturally and is added to toothpaste, and sometimes to drinking water supplies, because evidence shows it is good for people's teeth.
Fluorosis	The appearance of faint lines or streaks on the teeth that can result from over-exposure to fluoride. Most commonly caused by consuming too much fluoride before the age of 8, when permanent teeth are forming.
Incisors	The narrow-edged teeth at the front of the mouth – four at the top and four at the bottom.
Periodontal disease	Gum disease
PHE	Public Health England. An executive agency of the Department of Health and Social Care in the United Kingdom from 1 April 2013.
Plaque	A film or mass of bacteria that grows on surfaces within the mouth, such as on the teeth, on chewing surfaces, or along the gumline. It can be removed by brushing.
WHO	World Health Organisation. A united nations organisation whose primary role is to direct and coordinate international health.

Annex: Supporting data for charts

Figure A1: Proportion of five-year-old children free from dental decay in Nottinghamshire 2007/8 to 2016/17

Time period	England %	Nottinghamshire %
2007/08	69.04	74.43
2011/12	72.17	76.90
2014/15	75.20	78.97
2016/17	76.70	79.91

Figure A2: Local variations in decayed, missing and filled teeth (dmft) in 5-year-old children

Time period	England	Notts	Ashfield	Basset-law	Brox-towe	Gedling	Mans-field	N&S	Rush-cliffe
2007/08	1.11	0.81	0.79	0.63	0.9	1.3	0.56	0.9	0.62
2011/12	0.94	0.64	0.71	0.43	0.67	0.75	0.68	0.95	0.37
2014/15	0.84	0.61	0.64	0.5	0.5	0.71	0.84	0.74	0.34
2016/17	0.78	0.55	0.67	0.6	0.31	0.44	0.79	0.71	0.34

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