Herefordshire Council

Herefordshire Oral Health Needs Assessment

Version - FINAL

Herefordshire Council - Public Health Team

September 2019

CONTENTS

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ABBREVIATIONS

BAME – Black, Asian and Minority Ethnic
CCG – Clinical Commissioning Group
CDS – Community Dental Service
COHIPB – Child Oral Health Improvement Programme Board
COT – Courses of Treatment
DAC – Dental Access Centre
D_3MFT/d_3mft – Decayed, missing and filled teeth
GDP – General Dental Practitioner
GDS – Community Dental Service
HC – Herefordshire Council
IMD – Index of Multiple Deprivation
JSNA – Joint Strategic Needs Assessment
LAC – Looked After Children
LDC – Local Dental Committee
LGA – Local Government Association
LSOA – Lower Layer Super Output Area
NDEP – National Dental Epidemiology Programme
NHS – National Health Service
NHSE – NHS England
NICE – National Institute of Health and Care Excellence
OHNA – Oral Health Needs Assessment
ONS – Office for National Statistics
PHE – Public Health England
PHOF – Public Health Outcomes Framework
STP – Sustainability and Transformation Partnership
UDA – Unit of Dental Activity
UTLA – Upper Tier Local Authority

GLOSSARY

D_3mft/D_3MFT

A commonly used indicator of tooth decay and treatment experience in a population - (d), missing due to decay (m) and filled due to decay (f) teeth (t) in a population. In five year old children this score will be for the baby or first teeth or dentition and will be in lower case letters (dmft). In twelve year old children this score reflects the adult or permanent teeth or dentition and will be in upper case letters (DMFT).

Unit of Dental Activity (UDA)

Units of Dental Activity (UDAs) are a measure of the amount of work done during NHS dental treatment. More complex dental treatments count for more UDAs than simpler ones. For example, an examination is 1 UDA, fillings are 3 UDAs, and dentures are 12 UDAs.

Course of Treatment (CoT)

Dental care is provided to patients as CoT, and reflects –

- An examination of a patient, an assessment of their oral health, and the planning of any treatment to be provided to that patient as a result of that examination and assessment
- The provision of any planned treatment (including any treatment planned at a time other than the time of the initial examination) to that patient

OVERVIEW

Despite national improvements in oral health over the last few decades, many people across England and Herefordshire experience preventable oral diseases that impact on their everyday life. Oral health is therefore an important public health issue both nationally and locally.

Herefordshire Council and local authorities across England have a clear responsibility for improving the oral health of both children and adults and reducing inequalities in oral health. To inform local priorities and action, national guidance recommends that local authorities undertake an oral health needs assessment.

This document therefore fulfils this requirement, by comprehensively describing the standard of oral health of people living in Herefordshire and providing a detailed overview of current oral health care services locally.

Based on the best available intelligence, this assessment has found that the standard of children's oral health in Herefordshire is poor, and is poorer than both the regional and national picture. For example, just under a third of 5 year olds locally experienced preventable tooth decay in 2016/2017. Significantly this figure has remained broadly unchanged in the last 10 years.

Areas of good practice for preventing and addressing poor oral health in children and adults are evident across Herefordshire. Despite this, local challenges clearly exist in ensuring everyone has equitable access to dental care and preventative interventions for improving oral health.

To address these identified local issues and gaps, this document proposes 10 key recommendations. Each recommendation has been informed by national policy and guidance.

It is envisaged that future action and activity for improving oral health will be led by Herefordshire Council's Public Health Team and undertaken in collaboration with key local and regional organisations e.g. Healthwatch Herefordshire and Public Health England.

INTRODUCTION

Oral health reflects the 'standard of the oral and related tissues, which enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment' [1 - pg.55]. Good oral health is therefore integral to an individual's overall health, well-being and quality of life [2].

Over the last forty years, the oral health of both children and adults in England has significantly improved [3,4]. Despite this marked inequalities remain and many people continue to experience the negative physical, emotional and social impacts associated with poor oral health and oral disease.

Oral health problems of substantial concern include dental caries (tooth decay), periodontal (gum) disease and oral cancers [5,6]. Importantly, these diseases and almost all oral health problems are either largely preventable or can be treated in their early stages.

The causes of poor oral health and inequalities in oral disease are complex. A broad range of interacting biological, socio-behavioural, psychosocial, societal and political factors contribute to a person's risk of experiencing poor oral health outcomes [3,7,8].

Most oral diseases share modifiable risk factors common to the four leading non-communicable diseases; cardiovascular disease, cancers, respiratory diseases and diabetes [9,10]. These common risk factors include unhealthy diets (high in sugar), tobacco use and alcohol consumption.

Crucially, for both children and adults, poor oral health can cause significant pain and discomfort, making it difficult to eat, drink, communicate and socialise normally [5,11,12]. In addition, poor oral health places a considerable financial burden on individuals and wider society. This is because treating oral diseases is often complex and costly, and those experiencing poor oral health are more likely to be absent from education or employment.

Over the last decade, an increasing national emphasis has been placed on the importance of improving population oral health [8,13,14]. A range of key organisations both within and outside of the social care system, are therefore actively engaged and contributing to this national agenda at a regional and local level e.g. local authorities, Public Health England (PHE), NHS England (NHSE) and the Local Government Association (LGA).

NATIONAL CONTEXT – ENGLAND

Following the introduction of the Health and Social Care Act 2012, the responsibility for improving population oral health and reducing oral health inequalities in England was conferred to local authorities (unitary and upper tier) [3,4,6,15].

Consequently, since April 2013 and in partnership with PHE, NHSE and Clinical Commissioning Groups (CCGs), local authorities have been required to –

1) Secure the provision of oral health surveys in order to facilitate:
   - The assessment and monitoring of oral health needs
   - Planning and evaluation of oral health promotion programmes
   - Planning and evaluation of the arrangements for the provision of dental services
   - Reporting and monitoring of the effects of any local water fluoridation schemes

2) Secure the provision of oral health improvement programmes (to the extent that they consider appropriate in their area)

3) Participate in any oral health survey conducted or commissioned by the Secretary of State

4) Make proposals with regard to water fluoridation schemes, including a duty to conduct public consultations in relation to such proposals and powers to make decisions about such proposals

The commissioning of NHS dental services (including the totality of primary, secondary and unscheduled or urgent dental care), became and remains the responsibility of NHSE as part of the 2012 act. Furthermore, expert and specialist dental public health advice is provided by PHE for both local authorities and NHSE.

NATIONAL POLICY DRIVERS

A number of national policies and frameworks exist, which drive the agenda and ambition for improving population oral health and reducing oral health inequalities in England –

- The NHS Outcomes Framework [(16)] and Public Health Outcomes Framework [(17)] set out the desired health and well-being outcomes for adults and children in England. Both frameworks include indicators related to oral health, enabling regional and local benchmarking and progress to be monitored over time.

- An extensive range of national guidance and toolkits have been published by PHE and the National Institute of Health and Care Excellence (NICE) – See appendix A. Collectively, these present the evidence base of 'what works' for improving oral health at an individual and population level, and provide recommendations for organisations across the system.

- In 2016, PHE in partnership with a range of stakeholders, established the Child Oral Health Improvement Programme Board (COHIPB). The COHIPB action plan (2016-2020), aims to improve the health of all children and reduce the oral health gap for disadvantaged children [(18)].

- The NHS Long Term Plan (2019), places a major focus on the role and importance of preventing ill-health [(19)]. The plan includes commitments around improving the oral health of children and increasing NHS support (including dental services) for those with learning disabilities or autism and people living in care homes.

LOCAL CONTEXT - HEREFORDSHIRE

In 2017, the Joint Strategic Needs Assessment (JSNA) for Herefordshire, reported that the prevalence and severity of oral disease in children (aged 5 years), was worse than both the West Midlands and England position [20]. Consequently, concerns raised about the standard of children's oral health locally, led to Herefordshire Council undertaking the following strategic activity during 2018/2019 (see figure 1 below) –

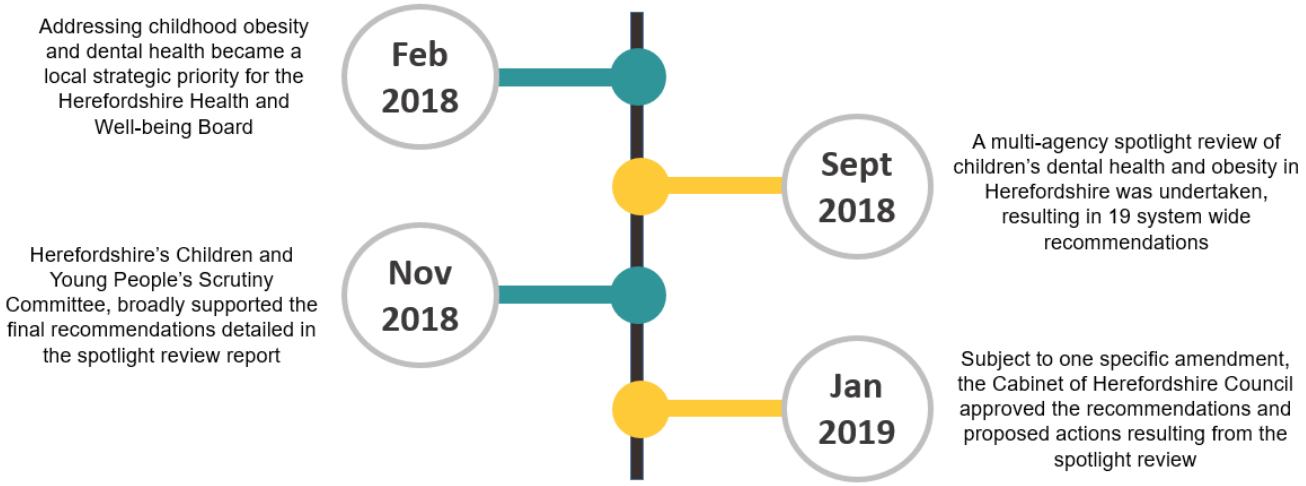


Figure 1 – Herefordshire strategic activity related to children's oral health (2018/2019)

One of the recommendations approved by the Cabinet of Herefordshire, was the requirement for a local Oral Health Needs Assessment (OHNA) to be conducted [21]. The Director of Public Health had identified this as a crucial step in determining the local strategic approach for improving oral health.

Given that a local assessment of the population's oral health hadn't previously been undertaken and a local strategic plan was yet to be developed, Cabinet agreed that an OHNA should be completed for Herefordshire.

ORAL HEALTH NEEDS ASSESSMENT – PURPOSE AND PROCESS

To fulfil the statutory requirement to assess a population's oral health needs and to inform oral health improvement activity, NICE recommend local authorities undertake OHNAs [22].

An OHNA is a cyclical process of –

"describing the oral health of a population, ascertaining their needs, measuring the capacity of existing services to meet these needs and where gaps exist, identifying new or alternative ways in which such gaps can be prioritised and filled" (pg18)

In 2014, NICE published guidance to support local authorities to conduct OHNAs, develop a local strategic direction for oral health improvement and deliver effective community based interventions [15].

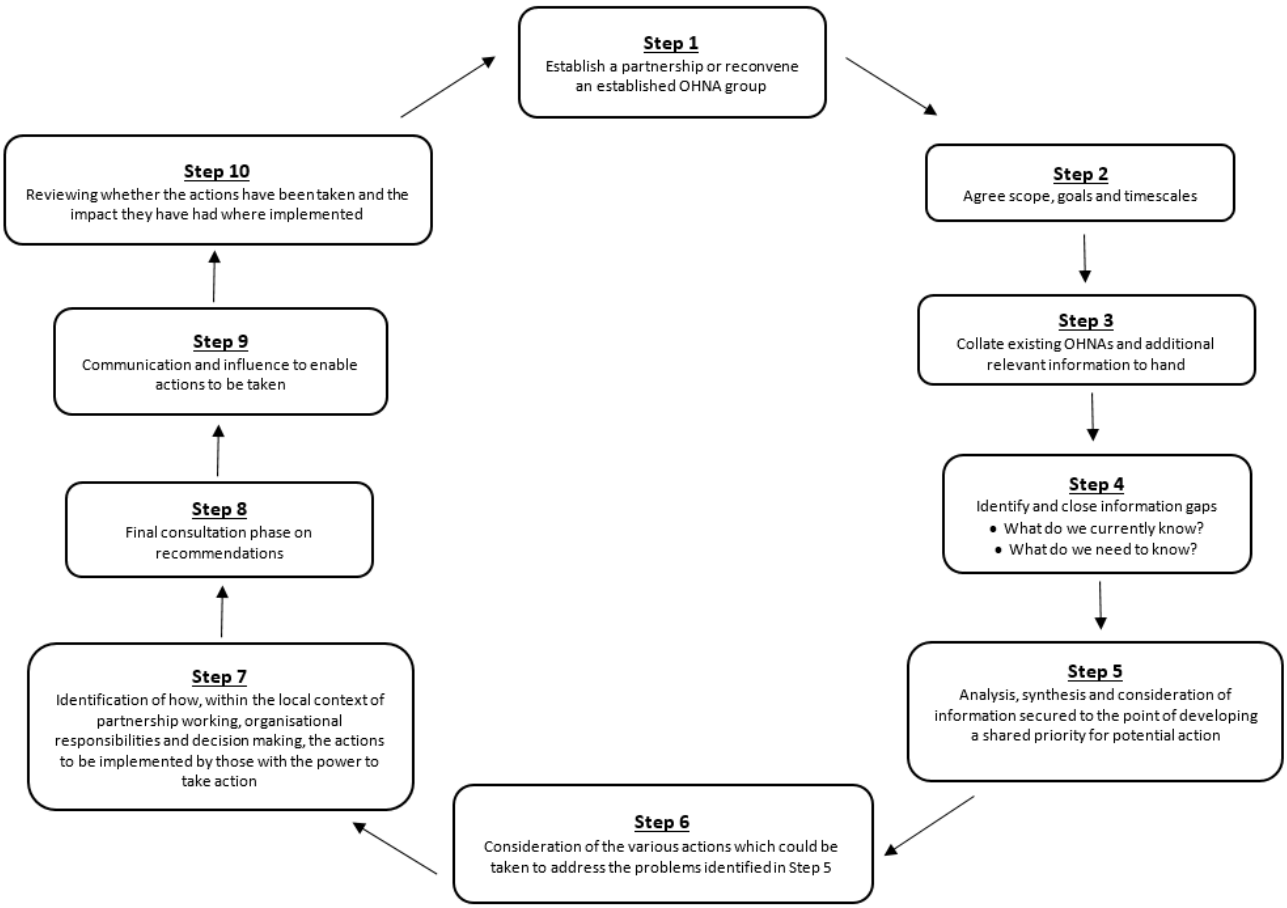


Figure 2 - 10 steps of conducting an OHNA

As part of this guidance and to ensure the methods for conducting an OHNA are comprehensive and robust, NICE recommended local authorities adopt the 10 step approach presented in figure 2.

This approach and the example OHNA template included in this guidance, has informed the final Herefordshire OHNA report.

HEREFORDSHIRE OHNA – AIMS, OBJECTIVES AND SCOPE

The specific aim and objectives of this OHNA were -

Aim

In order to inform the local strategic approach to oral health improvement and the reduction of health inequalities in Herefordshire, comprehensively describe the oral health of children and adults and the provision of oral health services across the county.

Objectives

The following objectives were developed to achieve the overarching project aim. In relation to the geographical footprint of Herefordshire –

- Describe the oral health needs of both children and adults, reporting on variation according to key socio-demographic and geographic variables
- Describe the provision and access of oral health services and identify any gaps in service
- Describe the provision of oral health improvement programmes, interventions and activities
- Identify opportunities to strengthen the access to and collection of data relevant to oral health
- Make recommendations for the future development of high quality, evidence based and outcome focused oral health care and oral health improvement services

POPULATION OF INTEREST

The OHNA covered the geographical footprint of the County of Herefordshire (within the West Midlands region). As presented in later chapters, the data included within the OHNA reflects both the resident population of Herefordshire (inclusive of both children and adults) and those accessing oral healthcare services in the county (who may or may not be residing in Herefordshire).

Where possible (based on data availability), the OHNA also considered and described the oral health needs of vulnerable groups within Herefordshire i.e. *"those people whose economic, social, environmental circumstances or lifestyle place them at high risk of poor oral health or make it difficult for them to access oral health services*" [5 - pg 93/94]. A description of the vulnerable groups of interest are described in more detail in the following chapter.

METHODS AND SOURCES OF DATA

The NICE 10 step approach informed the overall methodology employed for conducting Herefordshire's OHNA. The OHNA was conducted as a desk-based exercise and no primary research was undertaken.

To meet the aim and objectives of the OHNA, an extensive range of existing data sources were collected, analysed and reviewed. This included data from –

- Dental Epidemiology Programme (PHE)
- Public Health Outcomes Framework (PHOF)
- NHS Dental Statistics (NHS Digital)
- Office for National Statistics
- Hospital Episode Statistics (NHS Digital)
- GP Patient Survey Dental Statistics (NHSE)

- Understanding Herefordshire (Herefordshire Council and Herefordshire CCG)
- Healthwatch Herefordshire

Furthermore, an extensive range of national policies and guidance underpinned the resultant OHNA findings and recommendations (see Appendix A).

GOVERNANCE AND ACCOUNTABILITY

The process of completing the OHNA was governed by and accountable to the OHNA Task and Finish Group. Membership of this group included –

- Emma Booth – Specialty Registrar in Public Health, Herefordshire Council (Project lead and main author)
- Chris Nikitik - Intelligence Analyst, Herefordshire Council (Co-author)
- Caryn Cox – Consultant in Public Health, Herefordshire Council (Project supervisor)
- Sophie Hay – Health Improvement Practitioner, Herefordshire Council
- Anna Hunt – Consultant in Dental Public Health, PHE

In addition to the OHNA task and finish group, engagement with the following key stakeholders was crucial in guiding the structure and content of the OHNA –

- NHSE and NHS Improvement (Midlands)
- PHE (West Midlands Centre)
- Herefordshire Local Dental Committee (LDC)
- Wye Valley NHS Trust (Community Dental Services)

Final approval and sign-off for the OHNA was obtained from the Director of Public Health for Herefordshire Council in September 2019.

REPORT DISSEMINATION

The final local OHNA report will be published on the 'Understanding Herefordshire' website and cascaded to the following key groups and organisations during September 2019 –

- Cabinet of the Herefordshire Council
- Children and Young People Scrutiny Committee – Herefordshire Council
- Herefordshire Council services and teams
- Herefordshire LDC
- Herefordshire CCG
- PHE
- NHSE
- Healthwatch Herefordshire
- Herefordshire and Worcestershire Sustainability and Transformation Partnership (STP)

ORAL HEALTH AND DISEASE – AN OVERVIEW

Oral health is integral to a person's overall health, well-being and quality of life. The World Health Organization 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" [23]

ORAL DISEASES AND CONDITIONS

This OHNA therefore reports the standard of oral health for both children and adults, in relation to the following oral conditions – tooth decay, gum diseases and oral cancer. Each have been chosen for inclusion within this OHNA, given significant concerns about their prevalence, associated health impacts and the fact they are largely preventable [5,6,15].

Furthermore, national guidance explicitly references the action required by local authorities and key partners to prevent tooth decay, gum diseases and oral cancer [3,4,8,15,24]. Therefore, the OHNA Task and Finish Group agreed that these conditions would be the focus of the OHNA and other aspects of oral health e.g. orthodontics and dental trauma, would not be included within the scope of this OHNA.

For reference, NHSE published a West Midlands Orthodontic Needs Assessment in 2018, which included the population of Herefordshire [25].

Tooth decay

- Tooth decay (dental caries) occurs when tooth tissue is demineralised in response to the acids produced when dental plaque bacteria respond to dietary sugars.
- Continued high intake of dietary sugars, inadequate exposure to fluoride and a lack of regular plaque removal, lead to the tooth structures being destroyed.
- Over time this results in cavities and pain, and in the advanced stage, tooth loss and systemic infection.

Gum diseases

- Gum (periodontal) diseases comprise a range of oral conditions characterised by inflammation of the gums and loss of the tissues supporting the teeth.
- Caused by an interaction between plaque bacteria and the body's immune system, gum diseases present as bleeding or swollen gums (gingivitis) and pain. As gum diseases progress, chronic inflammation leads to a loss of gum attachment to the tooth and a loosening/loss of teeth (periodontitis).

Oral cancer

- Oral cancers include cancers of the lip and all sub-sites of the oral cavity and oropharynx. Oral cancers (especially in their advanced stage) and their associated treatments may cause difficulty in eating, drinking, communicating and affect their facial appearance.

WHAT CAUSES POOR ORAL HEALTH?

Wider determinants of oral disease

Individual behaviours related to oral hygiene and lifestyle are important in determining the risk of poor oral health and oral diseases. For example, inadequate exposure to fluoride and high consumption of sugar increases a person's risk of developing tooth decay and gum disease [4,12].

However, it is widely accepted that individual behaviours are profoundly shaped by the circumstances in which people are born, grow, live, work, and age [26]. The causes of poor oral health are therefore understood to be driven by a complex range of interacting biological, behavioural, psychosocial, environmental and socioeconomic factors [7,26–28] – see figure 3.

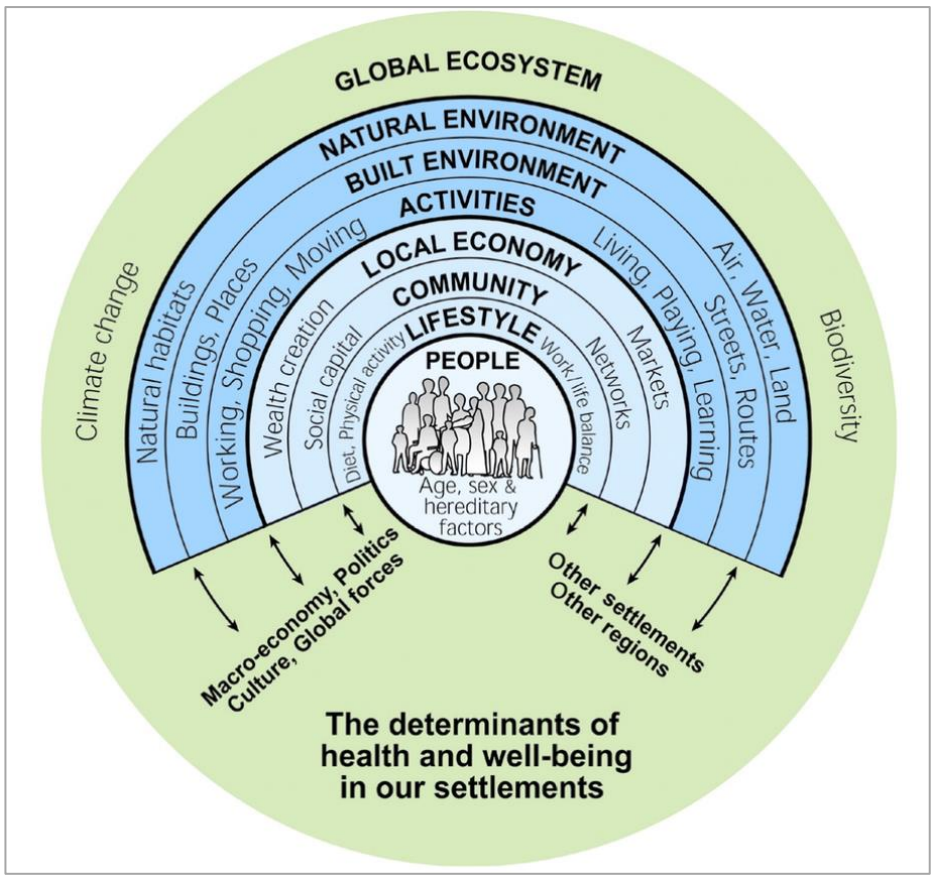


Figure 3 - The health map [25]

National policy and guidance on improving oral health [3,8,14,15,24,29], explicitly recognises the relationship between a person's risk of oral diseases and the 'wider determinants' of oral health. The wider determinants represent the background factors or characteristics that may increase someone's likelihood of adopting a particular behaviour or experiencing a specific health outcome.

For example, a person experiencing poverty is more likely to use tobacco, an important and modifiable risk factor for oral cancer [10,30,31].

Common risk factor approach

In order to achieve sustainable improvements in oral health, it remains crucial to address both the wider determinants and the modifiable risk factors for oral disease.

Significantly, most oral diseases share risk factors common to the four leading non-communicable diseases in the UK – Cardiovascular disease, cancer, respiratory diseases and diabetes [9]. These common risk factors include unhealthy dietary habits, tobacco use, excess alcohol consumption, poor oral hygiene and stress (see figure 4).

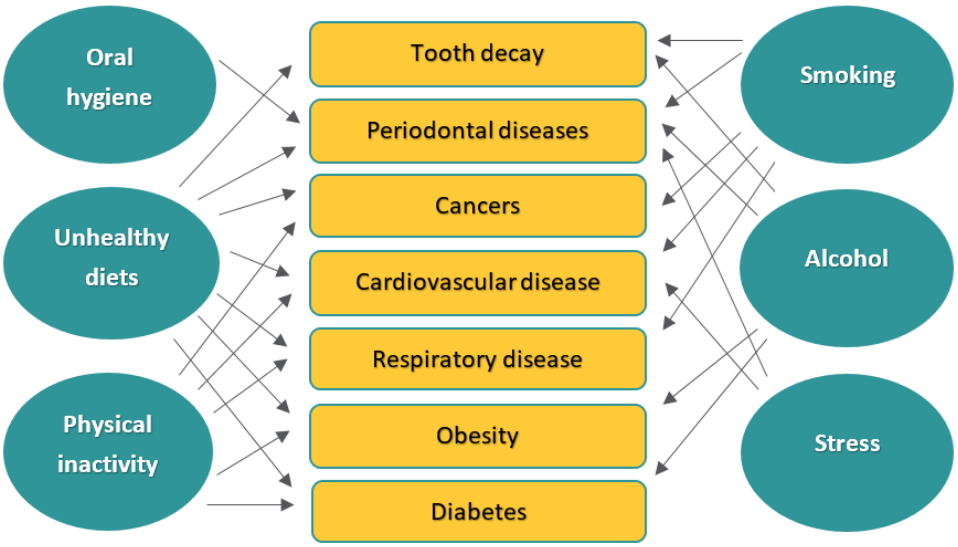


Figure 4 - Common risk factor approach for oral health (adapted from Watt, 2007[9])

By adopting a 'common risk factor approach' [10] both the wider determinants and risk factors common to chronic diseases are targeted and modified. This approach is deemed to be more effective and efficient than disease-specific approaches for improving oral health and population health more broadly because –

- Most chronic diseases have multiple risk factors e.g. cancer or cardiovascular disease
- A single risk factor can impact upon multiple diseases e.g. unhealthy dietary habits
- Some risk factors cluster in specific groups of people e.g. those from lower socio-economic backgrounds or particular minority ethnic groups

- Risk factors can interact e.g. relationship between tobacco use and excessive alcohol consumption

Intelligence regarding the incidence and prevalence of common risk factors, helps to understand future oral health needs. Therefore, in addition to the epidemiology of oral diseases, this OHNA also reports the local picture of common risk factors known to impact upon poor oral health i.e. smoking, alcohol use and dietary behaviours.

WHO IS MOST AT RISK OF POOR ORAL HEALTH?

Despite substantial improvements in oral health in England, marked inequalities remain [7,27,32,33]. Crucially as oral diseases are largely preventable, the existence of inequalities in oral health are considered to avoidable, unfair and unjust [7,34].

Poor oral health and oral diseases disproportionally affect individuals in society who are disadvantaged, vulnerable or socially excluded. For these groups, *"their economic, social or environmental circumstances means they are at greater risk of experiencing poorer oral health or may find it more difficult to access appropriate dental care"* [5 - pg 93/94]. This is inclusive of people who –

1) Are from a lower socioeconomic group or live in a more deprived area

Variations in outcomes related to oral health and health more broadly follow a continuum between different socioeconomic groups in society [26]. Those from higher socioeconomic groups experience better oral health than those from the lowest socioeconomic groups who typically experience poorer oral health [7,8].

For instance, a 20.1% difference exists in the prevalence of dental decay between 5 year olds in the most deprived and least deprived communities in England (33.7% and 13.6% respectively) [33].

Deprivation is also a significant driver for the lifestyle behaviours linked to poor oral health, with those in the lowest socioeconomic groups, more likely to smoke, have a diet higher in sugar and less likely to adopt good oral hygiene practices [7,13,30,32].

2) Are from a Black, Asian and Minority Ethnic group (BAME)

Within England, the standard of oral health varies according to ethnicity. Those from particular ethnic groups experience a markedly different burden of oral diseases such as tooth decay and oral cancer [6,7].

For example, in 2017, an almost 30% difference in the prevalence of dental decay was identified between Black/Black British children (19.6%) and children from an Eastern Europe background (49.4%) aged 5 [33].

3) Are older and frail

Maintaining good oral health can be difficult for those who are older or frail, especially those experiencing multiple long-term conditions and those living in residential care settings [24].

Those who are older or frail may face specific challenges, such as functional or mobility limitations and transport difficulties, which impact on their oral hygiene routine and their ability to access dental care. Both of which leave older people at higher risk of oral diseases and requiring increasingly complex oral healthcare [35,36].

4) Have learning disabilities

Children and adults with learning disabilities are likely to have a greater prevalence and severity of oral diseases [6,7]. Furthermore, compared to the general population, individuals with learning disabilities may have greater unmet dental care needs. PHE, recently published guidance [37] detailing the barriers someone with learning disabilities may face in achieving good oral health and accessing quality dental care.

5) *Are, or who have been in care i.e. Looked after children*

Looked after children (LAC) refer to those children under the age of 18 years, being looked after by a local authority. Due to issues associated with poverty, abuse and neglect, LAC tend to have poorer health and well-being than their peers and this is reflected in their standard of oral health [6,38].

LAC typically experience a greater burden of oral disease and are more likely to have unmet dental care needs. As part of the statutory health assessments for LAC, local authorities have a duty of care to identify and address their oral health needs [38].

6) *Are homeless*

People who are homeless are a diverse group comprising of the roofless and those living in temporary accommodation [39]. Limited research exists, which comprehensively evidences the oral health or oral health needs of people who are homeless. Recent studies however have identified that those who are homeless have significantly higher levels of tooth decay, gum disease and tooth loss than the rest of the population.

Furthermore, despite significant challenges in accessing appropriate care, people who are homeless often require more complex dental treatment [3,6,8].

7) Experience mental health problems

In 2014, around one in six adults in England met the criteria for having a common mental disorder [40]. Furthermore, 11% of children and young people aged between five and fifteen have a clinically diagnosable a mental health issue [41].

Those experiencing severe or enduring mental health problems are at particular increased risk of poorer oral health compared to the general population. In addition, accessing necessary dental treatment poses specific challenges for both children and adults experiencing mental health problems [42].

8) Experience issues with substance misuse

People who misuse drugs or alcohol tend to have poorer oral health. Use of illicit substances and excessive consumption of alcohol, negatively affects oral health by increasing a person's risk of tooth decay, gum disease and oral cancer [6,12,43].

9) Are from other vulnerable groups

This is inclusive of Gypsies and Travellers, refugees and asylum seekers, the medically compromised, as well as those with dental anxiety and dental phobia [6,44].

WHAT ARE THE IMPACTS OF POOR ORAL HEALTH?

As will be detailed later within the OHNA, the prevalence of oral diseases nationally and within Herefordshire, presents a significant public health issue. Poor oral health negatively affects a person's physical, emotional and social well-being and overall quality of life [45].

Oral diseases can cause pain and infection, which may impact upon a child or adults ability to eat, sleep, socialise, learn and work [11,23,34,44] – see figure 5.

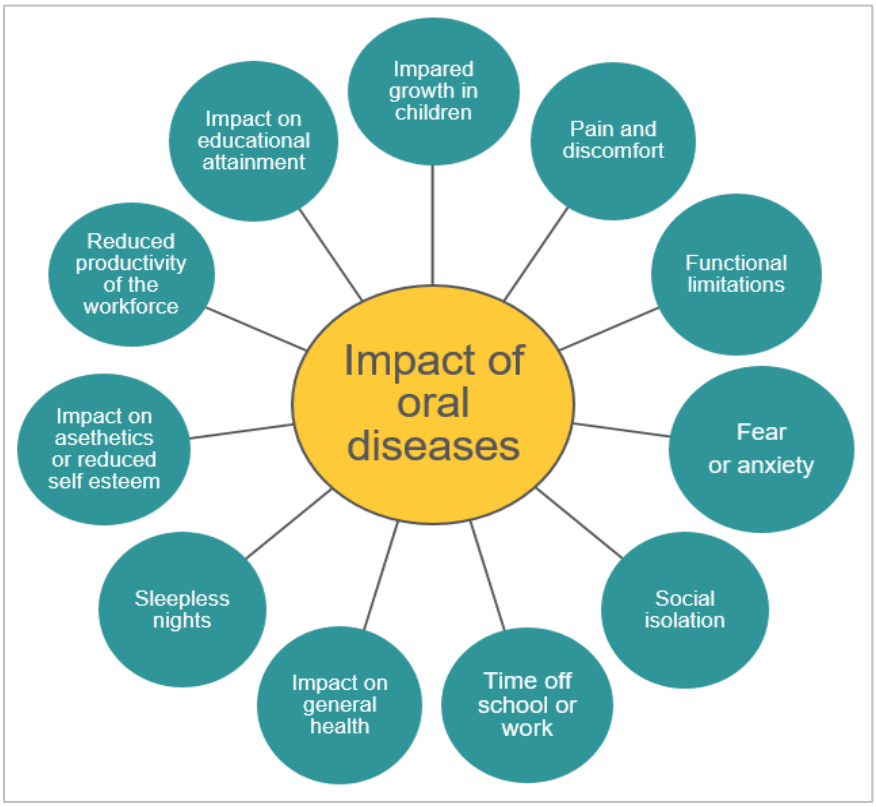


Figure 5 - Impact of oral diseases [29, 39]

A substantial negative impact of poor oral health relates to the level of disability in childhood resulting from oral diseases. For children aged 5-9 years in the UK, poor oral health was associated with a greater level of disability, than vision and hearing loss and diabetes mellutis [11,45].

Significantly, the impacts of poor oral health are not limited to the individual or their family, but present consequences to society more broadly. Despite being largely preventable, treating oral disease is costly, given the requirement for highly trained professionals, expensive technology and materials.

The NHS spent approximately £3.4 billion per annum on dental treatment in England during 2014, with an estimated additional £2.3 billion spent in the private sector [45]. Of considerable concern are the costs associated with tooth extractions. During 2015/2016, the NHS spent £50.5 million on tooth extractions for those under 19 years of age, the majority of which were due to preventable tooth decay.

In England, among children under five years of age, there were 9,306 admissions to hospital for tooth extractions in 2015/2016 (with 7,926 specifically identified as being due to tooth decay), at a cost of approximately £7.8 million.

HEREFORDSHIRE – PLACE AND POPULATION

PLACE

The County of Herefordshire is located in the West Midlands of England bordering Wales to the west, Shropshire to the north, Worcestershire to the east and Gloucestershire to the south-east (Figure 6). The city of Hereford lies in the middle of the county and other principal locations are the five market towns of Leominster, Ross-on-Wye, Ledbury, Bromyard and Kington.

The county has extensive countryside with remote valleys and rivers and a distinctive heritage. The River Wye divides the county, flowing east from the Welsh border through Hereford city before turning south through the Wye Valley 'Area of Outstanding Natural Beauty'. The Malvern Hills rising to 400m border the east of county, while the south-west is dominated by the western reaches of the Black Mountains with altitudes of more than 600m.

Herefordshire covers 2,180 square kilometres (842 square miles) with 95% of the land area classified as 'rural' and 53% of the population live in these rural areas. Being a predominantly rural county presents opportunities in, for example, tourism and agriculture, but also presents challenges, for example in geographical barriers to services.

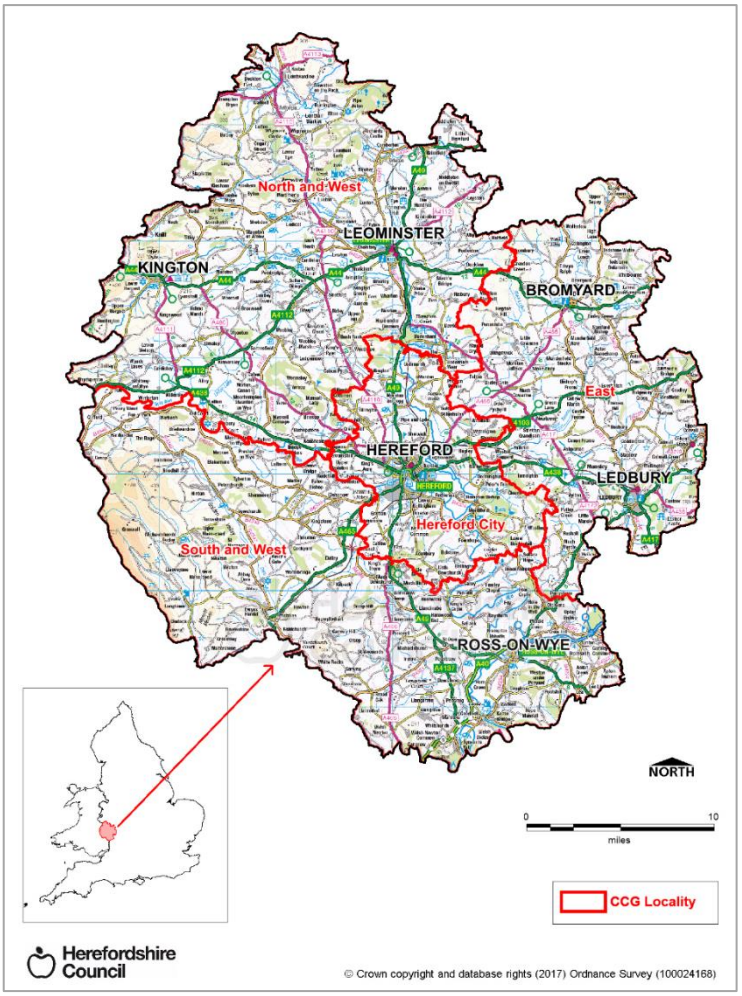


Figure 6 - Map of the County of Herefordshire

POPULATION

This section provides an overview of the total population of Herefordshire using figures produced by the Office for National Statistics (ONS), including information about recent and predicted total population growth and age structure.

Herefordshire is a predominantly rural county and has the fourth lowest population density in England. Between 2001 and 2017 the Herefordshire population increased from 174,900 to 191,000, which represents a 10.9% increase compared to population growth of 12% observed across England and Wales over the same period.

Although Herefordshire has a similar proportion of under-16s (17%) to that across England and Wales (19%), the county has an older age structure with 24% of the population aged 65+ (45,800 people) compared to 18 % nationally. This includes 6,100 people aged 85+.

Herefordshire is resident to a lower proportion of younger working age adults (from the age of 16 to mid-forties) compared with England & Wales, but has a higher proportion of older working age adults (mid-forties to the age of 64).

If recent (last five years) demographic trends were to continue and nationally determined assumptions about future fertility, mortality and migration were to be realised, the total population of Herefordshire is predicted to increase by 1% from the 2017 figure of 191,000 to 193,000 in 2020, and to 218,800 people by 2030, an increase of 9.2% from 2017 (Table 1).

Between 2017 and 2030 the majority of age groups show predicted increases in numbers, the exceptions being between 45 and 59 where numbers are predicted to fall by 3,000, a proportional decrease of 7.3%.

The greatest increase in numbers are predicted for those aged 75 and over where numbers will increase by 10,500, a proportional rise of over 50%. For those aged under 15 numbers will increase by 12.3% from 30,000 to 33,700.

These changes are reflected in the predicted change in population structure between 2017 and 2030 with there being an evident decrease in the overall proportion represented by those age 45 to 59 falling from 21.6 to 17.5%, a pattern reflected in both males and females (Figure 7).

Conversely, the proportion of the whole population accounted for by those aged 75 and over increases from 10.8 to 14.2%.

Table 1 - Estimated headline population figures for Herefordshire, mid-2017 to mid-2030

Age group	2017	2020		2025		2030	
		N	% change	N	% change	N	% change
0-4	9,500	9,600	1.1	10,300	8.4	10,800	13.7
5-9	10,600	10,800	1.9	10,800	1.9	11,400	7.5
10-14	9,900	10,600	7.1	11,500	16.2	11,500	16.2
15-19	9,700	9,100	-6.2	10,200	5.2	11,000	13.4
20-24	8,900	9,100	2.2	9,200	3.4	10,200	14.6
25-29	11,000	10,900	-0.9	11,100	0.9	11,000	0
30-34	10,800	11,500	6.5	12,300	13.9	12,400	14.8
35-39	10,600	11,100	4.7	12,600	18.9	13,300	25.5
40-44	10,200	10,600	3.9	12,100	18.6	13,400	31.4
45-49	13,000	11,800	-9.2	11,400	-12.3	12,800	-1.5
50-54	14,500	14,100	-2.8	12,600	-13.1	12,100	-16.6
55-59	13,700	14,800	8.0	14,900	8.8	13,300	-2.9
60-64	13,000	13,500	3.8	15,500	19.2	15,500	19.2
65-69	13,100	12,700	-3.1	13,800	5.3	15,600	19.1
70-74	12,000	13,000	8.3	12,500	4.2	13,400	11.7
75-79	8,200	9,600	17.1	12,000	46.3	11,500	40.2
80-84	6,300	6,700	6.3	8,200	30.2	10,300	63.5
85-89	3,900	4,200	7.7	4,900	25.6	6,000	53.8
90+	2,200	2,300	4.5	2,700	22.7	3,300	50.0
All ages	191,100	196,000	2.6	208,600	9.2	218,800	14.5

(Data source: ONS 2017 mid-year estimates © Crown copyright)

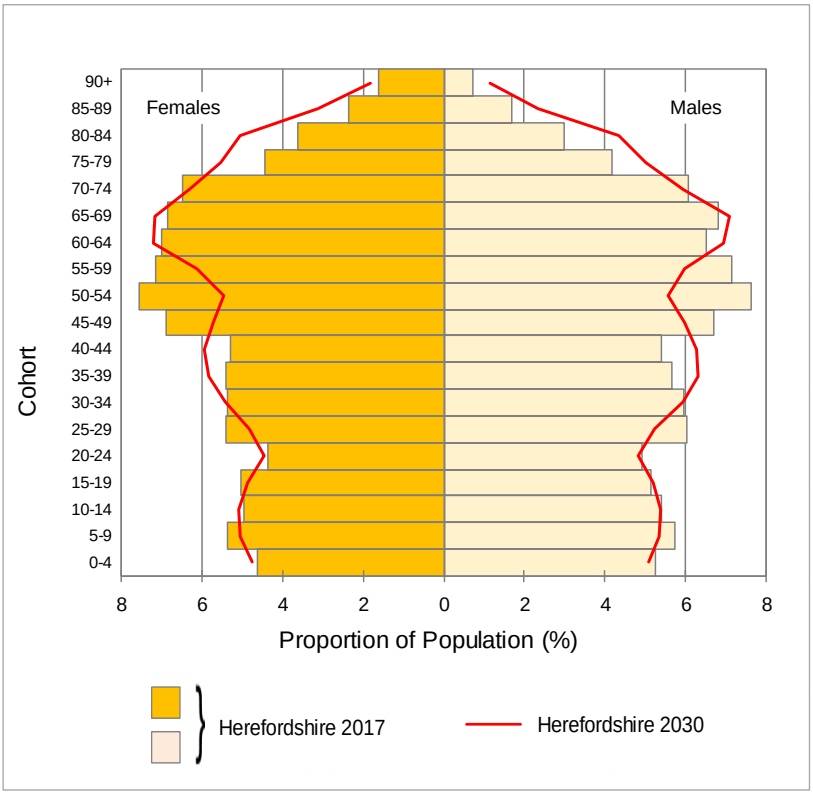


Figure 7- Estimated resident population of Herefordshire in 2017 and 2013

(Data source: ONS 2017 mid-year estimates © Crown copyright**)**

The predominantly rural nature of Herefordshire is reflected in the population density across the county with densities of over 5,000 individuals per km^2 recorded in some areas of Hereford, while densities of between 1,000 and 5,000 individuals per km^2 also evident in the market towns and parts of Hereford; much of the west of the county is resident to low population densities of less than 50 individuals per km^2 (Figure 8).

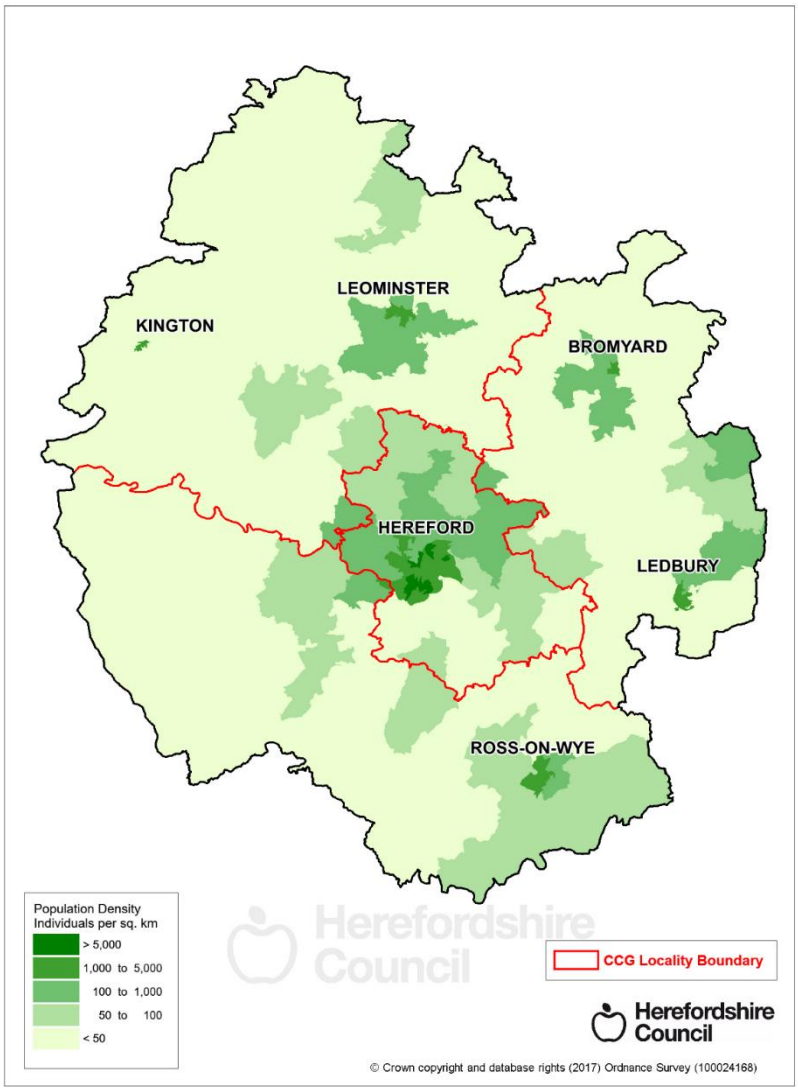


Figure 8 - Population density across Herefordshire, 2017

(Data source: ONS 2017 mid-year estimates © Crown copyright)

ETHNICITY

The 2011 census was the first opportunity to accurately quantify the impact that the expansion of the European Union in 2004 had had on Herefordshire's population, and it remains the only accurate source of information about the characteristics of the population. Estonia, Czech Republic, Hungary, Lithuania, Latvia, Poland, Slovakia and Slovenia joined in 2004; Romania and Bulgaria in 2007.

Experimental estimates in the years between censuses in 2001 and 2011 had indicated that the population of an ethnic origin other than 'white English, Welsh, Scottish, Northern Irish, British' –

known as the ‘Black, Asian and minority ethnic’ (BAME) population – had increased from 2.5 to 5.9%.

However, the 2011 census revealed that migration from Eastern Europe had been significantly under-counted in these estimates (mostly people of ‘white: other’ origin), and that they had also over-estimated the growth in the non-white population. In fact, the non-‘white British’ population in 2011 was 11,600 – more than two-and-a-half times bigger than in 2001 (4,300).

The proportion had increased from 2.5 to 6.3%, although this was still very low in national terms (19.5% across England and Wales as a whole). The ethnicity of the Herefordshire population is summarised in Table 2.

Table 2 - Ethnicity of Herefordshire population

Ethnic Group	Herefordshire		England
	No.	%	%
White: English/Welsh/Scottish/Northern Irish/British	171,900	92.0	80.5
White: Irish	700	0.4	0.9
White: Gypsy or Irish Traveller	350	0.2	0.1
White: Other White	7,200	5.1	4.4
Mixed/multiple ethnic groups	1,250	0.8	2.2
Asian/Asian British	1,450	1.1	7.5
Black/African/Caribbean/Black British	350	0.2	3.4
Other ethnic group	250	0.2	1
Total not 'White'	3,300	2.3	14.1

(Data Source: 2011 Census, table KS201. © Crown copyright)

DEPRIVATION

Based on the Index of Multiple Deprivation, out of 152 upper tier (county or shire council) authorities Herefordshire is the 92nd most deprived and is more deprived than its geographical neighbours – Shropshire (ranked 115th), Worcestershire (ranked 111th) and Gloucestershire (ranked 123th).

Of the 116 ‘Lower Layer Super Output Areas’ (LSOAs) in Herefordshire, Golden Post-Newton Farm is amongst the 10% most deprived across England; a further eight are included within the most deprived 20% in the Country, four of which are in south Hereford and three are in Leominster town.

When considering deprivation in Herefordshire across the county it is evident that a division exists between the east and the west of the county, with the latter comprising a relatively larger number of areas in the 50% most deprived in the county (Figure 9). Hereford city and the surrounding

rural area also have some of the least deprived areas in Herefordshire. Other less deprived areas include LSOAs located within the towns of Bromyard, Ledbury, Leominster and Ross-on-Wye, as well as rural areas between Hereford and Leominster and around Ledbury.

The income deprivation affecting children index is a supplementary index to the overall income domain. It gives the actual proportion of children aged 0-15 living in income deprived families. There are around 4,300 children living in income deprivation across Herefordshire (14% of all children), with the ten most deprived LSOAs in the county each have at least 28% of their under 16s living in income deprivation.

Ridgemoor in Leominster and Golden Post - Newton Farm in south Hereford have the highest proportions of children living in income deprivation with 38 and 34% respectively.

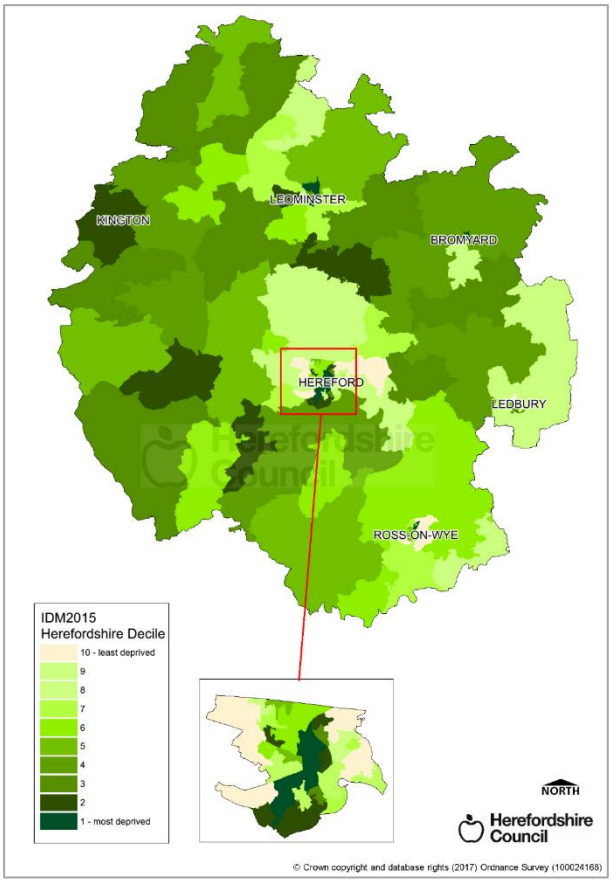


Figure 9 - Distribution of the IMD 2015 for Herefordshire LSOAs

(Data Source: ONS, 2015 © Crown copyright).

LIFE EXPECTANCY

Between 2001-03 and 2015-17 the life expectancy in males and females in Herefordshire have shown a steady increase, although small falls have been evident in subsequent years (Figure 10). For those born in Herefordshire in 2015-17 the average life expectancy is 79.8 years for males and 83.6 years for females. Similar patterns were also evident for England, although throughout

this period both the Herefordshire male and female figures have been higher than those recorded nationally, although in recent years the differences have not been significant.

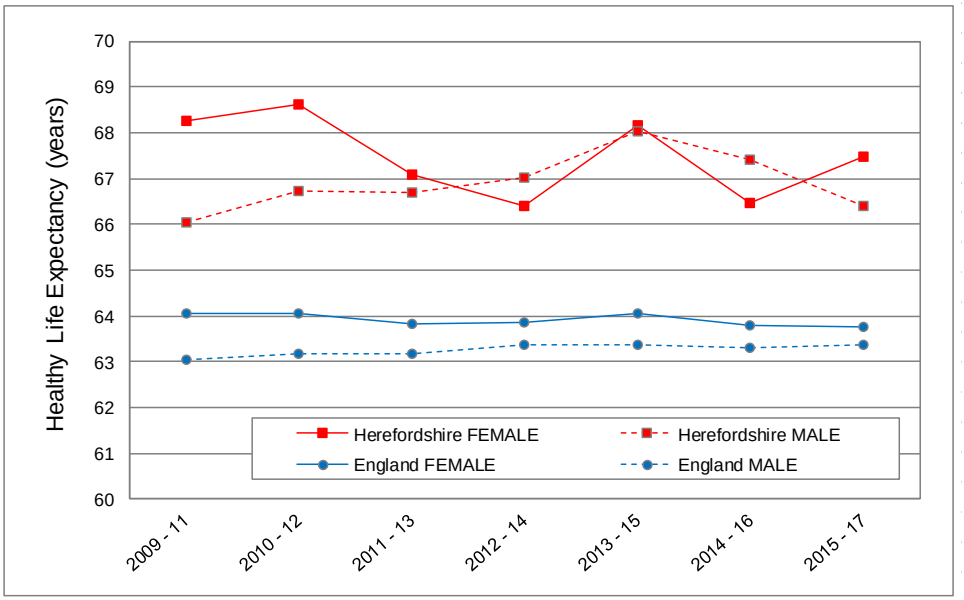


Figure 10 - Male and female life expectancy at birth in Herefordshire and England.

(Data source: Public Health Profiles, PHE)

Between 2009-11 and 2015-17 the healthy life expectancy in males and females in Herefordshire have shown some variability, although throughout this period the local figures have been significantly higher than those reported nationally (Figure 11). For those born in Herefordshire in 2015-17 the healthy life expectancy is 66.4 years for males and 67.5 years for females.

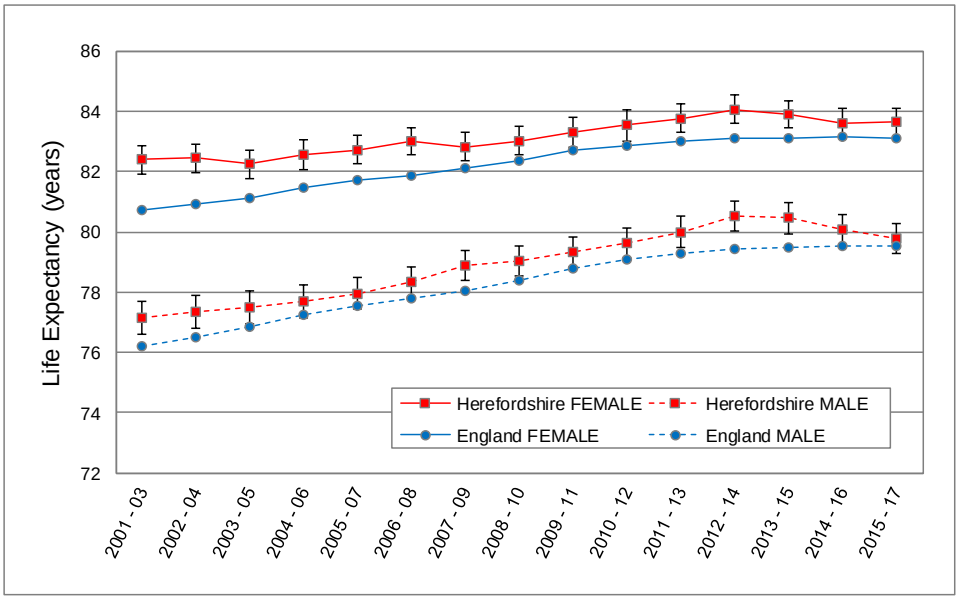


Figure 11 - Male and female healthy life expectancy in Herefordshire and England.

(Data source: Public Health Profiles, PHE)

OVERWEIGHT AND OBESITY - CHILDREN

Between 2007/08 and 2017/18 the proportion of children in reception (4-5 years) who were overweight varied between 20.7% and 24.0% locally, while levels of obesity ranged between 8.0% and 9.8%. In both cases no temporal trends were evident and the local figures were broadly similar to that observed nationally (Figure 12).

Over the same period the proportion of children in year 6 (10-11 years) who were overweight varied between 29.1 and 34.8% locally, while levels of obesity ranged between 15.5 and 19.8%. As with the reception data no temporal trends were evident and the Herefordshire figures were broadly similar to those recorded across England.

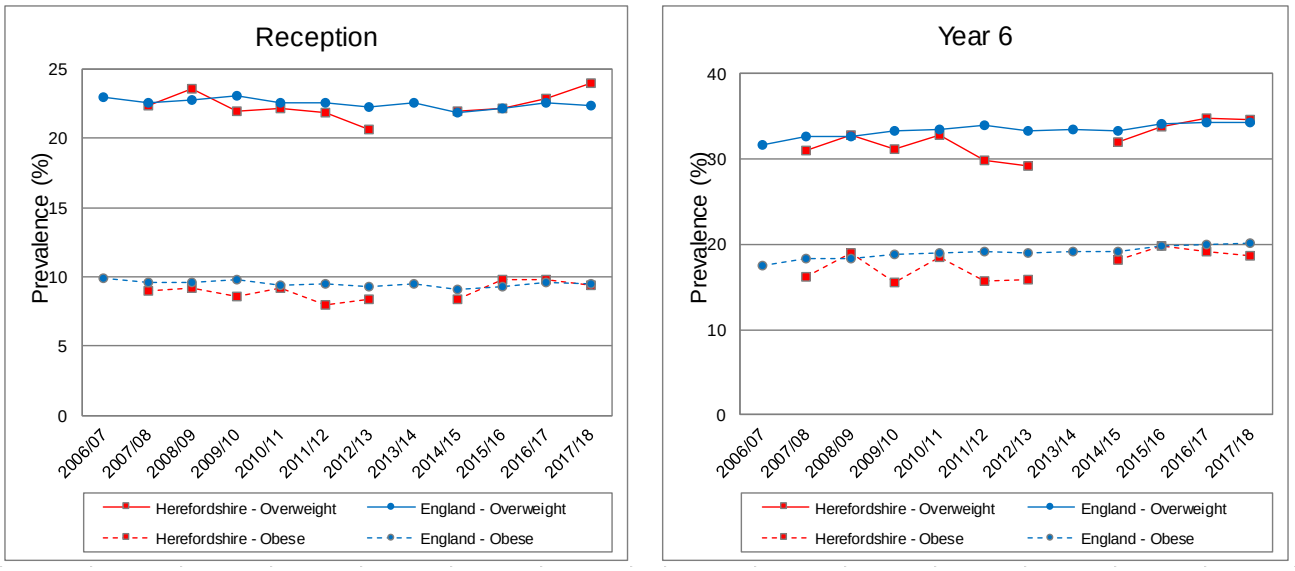


Figure 12 - Prevalence of overweight and obesity in reception and year 6 children in Herefordshire and England
(Data source: Public Health Profiles. PHE)

In 2017/18, of 1,841 Herefordshire reception age children measured, 441 (24.0%) were overweight; of this overweight cohort 172 (9.3%) were obese. In 2016/17 a total of 1,757 year 6 children were measured of which 6082 (34.6%) were overweight, 329 (18.7%) were obese. The local overweight and obese prevalence figures for both age groups were similar to those reported for England.

In reception and year 6 the highest prevalence of obesity was evident in the most deprived areas of Herefordshire with prevalence falling with decreasing deprivation, although in both cohorts this pattern is reversed in the least deprived quintile where both figures being higher than the second quintile (Figure 13). However, there are no areas of the county where fewer than 10% of children are obese when they leave primary school.

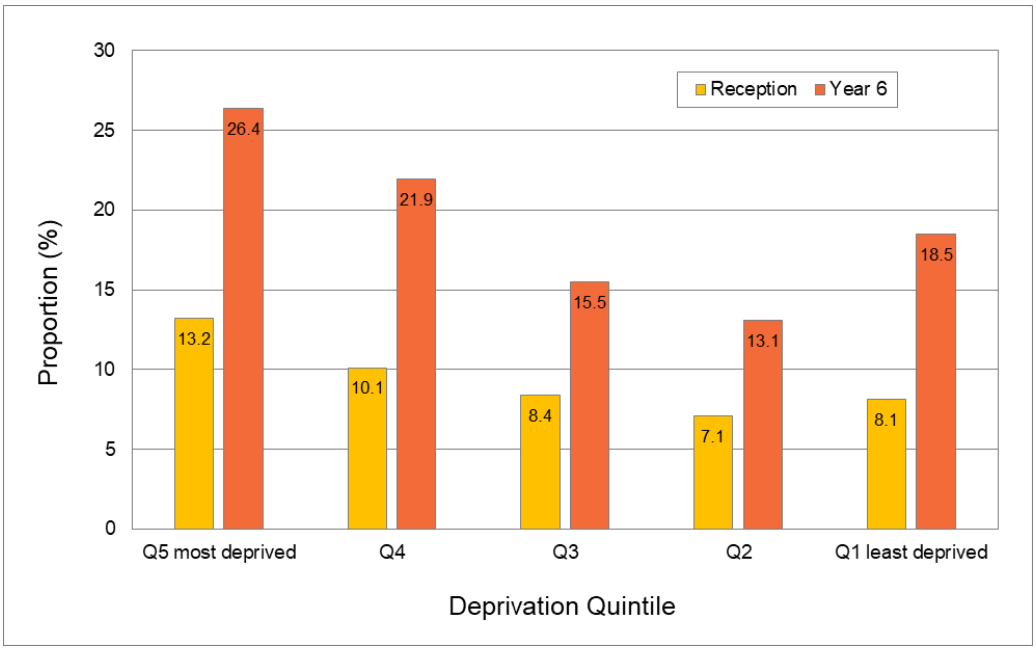


Figure 13 - Proportion of obese children in reception and year 6 by deprivation in Herefordshire.
(Data source: National Child Measurement Programme 2017/2018 and IMD 2015)

OVERWEIGHT AND OBESITY - ADULTS

Since 2015/16 there has been little variability in the prevalence of excess weight or obesity in adults in Herefordshire (Figure 14). In 2017/18 the local prevalence of excess weight was 64.5% which was similar to that recorded for England as a whole (62.0%). The prevalence of obesity in adults in Herefordshire in 2017/18 of 10.2%, was statistically higher than that recorded for England (9.8%).

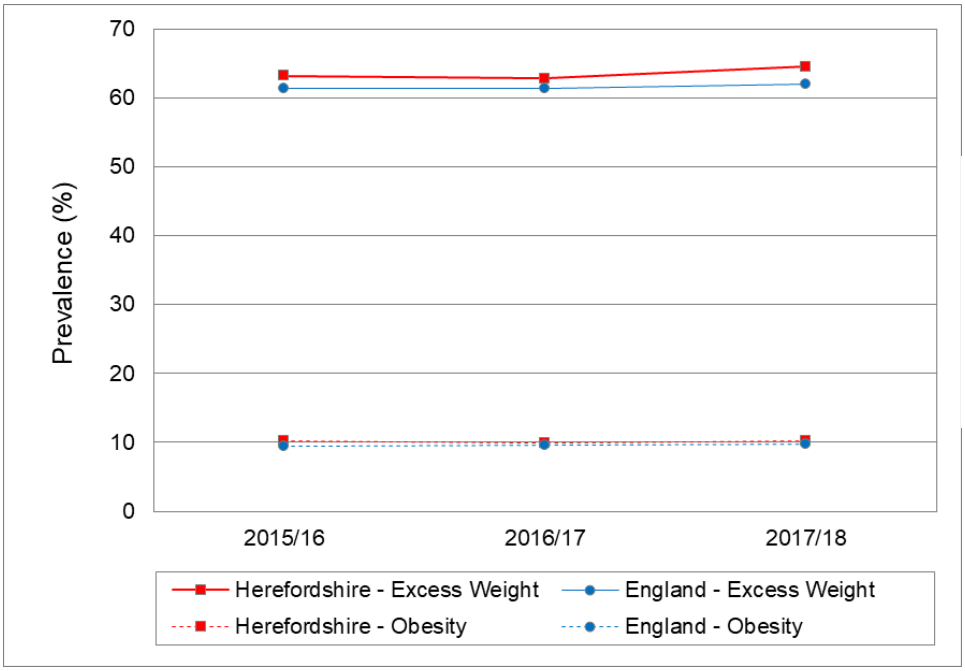


Figure 14 – Local and national trends in adult overweight and obesity prevalence

(Data source: Public Health Profiles, PHE)

HEALTHY EATING - CHILDREN

The government encourages healthy eating through campaigns such as '5 A DAY', which encourages everyone to eat at least five portions of a variety of fruit and vegetables every day. In 2014/15 the What About YOUth (WAY) survey [46] found that 58.3% of 15 year olds in Herefordshire reported eating at least five portions of fruit and vegetables on a daily basis, a figure significantly higher than that for England as a whole.

The Every Child Matters study conducted in 2009 reported that 62% of school children ate "a lot" of fresh fruit and 50% ate "a lot" of vegetables, although 10% reported "never" eating vegetables [47].

HEALTHY EATING – ADULTS

Between 2015/16 and 2017/18 the proportion of the adult population in Herefordshire reported as consuming at least five portions of a variety of fruit and vegetables every day has varied between 64.8% and 68.5% with this local figure being consistently higher than that reported for England as a whole (Figure 15).

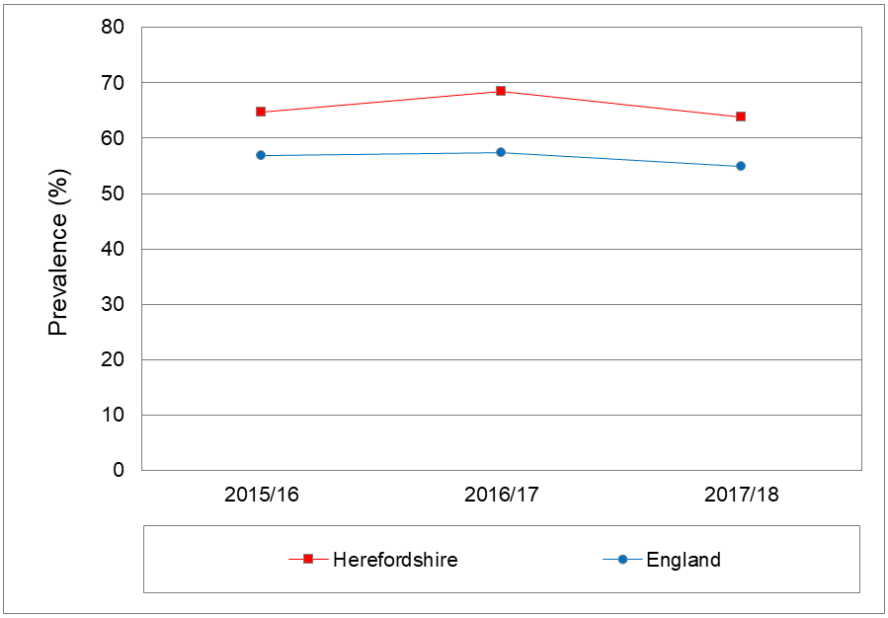


Figure 15 - Proportion of adults meeting the recommended '5-a-day' on a 'usual day'
(Data Source: Public Health Profiles, PHE)

SMOKING – ADULTS

Information on the prevalence of adult smoking has been collected as part of the Integrated Household Survey (IHS) up until 2014 and since 2012 as part of the Annual Population Survey (APS) [31]. Therefore the ONS announced it would no longer produce the IHS. Instead the questions formerly regarded as the IHS core will continue to be asked in the APS.

Between 2010 and 2017 the proportion of adults (aged 18 years and over) in Herefordshire who self-reported as smokers showed a general fall from 19.8 to 12.2%, while over the same period the figures for both England and the West Midlands also fell (Figure 16). With the exception of 2015 the local prevalence was below those recorded nationally and regionally; in 2015 the local figure was higher than both of these figures, although not significantly so.

When considering estimated smoking prevalence and average level of deprivation at each GP practice across Herefordshire it is evident that smoking is more prevalent in the most deprived quartile compared to less deprived quartiles and the lowest smoking prevalence was evident in the least deprived quartile.

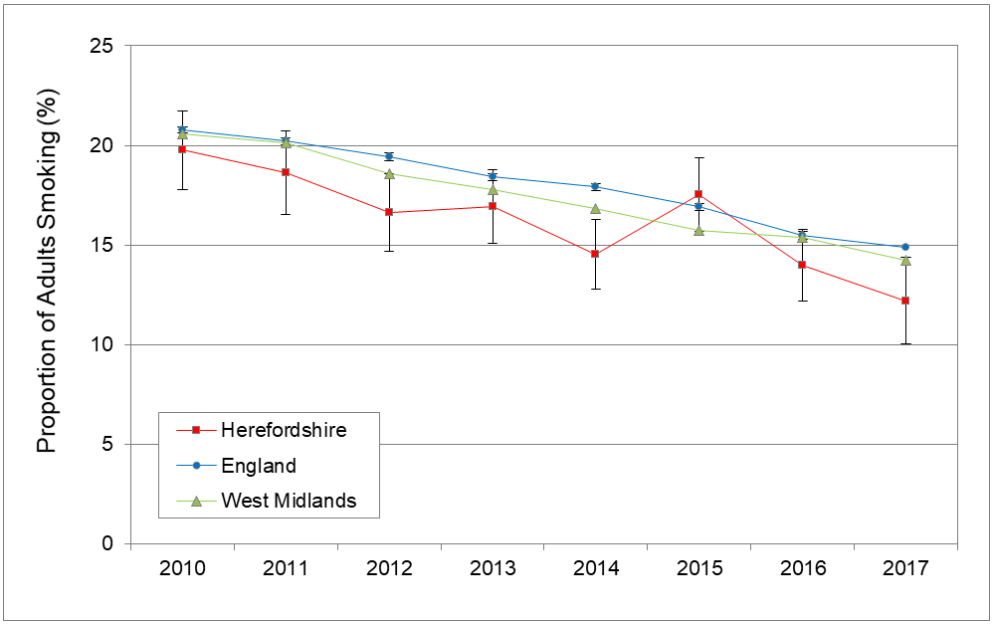


Figure 16 - Local, regional and national trends in prevalence of self-reported smoking in adults.
(Data source: PHE Local Tobacco Control Profiles for England)

ALCOHOL CONSUMPTION– ADULTS

The Herefordshire Health and Well-Being Survey [48] undertaken in 2011 included a section on drinking habits over the previous 12 months and on alcohol intake based on the previous week's consumption.

The findings indicated that 56% of adults reported consuming alcohol on a weekly basis, ranging in frequency from 26% who drank alcohol on average once or twice a week to 11% drinking almost every day (Figure 17). The proportion of males drinking on a weekly basis was 65%, which was significantly higher than the female figure of 46%. Similarly, the proportion of males who drank almost every day (14%) was significantly higher than the female rate of consumption (8%).

Approximately 10% of adults reported that they had not consumed any alcohol over the previous 12 months, while 35% drank less than once a week on average. This data indicates that on average males tend to drink more often than females, a pattern which is evident at all ages,

although for both genders the average frequency of drinking increases with age until 65 years of age after which frequency falls (Figure 18).

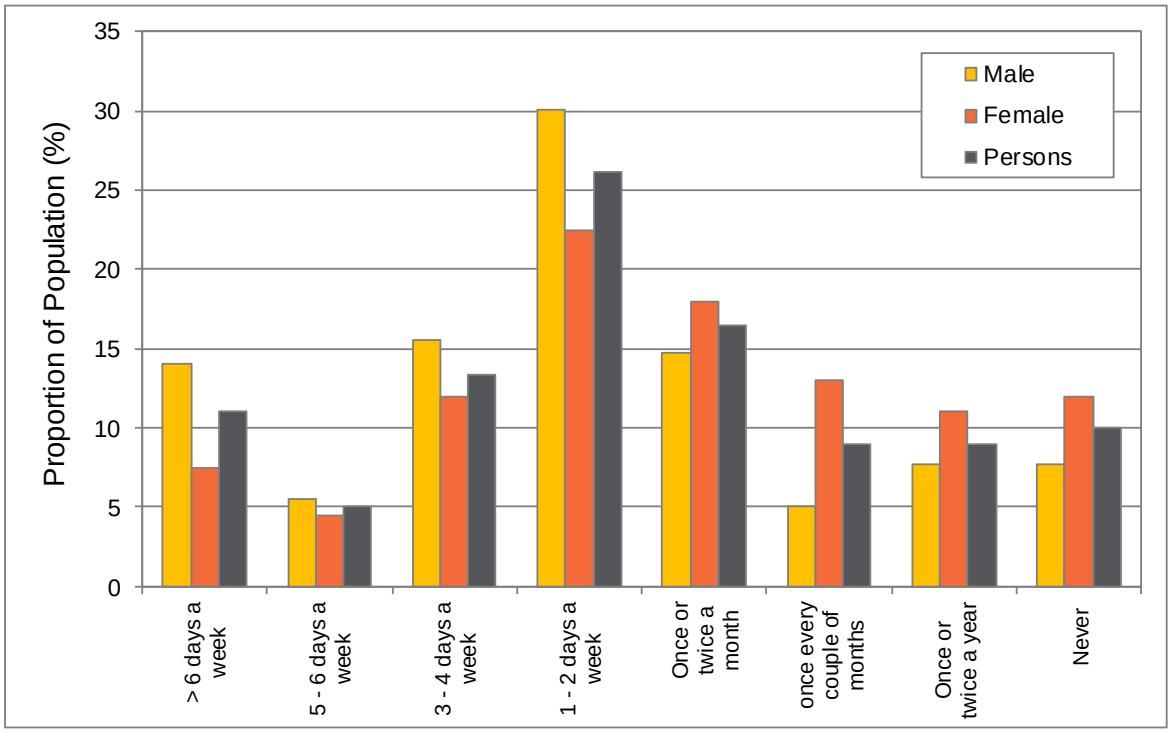


Figure 17 - Average frequency of alcohol consumption in Herefordshire, 2011.

(Data source: Herefordshire Health and Well-Being Survey, 2011)

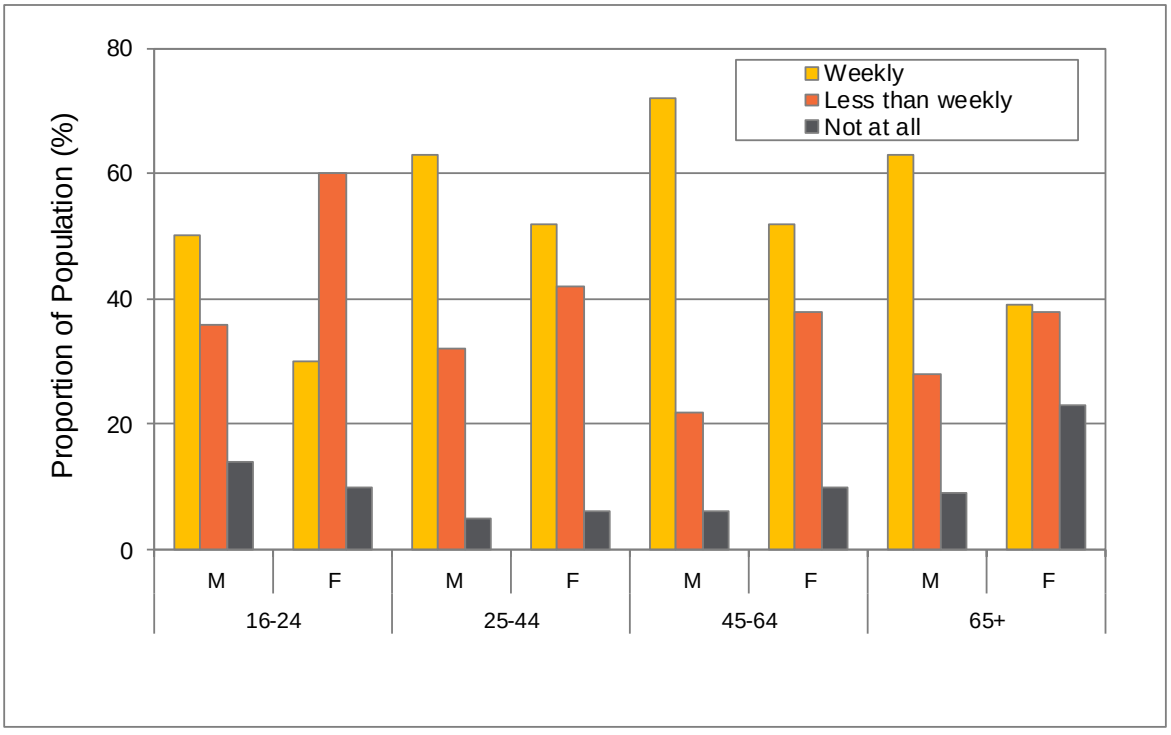


Figure 18 - Average frequency of alcohol consumption by gender and age in Herefordshire, 2011.

(Data Source: Herefordshire Health and Well-Being Survey, 2011)

Recommendations from the four Chief Medical Officers in the UK state that in order to keep health risks from alcohol to a low level it is safest not to drink more than 14 units a week on a regular basis [49].

Data for 2001 – 2014 indicate that in Herefordshire 25.9% of adults consumed more than 14 units per week and 21.0% of adults in Herefordshire reported binge drinking on their heaviest drinking day while 14.4% abstained from alcohol.

All three local measures were similar to the majority of figures reported for the ten nearest neighbour authorities. In relation to the level of deprivation across Herefordshire, 45% of adults in the most deprived areas abstain from alcohol, a figure appreciably higher than in less deprived quintiles where the proportions varied between 29 and 32% (Figure 19).

It is interesting to note that the highest proportion of adult binge drinking (22%) was also reported in the most deprived areas. However, a significantly lower proportion of residents in the most deprived areas also reported drinking within guidelines (18%) compared to 26% across the county as a whole. The lowest level of binge drinking in Herefordshire (17%) was recorded in the least deprived areas.

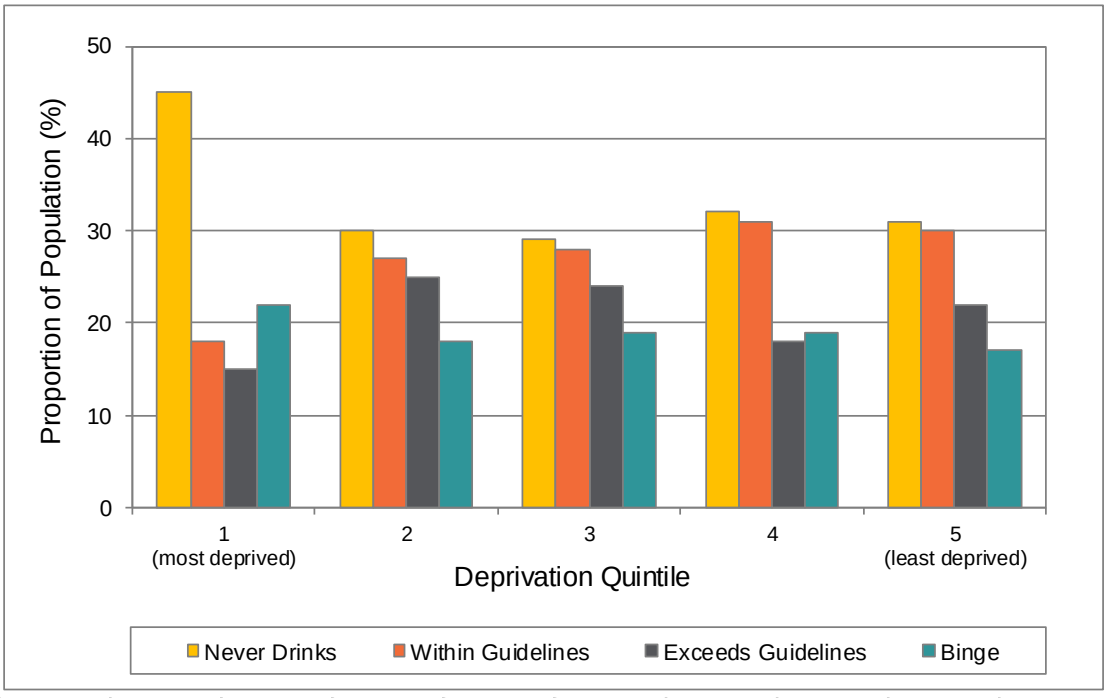


Figure 19 - Drinking behaviour in relation to consumption guidelines by level of deprivation in Herefordshire, 2011

(Data Source: Herefordshire Health and Well-Being Survey, 2011)

POPULATIONS AT RISK

As detailed previously, specific groups in the population are at greater risk of experiencing poorer oral health and some may find it more difficult to access appropriate oral health care. Despite this, there remains a paucity of data related to the oral health experience and overall oral health needs of at risk groups.

Local intelligence does however provide an indication of the numbers and proportion of Herefordshire's population, who belong to specific groups of interest. This information is crucial as it can be used by health and social care professionals to inform the future commissioning and delivery of oral health care services locally.

Looked after children

As of the 31st March 2018, there were 313 LAC in Herefordshire [50]. Table 3, presents the rates of children (aged under 18 years), who were looked after by a local authority at a local, regional and national level. Since 2015, the local rate of LAC has increased year on year and remains higher than both the regional and national values.

Table 3 – Local, regional and national rates of children (aged under 18 years) looked after (per 100,000) as of 31st March 2018 [50]

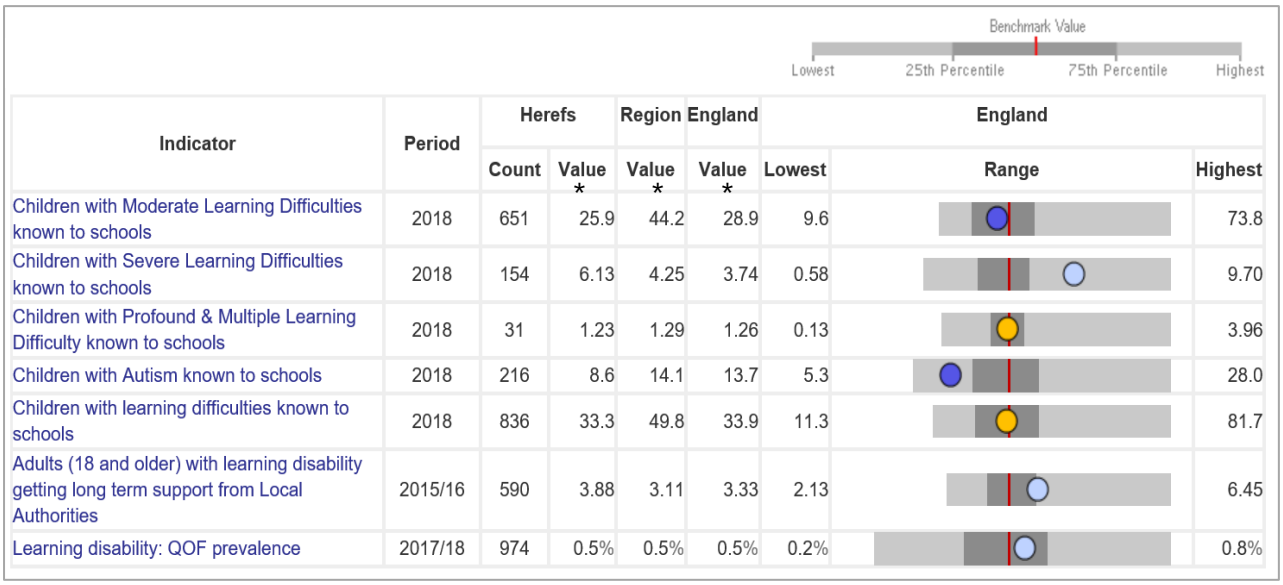
	2014	2015	2016	2017	2018
Herefordshire	67	75	79	84	87
West Midlands	73	74	73	75	78
England	60	60	60	62	64

Learning disabilities

The Public Health Outcomes Framework [17], publishes 'learning disability' profiles for local authorities in England. Each profile includes local data related to children and adults who are known to have a learning difficulty or learning disability and Figure 20 presents the data for Herefordshire.

It is important to note that there are no reliable statistics, which accurately report how many people there are with learning disabilities across the UK. Modelled estimates suggest that GP registers (i.e. QOF prevalence in figure 20), are likely to be an underestimation of the prevalence of learning disabilities.

For example, the true number of people (aged over 14 years) in Herefordshire with a learning disability is estimated to be over 3500 – 2.3% of the population [51,52]. As detailed in Herefordshire's Adult Learning Disabilities Needs Assessment (2018) [52], Herefordshire Council currently provides long-term social care support to around 600 adults with a learning disability.



Indicator	Period	Herefs		Region England	England	England		
		Count	Value *	Value *	Value *	Lowest	Range	Highest
Children with Moderate Learning Difficulties known to schools	2018	651	25.9	44.2	28.9	9.6		73.8
Children with Severe Learning Difficulties known to schools	2018	154	6.13	4.25	3.74	0.58		9.70
Children with Profound & Multiple Learning Difficulty known to schools	2018	31	1.23	1.29	1.26	0.13		3.96
Children with Autism known to schools	2018	216	8.6	14.1	13.7	5.3		28.0
Children with learning difficulties known to schools	2018	836	33.3	49.8	33.9	11.3		81.7
Adults (18 and older) with learning disability getting long term support from Local Authorities	2015/16	590	3.88	3.11	3.33	2.13		6.45
Learning disability: QOF prevalence	2017/18	974	0.5%	0.5%	0.5%	0.2%		0.8%

Figure 20 - Learning disability population data for Herefordshire (Data source: PHE Learning Disability Profiles)

***** Unless % is provided, the term 'value' refers to a rate and reflects a value 'per 1000 pupils' (for indicators related to children) and 'per 1000 population' (for the indicator related to adults).

People who experience mental health problems

PHE publish intelligence related to mental health at a national, regional and local level [(53)]. This includes data about the prevalence of common mental disorders i.e. depression and severe mental illness i.e. schizophrenia [(54)].

Based on data from GP registers in Herefordshire (2017/2018), PHE reported that for adults (over 18 years), the prevalence of depression was 9.1% (9.9% nationally) and the prevalence of severe mental illness was 0.83% (0.94% nationally). This equates to 13,856 and 1,557 people respectively.

In addition and based on modelled estimates, the local prevalance of mental health disorders in children (aged 5-16 years) during 2015 was 8.9% (2,139 children), lower than both regionally (9.7%) and nationally (9.2%).

As mental health data is obtained from registers of those diagnosed or treated, or from self-reported surveys, it is likely that the true burden of mental health problems is underestimated both locally and nationally.

People who need adult social care

There are currently around 1,500 people aged 65 years and over in Herefordshire living in either a local authority or privately funded care home [(55)]. Based on modelling commissioned by Herefordshire Council, the demand for care home places is expected to increase by 3% by 2021

and 5% by 2036 (to 2900). The proportion of people living with dementia in a Herefordshire care home is also expected to rise, from 1200 in 2016 to 2,300 in 2036.

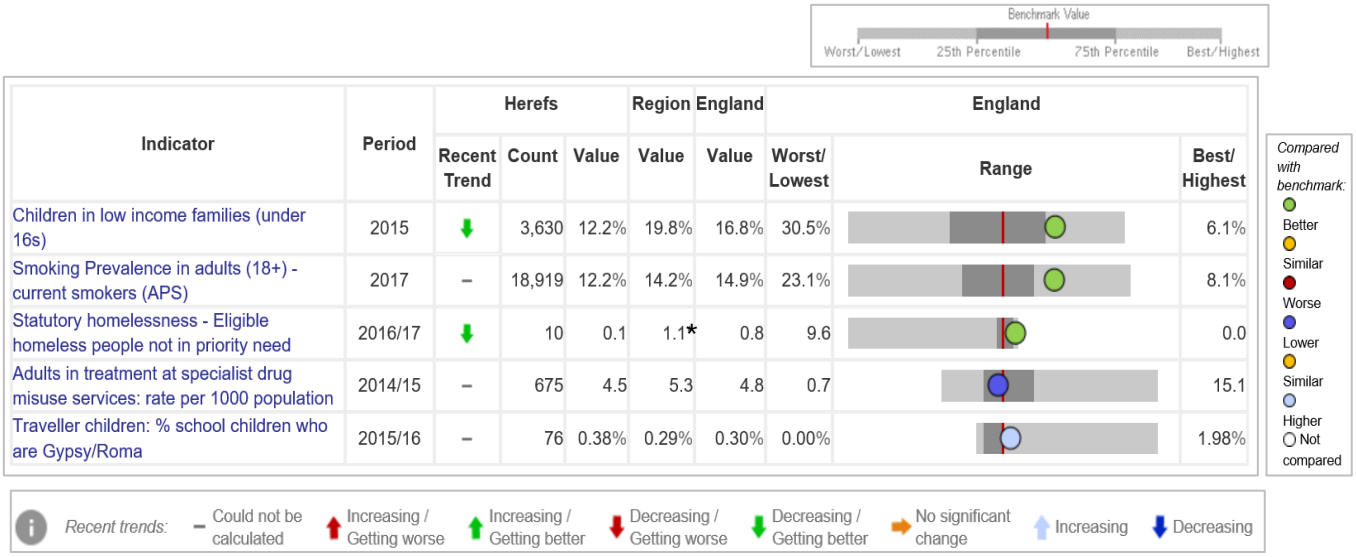
Asylum seekers and refugees

Herefordshire has supported the 'Syrian Vulnerable Person's Resettlement Scheme' (SVPRS), with 60 refugees (14 households) being resettled locally between 2016 and 2017 [56]. In addition up to 25 children and young people who are 'unaccompanied asylum seekers' are 'looked after' and supported by Herefordshire Council.

Herefordshire has agreed in principle to re-settle a further 35 refugees through SVPRS and the Vulnerable Children Resettlement Scheme (VCRS) and up to 40 asylum seekers under the General Asylum Dispersal Scheme (GADS).

Other vulnerable groups

The Public Health Outcomes Framework, publishes oral health profiles for local authorities in England [17]. Each profile includes local data set related to particular socio-demographic and lifestyle factors that are known to increase a person's risk of poor oral health (see figure 21).



Indicator	Period	Herefs			Region	England	England			Compared with benchmark:
		Recent Trend	Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest	
Children in low income families (under 16s)	2015	↓	3,630	12.2%	19.8%	16.8%	30.5%		6.1%	Better
Smoking Prevalence in adults (18+) - current smokers (APS)	2017	–	18,919	12.2%	14.2%	14.9%	23.1%		8.1%	Similar
Statutory homelessness - Eligible homeless people not in priority need	2016/17	↓	10	0.1	1.1*	0.8	9.6		0.0	Worse
Adults in treatment at specialist drug misuse services: rate per 1000 population	2014/15	–	675	4.5	5.3	4.8	0.7		15.1	Lower
Traveller children: % school children who are Gypsy/Roma	2015/16	–	76	0.38%	0.29%	0.30%	0.00%		1.98%	Similar

Higher
Not compared

Recent trends: – Could not be calculated; ↑ Increasing / Getting worse; ↑ Increasing / Getting better; ↓ Decreasing / Getting worse; ↓ Decreasing / Getting better; → No significant change; ↑ Increasing; ↓ Decreasing

***** Aggregated from all known lower geography values as a crude rate per 1000 estimated total households.

Figure 21 - Factors impacting on oral health - Oral health profile for Herefordshire (Data source: PHE Oral Health Profiles)

The data above indicates that aside from adults in treatment for substance misuse services, Herefordshire is broadly better or similar to the regional and national values for the remaining risk factors listed. Despite this, there clearly remains a considerable number of children and adults residing in the county, who may have additional oral health needs compared to the general population.

HEREFORDSHIRE - EPIDEMIOLOGY OF ORAL DISEASES

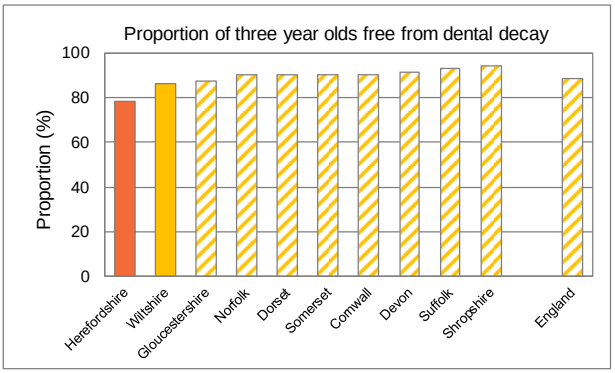
CHILDREN

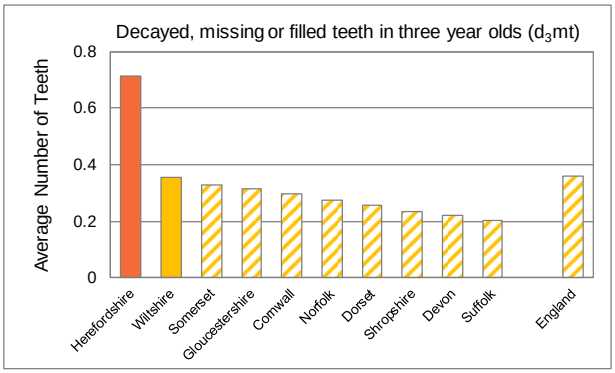
ORAL HEALTH OF THREE YEAR OLDS

A survey of the oral health of three year olds was undertaken in 2013 as part of the Public Health England (PHE) 'National Dental Epidemiology Programme' (NDEP) [57]. Of the 179 children in Herefordshire who participated, 78.3% were found to be free from dental decay, a figure significantly lower than that reported for England as a whole and for the majority of nearest statistical neighbours (Figure 22).

In Herefordshire there were an average of 0.71 teeth per child affected by decay (decayed, missing or filled teeth – d_3mt), a figure twice that recorded nationally and over two and a half times the average for the nearest neighbours (Figure 22). Locally, the number of teeth with obvious, untreated dental decay made up 87% of this figure compared to 89% nationally.

Among those three year olds in Herefordshire with decay experience, the average number of decayed, missing (due to decay) or filled teeth was 3.18, which corresponds to almost one sixth of teeth expected to be present at this age (most children have all 20 primary teeth present by age three). The local figure is similar to that recorded for England (3.08) and is broadly similar to the nearest statistical neighbours (Figure 22).





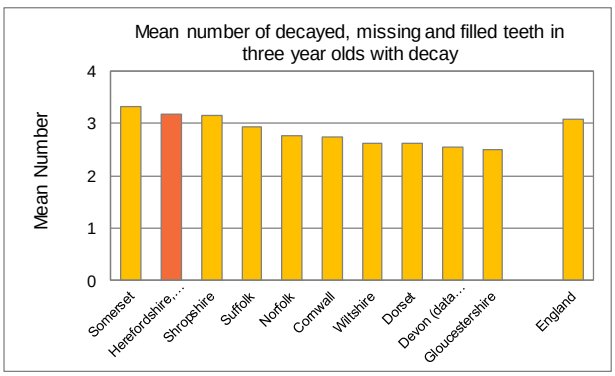


Figure 22 - Oral health of three year olds, 2013 (shaded bars indicate significantly different from Herefordshire figure).

(Data Source: NDEP – PHE)

ORAL HEALTH OF FIVE YEAR OLDS

The proportion of five year olds free from dental decay in Herefordshire has shown some variability with time and the local figure has been consistently lower than that reported for England [33]. The 2016/17 Herefordshire figure of 69.5% was significantly lower than that for England and was lower than the majority of nearest Upper Tier Local Authorities (UTLA) comparators (Figure 23).

The Herefordshire figure was 35th lowest out of 144 UTLAs across England for which data was available.

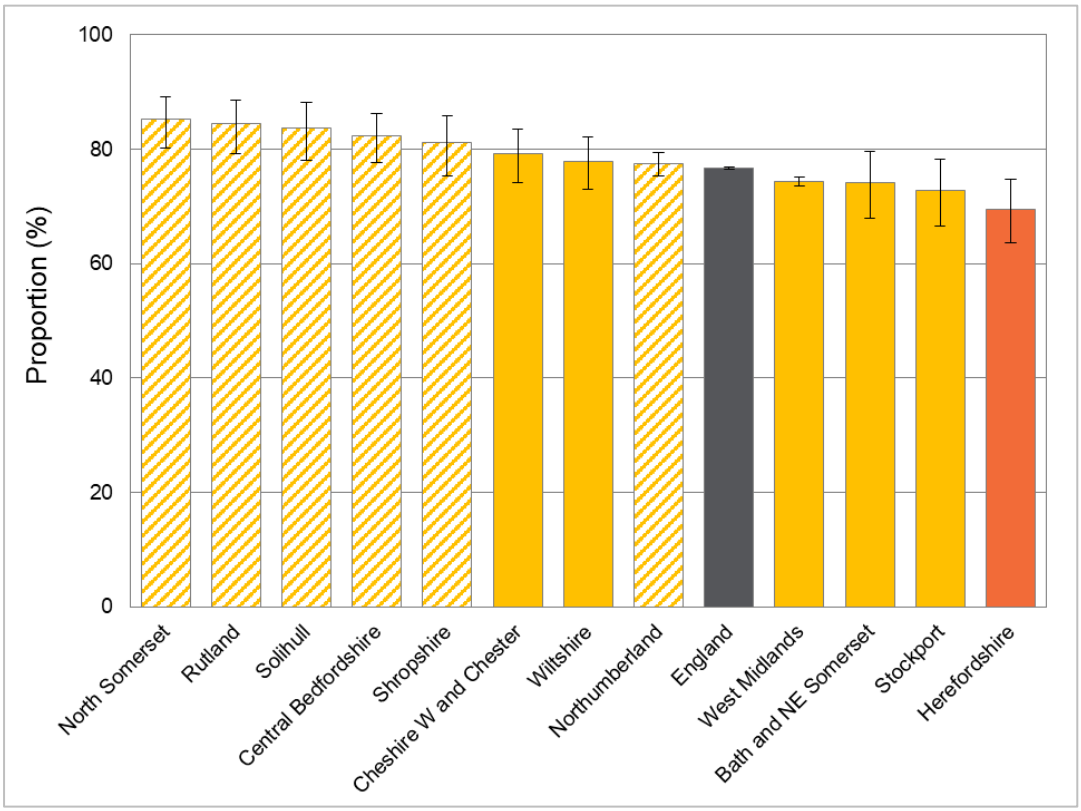


Figure 23 - Proportion of five year old children free from dental decay, 2016/17 (shaded bars indicate significantly different from Herefordshire figure). (Data source: NDEP – PHE)

The mean number of decayed, missing or filled teeth in five-year-olds in Herefordshire 2016/17 was 1.08, much higher than nationally (0.78) and regionally (0.82). Herefordshire was also the worst performing authority of its comparator group for this indicator.

The local figure was ranked the 35th highest out of 144 UTLAs across England for which data was available (Figure 24).

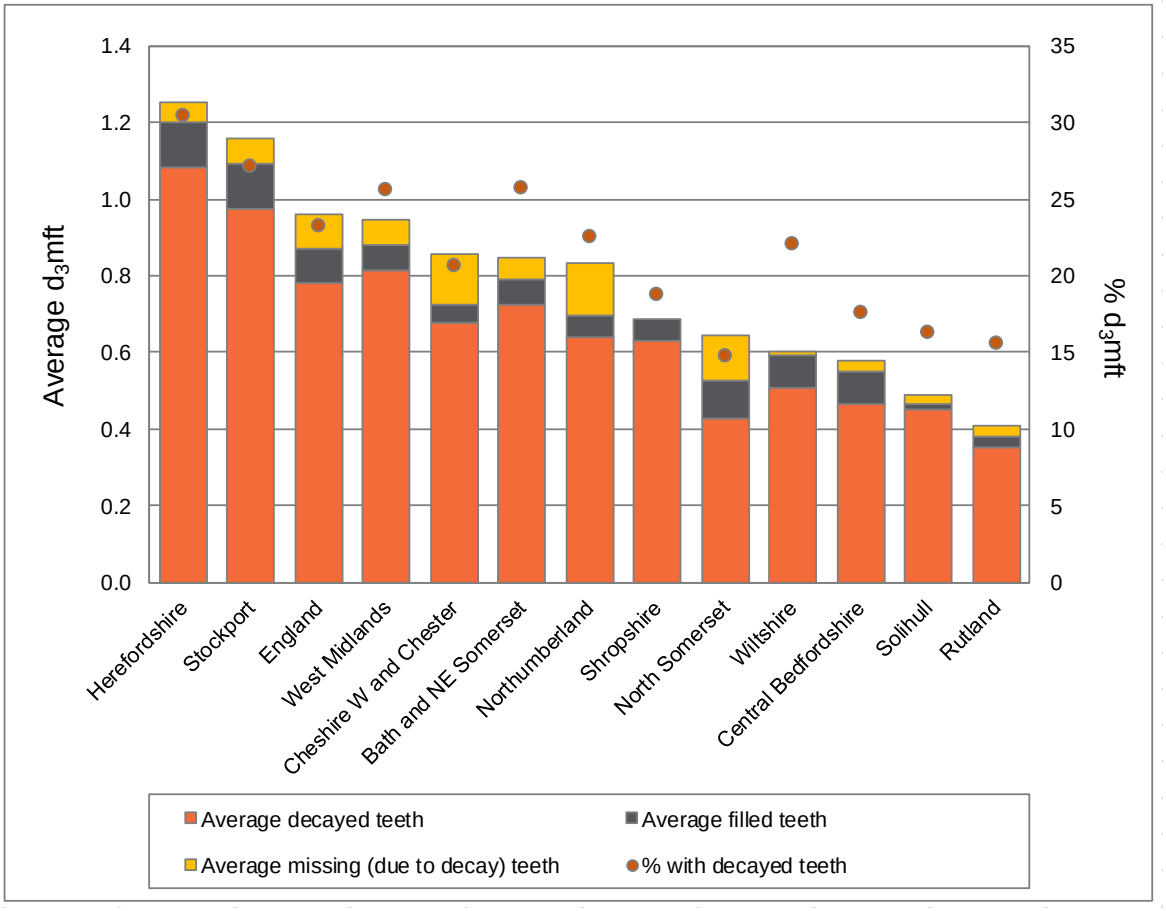


Figure 24 - The average number of decayed, extracted or filled teeth (d3mft) and the proportion of children affected by dental decay (% d3mft>0) among five-year-old children (Herefordshire, comparator local authorities and England).
(Data source: NDEP - PHE)

Data from 2017, would indicate at first glance that there has been a considerable local improvement (see figure 25); in 2017, 30% of children in Herefordshire experienced tooth decay compared to 41% in 2015.

However, it is important to note that the differences between the latest local figures and those reported previously are not statistically significant. What can be concluded from the data is:

- There has been no significant change in the local proportion of 5 year old children with experience of tooth decay over the last 10 years.

- 5 year old children in Herefordshire generally have poorer dental health than that reported nationally.

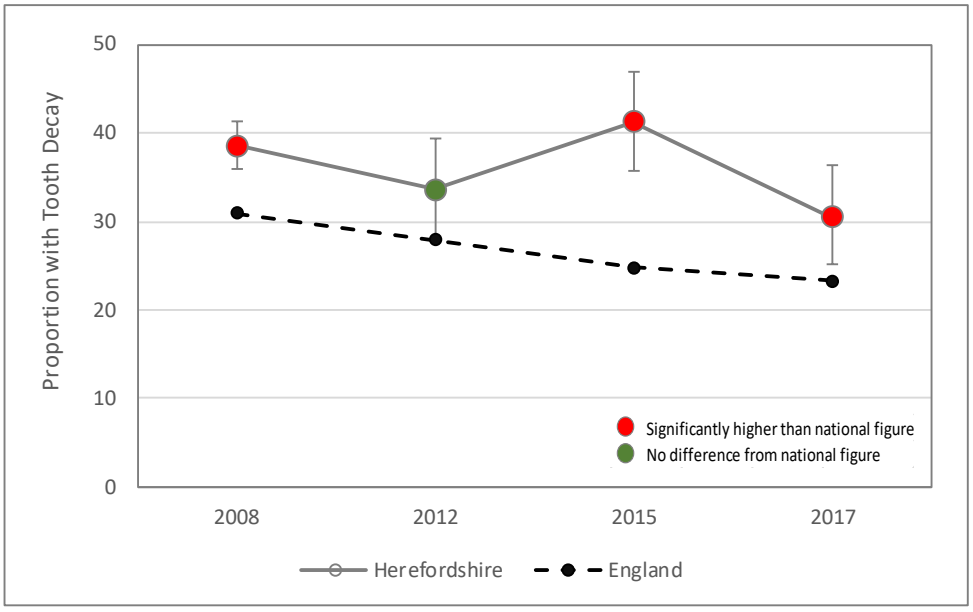


Figure 25 - Proportion of 5 year old children with tooth decay, 2016/17.

(Data source: NDEP – PHE)

Deprivation

Every child who has teeth is at risk of tooth decay, but the risk increases for those living in the more deprived areas where a range of socioeconomic factors influence children's development. However, in 2016/17, while the lowest level of tooth decay in 5 year old was evident in the least deprived population quintile, there was no strong association between levels of decay and deprivation across the county as a whole (Figure 26).

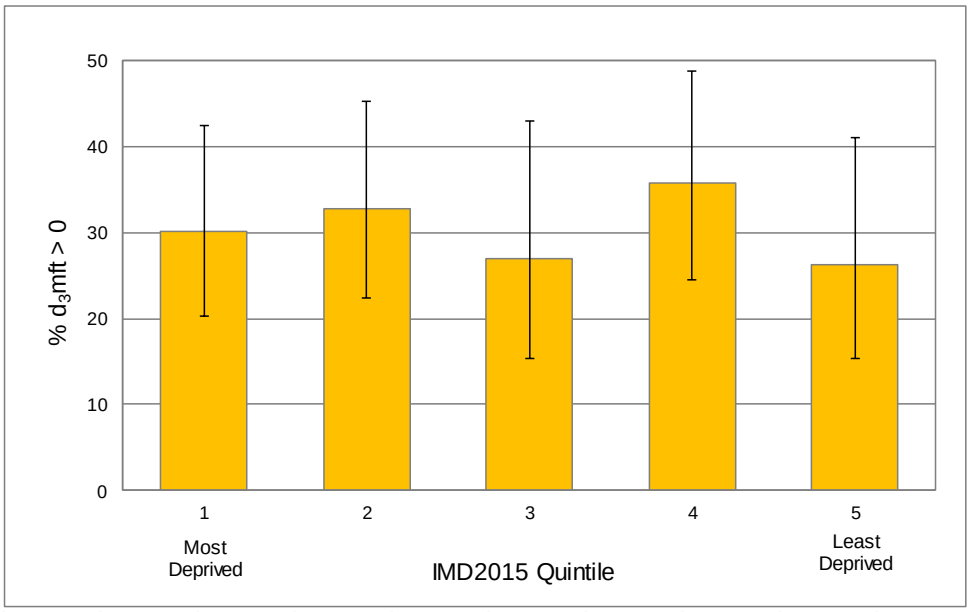


Figure 26 - Prevalence of decay in 5 year olds in Herefordshire by Index of Multiple Deprivation 2015 quintiles

(Data source: NDEP – PHE/IMD 2015)

There were however, spatial patterns evident in the levels of tooth decay in Herefordshire, with high levels observed in Hereford (particularly in South West Wye) and also in Leominster (Table 4).

Table 4 – Tooth decay severity and prevalence in 5 year olds in Herefordshire

Area	Average $d_3$mft	% with decay experience	Average $d_3$mft in those with decay experience
South Wye West	1.70	40.0	4.25
Leominster	1.20	43.9	2.72

Ethnicity

As previously described, at a national level there are known associations between oral health and ethnicity, with children from Chinese and Eastern European backgrounds experiencing greater levels of oral disease [33]. Despite this, at a local level, it is currently not possible to determine the standard of oral health in children according to ethnicity.

ORAL HEALTH OF TWELVE YEAR OLDS

A survey of the oral health of twelve year olds was undertaken in the school year 2008/09 as part of the PHE NDEP [58].

Of the 267 Herefordshire children which participated 55.9% were found to be free from dental decay, a figure significantly lower than that reported for England as a whole and for the majority of nearest statistical neighbours (Figure 27).

In Herefordshire there were an average of 1.05 teeth per child affected by decay (decayed, missing or filled teeth – D_3MFT), a figure significantly higher than that recorded nationally and in the majority of nearest neighbours (Figure 27). Locally, the number of teeth with obvious, untreated dentinal decay made up 38% of this figure compared to 44% nationally.

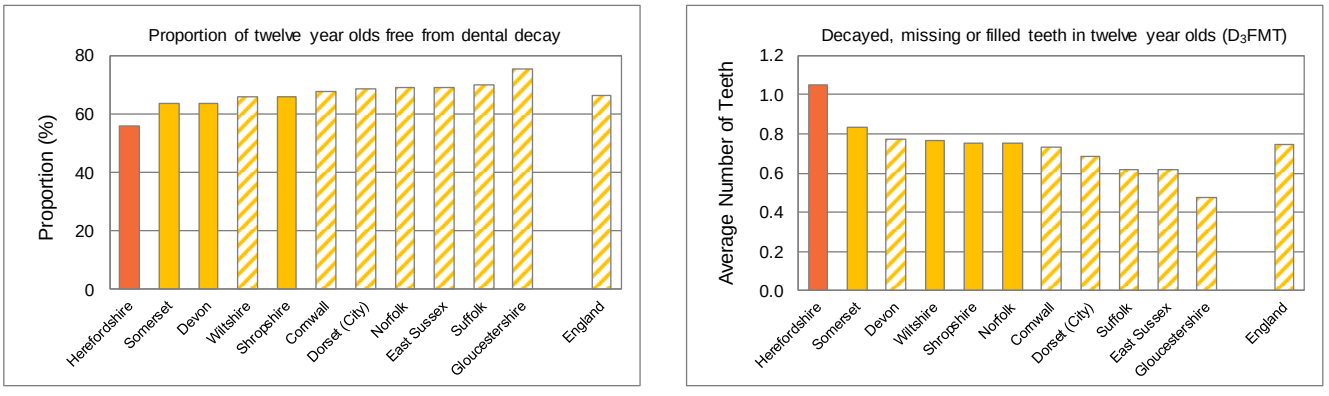


Figure 27 - Oral health of twelve year olds, 2008/09 (shaded bars indicate significantly different from Herefordshire figure).
(Data Source: NDEP – PHE)

LOOKED AFTER CHILDREN

Limited data exists that indicates the current oral health experience of LAC nationally or locally. Data previously published by the Department for Education [59] does however report the number and proportion of LAC who had their teeth checked by a dentist (see table 5). This figure is lower than both the national and regional figure.

Table 5 - Number and proportion of LAC who had their teeth checked by a dentist (as of 31 March 2016) [59]

	Number of LAC (looked after for at least 12 months)	Number of LAC who had their teeth checked by a dentist	Proportion of LAC who had their teeth checked by a dentist (%)
Herefordshire	205	145	70.7
West Midlands	6,860	5,620	81.9
England	48,490	40,770	84.1

HOSPITAL ADMISSIONS

In Herefordshire (during 2017/18) there was a total of 104 hospital admissions in individuals aged under 19 for which diseases of the oral cavity, salivary glands and jaws (ICD10 K00-K14) were the primary diagnosis [60].

Of the 104 hospital admissions recorded, 97 were for elective admissions, of which 44 were for impacted teeth i.e. a tooth has been blocked from breaking through the gum. Dentofacial anomalies and dental caries accounted for 14 and 10 admissions respectively. Overall, 60 out of the 104 admissions resulted in the extraction of one or more teeth, with all but seven being in individuals aged 10 or over.

Currently robust data is not available to ascertain whether the numbers of children undergoing dental extractions under general anaesthesia in Herefordshire is higher than regional or national rates.

ADULTS

ADULT DENTAL HEALTH SURVEY

The Adult Dental Health Survey is completed every 10 years with data available at a regional level [61]. The results of the last survey, which was undertaken in 2009, are discussed below.

Across the West Midlands, 91% of adults were dentate (i.e. had teeth), compared to 94% in England as a whole. The average number of natural teeth of dentate adults in the West Midlands was 25.1 while the figure nationally was 25.7; a functional amount of teeth is assessed as being 21.

Across the West Midlands 9% of adults were classed as periodontally (i.e. gum) healthy compared to a figure of 17% reported for England. Regionally, a further 32% of adults were periodontally healthy but had calculus, while 59% had loss of attachment and/or bleeding; the corresponding figures for England were 33% and 50%. Only 4% of adults in the West Midlands were classed as having excellent oral health compared to 10% nationally.

In the West Midlands, 39% of dentate adults had carious teeth (crowns and roots) compared to the national figure of 30% across England.

Around one in seven dentate adults in the West Midlands reported never or hardly ever feeling dental pain in the last 12 months, a figure similar to that reported nationally. Similarly, the proportion of dentate adults regionally reporting feeling pain fairly or very often (7%) was broadly similar to that reported across England (8%).

ORAL HEALTH SURVEY OF MILDLY DEPENDENT OLDER PEOPLE

As part of PHE's NDEP, standard examinations and questionnaires of a random sample of older people (aged 65 and above) living in supported housing were undertaken in the year September 2015 to August 2016 [35].

Of those assessed in Herefordshire 14.5% were endentulous (i.e. had none of their own teeth), a figure appreciably lower than those report for England (27.0%) or the West Midlands (54.8%). While 17% of those assessed in Herefordshire had not seen a dentist within the last two years, the figure for England was twice this (34.0%); the proportion for the West Midlands was 41.4%.

Of those dentate individuals in Herefordshire 5.1% reported feeling oral pain on the day of examination compared to 9.5% and 8.5% reported across England and the West Midlands respectively.

While 3.2% across England and 2.8% in the West Midlands were considered to be in urgent need of dental care none of those assessed in Herefordshire were in such need.

The proportion of dentate individuals in Herefordshire with an open pulp, ulceration, fistula or an abscess was 1.7 compared to 7.8 per cent nationally and 4.2% regionally. Locally, 80% of dentate individuals had visible plaque and 63% had visible calculus, with both figures being higher than those reported nationally and regionally.

Of those individuals in Herefordshire with partial dentures 6.9% were in need of replacement compared to 13.0% across England and 8.8% in the West Midlands. The local figure for individuals in need of replacement of full dentures was 15.8%, while the national and regional proportions with a similar need were 14.8% and 11.8% respectively.

Overall, the study found that nationally poorer oral health tended to be recorded in the more deprived areas.

ORAL CANCER

Between 2001-03 and 2014-16 the incidence of oral cancer in Herefordshire has shown a general rise which is mirrored in the incidence rate (Figure 28); a similar pattern is evident across England as a whole. In 2014-16 the local incidence rate was 14.0 per 100,000, a figure similar to that observed nationally and in nearest statistical neighbours (Figure 29)

Over this period the number of deaths Herefordshire related to oral cancer over any given three years showed some variability ranging between 10 and 23. Similarly, the local oral cancer mortality rate has shown some variability with no consistent pattern evident, although since 2009-11 the rate has shown a general increase (Figure 28). In 2015-17 the local mortality rate was 14.0 per 100,000, a figure similar to that observed nationally and in nearest statistical neighbours (Figure 29).

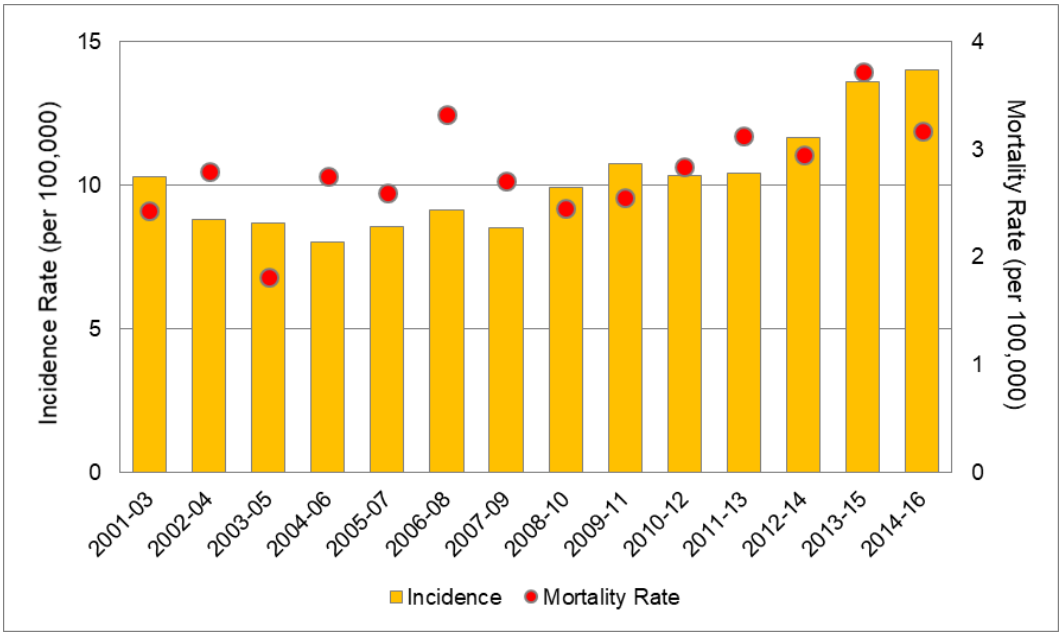
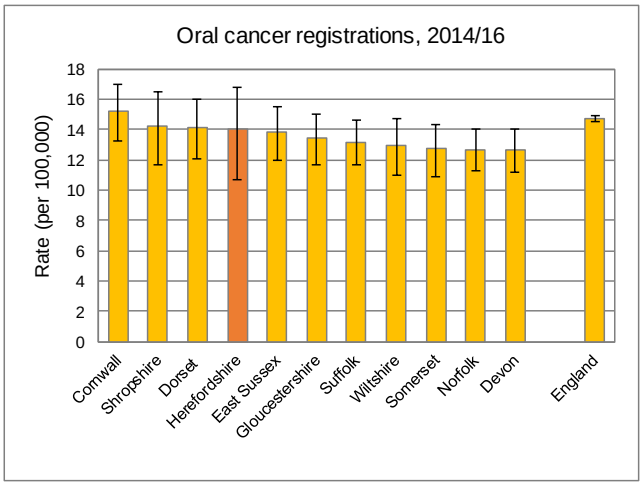


Figure 28 - Oral cancer incidence and mortality rates in Herefordshire. (Data Source: NCRAS)



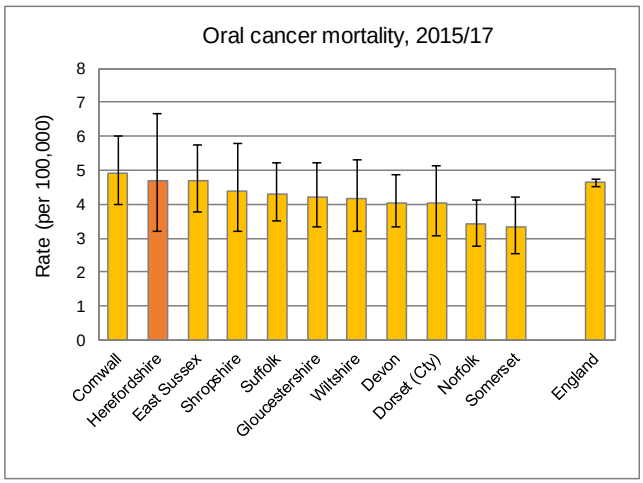


Figure 29 - Oral cancer incidence and mortality rates in Herefordshire. (Data Source: NCRAS)

HOSPITAL ADMISSIONS

The most common primary diagnosis associate with the 557 elective admissions in adults was dental caries which accounted for 175 cases, while 91 admissions were related to “other” disorders of teeth and supporting structures and 83 were associated with “other” diseases of lip and oral mucosa [60].

More specialist dental services can be provided in Primary and/or Secondary care and are accessed by referral from a primary care general dental practitioner. They are not discussed in this needs assessment as they fall outside the agreed scope.

HEREFORDSHIRE - ORAL HEALTHCARE SERVICES

PROVISION OF ORAL HEALTHCARE SERVICES

In England, a range of key organisations commission, deliver and support the provision of oral healthcare services (see figure 30). The specific roles and responsibilities of each of these organisations listed in figure 30, were defined by Public Health England in 2014 (see Appendix B).

In relation to NHS dental services, NHS England has the statutory responsibility for securing provision, which meet the needs of a local population. NHS dental services in Herefordshire, comprises primary care, which is inclusive of general dental services, together with unplanned (urgent) dental care and services provided by the Community Dental Service.

Furthermore, and as displayed in figure 30, NHS England also commission secondary dental services for delivery within hospital settings i.e. specialist orthodontic services.

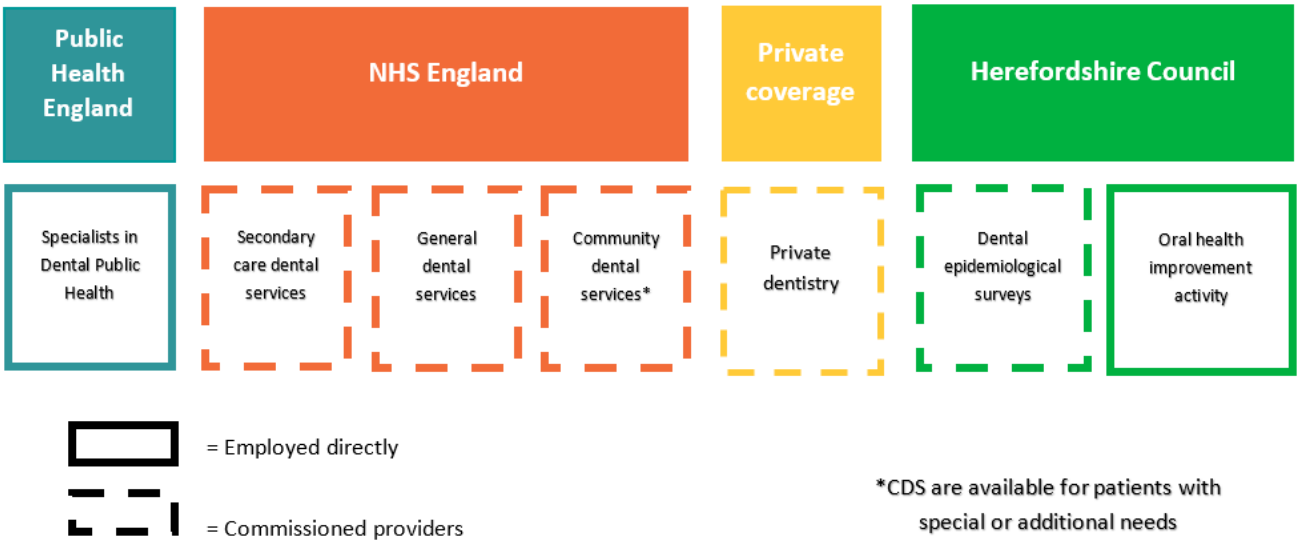


Figure 30 - Organisation of oral healthcare services

PRIMARY CARE DENTAL SERVICES

NHS dental services in England are provided predominantly within primary care. The majority of primary care dental services are non-specialist in nature and are provided by General Dental Practitioners (General Dental Services or GDS) or Community Dentists (Community Dental Services or CDS). Both types of service provision are described and discussed within this chapter of the OHNA. Primary care specialist services e.g. orthodontics fall outside of the scope of this OHNA.

GENERAL DENTAL SERVICES

Nationally and within Herefordshire, most NHS GDS are delivered by general dental practitioners (GDPs) – i.e. high street dentists [62–64]. Dentists providing GDS for the NHS, are not employed by the NHS, but are independent providers commissioned for their services.

Access to NHS primary care dentistry is commissioned for anyone who seeks it, regardless of where they live. In contrast to general practice registration, patients can choose any geographical area to access NHS dental services in England. For example, those in employment may choose to access an NHS dental provider close to where they work rather than where they live.

Since April 2006, patients are no longer registered to a dental practice and are only 'attached' to a dental practice when they are in active treatment [62,64]. Practices providing NHS GDS hold a notional list of patients who regularly attend their practice. Maintaining a patient list, enables dental practices to manage their capacity for providing dental care to both regular patients and new patients.

Whilst NHS dental services are recognised to be demand led, as part of the current NHS dental contract, NHS England are expected to target services towards those whose oral health is poor or who are at high risk of disease.

Current NHS dental contract

Since 2006, payments for NHS GDS are based on a contracted number of 'Units of Dental Activity' (UDAs) performed each year [63,65]. Each individual dental practice has a separate contract with NHS England, which outlines the number of UDAs they will be paid to deliver every year and the cost associated/contract value.

The number of UDAs contracted per area or per dental practice, is decided by NHS England based on their assessment of local population need. Practices are expected to deliver the contract value with a 4% tolerance for underperformance and over-performance is not remunerated [62,63].

The contract held between a dental practice and the NHS does not limit the amount of private practice it is able to perform.

In England, children under the age of 18 years of age are eligible for free dental care in any NHS environment. However, unless exempt from paying NHS dental charges [66], adults contribute towards the costs of NHS dental treatment in primary care. As displayed in table 6, the cost of the contribution is determined by the treatment band [67].

Table 6 - NHS patient dental charges (aged 18 years+)*

Course of treatment	Cost
Band 1	£22.70
Band 1 urgent	£22.70
Band 2	£62.10
Band 3	£269.30

* As of May 2019

National Contract Reform

In England, new NHS dental contract prototypes for GDS are being tested. This includes piloting a new remuneration system, which blends activity and capitation (i.e. patient registration) [65]. The pilot prototype scheme aims to increase the focus within GDS to preventive dental care by aligning both financial and clinical drivers. Two dental practices in Herefordshire are currently testing the new prototype dental contract (one within Hereford and one within Leominster).

AVAILABILITY OF SERVICES

Based on information from NHS England, as of May 2019, there are 17 contracts providing NHS GDS within Herefordshire (8 of which are based within Hereford City centre).

This number is subject to annual variation, given that existing dental general practices close and new ones open. Figure 31 overleaf, presents the geographical distribution of NHS GDS providers in Herefordshire.

During 2017/2018, there were 103 Dentists delivering NHS activity in Herefordshire. At 54 Dentists per 100,000 population, this was a 9.6% increase from 2016/2017 and higher than both the regional and national rates (43 and 44 per 100,000 respectively).

Dental access survey

The NHS website [64,68] provides information about general dental practices within a specific geographical area, including confirmation about whether a practice is taking on new patients. Whilst it is the responsibility of individual practices to keep the NHS website updated with this information, guidance from both NHS England and the Herefordshire Local Dental Committee, indicated this may not always the case.

Consequently, in May 2019, a local dental access survey was undertaken. Each of the 17 contracted providers delivering NHS GDS services in Herefordshire were contacted via telephone and asked if they were currently accepting new NHS patients.

Of the 17 practices, 6 reported they were currently accepting new child NHS patients, of which 3 were also accepting adults. Therefore as of May 2019, a total of 11 practices were not accepting new child NHS patients and 14 were not accepting either new child or adult NHS patients.

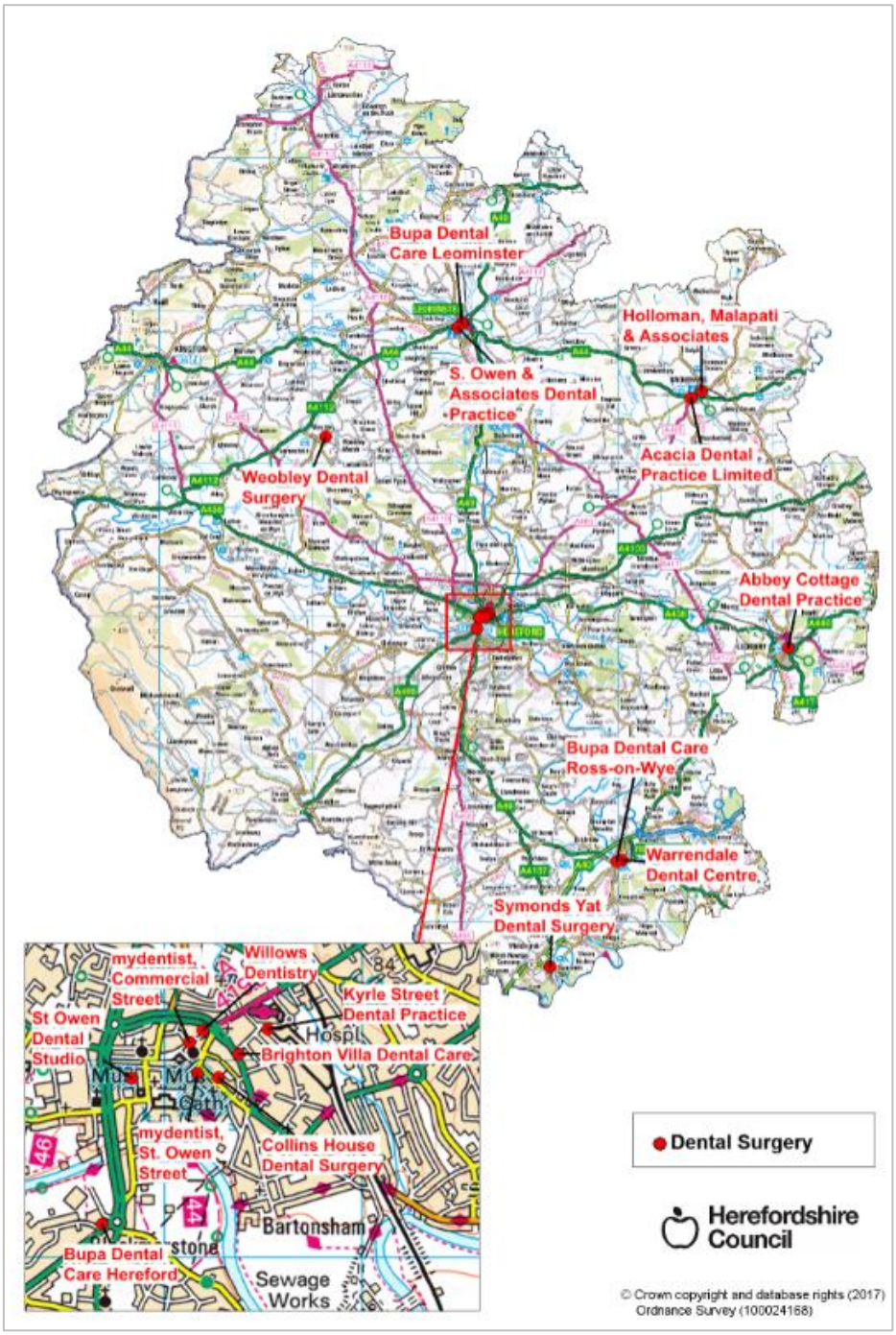


Figure 31 - Geographical distribution of NHS GDS providers in Herefordshire (as of May 2019)

ACCESS TO GENERAL DENTAL SERVICES

Access to GDS rates reflect the widespread availability of NHS dental care. Access rates are measured by the proportion of the resident population who were seen by an NHS dentist in the 12 months prior (for children) or 24 months prior (for adults).

This metric is based upon NICE guidance, which recommends specific interval lengths between dental examinations, based on a patient's oral health and other factors such as age and lifestyle risk factors i.e. smoking [(69)].

A total of 21,084 children (aged 0-17 years) were seen by an NHS dentist in Herefordshire, in the 12 months prior to the 31st of December 2018 (see figure 32). This is 58.7% of all children in Herefordshire (aged 0-17 years) and is approximately the same proportion as that identified nationally for the same age group over the same period (58.6%).

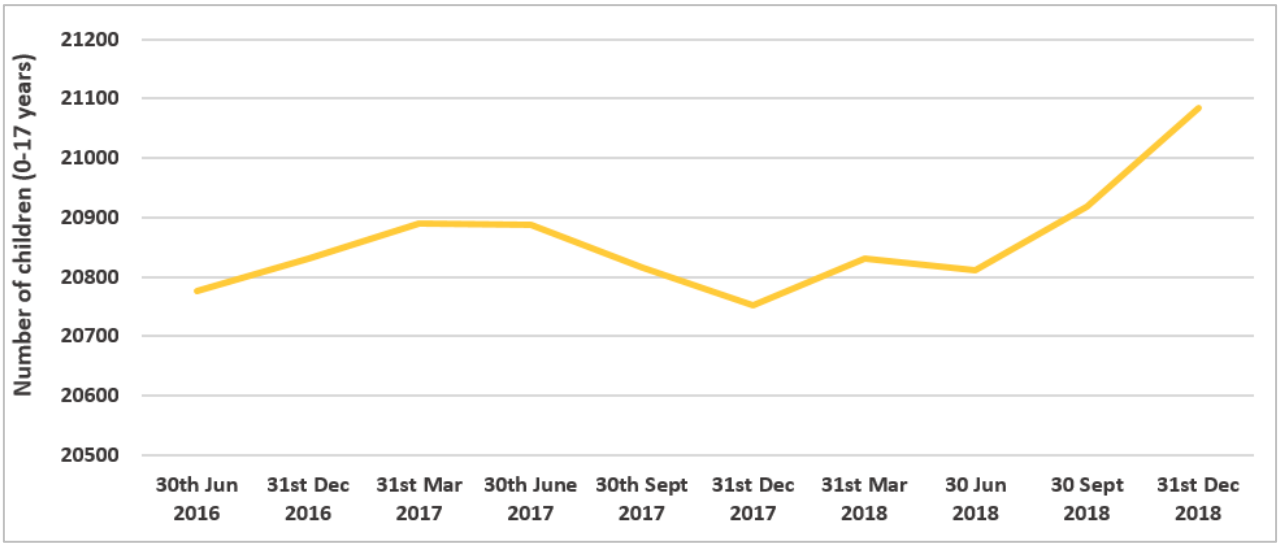


Figure 32 - Number of children in Herefordshire, seen by an NHS Dentist in the 12 months prior to 31st December 2018 (Data source: NHS Digital)

As of the 31st of December 2018, 43.1% of children aged 0-5 years in Herefordshire were seen by an NHS dentist (compared to 38.9% in England) – see figure 33.

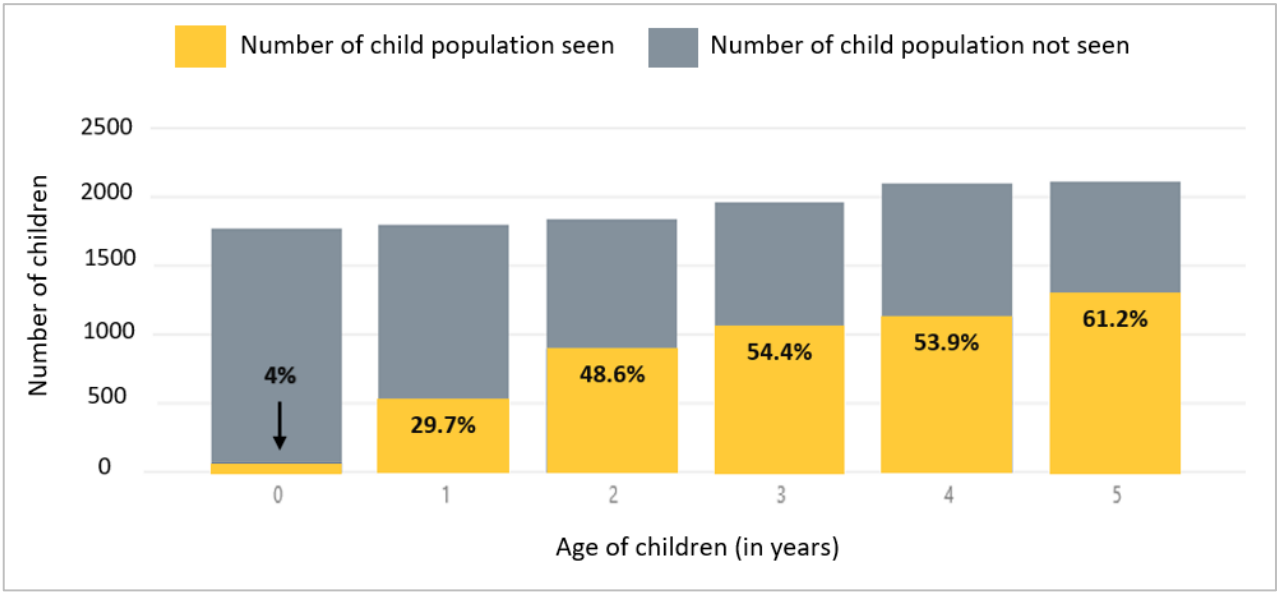


Figure 33 - Number and proportion of children (aged 0-5 years) in Herefordshire, seen by an NHS Dentist in the 12 months prior to 31st December 2018 (Data source: NHS Digital)

A total of 74,592 adults were seen by an NHS dentist in Herefordshire, in the 12 months prior to the 31st of December 2018 (see figure 34). This is 48.1% of all adults in Herefordshire and is marginally lower than the national proportion over the same period (50.4%).

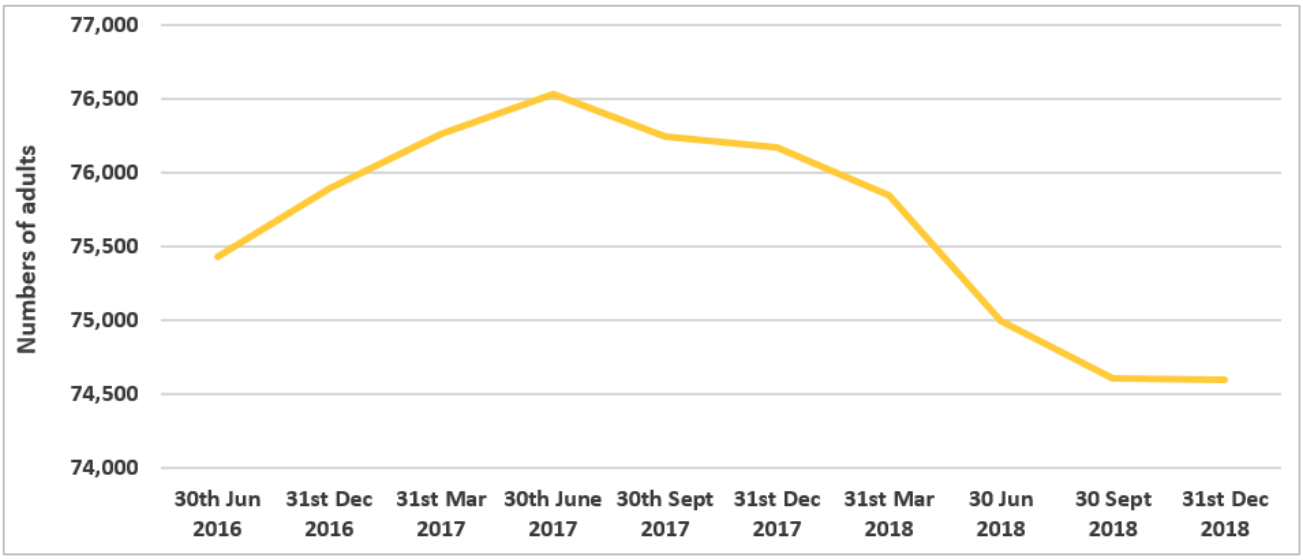


Figure 34 – Number of adults in Herefordshire, seen by an NHS Dentist in the 12 months prior to 31st December 2018
(Data source: NHS Digital)

It is important to note that NHS dental access data does not reflect the number of children and adults who were seen within private dental practice or who may have used hospital dental services exclusively.

This information is not included within NHS primary dental care data sets and therefore the reported dental access rates within Herefordshire may be higher than shown in figures 32, 33 and 34 above.

DENTAL SERVICE USAGE

Between 1st October 2017 and 30th September 2018, there were 127,755 Courses of Treatment (CoT) delivered within NHS GDS in Herefordshire. Dental care is provided to patients as CoT, and reflects -

- An examination of a patient, an assessment of their oral health, and the planning of any treatment to be provided to that patient as a result of that examination and assessment

- The provision of any planned treatment (including any treatment planned at a time other than the time of the initial examination) to that patient.

Each COT delivered within GDS is allocated a treatment banding and a fixed number of UDAs per band [62,63,65,70]:

- **Band 1**: includes an examination, diagnosis and advice. If necessary, it also includes x-rays, a scale and polish, application of fluoride varnish or fissure sealants, prevention advice and planning for further treatment (1 UDA)

- **Band 1 urgent**: includes urgent care such as removal of the tooth pulp, removal of up to two teeth, dressing of a tooth and one permanent tooth filling (1.2 UDAs)

- **Band 2**: includes all treatment covered by Band 1, plus additional treatment, such as fillings, root canal treatment, gum treatments and removal of teeth (3 UDAs)

- **Band 3**: includes all treatment covered by Bands 1 and 2, plus more complex procedures, such as crowns, dentures and bridges (12 UDAs)

For every CoT conducted, contracted providers submit a standard form i.e. 'FP17' to NHS Business Services Authority in order to receive payment. Each FP17 details the specific treatment the patient has received according to the relevant banding and therefore the associated UDAs [62,63,70].

Figure 35, presents the proportion of CoT delivered in Herefordshire during 2017/2018 according to each treatment band. As displayed in figure 35, band 1 treatments constitute the majority of COTs between 2017/2018.

Between 1st October 2017 and 30th September 2018, there were 228,180 UDAs delivered within GDS in Herefordshire. As described previously, UDAs are the currency in which GDS providers are remunerated for their NHS dental activity.

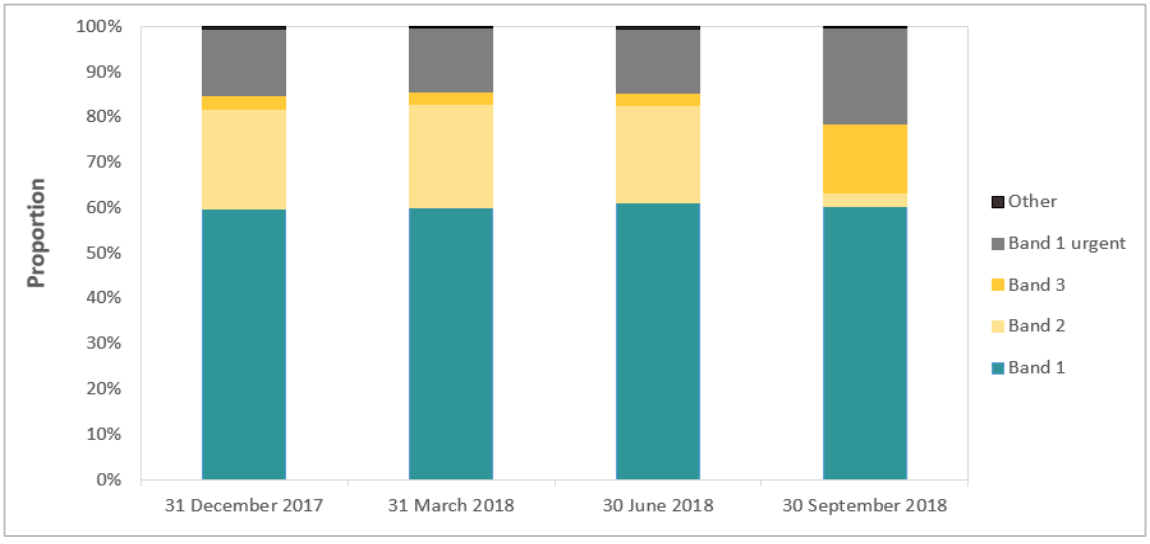


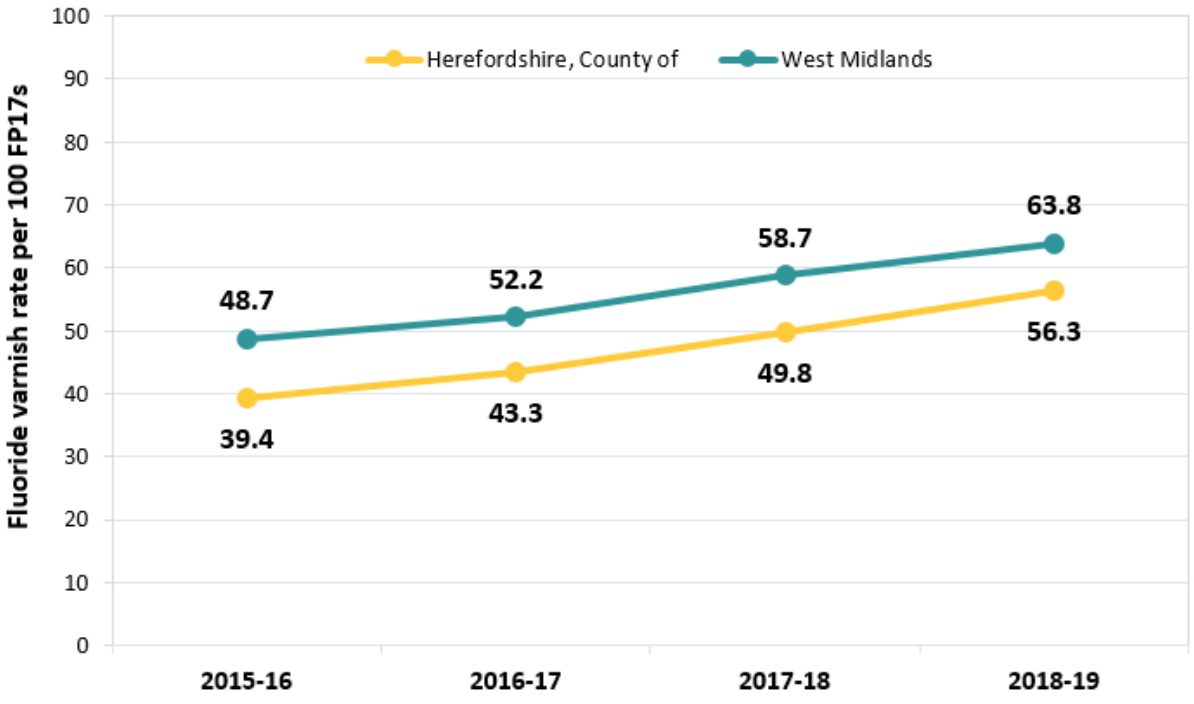
Figure 35 - Proportion of CoT delivered in Herefordshire according to each treatment band during 2017/2018.
(Data source: NHS Digital)

Fluoride varnish application

Evidence clearly demonstrates that application of fluoride varnish by a trained professional, reduces tooth decay in both children and adults (delivering better, 2017). Consequently, national guidance recommends the application of fluoride varnish every six months for all children between 3-16 years old and more frequently for all children (0-16 years) at higher risk of tooth decay i.e. those likely to develop caries or those with special needs [4]. For adults with a higher risk of tooth decay, it is recommended that fluoride varnish is applied twice a year.

As displayed in figure 36, the rate of fluoride varnish applications in children (aged 3-16 years) accessing NHS GDS in Herefordshire has increased since 2015/2016. Despite this, there remains a significant proportion within this age group who appear to have not received this intervention within NHS GDS in Herefordshire (43.7%).

Furthermore, based on submitted FP17s the rates of fluoride varnish applications in Herefordshire for this age group, appear to be consistently lower than the regional* average rate as reported by NHS Business Services Authority [71].



* 'West Midlands' - Inclusive of Birmingham, Coventry, Solihull, Warwickshire, Worcestershire, Herefordshire, Sandwell, Dudley, Warwickshire, Walsall and Wolverhampton.

Figure 36 - Fluoride varnish applications for 3-16 year olds resident in Herefordshire and the West Midlands.
(Data source: NHS Digital)

COMMUNITY DENTAL SERVICES

Across England and Herefordshire, community dental services (CDS), form an integral role in the delivery of primary dental care provision. Commissioned CDS providers deliver specialist and additional services for those with special care needs and/or those experiencing difficulties in accessing GDS. This may include –

- Children and adults with learning disabilities
- Children with complex and extensive dental treatment needs
- Children and adults experiencing mental health issues
- Frail older people who cannot receive care in general dental practice
- Children and adults who are severely physically and/or medically compromised
- Children and adults with severe dental anxiety
- Looked after children or children with identified safeguarding concerns
- People who are homeless
- People who are currently experiencing issues with substance misuse

In Herefordshire, the Wye Valley NHS Trust is commissioned to deliver CDS across the county. As of May 2019, local CDS provision in Herefordshire included –

- Advanced mandatory services – Provided on referral due to high level of facilities, experience or expertise required i.e. minor oral surgery
- Domiciliary services – Provided 'outreach' e.g. within a patients home or a care setting
- Sedation services – Including inhalation and intravenous sedation and general anaesthetic
- Urgent (i.e. unplanned) primary dental care

CDS in Herefordshire are delivered from seven dental clinics (i.e. Dental Access Centres - DACs) and within the County Hospital (e.g. for oral surgical procedures). Figure 37 overleaf, presents the geographical distribution of DACs within Herefordshire.

URGENT DENTAL CARE SERVICES

Urgent dental care is provided for patients who do not or are unable to access treatment from GDS but have an urgent need for treatment either in or out of hours.

Patients who require treatment urgently do not have to be registered or listed with a specific general dental practice in order to access appropriate dental care.

In Herefordshire, some NHS GDS providers offer urgent dental care within hours. The commissioned CDS provider offers urgent dental care both within and out of hours.

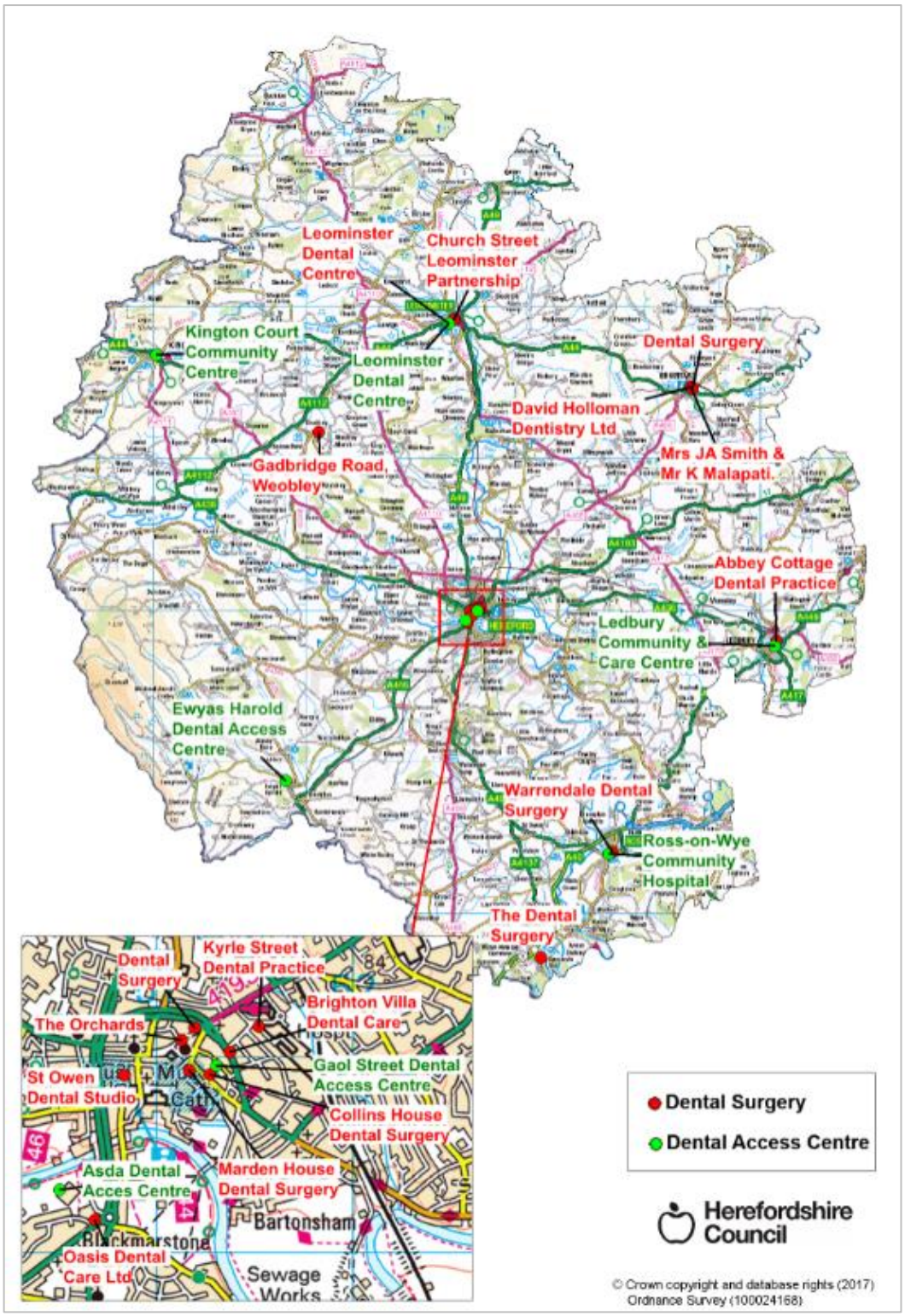


Figure 37 – Geographical distribution of NHS GDS providers and DACs in Herefordshire (as of May 2019)

SECONDARY CARE DENTAL SERVICES

Secondary care dental services are predominantly delivered within hospital settings and include oral surgery, orthodontics, oral medicine, oral and maxillofacial surgery and restorative dentistry. Secondary care dental services are primarily accessed via referrals from primary dental care (either NHS or private providers), with some referrals from primary medical care. Services delivered within secondary care are free from patient charges.

The following hospitals are commissioned to provide secondary care services for children and adults who are resident within Herefordshire. The type, nature and complexity of a patient's oral and general health needs will determine which services are accessed in each setting.

- County Hospital in Hereford (Wye Valley NHS Trust)
- Birmingham Dental Hospital (Birmingham Community Healthcare NHS Foundation Trust)
- Birmingham Children's Hospital (Birmingham Women's and Children's NHS Foundation Trust)
- Bristol Dental Hospital (University Hospitals Bristol NHS Foundation Trust)

PATIENT AND PUBLIC VIEWS

Healthwatch Herefordshire survey (April 2018)

Between 2017 and 2018, Healthwatch Herefordshire engaged with and consulted over 500 residents and professionals about their views and experiences of dental health in Herefordshire.

Findings from the published report in 2018 [72], indicated that that –

- Parents who were registered with a dentist tended to register their child at the same practice at about one years old.
- Parents who were not themselves registered with a dentist experienced no issues registering their child despite it being difficult to register themselves.
- Amongst parents of young children who had not as yet been registered with a dentist, approximately 50% were unsure as to what age their child should start to see a dentist
- A small number of parents thought that milk teeth were not that important.
- Approximately 5% of people did not know NHS dental care for children was free.
- Some parents from Eastern European countries, were unaware of how to find and register with a dentist.
- In rural areas, transport was identified as a barrier to accessing dental care as many parents reported not having access to a car. Furthermore, public transport was deemed to be expensive and commonly infrequent.

GP Patient Survey (August 2018)

The GP Patient Survey is an independent annual survey run by Ipsos MORI on behalf of NHS England [73]. The survey includes questions about a patient's experience of NHS dentistry.

Between January and March 2018, a total of 2,797 adults within Herefordshire completed the GP Patient Survey. Of the responses received, 94% people reported being successful in getting an NHS dental appointment within the last two years (compared to 93% nationally).

Of those reportedly not attempting to obtain an NHS dental appointment within the previous two years, 52% of respondents in Herefordshire (39% nationally), attributed this to either preferring private dental care (29%) or staying with a dentist when they moved from NHS provision to private practice (23%).

Finally, when asked about their overall experience of NHS dental services, respondents reported it was either very good (54%) or fairly good (33%). Both figures of which were comparable to the national picture (52% and 33% respectively).

IMPROVING POPULATION ORAL HEALTH

As previously described poor oral health and oral diseases, including those within the scope of this OHNA are largely preventable. Common risk factors exist, which affect a person's risk of developing oral diseases and a range of other non-communicable diseases. Furthermore, these common risk factors are understood to be driven by complex and interrelating economic, social and environmental determinants.

Addressing both the risk factors and wider determinants of poor oral health, is of fundamental importance for local authorities and key partners, who are tasked with improving oral health and reducing oral health inequalities at a population level [8,14,15,24].

NATIONAL GUIDANCE

To support local authorities to fulfil their specific role and responsibilities regarding oral health improvement, PHE, NICE and the LGA have published an extensive array of evidence-informed guidance and toolkits (see Appendix A).

Each of these national documents advocate for local authorities to –

- Identify, target and modify both the common risk factors and the wider determinants of oral diseases
- Adopt a population level needs based approach, whilst targeting action towards those groups at greater risk of poor oral health
- Prioritise the role of prevention, across the life course and within key settings i.e. families, schools, community and oral healthcare services
- Commission and/or deliver a range of evidence-informed oral health improvement programmes, that are co-created by professionals, families and wider-communities
- Ensure fair and equitable access to high quality dental care, which emphasises the importance of prevention
- Work in partnership with key partners for oral health improvement, including PHE, NHSE and CCGs

APPROACHES TO PREVENTION - UPSTREAM VERSUS DOWNSTREAM

A clear and consistent theme within national guidance is the requirement for local authorities and other key partners, to target interventions towards the prevention of poor oral health and oral diseases [3,4,8]. Whilst equitable access to high quality dental care forms an important part of improving a person's oral health, in isolation this will not achieve sustainable reductions in the burden of poor oral health and associated inequalities at a population level [7,13,32].

Approaches and options for preventing poor oral health and oral diseases can be understood as representing a continuum, from downstream interventions to upstream interventions [74].

Downstream interventions primarily aim to address the common risk factors or individual behaviours known to affect a person's risk of oral diseases. In contrast upstream interventions, aim to address the underlying causes of these common risk factors i.e. the wider determinants (see figure 38).

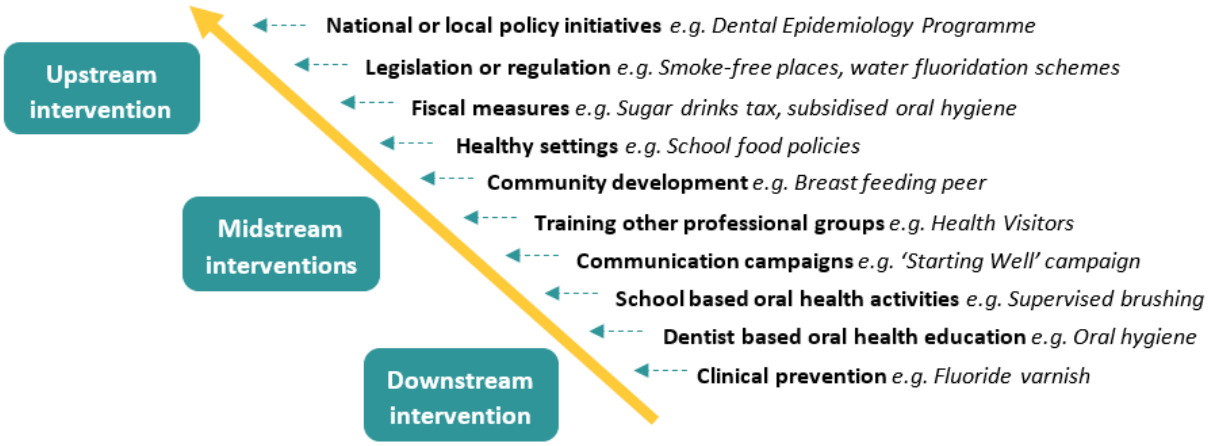


Figure 38 - Options for oral disease prevention (adapted from Watt, 2007 [67])

In fulfilling their statutory responsibilities, local authorities are expected to assess the local oral health needs of their population and then advocate for, influence and where relevant provide evidence-informed interventions across this continuum (presented in figure 38).

By ensuring upstream, midstream and downstream interventions are incorporated into a population level approach to prevention, the common risk factors and wider determinants for both oral diseases and other non-communicable conditions are simultaneously addressed. Evidence suggests the adoption of this approach reduces the overall burden of preventable ill-health and premature mortality within a population [5,23,45,75].

Proportional universalism

As discussed previously, there exists a social gradient in the experience of oral health and health outcomes more broadly [26,76]. With increasing disadvantage, vulnerability and social exclusion comes a greater prevalence and severity of oral diseases.

However, as everyone experiences some degree of inequality within a population, focusing solely on the most disadvantaged will not sufficiently reduce health inequalities across the social gradient [26,34].

Consequently, action to improve everyone's oral health needs to be universal, yet targeted with a scale and intensity that is proportionate to the level of inequality an individual, family or community faces. For example, whilst preventative dental care should be available for all children, 'Looked after children' and those experiencing poverty may require additional support i.e. through targeted fluoride varnish applications.

ORAL HEALTH IMPROVEMENT – WHAT WORKS?

A wealth of evidence now exists that proposes which interventions and action will improve the oral health of individuals and communities – See Appendix A. Since 2014, PHE have published a range of national toolkits, to reflect and summarise this evidence base [4,15,24,77].

Each toolkit makes evidence-informed recommendations regarding the local commissioning or provision of downstream, midstream and upstream interventions. The recommendations of 'what works' are relevant for primary care dental teams, local authorities and organisations who specifically engage with children, young people and older adults.

WHAT WORKS AT AN INDIVIDUAL LEVEL?

Primary care dental teams play an integral role in the prevention of oral diseases and the overall improvement of their patient's oral health. In recognition of this, in 2017, PHE published the 3rd edition of 'Delivering better oral health: an evidence-based toolkit for prevention' [4].

This provided dental professionals with clear guidance on which evidence-informed interventions should be delivered at an individual level. Key recommendations focused on providing patients with –

- Advice about oral hygiene practices across the life course e.g. twice daily exposure to appropriate levels of fluoride
- Tailored support and signposting in order to facilitate lifestyle behaviour changes e.g. reducing sugar consumption and stopping smoking
- Prevention focused dental care, including specific interventions known to prevent development or worsening of oral diseases i.e. application of fluoride varnish

Whilst NHS England (NHSE) are responsible for the commissioning of NHS primary care provision, local authorities can play a crucial role in advocating for dental professionals to adopt an preventive focus to individual care.

Furthermore, local authorities have a responsibility to seek assurance from NHSE and PHE that based on local need, their residents have equitable access to high quality and evidence-informed NHS dental services [3,14].

Outside of primary dental care, a number of downstream interventions i.e. delivered at an individual level, are promoted by PHE [15,24,77] as being effective for improving the oral health of children, young people and older vulnerable adults (e.g. those within care settings) –

Children and young people (0-19 years)

- The integration of oral health into targeted home visits by health and social care workers
- Targeted fluoride varnish programmes delivered outside of dental practices, for those who are deemed to be at greater risk of poor oral health
- Targeted provision of toothbrushes and tooth paste i.e. through health visiting services^

Vulnerable older people

- Appropriate oral hygiene promotion^, including daily exposure to higher fluoride toothpastes and powders (i.e. 2,800 to 5,000 ppm)
- Routine denture identification marking, to ensure lost dentures are returned to the correct person
- Targeted fluoride varnish applications in care homes and community settings

^ = *As of May 2019, a local mapping exercise has indicated that whilst not systematically adopted or delivered across Herefordshire, there is some evidence that the intervention is being provided locally*

WHAT WORKS AT A COMMUNITY LEVEL?

Individual interventions are an important component of local approaches to preventing poor oral health. However in order to achieve a sustainable improvement in population oral health and a reduction in inequalities, local authorities are required to commission or deliver interventions targeted at community settings and wider environments [3].

To inform this process, PHE published two evidence-informed toolkits for local authorities (one focusing on children and young people [15] and the other older vulnerable adults [24]. Each details the effectiveness of mid and upstream interventions for improving oral health in these specific groups.

Interventions deemed to be 'recommended' (R) or 'emerging' (E) and therefore of potential interest for local authorities included –

Children and young people (0-19 years) –

- Supervised tooth brushing in targeted childhood settings i.e. early years and schools (R)
- Healthy food and drink policies in childhood settings i.e. early years and schools^ (R)
- Targeted peer (lay) support groups and peer oral health workers (R)
- School or community food co-operatives (E)

- Fiscal policies to promote oral health (E)

Vulnerable older adults –

- Protocols for improving oral care in care settings (R)
- Outreach programmes & interventions to independently living older people (E)
- Assessment and multidisciplinary integrated preventive approach (including oral health) in primary care for independently living older people (E)

For children, young people and vulnerable older adults –

- Oral health training for the wider professional workforce e.g. health visitors, care home staff^ (R)
- Fluoridation of public water supplies* (R)
- Interventions and policies promoting breastfeeding, complementary feeding practices and wider dietary change across community settings for children and adults^ (E)

* Water fluoridation is the controlled adjustment of a fluoride compound to a public water supply in order to bring the fluoride concentration up to a level which effectively prevents tooth decay [(77)]. Deemed to be both safe and effective in improving oral health and reducing health inequalities, around 6 million people in England (approximately 10% of the population) currently receive water where fluoride has been artificially added [(78)].

RETURN ON INVESTMENT

In 2016, PHE published a rapid evidence review and return on investment (ROI) tool regarding the clinical and cost-effectiveness of the following evidence-based interventions for reducing tooth decay in 0-5 year olds [(29)] –

- Targeted supervised tooth brushing
- Targeted provision of fluoride varnish
- Targeted provision of toothbrushes and paste by post
- Targeted provision of toothbrushes and paste by post and by health visitors
- Community water fluoridation

The ROI tool was designed to support local authorities, who are making decisions about the commissioning and delivery of oral health improvement programmes for pre-school children in their area.

Based on a typical oral health profile and indicative costs, the infographic overleaf (figure 39) illustrates the 5 and 10 year ROI associated with each intervention included [(29)].

This includes monetised savings to the local authority and the NHS including the reduction in fillings provided in NHS primary care and tariff costs for dental extractions in NHS secondary care, the reduction in days missed at work for parents/carers accompanying children to the dentist and/or hospital. In addition the 'number of days saved at school' are generated although not monetised in the ROI.

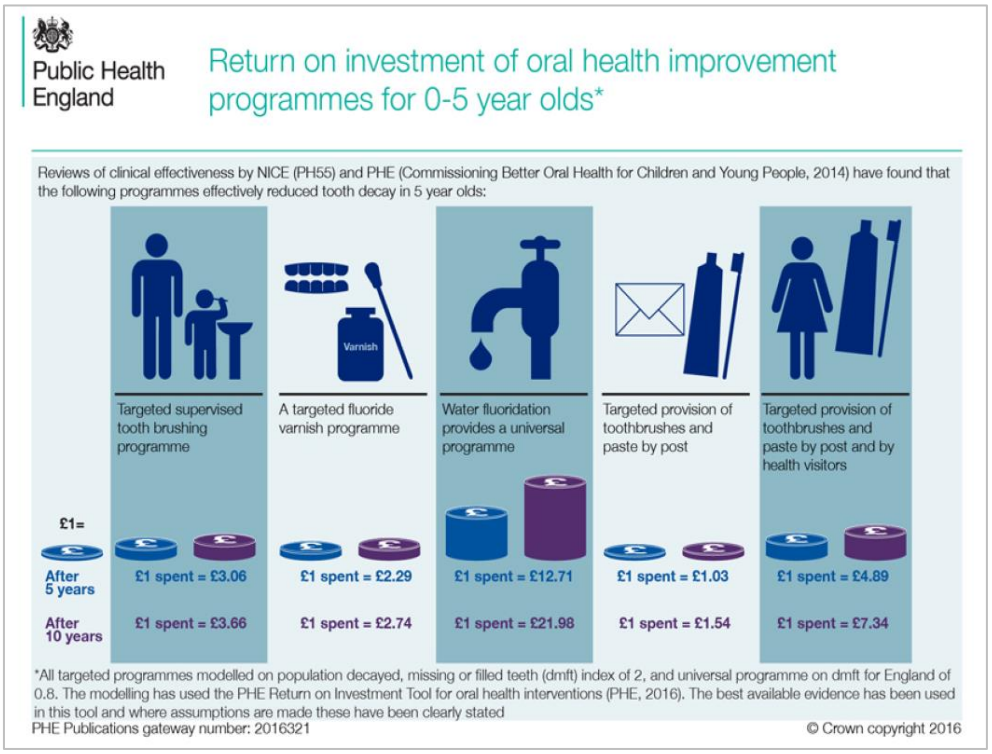


Figure 39 - Return on investment of oral health improvement programmes for 0-5 year olds

NICE GUIDANCE – LOCAL AUDIT AND MAPPING

As a unitary local authority, Herefordshire Council (HC) are the organisation statutorily required to commission or provide oral health improvement programmes for the population of Herefordshire. In addition to evidence reviews and toolkits available from PHE, NICE developed national guidance to inform the approach adopted by local authorities and key partners for improving oral health [(8)].

Table 7, details the 21 recommendations contained within this national guidance, and maps the current provision or activity in Herefordshire against each (as of May 2019). Recommendations to address any identified gaps are discussed in the next chapter.

Table 7 - Local audit against NICE guidance [8]

NICE recommendations	What's happening in Herefordshire?	Gaps against NICE recommendations
1. Ensure oral health is a key health and wellbeing priority	Oral health is a core component of Herefordshire's Joint Strategic Needs Assessment (JSNA) and Child Integrated Needs Assessment (CHINA). Improving the dental health of children and young people is a strategic priority for Herefordshire's Health and Well-being Board and identified in the Director of Public Health's annual report 2018.	The strategic responsibility for oral health improvement and reducing health inequalities is not led or overseen by a multi-agency group.
2. Carry out an oral health needs assessment (OHNA)	A final draft of the OHNA for Herefordshire was completed in June 2019 and the final report will be shared widely with partners throughout September 2019.	No formal plans exist for ensuring the OHNA forms part of a cyclical planning process.
3. Use a range of data sources to inform the oral health needs assessment	The recent OHNA, was informed by epidemiological and socio-demographic data, which was obtained at a national, regional and local level. PHE and NHS England supported the process of data collection and analysis.	N/A
4. Develop an oral health strategy	None identified	A local oral health strategy and/or action plan has not been developed, although is planned to be following the completion of the OHNA.
5. Ensure public service environments promote oral health	Areas and examples of good practice exist across Herefordshire i.e. promotion of breastfeeding; provision of healthy food and drink choices in some early years settings, schools and care settings.	A system-wide or consistent approach does not exist, which ensures all public service environments in Herefordshire promote oral health and healthier eating e.g. within leisure centres, nurseries, community centres, health and social care settings.

NICE recommendations	What's happening in Herefordshire?	Gaps against NICE recommendations
	HC Public Health Team are having initial discussions about engaging with public service environments to become 'health promoting'. Furthermore, 'levers' to influence planning decisions regarding fast food, are being reviewed.	
6. Include information and advice on oral health in all local health and wellbeing policies	Areas and examples of good practice exist across Herefordshire i.e. provision of information and advice in maternity and public health nursing services, schools and care settings. HC Public Health Team are having initial discussions with key services and settings about including oral health in local policies i.e. care homes.	A system-wide or consistent approach does not exist, which encourages all commissioners and providers of public services in Herefordshire to include information and advice on oral health.
7. Ensure frontline health and social care staff can give advice on the importance of oral health	Advice according to 'Delivering better oral health (PHE)', is delivered on an ad-hoc basis to various frontline services (by the HC Public Health Team). Making Every Contact Count (MECC), is delivered to some frontline staff within public services and includes topics on oral health and healthy eating.	A requirement for front line staff to receive oral health training is currently not detailed within all specifications of relevant public services in Herefordshire.
8. Incorporate oral health promotion in existing services for all children, young people and adults at high risk of poor oral health	Oral health promotion is currently embedded within Public Health Nursing Services and Children's Centres. In addition, examples of good practice exist is some adult care settings i.e. provision of appropriate oral hygiene advice.	A requirement for oral health promotion to be incorporated into all existing services is currently not met. Variation in provision is evident across children's services and health and social care services.

NICE recommendations	What's happening in Herefordshire?	Gaps against NICE recommendations
9. Commission training for health and social care staff working with children, young people and adults at high risk of poor oral health	None identified	Regular training (focused on oral or wider public health) is not routinely commissioned or provided for health and social care staff.
10. Promote oral health in the workplace	Limited ad-hoc oral health promotion advice may be offered in some public sector organisations in Herefordshire i.e. through occupational health and human resource services.	The promotion of oral health as per 'Delivering better oral health' (PHE)[4] is not delivered systematically and routinely across all public sector organisations in Herefordshire.
11. Commission tailored oral health promotion services for adults at high risk of poor oral health	None identified	Herefordshire Council do not commission or facilitate the provision of tailored oral health promotion services or interventions for specific at-risk groups i.e. outreach services for people who are homeless, Traveller communities, or those who have sought asylum locally.
12. Include oral health promotion in specifications for all early years services	Oral health promotion is included in the contract specification for the Herefordshire Public Health Nursing Service (contract commenced 2018) and is monitored by strategic targets.	A requirement for all contract specifications for early years services to promote oral health and train staff is currently not met within Herefordshire.
13. Ensure all early years services provide oral health information and advice	Areas and examples of good practice exist across Herefordshire i.e. provision of information about oral health and healthier eating within maternity and public health nursing services, Children's Centres, schools and care settings.	The provision of oral health information and advice as per 'Delivering better oral health' (PHE)[4] is not delivered systematically and routinely across all early years services.
14. Ensure early years services provide additional tailored information and advice for groups at high risk of poor oral health	Areas and examples of good practice exist across Herefordshire i.e. In 2019, Public Health Nursing Service provided free tooth brush packs to families in groups at high risk of poor oral health.	The provision of additional tailored information and advice is not delivered systematically and routinely across all early years services.

NICE recommendations	What's happening in Herefordshire?	Gaps against NICE recommendations
15. Consider supervised tooth brushing schemes for nurseries in areas where children are at high risk of poor oral health	None identified	Currently Herefordshire Council do not commission or facilitate the provision of supervised tooth brushing schemes i.e. in early years settings or schools.
16. Consider fluoride varnish programmes for nurseries in areas where children are at high risk of poor oral health	None identified	Currently Herefordshire Council do not commission or facilitate the provision of supervised tooth brushing schemes i.e. in early years settings or schools.
17. Raise awareness of the importance of oral health, as part of a 'whole-school' approach in all primary schools	Areas and examples of good practice exist across primary schools in Herefordshire i.e. implementation of the 'School Food Plan', availability of plain drinking water and provision of healthier food choices.	Local evidence is not available, which determines the proportion of primary schools in Herefordshire who adopt a 'whole school' approach to oral health or implement national guidance and policies for improving oral health of children.
18. Introduce specific schemes to improve and protect oral health in primary schools in areas where children are at high risk of poor oral health	None identified	Local evidence is not available, which determines the existence of specific schemes and interventions (i.e. staff training, adapted oral health advice, tooth brushing schemes being delivered in primary schools.
19. Consider supervised tooth brushing schemes for primary schools in areas where children are at high risk of poor oral health	None identified	Currently Herefordshire Council do not commission or facilitate the provision of supervised tooth brushing schemes i.e. in early years settings or schools.

NICE recommendations	What's happening in Herefordshire?	Gaps against NICE recommendations
20. Consider fluoride varnish programmes for primary schools in areas where children are at high risk of poor oral health	None identified	Currently Herefordshire Council do not commission or facilitate the provision of community-based fluoride varnish programmes i.e. in early years settings or schools.
21. Promote a 'whole school' approach to oral health in all secondary schools	Areas and examples of good practice exist across primary and secondary schools in Herefordshire i.e. implementation of the 'School Food Plan', availability of plain drinking water and provision of healthier food choices.	Local evidence is not available, to determine the proportion of secondary schools in Herefordshire who adopt a 'whole school' approach to oral health or implement national guidance and policies for improving oral health of children and young people.

CONCLUSIONS AND RECOMMENDATIONS

Based on the intelligence and information available, this OHNA has comprehensively described the standard of oral health of people living in Herefordshire. In addition, this OHNA has also presented a detailed overview of current oral health care services locally, in relation to their availability, accessibility and activity.

Where possible, the local picture in Herefordshire has been benchmarked against regional and national positions, in order to provide a comparative understanding of oral health needs and experiences locally.

CHALLENGES AND GAPS

Findings from this OHNA, indicate that a number of challenges and gaps exist in relation to the oral health of Herefordshire's population.

PLACE AND POPULATION

- Herefordshire has one of the highest proportions of people over the age of 65 years. As older adults are more likely to require complex oral health care, in the future this may increase the level of need and demand for appropriate dental services.

- Over half of all residents in Herefordshire live in rural communities. Although the local population-dentist ratio is higher than both nationally and regionally, approximately half of dental provision is in Hereford city. This may create challenges for rural communities, who require dental care but experience barriers to transport or access more broadly.

- A concerning proportion of children and adults in Herefordshire are overweight or obese. Furthermore, a significant number of people smoke and/or consume alcohol excessively. The prevalence and unequal distribution of these risk factors locally are an important consideration for addressing poor oral health in Herefordshire.

STANDARD OF ORAL HEALTH

- Children in Herefordshire have significantly poorer oral health than reported nationally and generally poorer oral health than reported by our geographical and statistical neighbours. This finding is consistent across all survey results for 3 year olds, 5 year olds and 12 year olds.

- For children aged 5 years, there has been no significant change in the standard of oral health locally over the last 10 years.

- In the last ten years the incidence and mortality rate of oral cancer in Herefordshire has generally increased (a trend reflected nationally).

Gaps in knowledge

- Small sample sizes and limited data, mean it is not possible to confirm the true prevalence and severity of oral diseases experienced in Herefordshire. In addition, reliable conclusions cannot be drawn about the extent of oral health inequalities locally e.g. related to deprivation or ethnicity.

- Whilst the numbers of people within particular at-risk groups can be estimated, local information is lacking about the burden of oral diseases experienced within these groups i.e. Looked after children, older adults in care, people who are homeless.

ORAL HEALTHCARE SERVICES

- A larger proportion of children in Herefordshire have been seen by an NHS dentist than reported nationally, however a significant number of children under 5 years have not accessed NHS dental services (especially those under 2 years).

- Results from the local dental access survey (May 2019) indicate that it may currently be difficult for both children and adults to obtain routine NHS dental care within Herefordshire.

- A large proportion of children and young people in Herefordshire appear to not be receiving fluoride varnish applications within NHS dental care.

- Approximately a third of 'Looked after children' in Herefordshire have not had their teeth checked by a dentist. Without more recent data, it is not known if this remains a current challenge.

Gaps in knowledge

- A lack of local data at a granular level, means it is not possible to determine the current equity of access to NHS dental care according to different demographics i.e. deprivation, age, sex, ethnicity or geography.

- It is not known whether there is reasonable and equitable access to local dental services that meet the needs of at-risk groups i.e. in relation to domiciliary care, outreach or specialist primary care services.

ORAL HEALTH IMPROVEMENT

As detailed in Table 7 (pg. 59), a number of gaps exist between NICE recommended practice for local authorities and the current approach to oral health improvement locally.

- Whilst improving oral health (particularly in children), is a local strategic priority, there remains a lack of strategic direction and designated resources to achieve positive outcomes at a population level

- There is limited co-ordination and consistency in the delivery of oral health improvement activities and messages across community settings (i.e. children's services, educational settings, care homes).

Gaps in knowledge

- Insufficient local data means it is not possible to evidence the extent of oral health inequalities in Herefordshire. Due to this, at the current time, the need for fluoridation of local public water supplies is not able to be determined.

- It is not known to what extent the dental workforce are engaged with Making Everyone Contact Count (MECC).

RECOMMENDATIONS

To address the challenges and gaps identified in this OHNA and improve the oral health of Herefordshire's population, 10 key recommendations are proposed (see table 8 below). Each recommendation is based on the findings from the OHNA and is extensively informed by national guidance (see Appendix A).

As per their statutory obligation, Herefordshire Council are expected to have overarching responsibility and accountability for the recommendations listed. However, ensuring the recommendations are actioned, will require engagement with and input from the following key multi-agency partners across the system –

- PHE
- NHS
- Herefordshire LDC
- Herefordshire and Worcestershire STP
- Healthwatch Herefordshire

Table 8 - Herefordshire OHNA - 10 key recommendations		
Recommendation Number	**Recommendation**	**By when? (Suggested owners)**
1	Establish a multi-agency steering group to lead the strategic direction for improving oral health and reducing oral health inequalities in Herefordshire. Ensure key partners are represented in the group's membership.	By October 2019 (Herefordshire Council – Public Health Team)
2	Based on the findings from the OHNA, develop a clear local vision and a high-level action plan for improving oral health and reducing oral health inequalities in Herefordshire.	By November 2019 (Herefordshire Council - in conjunction with multi-agency steering group)
3	Bridge the gaps in the current local approach to oral health improvement identified through the audit against the NICE guidance and the review of PHE guidance.	Ongoing (Herefordshire Council - Public Health Team, in conjunction with multi-agency steering group)
4	In accordance with PHE evidence-informed toolkits, scope and investigate the commissioning and provision of programmes with a known return on investment – • Targeted community fluoride varnish (for children and older vulnerable adults) • Targeted supervised tooth brushing • Targeted provision of toothbrushes and toothpaste by post and/or health visitors	By December 2019 (Herefordshire Council - Public Health Team, in conjunction with multi-agency steering group)
5	In line with 'Delivering Better Oral Health' (PHE, 2017), promote the role and value of primary prevention within NHS primary dental care across Herefordshire. This is inclusive of – • Increasing the delivery of preventive interventions i.e. fluoride varnish applications • Encouraging parents/carers of infants (< 2 years) to access NHS dental care • Embedding Making Every Contact Count within dental care settings	Ongoing (NHS England and Public Health England in conjunction with the local dental committee and Herefordshire Council)

	• Ensuring dentists and oral health professionals are able to refer patients to community based health promotion activities i.e. for weight management, smoking cessation.	
6	Engage with and support key community settings (especially those commissioned or provided by the local authority) to develop local policies for improving oral health that reflect NICE guidance i.e. care settings, children and young people's settings, general practices and hospitals.	Ongoing (Herefordshire Council - Public Health Team, in conjunction with multi-agency steering group)
7	Ensure continued local participation in the PHE Dental Public Health Epidemiology Programme and identify opportunities to increase both sample sizes and consent rates of local dental surveys	Ongoing (Public Health England in conjunction with Herefordshire Council)
8	Explore the feasibility of undertaking a health equity audit of access to dental services in Herefordshire, specifically related to 'at-risk groups' (e.g. Looked after children, vulnerable older adults, people who are homeless or refugees, those with a learning disability).	By December 2019 (Herefordshire Council - Public Health Team, in conjunction with NHS England)
9	Seek opportunities to influence the common risk factors and wider determinants for poor oral health, obesity and other key public health issues i.e. smoking, high-risk drinking. For example through encouraging public service settings to be 'health promoting' and influencing local relevant planning decisions.	Ongoing (Herefordshire Council - Public Health Team, in conjunction with multi-agency steering group)
10	Based on a Cabinet approved recommendation (Jan 2019), investigate the case for commissioning a feasibility study into water fluoridation. This should be considered in the context of local needs and the range of oral health improvement programmes currently commissioned/provided.	By December 2019 (Herefordshire Council - Public Health Team, in conjunction with multi-agency steering group)

References

1. Department of Health. Choosing Better Oral Health: An Oral Health Plan for England. 2005 [Accessed: 2019 Feb 19]. Available from: http://www.dh.gov.uk/AboutUs/
2. Sheiham A. Oral health, general health and quality of life. Bull World Health Organ. 2005 [Accessed: 2019 Apr 20];83:644–644. Available from: https://www.scielosp.org/scielo.php?pid=S0042-96862005000900004&script=sci_arttext&tlng=es
3. Local Government Association. Tackling poor oral health in children: local government's public health role | Local Government Association. 2016 [Accessed: 2019 May 10]. Available from: https://www.local.gov.uk/tackling-poor-oral-health-children-local-governments-public-health-role
4. Public Health England. Delivering better oral health: an evidence-based toolkit for prevention. 2017 [Accessed: 2019 Mar 22]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/605266/Delivering_better_oral_health.pdf
5. World Health Organization. Oral health. 2018 [Accessed: 2019 Mar 29]. Available from: https://www.who.int/news-room/fact-sheets/detail/oral-health
6. Public Health England. North Yorkshire and Humber oral health needs assessment 2015. 2015 [Accessed: 2019 Apr 12]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/463063/North_Yorks___Humber_oral_health_needs_assessment.pdf
7. Appleby J, Reed R, Merry L. Root causes: Quality and inequality in dental health. 2017 [Accessed: 2019 Mar 22]. Available from: https://www.nuffieldtrust.org.uk/files/2018-10/1540139783_qualitywatch-root-causes-dental-health-report.pdf
8. Health and Care Excellence NI for. Oral health: local authorities and partners. 2014 [Accessed: 2019 Mar 21]. Available from: https://www.nice.org.uk/guidance/ph55/resources/oral-health-local-authorities-and-partners-pdf-1996420085701
9. Alwan A, Armstrong T, Bettcher D, Branca F, Chisholm D, Ezzati M, et al. Global status report on noncommunicable disease 2010. 2010 [Accessed: 2019 Apr 25]. Available from: https://apps.who.int/iris/bitstream/handle/10665/44579/9789240686458_eng.pdf;jsessionid=A9E558B13155DDDD855817BEA225F250?sequence=1
10. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. Community Dent Oral Epidemiol. 2000. [Accessed: 2019 May 1];28(6):399–406. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11106011
11. Public Health England. Child oral health: applying All Our Health. 2018 [Accessed: 2019 Feb 19]. Available from: https://www.gov.uk/government/publications/child-oral-health-applying-all-our-health/child-oral-health-applying-all-our-health
12. Daly B, Batchelor P (Lecturer), Treasure ET, Watt RG. Essential dental public health. [Accessed: 2019 Apr 12]. 253 p. Available from: https://global.oup.com/ukhe/product/essential-dental-public-health-9780199679379?cc=pt&lang=en&
13. Godson J, Csikar J, White S. Oral health of children in England: a call to action! Arch Dis Child. 2018 . [Accessed: 2019 May 24];103(1):5–10. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29025702
14. Public Health England. Oral health improvement programmes commissioned by local authorities . 2018 [Accessed: 2019 May 24]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707180/Oral_health_improvement_programmes_commissioned_by_local_authorities.pdf
15. Public Health England. Local authorities improving oral health: commissioning better oral health for children and young people: an evidence-informed toolkit for local authorities. 2014 [Accessed: 2019 May 11]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321503/CBOHMaindocumentJUNE2014.pdf
16. NHS Digital. NHS Outcomes Framework (NHS OF). 2019 [Accessed: 2019 May 12]. Available from: https://digital.nhs.uk/data-and-information/publications/ci-hub/nhs-outcomes-framework
17. Public Health England. Public Health Outcomes Framework. 2019 [Accessed: 2019 May 22]. Available from: https://fingertips.phe.org.uk/profile/public-health-outcomes-framework
18. University College London. Children's Oral Health Improvement Programme Board: Evaluation Report Year 1 . 2018 [Accessed: 2019 May 15]. Available from: https://www.ucl.ac.uk/iehc/research/epidemiology-public-health/research/dental-public-health/collaborators/COHIPBR
19. NHS. NHS Long Term Plan. 2019 [Accessed: 2019 May 24]. Available from: https://www.longtermplan.nhs.uk/
20. Strategic Intelligence Team (Herefordshire Council). Understanding Herefordshire: Joint Strategic Needs Assessment 2017. 2017.[Accessed: 2019 May 24]. Available from: https://councillors.herefordshire.gov.uk/documents/s50048458/Appendix 1 JSNA 2017 Refresh.pdf
21. Herefordshire Council. Summary of recommendations to the executive and executive responses [Dental Health and Childhood Obesity]. 2019 [Accessed: 2019 May 4]. Available from:

https://councillors.herefordshire.gov.uk/documents/s50063204/Appendix 1 - Dental Health and Childhood Obesity Spotlight Review - Summary of recommendations and e.pdf
22. Chestnutt IG, Morgan MZ, Monaghan NP, Thompson S, Collins L. An overview of oral health needs assessments - to support NICE public health guidance. 2013 [Accessed: 2019 Mar 15]. Available from: https://www.nice.org.uk/guidance/ph55/evidence/report-1-an-overview-of-oral-health-needs-assessments-main-report-pdf-431755885
23. Petersen PE. Continuous improvement of oral health in the 21st century - the approach of the WHO Global Oral Health Programme. 2003 [Accessed: 2019 Apr 12]. Available from: https://apps.who.int/iris/bitstream/handle/10665/68506/WHO_NMH_NPH_ORH_03.2.pdf?sequence=1&isAllowed=y
24. Public Health England. Commissioning better oral health for vulnerable older people An evidence-informed toolkit for local authorities. 2018 [Accessed: 2019 Mar 12]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/738722/CBOH_VOP_V16_Final_WO_links.pdf
25. NHS England. Orthodontics needs assessment for NHS England West Midlands. 2018 [Accessed: 2019 May 29]. Available from: https://www.england.nhs.uk/mids-east/wp-content/uploads/sites/7/2019/02/Orthodontic-Needs-Assessment-West-Midlands-2018.pdf
26. Marmot M, Goldblatt P, Allen J. Fair Society Healthy Lives (The Marmot Review). 2010 [Accessed: 2019 Apr 1]. Available from: http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review
27. Watt RG, Heilmann A, Listl S, Peres MA. London Charter on Oral Health Inequalities. J Dent Res. 2016 Mar 23 [Accessed: 2019 May 24];95(3):245–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/26701349
28. Barton H, Grant M. A health map for the local human habitat. J R Soc Promot Health. 2006. [Accessed: 2019 Mar 12];126(6):252–3. Available from: http://journals.sagepub.com/doi/10.1177/1466424006070466
29. Public Health England. Improving the oral health of children: cost effective commissioning. 2016 [Accessed: 2019 May 25]. Available from: https://www.gov.uk/government/publications/improving-the-oral-health-of-children-cost-effective-commissioning
30. Office for National Statistics. Likelihood of smoking four times higher in England's most deprived areas than least deprived. 2018 [Accessed: 2019 Apr 22]. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/articles/likelihoodofsmokingfourtimeshigherinenglandsmostdeprivedareasthanleastdeprived/2018-03-14
31. Office for National Statistics. Adult smoking habits in the UK: 2017. 2017.[Accessed: 2019 Mar 25]. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2017
32. Watt RG, Listl S, Peres M, Heilmann A. Social inequalities in oral health: from evidence to action. 2015 [Accessed: 2019 Apr 13]. Available from: http://media.news.health.ufl.edu/misc/cod-oralhealth/docs/posts_frontpage/SocialInequalities.pdf
33. Public Health England. National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2017. 2018 [Accessed: 2019 May 7]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/768368/NDEP_for_England_OH_Survey_5yr_2017_Report.pdf
34. Petersen PE, Kwan S. Social determinants and equity in health. World Heal Assem Community Dent Oral Epidemiol. 2009 [Accessed: 2019 May 24];39:481–7. Available from: https://www.who.int/oral_health/publications/2013_equity_social_determinants_public_health_programmes.pdf?ua=1
35. Public Health England. National Dental Epidemiology Programme for England: oral health survey of mildly dependent older people, 2016 A report on the oral health and dental service use of older people living in supported housing. 2018 [Accessed: 2019 Apr 24]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/773355/NDEP_For_England_oral_health_survey_of_mildly_dependent_older_people_2016_report.pdf
36. Public Health England. What is Known About the Oral Health of Older People in England and Wales A review of oral health surveys of older people. 2015 [Accessed: 2019 Mar 24]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/489756/What_is_known_about_the_oral_health_of_older_people.pdf
37. Public Health England. Oral care and people with learning disabilities. 2019. [Accessed: 2019 May 02] Available from: https://www.gov.uk/government/publications/oral-care-and-people-with-learning-disabilities/oral-care-and-people-with-learning-disabilities
38. Local Government Association. Healthy futures: supporting and promoting the health needs of looked after children. 2015 [Accessed: 2019 Apr 21]. Available from: https://www.local.gov.uk/healthy-futures-supporting-and-promoting-health-needs-looked-after-children
39. Shelter. What is homelessness? - Shelter England. 2018 [Accessed: 2019 Mar 25]. Available from: https://england.shelter.org.uk/housing_advice/homelessness/rules/what_is_homelessness
40. NHS Digital. Adult Psychiatric Morbidity Survey: Survey of Mental Health and Wellbeing, England, 2014. 2018. [Accessed 2019 May 03] Available from: https://digital.nhs.uk/data-and-information/publications/statistical/adult-psychiatric-morbidity-survey/adult-psychiatric-morbidity-survey-survey-of-mental-health-and-wellbeing-england-2014
41. NHS Digital. Mental Health of Children and Young People in England, 2017. 2018. [Accessed: 2019 May 22].

Available from: https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017
42. Foundation OH. Mental illness and oral health. [Accessed: 2019 May 29]. Available from: https://www.dentalhealth.org/mental-illness-and-oral-health
43. Foundation OH. Drugs, alcohol and your oral health. [Accessed: 2019 May 29]. Available from: https://www.dentalhealth.org/drugs-alcohol-and-your-oral-health
44. Public Health England. Adult oral health: applying All Our Health. 2019 [Accessed: 2019 May 24]. Available from: https://www.gov.uk/government/publications/adult-oral-health-applying-all-our-health/adult-oral-health-applying-all-our-health
45. Public Health England. Health Matters: Tackling child dental health issues at a local level - Public health matters. 2017 [Accessed: 2019 Apr 3]. Available from: https://publichealthmatters.blog.gov.uk/2017/06/19/health-matters-tackling-child-dental-health-issues-at-a-local-level/
46. NHS Digital. Health and Wellbeing of 15-year-olds in England - Main findings from the What About YOUth? Survey 2014. 2015 [Accessed: 2019 Apr 22]. Available from: https://digital.nhs.uk/data-and-information/publications/statistical/health-and-wellbeing-of-15-year-olds-in-england/main-findings---2014
47. Understanding Herefordshire (Herefordshire Council). Healthy weight and healthy eating. 2019 [Accessed: 2019 Apr 12]. Available from: https://understanding.herefordshire.gov.uk/lifestyles/healthy-weight-and-healthy-eating/
48. Herefordshire Council and NHS Herefordshire. Herefordshire Health and Well-being Survey 2011 Final Report . 2011 [Accessed: 2019 May 4]. Available from: https://factsandfigures.herefordshire.gov.uk/media/9953/herefordshire-health-and-well-being-survey-2011-final-report.pdf.
49. NHS. New alcohol advice issued - NHS. 2016 [Accessed: 2019 May 3]. Available from: https://www.nhs.uk/news/food-and-diet/new-alcohol-advice-issued/
50. Department for Education. Children looked after in England including adoption: 2017 to 2018. 2018 [Accessed: 2019 May 12]. Available from: https://www.gov.uk/government/statistics/children-looked-after-in-england-including-adoption-2017-to-2018
51. Intelligence Unit (Herefordshire Council). People who need adult social care - Understanding Herefordshire. 2019 [Accessed: 2019 May 2]. Available from: https://understanding.herefordshire.gov.uk/community/topics-relating-to-vulnerable-people/people-who-need-adult-social-care/
52. Intelligence Unit (Herefordshire Council). Herefordshire Adult Learning Disabilities Needs Assessment. 2018 [Accessed: 2019 May 25]. Available from: https://understanding.herefordshire.gov.uk/media/1091/g-ccs-research-information-vulnerable-people-learning-disability-learning-disabilities-ina-2016-17-report-full-report-current-version-learning-disabilities-2018-full-report-v10.pdf
53. Public Health England. Public Health Profiles - Mental Health, Dementia and Neurology. 2019 [Accessed: 2019 May 29]. Available from: https://fingertips.phe.org.uk/profile-group/mental-health
54. Public Health England. Mental Health and Wellbeing JSNA. 2019 [Accessed: 2019 May 29]. Available from: https://fingertips.phe.org.uk/profile-group/mental-health/profile/mh-jsna/data#page/1/gid/1938132922/pat/6/par/E12000005/ati/102/are/E06000019/iid/90581/age/1/sex/4
55. Intelligence Unit (Herefordshire Council). Future demand in care homes for the over 65s . 2019 [Accessed: 2019 May 25]. Available from: https://understanding.herefordshire.gov.uk/community/topics-relating-to-vulnerable-people/future-demand-in-care-homes-for-the-over-65s/
56. Intelligence Unit (Herefordshire Council). Refugees and asylum seekers. 2019 [Accessed: 2019 May 21]. Available from: https://understanding.herefordshire.gov.uk/community/topics-relating-to-vulnerable-people/refugees-and-asylum-seekers/
57. Public Health England. Oral health survey of 3 year old children 2013 . 2019 [Accessed: 2019 Mar 7]. Available from: https://www.gov.uk/government/publications/oral-health-survey-of-3-year-old-children-2013
58. Public Health England. Oral health survey of 12 year old children 2009. 2019 [Accessed: 2019 Apr 25]. Available from: https://www.gov.uk/government/publications/oral-health-survey-of-12-year-old-children-2009
59. Department for Education. Children looked after in England including adoption: 2015 to 2016. 2016 [Accessed: 2019 May 15]. Available from: https://www.gov.uk/government/statistics/children-looked-after-in-england-including-adoption-2015-to-2016
60. NHS Digital. Hospital Episode Statistics (HES). 2019 [Accessed: 2019 May 1]. Available from: https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/hospital-episode-statistics
61. NHS Digital. Adult Dental Health Survey 2009 - Summary report and thematic series . 2011 [Accessed: 2019 May 1]. Available from: https://digital.nhs.uk/data-and-information/publications/statistical/adult-dental-health-survey/adult-dental-health-survey-2009-summary-report-and-thematic-series
62. NHS Business Services Authority. Dental handbook: A guidance for commissioners, practices and dentists in England. 2017 [Accessed: 2019 May 25]. Available from: https://www.nhsbsa.nhs.uk/sites/default/files/2017-05/Dental handbook v1.0.pdf
63. NHS England. Standard General Dental Services Contract - July 2018. 2018 [Accessed: 2019 May 8]. Available from: https://www.england.nhs.uk/wp-content/uploads/2018/08/general-dental-services-contract-2018.pdf
64. NHS. Dentists - NHS. 2019 [Accessed: 2019 Apr 25]. Available from: https://www.nhs.uk/using-the-nhs/nhs-services/dentists/
65. NHS Business Services Authority. NHS Dental Services - Dental Contract Reform (DCR) handbook. 2017 [Accessed: 2019 May 1]. Available from: https://www.nhsbsa.nhs.uk/sites/default/files/2017-05/DCR handbook

Amalgamated %28V1.0%29 05 2017.pdf
66. NHS Business Services Authority. Help with NHS dental costs. 2019 [Accessed: 2019 May 25]. Available from: https://www.nhsbsa.nhs.uk/help-nhs-dental-costs
67. NHS. Understanding NHS dental charges. 2017 [Accessed: 2019 May 2]. Available from: https://www.nhs.uk/using-the-nhs/nhs-services/dentists/understanding-nhs-dental-charges/
68. NHS. Results for Dentists in Herefordshire. 2019 [Accessed: 2019 May 25]. Available from: https://www.nhs.uk/service-search/Dentists/Herefordshire/Results/12/-2.746/52.102/3/10126?distance=25
69. Cockcroft B. Gateway Approval Reference Number: 15654 - National Institute for Health and Clinical Excellence (NICE) guidelines on dental recall. 2011 [Accessed: 2019 May 25]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/215663/dh_126005.pdf
70. NHS Business Services Authority. NHS Dental Services - Regulations and handbooks. [Accessed: 2019 Mar 25]. Available from: https://www.nhsbsa.nhs.uk/activity-processing-and-payment-services/regulations-and-handbooks
71. NHS Business Services Authority. Fluoride Varnish FP17s by Performance Year 2015-16 Onwards. 2018.
72. Herefordshire H. Healthwatch Herefordshire Children's Dental Health Report. 2018 [Accessed: 2019 Apr 22]. Available from: https://healthwatchherefordshire.co.uk/wp-content/uploads/2018/04/Healthwatch-Herefordshire-Childrens-Dental-Health-Report-April-218.pdf
73. NHS England. GP Patient Survey: Survey and Reports. 2018 [Accessed: 2019 Mar 15]. Available from: https://www.gp-patient.co.uk/surveysandreports
74. Watt RG. From victim blaming to upstream action: tackling the social determinants of oral health inequalities. Community Dent Oral Epidemiol. 2007. [Accessed: 2019 May 24];35(1):1–11. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17244132
75. World Health Organization. Oral health - Strategies and approaches in oral disease prevention and health promotion. World Health Organization. 2010 [Accessed: 2019 Feb 11]. Available from: https://www.who.int/oral_health/strategies/cont/en/
76. Carey G, Crammond B, De Leeuw E. Towards health equity: a framework for the application of proportionate universalism. Int J Equity Health. 2015. [Accessed: 2019 May 25];14(1):81. Available from: http://www.equityhealthj.com/content/14/1/81
77. Public Health England. Improving oral health: a community water fluoridation toolkit for local authorities. 2016 [Accessed: 2019 May 25]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774128/Fluoridation_Toolkit_-_Publications_gateway_version_20160304.pdf
78. Public Health England. Water Fluoridation Health monitoring report for England 2018. 2018. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692754/Water_Fluoridation_Health_monitoring_report_for_England_2018_final.pdf

Appendices

Appendix A – Key national guidance on oral health

Organisation	Guidance/toolkit title	Year of publication
Public Health England	• Local authorities improving oral health: commissioning better oral health for children and young people	2014
	• Improving the oral health of children: cost effective commissioning	2016
	• Delivering better oral health: an evidence-based toolkit for prevention	2017
	• Child oral health: applying All Our Health	2018
	• Oral health improvement programmes commissioned by local authorities	2018
	• Commissioning better oral health for vulnerable older people	2018
	• Oral care and people with learning disabilities	2019
	• Adult oral health: applying All Our Health	2019
National Institute of Health and Care Excellence	• Oral health: local authorities and partners, PH55	2014
	• Oral health promotion: general dental practice, NG30	2015
	• Oral health for adults in care homes, NG48	2016
	• Oral health promotion in the community, QS139	2016
	• Oral health in care homes and hospitals, QS151	2017
Local Government Association	• Tackling poor oral health in children	2016

Appendix B – Roles and responsibilities of the key organisations involved with improving oral health (15 - pg.15)

	Body	Key Responsibilities
National	NHS England	▪ planning, securing and monitoring primary care community and secondary dental services within a single operating model ▪ developing and negotiating contracts; policies, procedures, guidance and national care pathways ▪ commissioning public health services for children aged 0-5 years (including health visiting, family nurse partnerships within the healthy child programme (HCP) 0-5 years until 2015)
	Public Health England	▪ providing health improvement support for local authorities and NHS England ▪ informing and developing national oral health policies and clinical guidelines ▪ addressing oral health inequalities ▪ ensuring patient safety and governance systems
	Health Education England	▪ providing national leadership for planning and developing the whole healthcare and public health workforce
	National Institute for Health and Care Excellence (NICE)	▪ providing independent advice and guidance to the NHS and social care; developing dental public health guidance
	Health Watch England	▪ representing the rights and views of the public and health and social care users to inform commissioning ▪ identifying public concerns about health and social care services ▪ developing and leading local Health Watch
Regional	NHS England regional reams	▪ providing clinical and professional leadership at the regional level ▪ coordinating and planning dental services on the basis of regional needs ▪ direct commissioning functions and processes ▪ regional director of nursing responsible for supporting and providing assurance on safeguarding children
	PHE regional teams	▪ developing guidance for local authorities ▪ supporting collaborative commissioning of oral health improvement programmes
Local	NHS England area teams	▪ commissioning all NHS dental services - both primary and secondary care ▪ supporting CCGs to assess and assure performance ▪ direct and specialised commissioning ▪ managing and cultivating local partnerships and stakeholder relationships, including representation on local health and wellbeing boards ▪ local area team director of nursing responsible for supporting and providing assurance on safeguarding children
	PHE centres	▪ providing dental public health support to NHS England and local authorities ▪ contributing to joint strategic needs assessments (JSNA), strategy development, oral health needs assessment ▪ supporting local authorities to understand their role in relation to water fluoridation
	Local authorities – public health	▪ jointly statutorily responsible with CCGs for JSNAs assessing local health needs ▪ conducting and/or commissioning oral health surveys to assess and monitor oral health needs ▪ responsible for reducing health inequalities ▪ planning, commissioning and evaluating oral health improvement programmes ▪ leading scrutiny of delivery of NHS dental services to local populations ▪ commissioning surveys to facilitate PHE to monitor and report on the effect of water fluoridation programmes (if water fluoridation programmes affect the local authority area) ▪ lead responsibility for the healthy child programme 5-19 years (and HCP 0-5 years from 2015), the national child measurement programme and the care of vulnerable children and families (ie. looked after children, the troubled families programme) ▪ safeguarding children ▪ commissioning local healthy schools, school food and healthier lifestyle programmes
	Local health watch	▪ providing information and advice to the public about accessing health and social care services and power to enter and view service provision ▪ engaging and collecting public and users' views about access and the quality of services to inform commissioning
	Local dental networks (LDNs)	▪ providing local professional leadership and clinical engagement ▪ supporting the specialist dental public health workforce to plan and design local care pathways, dental services and oral health strategies
	Clinical commissioning groups (CCGs)	▪ GP-led commissioning groups accountable to NHS England for commissioning community health services, children's mental and physical health services, emergency care, maternity services
	Early year providers schools	▪ Department of Health and Department for Education integrated health and education reviews for children aged 2 to 2 ½ by 2015
	Schools	▪ Healthy schools programme ▪ delivering non-statutory personal, social, health and economic (PSHE) education in key stage 1 of the national curriculum