



Public Health Outcome Framework (PHOF) Summary

Outcome Title: Oral Health of 0-5s.

Context

The Public Health Outcomes Framework (PHOF) 'Healthy lives, healthy people: Improving outcomes and supporting transparency' sets out a vision for public health, desired outcomes and the indicators that will help us understand how well public health is being improved and protected. The framework concentrates on two high-level outcomes to be achieved across the public health system, and groups further indicators into four 'domains' that cover the full spectrum of public health. The outcomes reflect a focus not only on how long people live, but on how well they live at all stages of life.

Definitions

4.02 - Tooth decay in children aged 5.

Why is Oral Health in Children an issue?

Tooth decay is the most common oral disease affecting children and young people in England, yet it is largely preventable¹. Poor oral health can impact upon a child's ability to sleep, eat, speak, play and socialise with other children. Other consequences include pain, infections, poor diet, and impaired nutrition and growth². Oral health is thus a fundamental part of overall health and wellbeing. When children are not healthy, this affects their ability to learn, thrive and develop. In this way, good oral health can contribute to school readiness.

There are associations between oral disease and the other major chronic non communicable diseases (NCDs), namely diabetes, cardiovascular diseases, cancers, and chronic respiratory diseases. They all share common risk factors including an unhealthy diet, tobacco use, harmful use of alcohol, and physical inactivity. Furthermore oral disease itself may constitute a risk factor for NCDs.

What does the evidence show?

Oral Health of Children in Norfolk

Prevalence of dental decay at age five

The proportion of the population who have decay experience is used as a proxy for prevalence. Whilst children's oral health has improved over the past 20 years, across England, almost a third (27.9%) of five-year-olds still had tooth decay in 2012³. Oral health in children in Norfolk is only slightly better than England averages, with 27.2% of five-year olds experiencing tooth decay in 2012 (Figure 1)³.

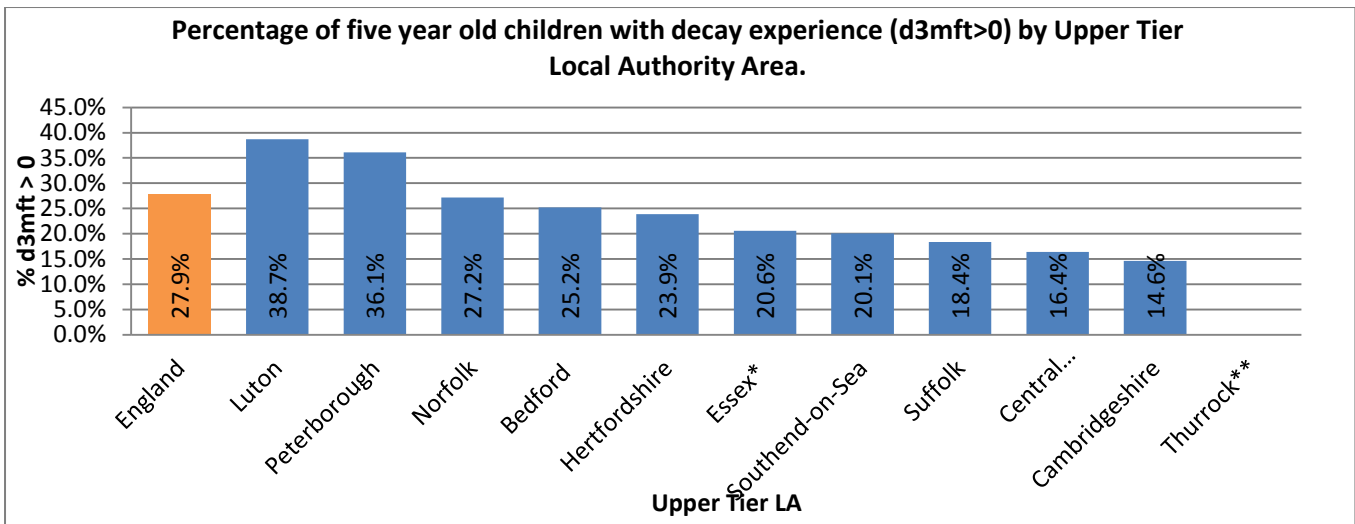


Figure 1 Percentage of five year old children with decay experience (d3mft>0) by Upper Tier Local Authority Area. Source: National Dental Epidemiology Programme for England 2013³. *Essex: (Data for Castle Point, Colchester, Epping Forest, Harlow, Rochford, Tendring & Uttlesford ONLY), ** Thurrock: All or part LA did not partake in survey.

Population averages can mask oral health inequalities. Local data demonstrate that the prevalence of dental decay in 5 year olds ranged from 31.9% in Norwich, to 22.7% in South Norfolk (Figure 2)⁴. Dental decay prevalence is higher than the England average in three local authority areas: Norwich, North Norfolk, and King's Lynn and West Norfolk although this is not significant (Figure 2)⁴.

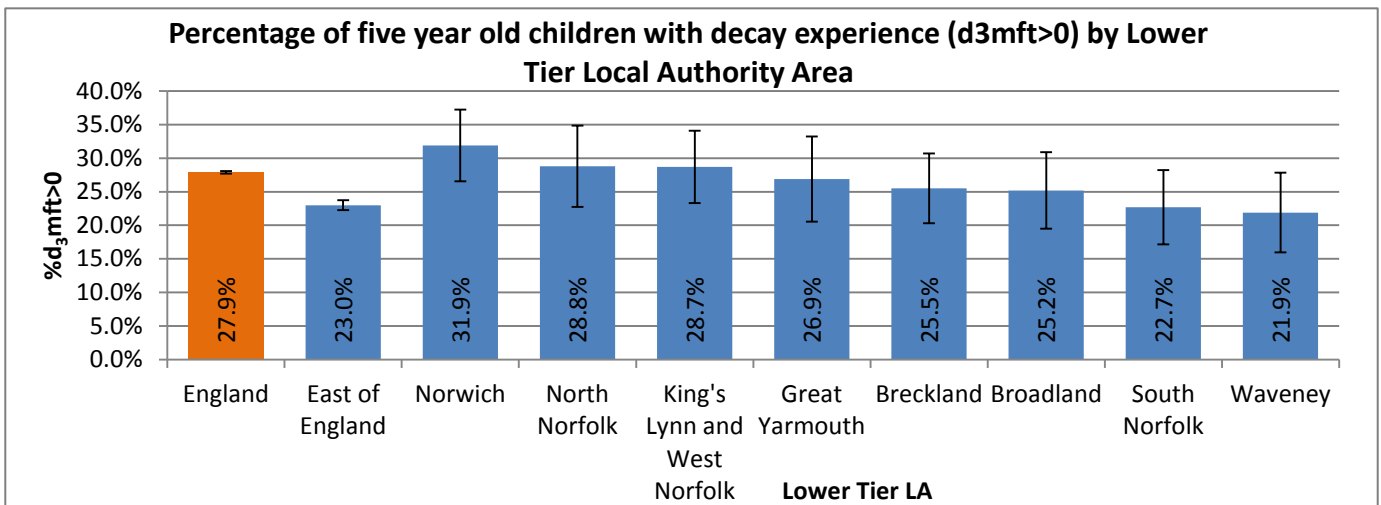


Figure 2 Percentage of five year old children with decay experience (d3mft>0) by Lower Tier Local Authority Area. Source: National Dental Epidemiology Programme for England 2013.⁴

Deprivation and Oral Health

People living in deprived communities consistently have poorer oral health than people living in more affluent communities⁵. Figure 3 shows the relationship between levels of deprivation in each of the districts (IMD 2010)⁶ against dental decay prevalence⁴. Generally, the higher the deprivation the more decay the children are experiencing (Figure 3).

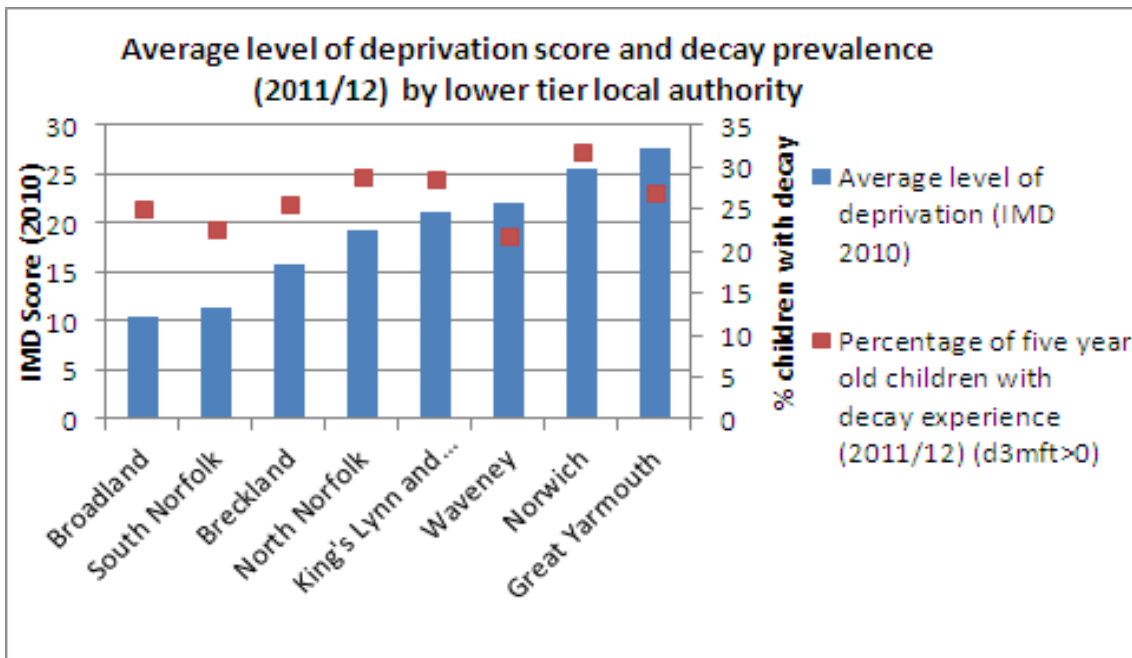


Figure 3 Average level of deprivation score⁷ and decay prevalence (2011/12) by lower tier local authority. National Dental Epidemiology Programme for England (2013).⁴

Severity of Dental Decay at Age Five

In England, the average number of teeth per child affected by decay (decayed, missing or filled teeth (d3mft)) was 0.94. The mean d3mft in Norfolk ranged from 1.38 in Norwich to 0.57 in Waveney (Figure 4). The data shows that the mean d3mft in Norwich is significantly higher than the England mean (Figure 4). Great Yarmouth, Kings' Lynn and West Norfolk, and Breckland all have higher averages than England, but this is not significant³. This is the indicator included in the Public Health Outcomes Framework⁸.

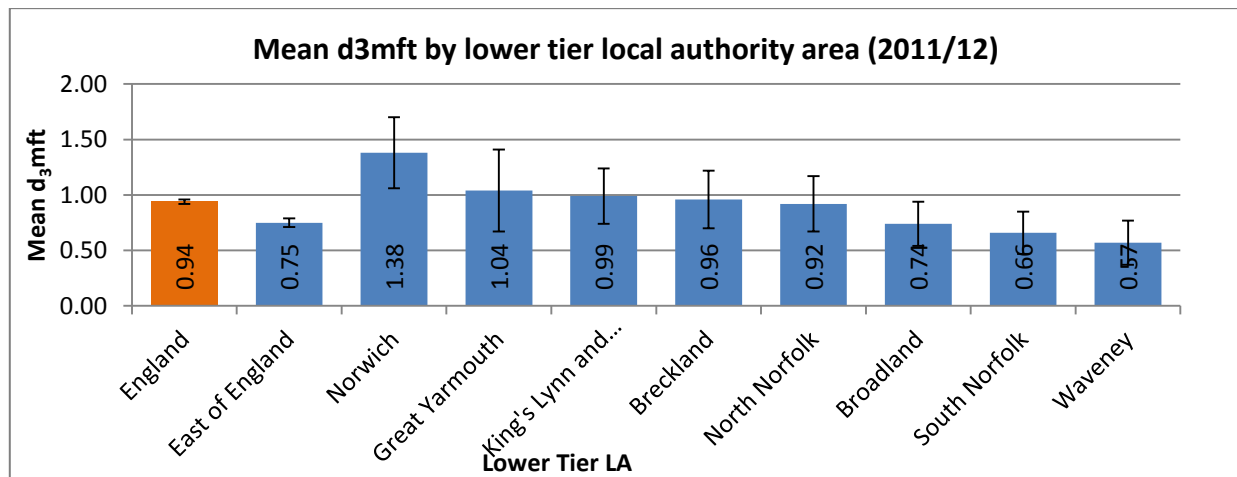


Figure 4 Mean d3mft by lower tier local authority area (2011/12) Source: National Dental Epidemiology Programme for England 2013⁴

Disease Burden in those Children who have Decay

The average d3mft for the whole sampled population can be compared over time and is an important statistical indicator; however, it does not clearly identify the disease burden in those children who already have decay. A greater understanding about the extent of disease in the mouths of children affected can be obtained by calculating the average number of decayed, missing or filled teeth in this group with decay. This is referred to as d3mft>0.

A child aged five normally has 20 primary teeth. In England for those children with decay experience, the average number of decayed, missing (due to decay) or filled teeth is 3.38. The chart below shows that four local authority areas in Norfolk have higher values than this, although only Norwich is significantly higher (Figure 5)⁹.

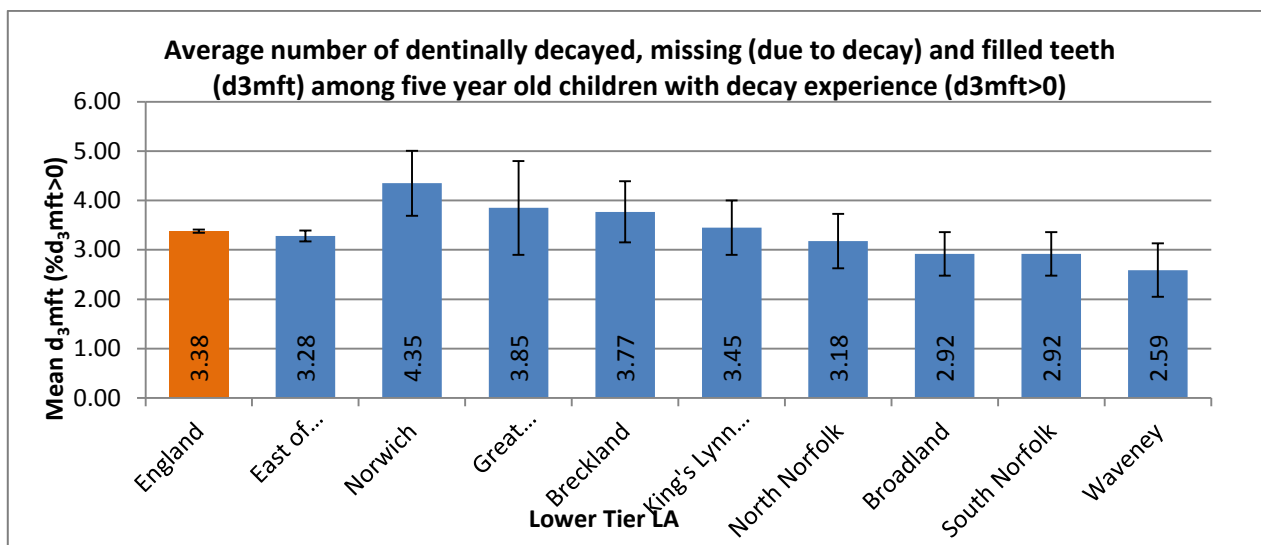


Figure 5 Average number of dentinally decayed, missing (due to decay) and filled teeth (d3mft) among five year old children with decay experience (d3mft>0) Source: National Dental Epidemiology Programme for England 2013⁴

Dental Treatment

The care index is the proportion of teeth with caries that have been filled. It gives an indication of the restorative care received by children with decay by dentists. It is derived by taking the number of filled teeth and dividing by the total number of dentinally decayed, missing and filled teeth and converting to a percentage (ft/d3mft). In using this care index data, caution should be taken in making assumptions about the extent or the quality of clinical care available. The higher the care index the more fillings that have been undertaken. Figure 6 shows that the care index was 11.2% across England as a whole showing that just over a tenth of decayed teeth are treated by filling them⁴. This index varied between 14.9% in Breckland to 5% in Norwich; there is therefore considerable variation within the region⁴.

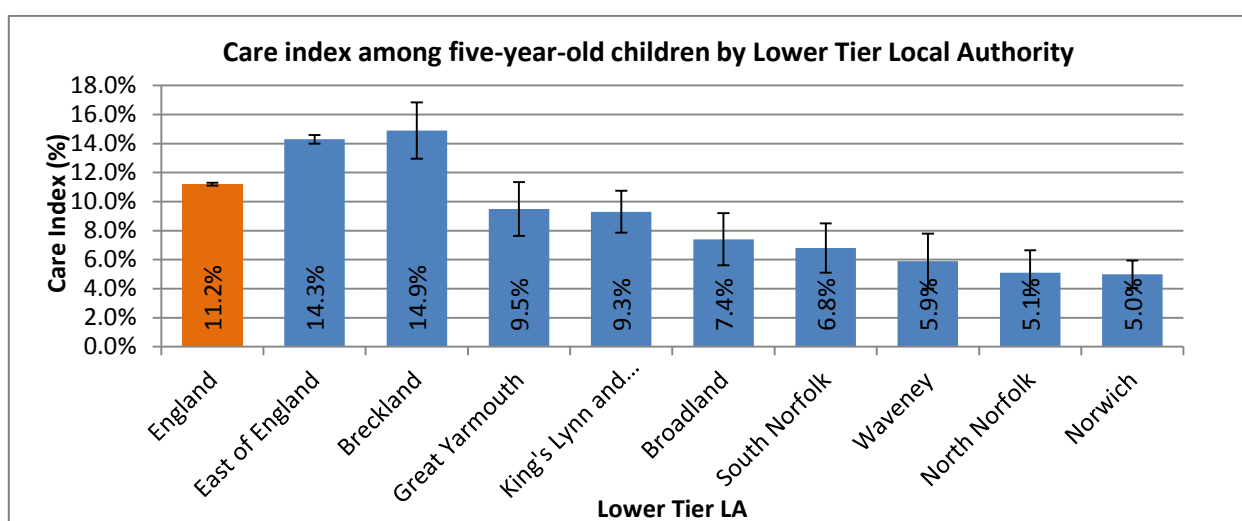


Figure 6 Care index among five-year-old children by Lower Tier Local Authority Area Source: National Dental Epidemiology Programme for England 2013.⁴

The care index alone can only give a limited picture of treatment as it is dependent on access to care. The care index is a measure of restoration of teeth. Where multiple teeth are decayed in 5-year olds, extraction of teeth may be required (possibly under general anaesthetic). The proportion of 5 year old children who had one or more teeth extracted on one or more occasions across England was 3.1% (Figure 7)⁴. These proportions varied between 3% in Waveney to 0% in North Norfolk⁴.

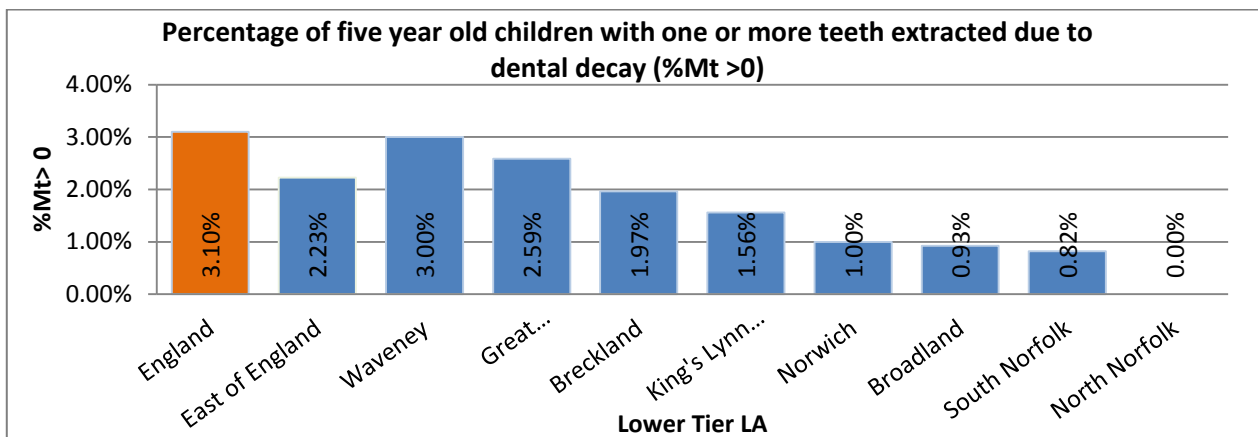


Figure 7 Percentage of five year old children with one or more teeth extracted due to dental decay (%Mt >0) Source: National Dental Epidemiology Programme for England 2013.⁴

Children with Sepsis at the Time of the Examination

Among five year olds nearly all sepsis will be the result of the dental decay process rather than originating from gum problems. Sepsis was defined in the protocol for the National Dental Epidemiology Programme survey as the presence of a dental abscess or sinus recorded by visual examination of the soft tissues¹⁰. Untreated caries can give rise to infection of the tooth pulp (inner most part of the tooth¹¹), which can spread to the supporting tissues and the jaws, culminating in advanced disease conditions that are often painful. Across England 1.7% of five year old children showed signs of sepsis in the 2012 survey (Figure 8)⁴. The percentage of children with obvious abscess/sepsis was almost double the national average in King's Lynn and West Norfolk (3.1%), and Breckland (3.03%) (Figure 8)⁴.

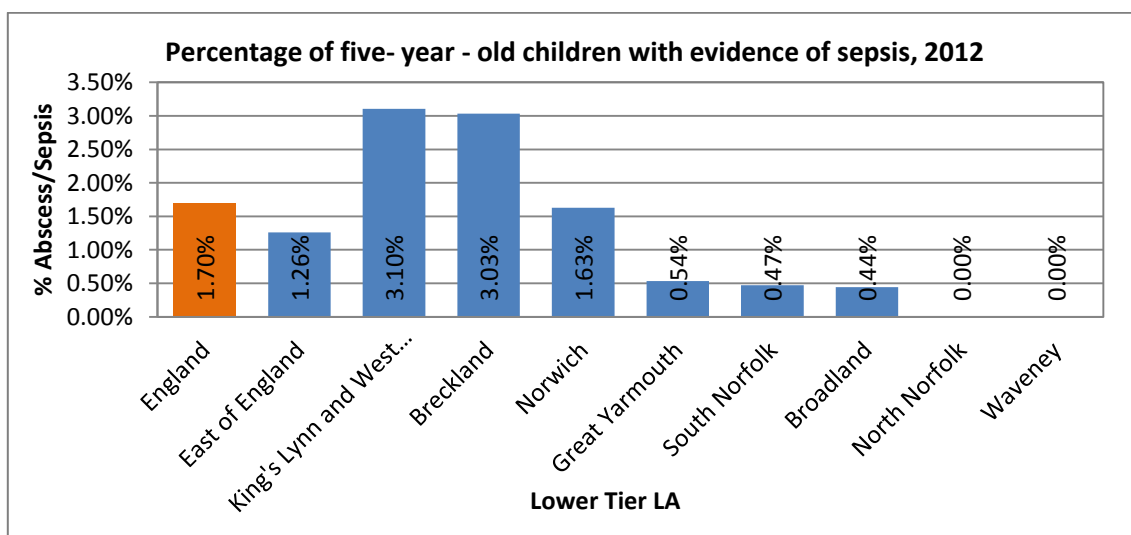


Figure 8 Percentage of five- year - old children with evidence of sepsis, 2012 Source: National Dental Epidemiology Programme for England 2013⁴.

What can we do to reduce prevalence?

Oral diseases are largely preventable; and there is a need to develop interventions to achieve sustained and long-term improvements in oral health and reduce inequalities. Improvements in oral health over the past 30 years have been largely unrelated to clinical treatment¹². The greatest impact has been made by social, economic and environmental factors alongside the widespread use of fluoride toothpaste. There is potential for further decline by reducing sugar consumption, and appropriate exposure to fluorides and fissure sealants. In moving forward, priorities include:

- On-going commissioning of dental epidemiological surveys by local authorities as part of their statutory requirements is necessary to monitor oral health and progress against the public health outcomes framework indicator.
- Priorities should continue to be driven by knowledge of local populations and careful assessment of needs and evidence-based practice.
- Areas with children with high levels of tooth decay should be identified, and preventive services should be targeted to these locations, for example targeted oral health improvement interventions such as community fluoride varnish schemes and tooth brushing programmes, using the principles of proportionate universalism.¹³ This requires a combination of both universal and targeted activities, alongside specialist services.
- Local authorities should work towards improving oral health and reducing oral health inequalities through the commissioning of evidence-based oral and general health promotion programmes.

Local actions to address the issue

From 1st April 2013 the statutory responsibility for the commissioning of oral health promotion transferred from the NHS to local authorities. The current dental public health functions of local authorities now include a statutory requirement to assess their local population's oral health needs, develop oral health strategies and commission or provide oral health improvement programmes¹⁴. They must also provide or commission oral health surveys as part of the Public Health England Dental Public Health Intelligence Programme¹⁵. Guidance was recently produced to assist local authorities in their oral health duties; 'Commissioning Better Oral Health for Children and Young People: Local Authorities' Public Health Role'¹⁶. The National Institute for Health and Care Excellence (NICE) will also be publishing the following further public health guidance in October 2014; 'Oral health: local authority strategies to improve oral health particularly among vulnerable groups'.

The content of this summary was adapted from a report kindly provided by Reena Patel (Dental Public Health Specialty Registrar) and Amanda Crosse (Consultant in Dental Public Health), Public Health England, Anglia & Essex Team.

For more information on this subject

Public Health Outcomes Framework:

<http://www.phoutcomes.info/>

Health Needs Assessment: Norfolk Healthy Child Programme for Children from Birth to Five Years (2014) <http://www.norfolkinsight.org.uk/resource/view?resourceId=974>.

References

¹ Bernabe, E., Calculation performed by E Bernabe using the Global Burden of Disease Collaboration, GBD 2010 Country Results: A Global Public Good. *Lancet* 381: 965-70. 2013: London.

² Nuttall, N. and R. Harker, Impact of Oral Health: Children's Dental Health in the United Kingdom, 2003. 2004. Public Health England, Children and Young People's Health Outcome Framework. 2014.

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- ³ Public Health England, National Dental Epidemiology Programme for England: oral health survey of five-year-old children 2012. A report on the prevalence and severity of dental decay. 2013.
- ⁴ National Dental Epidemiology Programme for England (2013) Oral Health Survey of five-year-old children 2012, lower tier local authority (LA).
- ⁵ Marmot et al. (2011) Social Determinants and Dental Health. *Advances in Dental Research*, 23(2): pp. 201-206.
- ⁶ Social Disadvantage Research Centre at the University of Oxford The English Indices of Deprivation 2010: Local Authority District Summaries/Department for Communities and Local Government, Indices of Deprivation 2010.
- ⁷ Department for Communities and Local Government. The English Indices of Deprivation 2010: Local Authority District Summaries File Notes.
- ⁸ Department of Health (2012) Improving Outcomes and Supporting Transparency: Part 1: A public health outcomes framework for England, 2013-2016.
- ⁹ Health and Social Care Information Centre, Hospital Episode Statistics, Admitted Patient Care, England - 2012-13. 2013.
- ¹⁰ National Dental Epidemiology Programme for England. NHS Dental Epidemiological Oral Health Survey of 5-year-old children in England. 2011/2012 National protocol.
- ¹¹ NHS Choices (2013) Toothache.
<http://www.nhs.uk/Conditions/Toothache/Pages/Introduction.aspx> (Accessed July 2014).
- ¹² Watt et al. (2012) Integrating the common risk factor approach into a social determinants framework. *Community dentistry and oral epidemiology* 40.4, pp. 289-296.
- ¹³ The Marmot Review (2010) Fair Society Healthy Lives. HM Government.
- ¹⁴ NHS Bodies and Local Authorities (Partnership Arrangements, Care Trusts, Public Health and Local Healthwatch) Regulations Statutory Instrument: SI3094. 2012: United Kingdom. p.8.
- ¹⁵ NHS Dental Epidemiology Programme for England. Dental Health. Accessed from:
<http://www.nwph.net/dentalhealth/> (Accessed July 2014).
- ¹⁶ Public Health England (2014) Local authorities improving oral health: commissioning better oral health for children and young people: An evidence-informed toolkit for local authorities.