Integrated Strategic Needs Assessment

Local Strategic Review of Children’s Dental Health

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1. Defining the Issue

Dental caries (tooth decay) is a preventable condition, which involves the localised destruction of tooth tissue. It is caused by a number of factors which relate to interactions between teeth, microorganisms and dietary carbohydrates. In respect of children’s dental health, the concern is the level of dental caries in children at age 5 years. This is commonly assessed using the dmft index, which is a measure of the number of teeth affected by decay. These are actively decayed (d), missing (m) or filled (f) teeth (t).

2. Why is this issue highlighted?

Despite improvements in the oral health of children over the last 30 years, poor dental health remains a problem in Blackburn with Darwen. A survey conducted during 2007/08 found that 5 year old children had an average of 2.41 teeth affected by tooth decay, more than twice the national average of 1.11. This is amongst the highest in England. Only 49% of Blackburn with Darwen children were free of decay at the age of 5 compared with 69% in the country as a whole. Decayed, missing and filled teeth (dmft) in 5-year olds is included in the new Public Health Outcomes Framework, not only as a good direct measure of dental health, but also as an indirect, proxy measure for child health and diet. It is also an issue because it is a major health inequality, with less well off children far more seriously affected than children from more affluent households. Also, poor dental health in young children is a predictor of poor dental health in older children and adults.

“The consequences of children suffering from dental caries include severe pain, abscess formation, sleep loss for patients and parents or carers, behavioural problems and the need for extractions under general anaesthesia with its associated potentially life threatening risks. Further, suffering from caries in childhood is the strongest predictor for suffering from caries later in life.”

3. Who is at risk?

Tooth decay is a common preventable condition which is caused by a number of factors that relate to ineffective oral hygiene and diet. Prevention of tooth decay for children should include effective tooth brushing with an appropriate strength fluoride toothpaste and limiting the amount and frequency of sugar intake. It is important to note that young children cannot exercise choice in relation to dental care and hygiene and by the time that they are old enough to do so, they may already be suffering from dental caries. They are therefore especially vulnerable to dental problems and the less well off the household, the more vulnerable the children seem to be.

Figure 1 - Risk Factors for Children’s Dental Health

Source OPM
Sugar Consumption

Sugar is commonly present in many foods and drinks, including some carbonated drinks. Research carried out on children in the North West found a link between the number of carbonated drinks consumed and levels of dental caries.\(^6\)

There is also extensive evidence demonstrating that children are exposed to high levels of advertising promoting the consumption of foods high in fat, sugar and salt (HFSS) (see for instance Boyland EJ, et al. 2011)\(^7\) despite the restrictions on advertising to children that are already in place. There is also research that demonstrates that this advertising influences children’s patterns of consumption\(^8\). This suggests that in places where there is a high density of children and young people such as schools, nurseries etc., the sale and supply of HFSS foods should not be allowed or should be restricted and that there should be national initiatives to further limit the promotion of HFSS foods by way of electronic media. These points have recently been reinforced by Dr Hilary Cass, president of the Royal College of Paediatrics and Child Health who strongly suggested that there should be a ban on all TV advertising of HFSS foods before the nine o’clock watershed.\(^9\)

Taxation is another method that might be used to reduce the consumption of HFSS foods. Recently Denmark (2010), Hungary (2011) and Finland (2011) have all imposed a tax on HFSS foods and France (2012) has imposed a tax on sugary drinks.\(^10\) This might improve health, including the prevalence of caries, although other possible outcomes are suggested such as people spending their money on cheaper but equally unhealthy alternatives.\(^10\) Dr Cass has suggested in a Guardian article that “the coalition should also impose immediate extra taxes on highly-sugared soft drinks and examine the viability of "fat taxes" to reduce consumption of unhealthy foods”.\(^11\)

Looked After Children

Looked after children and young people are frequently relocated and this can pose particular challenges for health care provision. In responding to the health needs of these children it is important to include the provision of dental care and preventive interventions.\(^25\)

Travellers

There are significant pockets of traveller communities in parts of Lancashire. The families and carers within this group have particular needs relating to access to health services including dental health services and basic preventive interventions. Addressing the oral health needs of this group requires specific consideration.\(^25\)
4. The level of need in the population

The most recently available data demonstrates that, in terms of the **average number** of dmft, Blackburn with Darwen has amongst the worst children’s dental health in the country (Figure 2).

**Figure 2 - Average number of decayed missing or filled teeth in 5 yr olds. England PCTs 2007-08 with 95% confidence intervals.**

Also, the **percentage** of children with at least one dmft is greater than that for almost all other areas in the country (Figure 3).

**Figure 3 - Percentage of 5 yr olds with at least one decayed missing or filled tooth (dmft). England PCTs 2007-08 with 95% confidence intervals**

It is also important to observe how many teeth affected by caries a child has in the event of them having caries at all. Once again, Blackburn with Darwen compares rather badly to other parts of the country.
### Figure 4 - Average number of decayed, filled and missing teeth in 5 yr olds who have at least one dmft - by PCT 2007-08 with 95% confidence intervals.

<table>
<thead>
<tr>
<th>PCT</th>
<th>Average number dmft</th>
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<td>Blackburn with Darwen</td>
<td>4.56</td>
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<tr>
<td>North West</td>
<td>3.8</td>
</tr>
<tr>
<td>England</td>
<td>3.45</td>
</tr>
</tbody>
</table>

*Source:* NWPHO

However, it should also be noted that there is considerable overlap in the confidence intervals of Blackburn with Darwen and other PCTs. This suggests that its exact position in the rankings is subject to an element of chance.

### Historical data

For the 2007/08 survey, a child was examined only if permission had been given to do so. This system is known as positive consent. Previously, children who were selected for the survey would be examined unless a parent or guardian specifically objected. What effect this change has had on the data is not clear, but a paper in the British Dental Journal suggests that “Parents appear to be more likely to opt children with caries out of dental surveys when positive consent is used”.  

The new rules mean that it is dangerous to compare the 2007/08 results directly with earlier surveys. Rather, the 2007/08 data represents a new baseline against which succeeding years can be compared.

Bearing these cautions in mind, in 2005/06, the average number of dmft was 3.2 and the percentage of children with at least one dmft was 63%.
Inequalities within Blackburn with Darwen

The current rules for the dental survey state that a minimum of 250 children should be examined in each local authority and PCT. However, in 2003/04, a much larger sample of 1706 was taken in Blackburn with Darwen, allowing analysis by ward. The maps below (Figure 5) show the average dmft score and the percentage of children affected by caries at the ward level. They show a clear pattern and sharp contrasts across the borough.

Figure 5 - 2003/04 survey of 5-year old children in Blackburn with Darwen (a) average dmft, (b) % dmft

Figure 6 shows the Index of Multiple Deprivation for comparison:

Figure 6 - Index of Multiple Deprivation 2007
Children’s Dental Health

**Dental health and deprivation**

There is a very strong relationship between levels of deprivation and children’s dental health nationally and locally. The chart below (Figure 7) includes every local authority for which there is data and the average number of dmft for 5 year olds in that authority. The chart shows a clear relationship between levels of deprivation and the number of dmft. The chart also shows that Blackburn with Darwen has a greater number of dmft than its IMD alone would suggest.

Figure 7 - Average number of decayed filled and missing teeth in 5yr olds (2007/08) by Local Authority Index of Multiple Deprivation (2007)

![Chart showing relationship between dental health and deprivation](chart.png)

**Sources:** - dfmt data - NWPHO; IMD data - Dept. for Communities and Local Govt

**In-patient treatment for dental caries**

There is also a relationship between ward based levels of deprivation and, for instance, the number of dental in-patient treatments for 0-4 year old children (Figure 8).

Figure 8 - Number of in-patient treatments 0-4 yrs old per 1000 population 2006/07 – 2009/10 by ward Index of Multiple Deprivation.

![Chart showing relationship between in-patient treatment and deprivation](chart2.png)

*Source: In-patient data - Blackburn with Darwen PCIU; Ward Based IMDs based on LSOA-level IMDs and population estimates.*
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Figure 8 is based on a total of 265 admissions over a 4 year period. It is worth noting that older children undergo even more in-patient treatment for dental caries, and it is in fact the most common cause of admission for 5-9 year olds and 10-14 year olds in Blackburn with Darwen.

**Service Use**

Visits to the dentist as a proportion of the child population reached a high point in December 2008. From this high point, there has been a slow decline although Blackburn with Darwen still performs better than England or the North West. (Figure 9)

Figure 9 - Children seen in the previous 24 months as a percentage of the population by quarter from 31.03.2006 to 31.03.2011 Blackburn with Darwen, North West and England.

Source:- NHS Information Centre
5. Good Practice

To assist with the delivery of effective caries-preventive interventions at population, community and individual level, led by the dental profession, the Department of Health has published a toolkit named Delivering Better Oral Health. This provides guidance which is evidence-based and age-specific relating to the prevention of dental diseases including dental caries in children, and outlines best practice with regards to caries prevention in children.

Fluoride has been the cornerstone of caries-preventive strategies for more than five decades. There are a number of ways in which fluoride can be used to have a caries preventive effect. It might naturally be present in drinking water, or can be added to the water supply. Fluoride-containing toothpastes, mouth rinses and varnish are other methods commonly used in the UK, either alone or in combination, to prevent caries.

**Fluoride Varnish**

Delivering Better Oral Health recommends the use of fluoride varnish for caries prevention in children with particular levels of risk and at particular ages. It quotes supporting evidence from, for instance, systematic reviews by Morinho et al (2007) who found that overall, studies supported the use of fluoride varnish in children as a means of reducing the incidence of caries.

However, a recent study by Manchester University and others was carried out in the North West involving over 2900 children from schools in East Lancashire including Blackburn with Darwen. These children were chosen because of the high levels of dental caries in 12 year olds from this region and because the water supply is not fluoridated. Approximately half the children were in the treatment group and half were controls. The research was unable to demonstrate that topical application of fluoride varnish to the permanent molars of 7-8 year old school children produced any benefits in terms of the reduction of caries. The authors of the report concluded that “*we could find no evidence of a caries preventive benefit of 22600 ppm fluoride varnish applied to the first permanent molar teeth in the school setting*”.

**Fluoridation**

Fluoride in water confers significant benefits in terms of dental health, but the water in Blackburn with Darwen is only fluoridated naturally, at levels considerably below the recommended levels.

Blackburn with Darwen and Birmingham have similarly high levels of deprivation, ranking 17th and 9th respectively on the Index of Multiple Deprivation. However, the average number of dmft in 5 yr olds in Birmingham is only 1.35 whereas in Blackburn with Darwen it is 2.41. The difference between the two local authorities is that 100% of the population of Birmingham has a fluoridated water supply. This suggests that fluoridation of the water supply in Blackburn with Darwen would significantly reduce the number of dmft in 5 yr old children.
6. Current Services/ Initiatives

**Toothbrush and Toothpaste Scheme**
Under this scheme, children are given a toothbrush and a 1450ppm fluoride toothpaste pack on a termly basis. The scheme began with children attending schools and their feeder nurseries in wards identified to have the highest dmft figures.

It has been extended using NHS funding to include all pre-school establishments, Children’s Centres and reception classes. This helps maintain links and allow collaborative working between health and educational establishments.21

**Stop the Rot**
A campaign called Stop the Rot was started to remind people that there are NHS dentists available in the borough. The campaign recommends that parents start taking their children to the dentist from birth and make sure older children have regular check-ups.

**The Smiles Scheme**
The NHS Blackburn with Darwen Smiles scheme seeks to implement the recommendations of the “Oral Health Strategy and Commissioning plan” (see section 11), and in particular seeks to ensure that there is a consistency of message in relation to the use of fluoride products, simple consistent dietary advice, improvements in the quality and quantity of evidence-based preventive practice and that NHS dental care “is delivered in accordance with the PCT clinical governance framework, national guidelines and evidence base”.

**Special Care Dentistry**
Children and adults with disabilities and impairments for example learning disabilities, medical problems, and/or other additional needs make them more susceptible to oral health problems. People with learning disabilities or mental health problems have less of their dental disease treated compared to the general population, and when it has been treated they have more extractions and fewer fillings than in the general population.

There is a wide spectrum of disability and impairment. As such, most patients will receive care within a primary care setting. However, for patients with complex needs, oral care may need to be provided either within a secondary or tertiary centre by a Consultant in Special Care Dentistry. A philosophy of shared care between primary, secondary and tertiary care, with a skill mix in each setting to include specialists in Special Care Dentistry should underpin the future development of these services.

There is an existing Special Care and Paediatric Dentistry Clinical Network, which has developed a patient pathway including referral criteria and a model for delivery. The network should continue its work across Lancashire to develop the specification prior to commissioning from the most appropriate provider.25
Children’s Dental Health

**Fluoride varnish**

The use of fluoride varnish has been increasing in Blackburn with Darwen since 2009/10 (see Figure 10). By 2010/11, it exceeded the national average in terms of the percentage of courses of dental treatment for children which included the application of fluoride varnish. However Blackburn with Darwen was still below the North West average, and well behind some other North West PCTs (Figure 11).

**Figure 10 - Number of children receiving fluoride varnish treatment, Blackburn with Darwen. April 2009-August 2011**

![Graph showing the number of children receiving fluoride varnish treatment in Blackburn with Darwen from April 2009 to August 2011.](image)

Source: NHS Business Services Authority. Derived from FP17 claim forms.

**Figure 11 - Percentage of child courses of treatment that contain Fluoride varnish treatment. 2010/11**

![Graph showing the percentage of child courses of treatment that contain fluoride varnish treatment across different PCTs in 2010/11.](image)

Source: NHS Information Centre
7. Gaps

Research carried out with service users in Blackburn with Darwen has revealed the existence of various information gaps, such as a lack of understanding of the importance of fluoride, as well as a perceived or real difficulty in finding and registering with a dentist who will treat the whole family. The research project is described in Section 9 below, and these key findings are summarised in Appendix 1.

8. Value for money

Fluoridation is one of the few preventive interventions whose cost effectiveness has been thoroughly investigated:

“The cost effectiveness of water fluoridation has been extensively studied over many years. Economic studies have found that it is more cost-effective than alternative strategies, and that the cost-effectiveness of water fluoridation increases with the number of potential beneficiaries. The value for money of implementing a scheme in a particular area can be determined by assigning a monetary value to the projected number of medical interventions (fillings, extractions etc) that water fluoridation would prevent. Where the average number of dmft is two or above for children aged five years, the benefits are likely to outweigh the costs significantly. For areas with a high prevalence of tooth decay, water fluoridation is both the most effective and the most cost-effective public health strategy.”

There is very little evidence concerning the cost effectiveness of the other preventive measures recommended by the Department of Health. However, research is currently under way to remedy that.

9 Involvement

Dental health issues were thoroughly explored in a programme of research commissioned by NHS Blackburn with Darwen as part of the Health Inequalities contract with BwD Healthy Living, culminating in the production of a report in July 2010. The research incorporated a survey and four focus groups, which consisted of white parents, BME parents, BME grandparents and white childminders recruited from different areas of Blackburn with Darwen. The recommendations and key findings arising from the report are summarised in Appendix 1.
10 Recommendations

The following recommendations are derived from the Oral Health Strategy And Commissioning Plan 2012 – 2015, produced by NHS Lancashire.

Actions to improve oral health

- Use Smile4Life as the vehicle for oral health improvement activities across Lancashire.
- Ensure that routine care includes preventive elements outlined in “Delivering Better Oral Health”
- Ensure that relevant clinical networks include a preventive approach in their care pathway design
- Develop the health, social care and educational workforce to deliver the preventive agenda
- Reduce the consumption of sugar
  As noted below in the “Oral Health Strategy and Commissioning Plan” “NHS Blackburn with Darwen should engage with other health and non-health agencies to reduce the overall quantity of sugar consumed by individuals and the frequency with which it is consumed.” This could include:-
  - Schools and nurseries not siting on their premises vending machines that sell HFSS foods.
  - School meals, perhaps especially free school meals, should conform to the government guidelines on school meals.
  - Information concerning the sugar content of drinks and food should be included in PHSE classes.
  - All dentists and doctors surgeries and health visitors should provide information concerning the sugar content of drinks and foods.
  - It would also be useful to carry out local insight research on HFSS foods amongst children and their parents.
  - As noted on p2, fiscal and regulatory opportunities to control HFSS foods should continue to be explored.

Actions to improve services

- Continue to review access to routine care for the adult and child populations
- Commission services to address the inequity in access across Lancashire

Special care dentistry (children and adults)

- Continue to use the Lancashire and Cumbria Special Care and Paediatric Dentistry Clinical Network to develop clear pathways and a model for delivery of special care dentistry across Lancashire
- Assess need and review existing provision

Information, research and evaluation

- Continued support for local commissioning of dental epidemiology in line with the National Programme (NDEP)
- Build outcome and process evaluation into all actions in the strategy
- Work with established research partners to design robust research around new interventions
Blackburn with Darwen has an “Oral Strategy and Commissioning Plan” (2007), which describes the oral health needs of the population and recommends actions to improve the oral health of the population and reduce oral health inequalities. The plan is intended to inform all commissioning decisions that concern the prevention of oral disease and provision of dental services. A revision was planned for 2012 which would have included an account of progress made against the objectives. Due to recent changes within the NHS, it is not clear whether this revision will now take place.

The strategy makes 32 recommendations that are intended to improve the oral health of the population of Blackburn with Darwen, including children, and including the issue of inequalities. There are too many to list here but they include a recommendation to investigate the feasibility of fluoridating the water supply, and if it is feasible to request that the Strategic Health Authority should consult on fluoridation. There should be an increase in evidence-based targeted intervention in nurseries and schools. NHS Blackburn with Darwen should engage with other health and non-health agencies to reduce the overall quantity of sugar consumed by individuals and the frequency with which it is consumed.

Consultation is also under way concerning an “Oral Health Strategy and Commissioning Plan” for NHS Lancashire. This will cover the time period 2012-2015.

12. Where to find out more

The Department for Health have published an evidence base of interventions to improve dental health in children, “Delivering Better Oral Health”.

13. Key contacts

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14. Key Indicators

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Spine chart showing, for 5 and 12 year old children:
- Indicators 1 and 4 - the average number of decayed, missing and filled teeth (Av dfmt, Av DMFT);
- Indicators 2 and 5 - the percentage of children with at least one dmft (% dmft >0) or DMFT (%DMFT >0); and
- Indicators 3 and 6 - the average number of dmft or DMFT in children with at least one decayed, missing or filled tooth (Av dfmt >0, Av DMFT >0).

The chart compares Blackburn with Darwen to the North West and England and includes the regional and national ranges.

Source NWPHO
Key Findings

- Of those questioned, the majority of parents regularly visit the dentist as did their children.
- For those who don’t attend regularly the reason stated was that they couldn’t find a dentist and are not aware of how to register with a dentist, or how to get dental health treatment.
- The fluoride varnish scheme is not well known and parents aren’t aware if their children have had it done. There is also no clear understanding of the importance of fluoride.
- There appears to be few dentists who register families. Many only treat either adults or children, which makes it more difficult organizing and attending different appointments at different venues, especially if parents don’t have their own vehicle, thus preventing them from having regular checks.
- There are contrasting views as to when parents should first brush their child’s teeth, likewise for what age a child should be supervised whilst cleaning teeth.
- White parents tended to wean their children at an earlier age compared to those from BME communities.
- Grandparents from all communities tended to have the same opinion that their grandchildren’s dental health was not their responsibility, so had very little input. However they were more likely to give sweet treats and not restrict snacks as much as parents.
- Sugary snacks in between meals are still given readily with many having them at least once/twice per week.
- There are indications that some parents are not aware what types of food contribute to good dental health, although knowledge was high around what types of foods should be avoided.
- Parents felt that extended families, peer groups and the media played a major part in influencing what types of snacks and food their children had.
- Information and advice available suggests current awareness schemes are getting messages across to some sections of the community.
- White parents tended not to listen to advice from health professionals compared to BME parents who felt the advice was imperative.
- Family and friends still play a major role in giving advice and information to parents. However, parents are not always mindful that this information could be out of date and not in line with current guidelines.
Evidence suggests that current advice and guidelines are often conflicting and parents are often left with not knowing what the correct thing is to do. Other than from dentists, parents got the majority of their information and advice from schools and children’s centres. Respondents felt that weaning was not associated with dental health and had more to do with general healthy eating.

**Key recommendations**

- Existing community networks should be better utilised to distribute information and deliver more in depth messages which give explanations about the guidelines. These can include the childminders, parents' groups, children’s centres, nurseries and schools.
- The fluoride varnish scheme needs to be better promoted and explained to the wider community.
- Information should be more readily available on the types of food that promote good dental health, and not just focus on the types of foods to avoid.
- There needs to be clear information on how to register with or access regular dental treatment.
- Dentists who register and treat families as a whole should be encouraged or publicised more.
- Guidelines should be made clearer on the ages children should start to clean their teeth and up to what age they should be supervised.
- Community Dental Health Champions schemes should be developed to promote and offer advice and information in informal settings to parents. This could be developed through schools.
- On a national level, baby food manufacturers should be lobbied to alter labelling to bring it into line with current professional guidelines on recommended ages for readymade food.

Reproduced from "Healthy Living – Healthy Choices for Healthy Communities" – Dental Health Report, July 2010".24
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References


5 OPM 2005 *A Futures Study of Dental Decay in Five and Fifteen Year Olds in England*. Available from [www.opm.co.uk/resources/16/download](http://www.opm.co.uk/resources/16/download)


13 Beynon et. al., (March 2010). *Statement arising from a meeting at NWPHO about the data arising from the 2007/08 NHS DEP survey of 5 yr olds.* North West Public Health Observatory. [http://www.nwph.net/dentalhealth/reports/Statements_re_NHS_DEP_5_yr_olds_2007_08.pdf](http://www.nwph.net/dentalhealth/reports/Statements_re_NHS_DEP_5_yr_olds_2007_08.pdf)


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22 NHS Business Services Authority (BSA), Dental Services Division. (The BSA process the FP17 claim form which dentists complete following treatment provided to their patients.) Available from http://www.nhsbsa.nhs.uk/DentalServices.aspx


24 Healthy Living (July 2010) – Healthy Choices for Healthy Communities, Dental Health Report. Blackburn with Darwen NHS Teaching Care Trust Plus.
