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JSNA Chapters:

[Warrington JSNA Smoking Chapter](#)

[Warrington Joint Strategic Needs Assessment Index](#)

[Warrington JSNA Alcohol Chapter](#)

[Warrington JSNA Cancer Chapter](#)

[Warrington JSNA Unscheduled Care Chapter](#)

JSNA Data Baskets:

[Population Estimates and Projections \(Warrington\)](#)

Contents

- [Warrington Joint Strategic Needs Assessment \(JSNA\) 2011 - Dental Health Chapter](#)
- [Executive Summary](#)
- [1\) Who's At Risk and Why](#)
- [2\) The Level of Need in the Population](#)
- [3\) Current Services in Relation to Need](#)
- [4\) Projected Service Use and Outcomes in 3-5 Years and 5-10 Years](#)
- [5\) Evidence of What Works](#)
- [6\) \(Target\) Population/Service User Views](#)
- [7\) Unmet Needs and Service Gaps](#)
- [8\) Recommendations for Commissioning](#)
- [9\) Recommendations for Needs Assessment Work](#)
- [Key Contacts](#)
- [References](#)
- [Signed Off By](#)

Warrington Joint Strategic Needs Assessment (JSNA) 2011 - Dental Health Chapter



The Joint Strategic Needs Assessment (JSNA) considers a wide range of factors that affect the health and wellbeing of the people of Warrington. The objective of the JSNA is to involve partner organisations, such as the local NHS, local authorities, Police, Fire and third sector organisations in order to provide a top level, holistic view of current and future need within the borough. The JSNA is used to agree key priorities to improve the health and wellbeing of all our communities at the same time as reducing health inequalities.

[Return to chapter contents](#)

Executive Summary

Introduction

Improving oral health is a part of the Government's wider public health strategy. The 2011/12 NHS Operating Framework (Department of Health, 2011). requires PCTs to improve access to NHS dentistry and to work with dentists and other agencies to promote improvements in the oral health of children. Warrington PCT has a board approved Dental Commissioning Strategy which sets out, up to 2013, an evidence based plan designed to meet the key objectives of **improving NHS dental access, improving oral health and reducing dental health inequalities.**

This chapter sets out how dental health has changed nationally over the last 40 years. It goes on to describe the key risk groups for dental disease before considering the change in levels of dental disease in the Warrington population. The chapter also sets out the evidence base for many dental interventions, what NHS dental services are available in Warrington and it predicts likely future demand for NHS dental services.

Key Issues and Gaps

Dental health of the population is improving both in the country as a whole and also in Warrington, but improvement in dental health amongst the youngest children has stalled. It is important that efforts are made to address this problem. There also exists in Warrington variation in child dental health between the electoral wards comprising the PCT. This dental health inequality also needs addressing. Finally, older adults are retaining their natural teeth well into old age. These older cohorts will require extensive dental support if their dental health is to be maintained.

Recommendations for Commissioning

There is a requirement to maintain satisfactory levels of NHS dental service for the local population. Oral health is improving yet demand for increasingly sophisticated dental services **increases. NHS dental services in Warrington are good. Demand for services and provision of NHS dental supply are currently in equipoise.** This means that generally, patients do not have to wait long for a dental appointment in the 'High Street' and patients also have choice of which NHS dentist they go to. Dental services complementary to the 'High Street' including the Salaried Dental Services and the secondary care provider, Warrington District General Hospital offer a good range of services.

The key dental issue to address, both locally and nationally, is the improvement of child dental health. Dental decay is a preventable disease and the tools exist to both improve the dental health of young children and also to reduce the dental health inequalities that are found within the geographic footprint of Warrington PCT. Some PCTs have adopted the large scale postal distribution of fluoride toothpaste and brush to all children living within the boundary of the PCT.

At the other end of the age range, older adults, with increasingly complex medical histories, have substantial dental health needs. It is important that the PCT recognises this and ensures that it retains sufficient primary care NHS dental provision to meet what is likely to be steadily increasing demand from these older age cohorts.

[Return to chapter contents](#)

1) Who's At Risk and Why

Oral health is an integral element of general health and well-being. Good oral health enables individuals to communicate effectively, to eat and to enjoy a variety of foods, and is important in overall quality of life, self esteem and social confidence. Unfortunately oral diseases are very common and their impact on both society and the individual are significant, Department of Health (2005). Pain, discomfort, sleepless nights, limitation of eating function leading to poor nutrition, and time off school or work due to dental problems are all common impacts of oral diseases. Improving oral health is part of the Government's wider public health strategy. Oral health is central to healthy living and a key marker of the health of the community. Good oral health makes an important contribution to an attractive appearance, self esteem and quality of life. Missing or decayed teeth and ill-fitting dentures can make people feel self conscious and lead to loss of confidence and social isolation. The most common diseases, tooth decay and periodontal disease (gum disease) can both cause pain and infection as well as eventual tooth loss.

In the first half of the 20th century oral health in England was very poor. Many people had no teeth and dental decay was almost universal. Until the inception of the NHS, even fillings were expensive and out of reach of many ordinary people.

In the very early years of the NHS, the drive to reduce the backlog of disease was the priority and by the time the first national survey of adult dental health was published in 1968, over a third of the adult population had no teeth at all (Kelly et al 2000). **By 1978, things were beginning to change. Generations who had lost all their teeth were gradually being replaced by generations who had their teeth filled rather than extracted (Kelly et al 2000).** The achievements of the NHS had been considerable, transforming the way the population felt, functioned, looked and behaved in just 30 years.

By 1998, three groups of adults moving through the population could be clearly identified, each with very different needs:

Older age groups (those past the age of retirement) were dominated by those with no teeth at all and in need of complete dentures.

A young generation (under the age of 30 years) had lower levels of decay than their parents. They had low need for fillings and are likely to remain in this healthy condition provided that **appropriate preventive care is available.**

Finally, and importantly, a group between 30 and 65 years could be identified who had experienced high levels of disease which had been treated by fillings (the "heavy metal" generation) and who will have high maintenance needs as they age Steele, (2009).

Whilst dental decay in adults provides the greatest challenge to the NHS, gum disease (periodontal disease) also affects a large proportion of the population and becomes more common with increasing age. The most recent national adult dental health survey The Health and Social Care Information Centre NHS (2011) found that 55% of adults aged over 16 years **had moderate signs of gum disease. Periodontal disease can lead to a loss of the supporting structures holding the teeth in position.** This 'loss of attachment' becomes more prevalent in older people. The prevalence and severity of periodontal disease is greater in smokers.

Oral cancer is a malignant tumour of the mouth. In 2005, there were 4926 cases of oral cancer diagnosed in the United Kingdom (Cancer Research UK, online 2011) and although this represents only 2% of cancers, 1850 deaths were attributed to the disease in 2007. The condition is more prevalent in males with a male to female ratio of 1.6:1. Although the risk of developing oral cancer increases with age, the incidence of oral cancer diagnosed in men in their 40's and 50's has doubled and there has been no increase in survival, despite advances in surgical and management techniques. Debate continues in the literature as to whether this reflects a more aggressive form of the disease in younger cohorts caused by the abuse of tobacco and alcohol.

Like adults, children's dental health in England has also improved in the last 30 years. National surveys of children's oral health are undertaken every 10 years together with more frequent local NHS surveys. In the early 1970's, around 30% of children started school with no experience of tooth decay in their first teeth; by 2003 this figure had risen to 59%. The proportion of older children with decay experience in their adult teeth had also dropped. In 1973, 93% of 12-year-olds had tooth decay in England; by 2003 this had fallen to a historic low of 38% Harker and Morris (2005).

The average number of decayed, missing or filled teeth in all children has fallen since 1973 in all age groups. The most significant change has been in older children. In 12-year-old children in this period the fall has been from 5.0 to 0.7 affected teeth which means that this age group now has the best oral health in Europe, (Department of Health, 2005). In 5-year-old children, improvements have been achieved since 1973, however, since 1983 improvements in oral health amongst this age group have ceased.

In spite of overall improvement, a gap between the oral health status of children in lower socio-economic groups and children in higher socio-economic groups still exist. The 2003 National Survey of Child Dental Health(7) highlights inequalities by social background, for example, the probability of having obvious decay experience of the first teeth was about 50% higher in the lowest social group than amongst the highest social group. Amongst 15-year-olds from managerial and professional backgrounds, 47% had obvious decay experience compared with 65% from manual socio- economic backgrounds.

Regular NHS surveys of children's oral health have been nationally coordinated by the British Association for the Study of Community Dentistry (BASCD: www.BASCD.org). These surveys have proved invaluable in monitoring the dental health of the child population. The surveys continually demonstrate disparities in oral health across and within regions in England with a seven fold difference between PCTs with the best dental health and those with the worst (Pitts et al 2005).

Despite the general improvement in oral health there remain very marked inequalities in oral health. People living in areas of material and social deprivation have much higher levels of tooth decay. They are more likely to have diets high in sugary foods and drinks and they brush their teeth less often. Vulnerable groups of society also have poorer oral health and less access to oral health care services. For example, children and adults with learning disabilities and people with mental illness tend to have fewer teeth, more untreated decay and more periodontal disease than the general population.

Other groups at risk include people with disability, those in long-term institutional care (such as residential homes, psychiatric hospitals and prisons), homeless people and some refugees and asylum seekers. Some minority ethnic groups may face an increased risk of oral disease because they are more likely to be living in areas of disadvantage, and some groups may encounter language and cultural barriers to accessing care and advice.

Elderly people living in residential care tend to have a poorer diet than those living in their own homes. Adolescents, especially young men from semi-skilled or manual backgrounds, have been identified as a grouping which there is a dramatic reduction in dental visits in the transition from childhood to adult life. Children, expectant mothers and women of child bearing age require special consideration. Other vulnerable groups include people requiring palliative care and people undergoing chemotherapy, radiotherapy and bone marrow transplant.

Dental treatment is expensive for the individual, for the NHS and for society as a whole. The total spend on dental care in England in 2009/10 was approximately £5.7 billion including private dental treatment (NHS £3.3 billion – 58% of total spend: private £2.4 billion – 42%) (Dentistry UK Market Report, 2011). Indirect costs, such as time off work to attend for dental treatment, are also a significant financial burden to society Department of Health (2005).

To achieve sustainable oral health improvements and reduce inequalities, action is needed to tackle the underlying causes of oral diseases. Contemporary public health research and policy recognises a spectrum of determining factors. These range from decisions taken nationally on

economic and social policy through the impact that these have on the social environment matched with health behaviours adopted by individuals in the population. Focusing on these 'upstream' factors that cause poor oral health and create inequalities is fundamentally important. Actions that only seek to change individual behaviour and lifestyles will have a **limited long term effect**.

The frequent and high consumption of sugars is the main cause of dental decay. The majority of the English population consumes more sugar than the recommended 60g per day, (Department of Health, 2005). Soft drink, confectionery and biscuits are the main source of sugars in the diet. There is particular concern about the high levels of consumption amongst pre-school children, adolescents and older people particularly those living in institutions. A range of factors influence what people eat and drink but costs, availability, access and clear information are all important.

Eating a healthy balanced diet which contains plenty of fruit and vegetables and is low in fat, salt and sugar and, based on whole grain products, is important for promoting good health. All age groups of the population consume less than the current recommendation of at least five portions of fruit and vegetables a day. Snacking on fruit and vegetables rather than snacks high in sugar can help promote oral health and particularly help to reduce the risk of dental decay.

The health of the periodontal (gum tissues) and bone supporting the teeth can be compromised when teeth and gums are not brushed regularly and dental plaque accumulates. Oral hygiene practices are best learned in early childhood as part of body hygiene and cleanliness.

Tooth decay occurs when acid is produced by bacteria found in plaque on the surface of teeth. This results in loss of some of the tooth calcium and phosphate minerals. This demineralisation happens every time sugary food and drinks are consumed. Once the plaque acid has been neutralised, some of the minerals can be deposited back into the teeth- a process known as remineralisation. Fluoride tips the balance in favour of this 'repair'. Increasing the availability of fluoride therefore helps prevent tooth decay.

Since the 1970s, fluoride has been added to most toothpastes and this is the main reason for the improvement in oral health seen in the UK and Europe. Effective, twice daily toothbrushing has the additional benefit of improving periodontal health. In areas with high levels of disease, water fluoridation is an effective and safe public health measure to reduce decay and more beneficial than the use of just fluoride toothpaste alone.

Tobacco use, especially smoking, increases the prevalence and severity of periodontal (gum) disease. It is also by far the greatest risk factor for oral cancer. Excessive alcohol consumption, particularly spirits, is a further risk for oral cancer, especially when combined with smoking and a poor diet. Heavy drinkers and smokers are 30 times more likely to develop oral cancer than non-smokers and non-drinkers (Blot et al. 1998).

Broken (traumatised) teeth are a common problem amongst certain groups such as adolescent boys. Broken teeth can adversely affect people's appearance and self confidence, and are expensive and difficult to treat. Dental injuries may occur for a variety of reasons including playing contact sports, violence and falls. Binge drinking, violence and non-accidental injury are also causes of facial injury and broken teeth.

[Return to chapter contents](#)

2) The Level of Need in the Population

The dental health of the child population is extensively measured in the UK. The index used to measure dental health actually measures the number of decayed, missing and filled teeth - and is called the dmft index in the primary or first teeth (DMFT in the permanent teeth). It should be remembered that children begin to lose their primary teeth between 6 and 14 years. The first permanent teeth begin to appear at 6 years and with the exception of the wisdom teeth, all permanent teeth are usually present in the mouth by 18 years.

The dental health of children in England is measured by trained and calibrated dental epidemiologists. The data for this report has been provided by The North West Dental Observatory.

<http://www.dental-observatory.nhs.uk/Default.aspx?crumb=00020007013410E000B8>

Table 1. Mean dmft and %age with decay experience (% dmft>0) 5-year-olds Warrington 2003/2004

	Mean DMFT	DMFT > 0 (%)
England	1.49	38.7
Cheshire and Merseyside	1.85	45.0
Warrington PCT	1.53	40.7

Table 1 shows the dental health of Warrington 5-year-olds in 2003/4 and compares the data with the regional and national average. The average 5-year-old in Warrington had 1.53 decayed, missing or filled teeth and 40.7% of 5-year-olds were affected by dental decay. The data shows that in 2003/4 on average 5-year-old children in Warrington had better dental health than 5-year-olds in Cheshire and Mersey and fewer 5-year-olds were affected by dental disease.

<http://www.dundee.ac.uk/tuith/search/bdsearch.html>

Table 2. Mean dmft and %age with decay experience (% dmft>0) 5-year-olds Warrington 2005/2006

	Mean DMFT	DMFT>0 (%)
England	1.47	38.0
North West	2.00	48.6
Warrington PCT	1.54	38.9

<http://www.dundee.ac.uk/tuith/search/bdsearch.html>

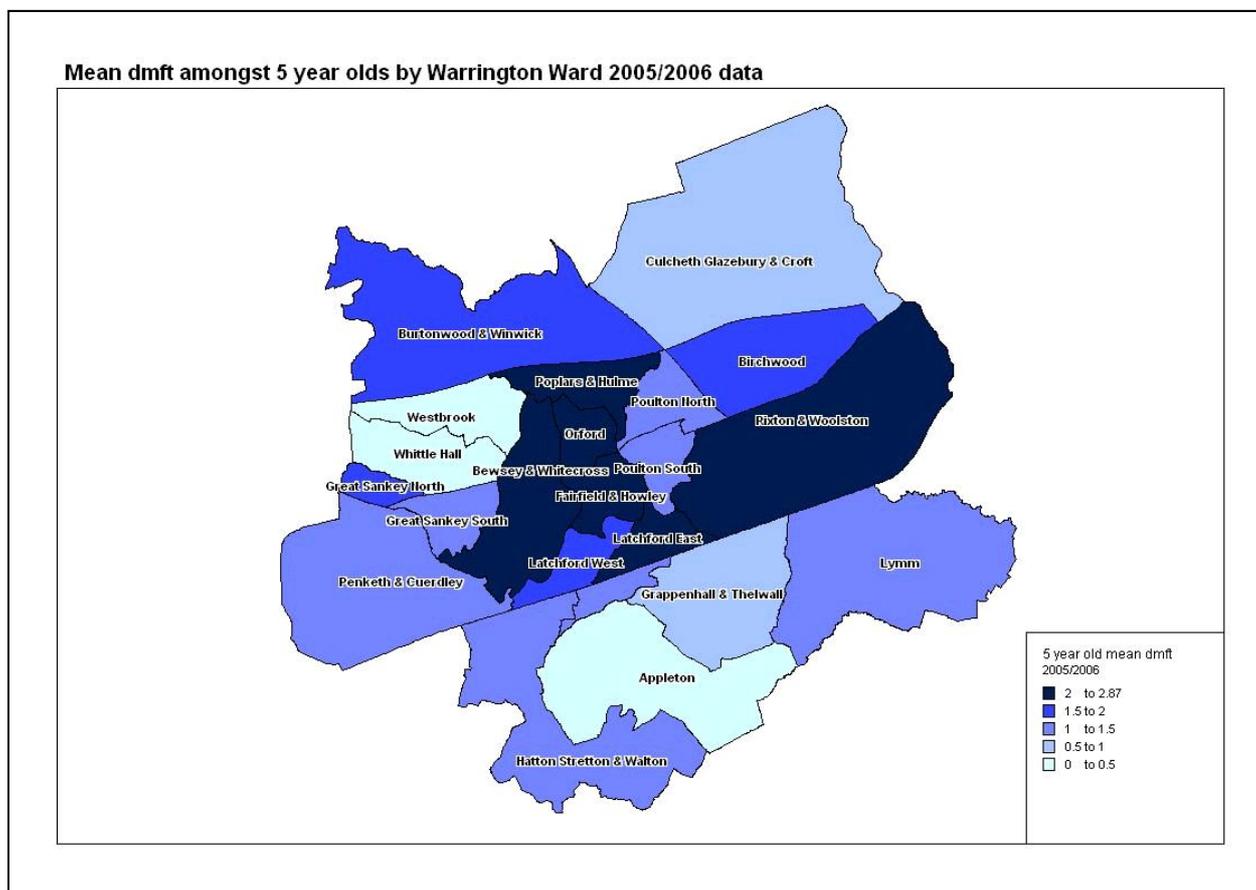
Table 2 shows that the dental health of 5-year-olds had not altered since 2003/4. The average 5-year-old in Warrington in 2005/6 had 1.54 teeth affected by decay (1.53 in 2003/4). Almost 39% of children (38.9%) were affected by decay in 2005/6, slightly less than that found in 2003/4.

Table 3. Mean dmft and %age with decay experience (% dmft>0) 5-year-olds 2005/2006 in Warrington by electoral ward

Ward Code	Ward Name	Mean DMFT	DMFT>0 (%)
OOEUNB	Appleton	0.43	22
OOEUNC	Bewsey and Whitecross	2.87	57
OOEUND	Birchwood	1.62	39
OOEUNE	Burtonwood and Winwick	1.60	44
OOEUNF	Culcheth, Glazebury and Croft	0.91	24
OOEUNG	Fairfield and Howley	2.29	58
OOEUNH	Grappenhall and Thelwall	0.96	31
OOEUNJ	Great Sankey North	1.62	38
OOEUNK	Great Sankey South	1.11	32
OOEUNL	Hatton, Stretton and Walton	1.19	31
OOEUNM	Latchford East	2.40	64
OOEUNN	Latchford West	1.80	52
OOEUNP	Lymm	1.04	25
OOEUNQ	Orford	2.43	51
OOEUNR	Penketh and Cuerdley	1.26	37
OOEUNS	Poplars and Hulme	2.63	52
OOEUNT	Poulton North	1.31	33
OOEUNU	Poulton South	1.49	38
OOEUNW	Rixton and Woolston	2.67	47
OOEUNX	Stockton Heath	1.08	30
OOEUNY	Westbrook	0.19	13

Table 3 sets out the dental health of 5-year-olds in Warrington (2005/6) by electoral ward and there is a substantial range in the dental health between the wards. The best dental health is found amongst 5-year-olds in Westbrook electoral ward. In this ward, the average child had on average 0.19 teeth affected by decay and 13% of children were affected by decay. In contrast, the electoral ward with the worst dental health amongst 5-year-olds was Bewsey and Whitecross. Here the average 5-year-old had on average 2.87 teeth affected by decay and 57% of children were affected by decay.

Figure 1. Mean dmft 5-year-olds 2005/2006 in Warrington by electoral ward



In summary, the dental health of 5-year-olds in Warrington has been relatively stable over time and generally, child dental health at 5-years in Warrington is better than the regional average, although there is significant electoral ward level variation in dental health within the PCT.

Table 4. Mean dmft and %age with decay experience (% dmft>0) 12-year-olds Warrington 2000/2001

	Mean DMFT	DMFT > 0 (%)
England	0.86	37.0
North West	1.25	46.8
Warrington PCT	0.82	36.8

<http://www.dundee.ac.uk/tuith/search/bdsearch.html>

Table 4. shows the dental health of 12-year-olds in Warrington in 2000/1. The data indicate that child dental health in 12-year-olds is very similar to the national average and better than in the North West. The average 12-year-old in Warrington had 0.82 teeth affected by decay and 36.8% of Warrington children were affected by decay.

Table 5. Mean dmft and %age with decay experience (% dmft>0) 12-year-olds Warrington 2008/2009

	Mean DMFT	DMFT > 0 (%)
England	0.74	33.4
North West	0.95	39.8
Warrington PCT	0.73	32.9

<http://www.nwph.net/dentalhealth/survey-results-12.aspx>

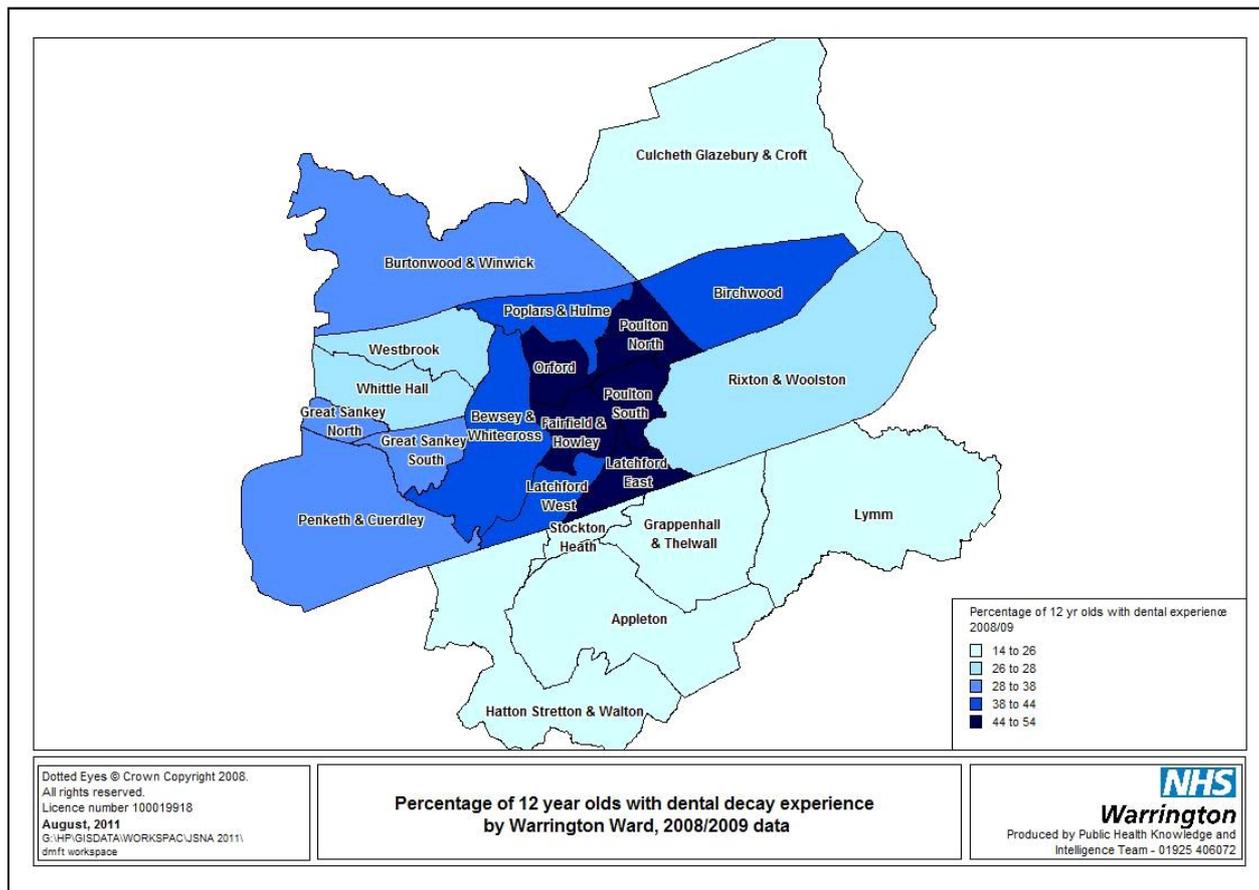
Table 5. shows the dental health of 12-year-olds in Warrington in 2008/9 and suggests that oral health amongst this age group has improved since 2000/1. The average 12-year-old had 0.73 teeth affected by decay and approximately 33% of Warrington 12-year-olds were affected by decay. In the 7 years between the two dental epidemiological studies amongst 12-year-olds there has been an 11% reduction in the mean number of teeth with decay experience.

Table 6. Mean DMFT and %age with decay experience (% DMFT>0) 12-year-olds 2008/2009 in Warrington by electoral ward

Ward Code	Ward Name	Mean DMFT	DMFT>0%
OOEUNB	Appleton	0.34	24
OOEUNC	Bewsey and Whitecross	1.16	41
OOEUND	Birchwood	0.91	38
OOEUNE	Burtonwood and Winwick	0.86	33
OOEUNF	Culcheth, Glazebury, Croft	0.42	25
OOEUNG	Fairfield and Howley	1.28	54
OOEUNH	Grappenhall and Thelwall	0.58	25
OOEUNJ	Great Sankey North	0.65	32
OOEUNK	Great Sankey South	0.72	36
OOEUNL	Hatton, Stretton and Walton	0.23	14
OOEUNM	Latchford East	1.23	49
OOEUNN	Latchford West	1.00	39
OOEUNP	Lymm	0.19	14
OOEUNQ	Orford	1.16	47
OOEUNR	Penketh and Cuerdley	0.61	28
OOEUNS	Poplars and Hulme	1.11	40
OOEUNT	Poulton North	0.94	44
OOEUNU	Poulton South	1.29	45
OOEUNW	Rixton and Woolston	0.54	27
OOEUNX	Stockton Heath	0.31	20
OOEUNY	Westbrook	0.44	27
OOEUNZ	Whittlehall	0.53	26

Table 6 sets out the dental health of 12-year-olds in Warrington (2008/9) by electoral ward and as with the 5-year-old data, there is a substantial range in the dental health between the wards. The best dental health is found amongst 12-year-olds in Lymm ward. In this ward, the average child had, on average, 0.19 teeth affected by decay and 14% of children were affected by decay. In contrast, the electoral ward with the worst dental health amongst 12-year-olds was Poulton South. Here the average 12-year-old had, on average, 1.29 teeth affected by decay and 45% of children were affected by decay.

Figure 2. Mean DMFT 12-year-olds 2008/2009 in Warrington by electoral ward



In summary, the dental health of 12-year-olds in Warrington has improved over time and generally, child dental health at 12-years in Warrington is better than the regional average and very similar to the national average. As with the dental health of younger children, there is considerable variation in dental health across the electoral wards of Warrington PCT.

The dental health of adults in England has been less well monitored over the years and detailed data on the adult dental health of local communities is not available.

Nevertheless, since 1968, there has been a national adult dental health survey published approximately every 10 years and these surveys shed light on the changes in dental health of adults living in England. The available data point to an improving picture in terms of dental health in England.

The most recent adult dental health survey, Steele J (2009). suggest that the proportion of adults in England with active decay has fallen by 18 percentage points from 46% in 1998 to 28% in 2009 and this reduction is reflected in all age groups. There are social variations in dental decay with adults from routine and manual occupation households being more likely to have decay than those from managerial and professional occupational households (37% compared with 26%).

Periodontal (gum) disease remains common at a low level in England. Overall, 45% of adults had periodontal (gum) pocketing exceeding 4mm, although for the majority (37%) disease was moderate with pocketing not exceeding 6mm. Seventy five per cent of adults said that they cleaned their teeth at least twice a day and a further 23 per cent of adults said that they cleaned their teeth at least once per day.

[Return to chapter contents](#)

3) Current Services in Relation to Need

Dental Services in Warrington include 22 General Dental Service's contracts, 1 Personal Dental Service Plus contract and 4 Specialist Personal Dental Services Orthodontic Contracts. The service is provided by 80 dental performers of which there are 2 specialist orthodontists and 2 dentists with specialist interest in orthodontics.

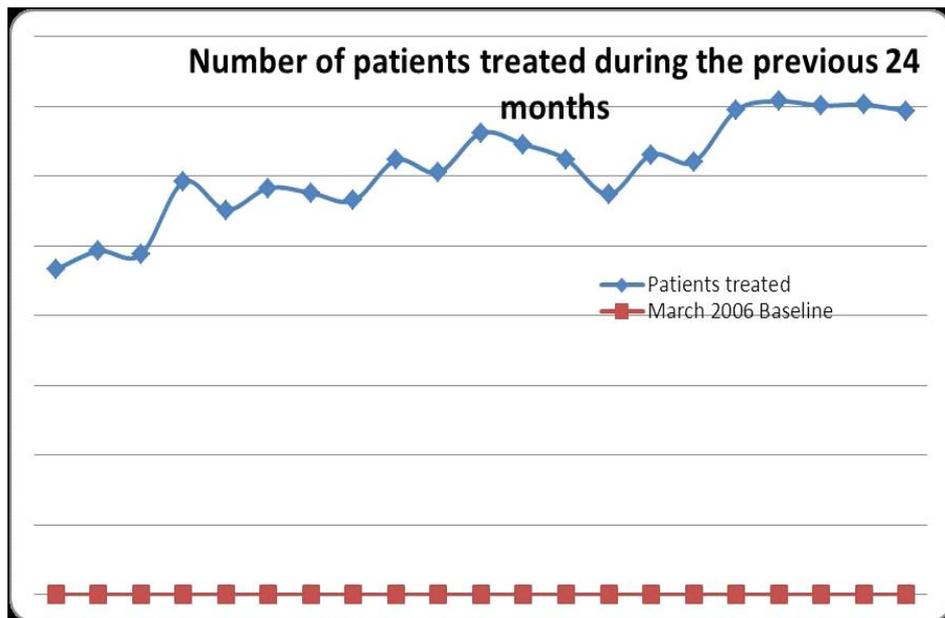
Additional provision is provided via a Salaried Personal Dental Services contract which has 12 performers who provide specialist referral dental services, dental access services, emergency dental service and dental provision within two Warrington prisons. The provider of the service is Bridgewater Community Health Care NHS Trust.

Since April 2006 NHS Dentists in England have been in contract with PCTs. The 'currency' used to measure dental activity provided is the Unit of Dental Activity (UDA). Units of Dental Activity are standard measures of dental activity in the NHS and each PCT sets the limit on how many UDAs each dental practice should provide in a given year. Warrington PCT currently commissions 349,705 units of Dental Activity and 18,674 units of orthodontic activity.

A key requirement of PCTs is to ensure that patients have access to NHS dental services.

In order to address this issue, Warrington PCT has been working with the local dental profession to ensure that NHS dental access is good and that patients have a choice of provider of dental care. Since 2006, the number of patients accessing NHS dental care in Warrington has increased. In 2011, more than 126,000 patients had accessed NHS dental care in Warrington in the previous 24 months. The figure in 2006 at the start of the new dental contract was 122,668 (Figure 3).

Figure 3. Number of Patients treated during the previous 2 years



[Return to chapter contents](#)

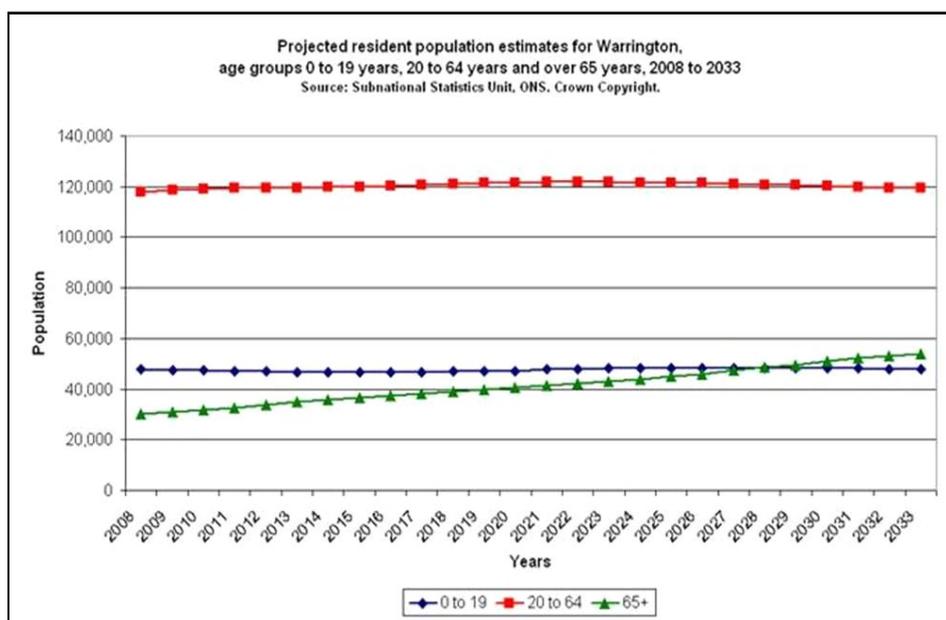
4) Projected Service Use and Outcomes in 3-5 Years and 5-10 Years

The population estimates (Figure 4) for Warrington suggest that for most age cohorts, there will be little change in size over the next 20 years. The exception perhaps is the 65 year+ age group which is expected to grow substantially in that time.

Older adults can be expected to make significant demands on NHS dental services since they are the generation that, when younger, did not have access to fluoride toothpaste and therefore had high levels of dental decay (heavy metal generation). Treatment of decay involves the placement of fillings and crowns and these will need replacing periodically. The increasing size of the older age cohorts in Warrington will mean that local dental services must be prepared to address this demographic development. The dental treatment of older people is often complex and Warrington PCT (and its successor) should ensure that the appropriate level of NHS dental care is commissioned in order to address this demographic change.

In 2014, a new primary care dental contract is being launched in England. Whilst the details of this contract have yet to be finalised, there is anticipation that it will be based on a capitation system. Currently the 23 'High Street' dentists in Warrington provide a service that matches patient demand. All those that wish to access NHS dental care are able to do so. Provided that the size of the local dental profession remains stable, there is every reason to expect that under the new dental contract NHS dental access will remain at a satisfactory level in Warrington.

Figure 4. Resident Population Projections to 2033



Data and charts for population projections are available [here](#).

[Return to chapter contents](#)

5) Evidence of What Works

Improving oral health is a complex, multifaceted task. Addressing the many issues that have an impact on oral health requires a range of evidence based interventions.

In general terms, any approach should involve consideration of:

1. Interventions that improve oral health and reduce oral health inequalities
2. Interventions that improve access to dental services.

Warrington PCT's Dental Commissioning Strategy 2008-13, (2008) has its basis in the delivery of evidence based interventions, designed to improve oral health, reduce oral health inequality and improve access to NHS dental services.

1. Interventions that improve oral health and reduce oral health inequalities

- Water Fluoridation
- Milk Fluoridation
- Distribution of toothpaste containing at least 1000 parts per million (ppm) fluoride
- Implementation by dentists of 'Delivering Better Oral Health – an evidence based toolkit for prevention

Water Fluoridation

Water fluoridation is different from other interventions aimed at improving oral health in that it does not require individual behavioural change. All water contains fluoride naturally. Water fluoridation is the process of 'topping up' the natural fluoride content of public water supplies to a level that is known to improve dental health safely and effectively. In temperate climates that level is 1 part of fluoride per million parts of water (1ppm); this is a level that occurs naturally in many places throughout the world. (The British Dental Association and the Faculty of Public Health, online 2011)

Despite an overall improvement in dental health over the past 30 years, tooth decay remains a significant public health problem in some parts of the UK. Inequalities in dental health are widespread throughout the UK, with children living in the poorest, non-fluoridated communities continuing to suffer unacceptably high levels of tooth decay. Many studies have confirmed that water fluoridation reduces tooth decay and has no harmful side effects. Children are the group that benefits most from water fluoridation, but adults benefit too. The most substantial source of evidence to date of the effect of water fluoridation is the Systematic Review of Public Water Fluoridation, commonly referred to as the 'York Review' (McDonagh et al, 2000) This review analyses the findings from the 'best available and most reliable evidence' on the safety and effectiveness of water fluoridation. It is a systematic review of 214 studies. The York review found that the 'best available evidence suggests that fluoridation of water supplies does reduce caries (decay) prevalence. It is claimed that water fluoridation may have harmful side effects including dental fluorosis, bone fracture and cancer. The most substantial source of evidence to date of the effect of water fluoridation (the York review) also looked at safety and examined 176 relevant studies (88 dental fluorosis, 29 fractures, 26 cancer, and 33 other effects); the majority were of a low quality.

A dose dependent increase in dental fluorosis was found. At a fluoride level of 1 ppm, an estimated 12.5% (95% confidence interval: 7.0, 21.5) of exposed people would have an aesthetically concerning fluorosis from these studies. However, the authors state that there is a risk of bias towards overestimation due to a lack of assessor blinding in many studies.

Any water fluoridation scheme has ethical, environmental, financial and legal implications. In the event that North West SHA and its constituent PCTs decided to consider the introduction of a fluoridation scheme all these issues would need to be considered as part of the required consultation exercise as set out in the Water Industry Act of 2003.

In the UK, around 6 million people (approximately 10% of the population) currently receive a fluoridated water supply with the West Midlands being the most extensively fluoridated region. Worldwide, around 400 million people benefit from a fluoridated water supply, with the US being one of the most extensively fluoridated countries. (The British Dental Association and the Faculty of Public Health, online 2011)

In 2003, amendments to section 58 of the Water Industry Act (Department of Health, 2003) were passed by Parliament making it mandatory for water companies to fluoridate water supplies wherever this is formally requested by strategic health authorities following consultation with local community. If the outcome of the public consultation is support for water fluoridation, the Strategic Health Authority can ask the water company to comply with this request.

Currently there are no plans for North West Strategic Health Authority to consult on water fluoridation.

Milk Fluoridation

Milk is an important part of the human diet. Fluoridated milk was first investigated in the early 1950's. Clinical trials were initiated in the 1980's. These trials showed clearly that the optimal daily intake of fluoride in milk is effective at preventing dental decay. At present, milk fluoridation programs are running continuously in ten countries throughout the world, (Banoczy and Rugg-Gunn, 2007). A systematic review of the benefits of milk fluoridation was undertaken in 2005, (Yeung, et al, 2005). The review concluded that "although there was little robust evidence to support fluoridated milk and the external validity of the included studies must be viewed with caution, this does not imply that milk fluoridation is ineffective in caries prevention, merely that high quality Randomised Control Trial RCT evidence is lacking in the area". The two studies that were of sufficient quality to be included in this review suggested that fluoridated milk was beneficial to school children by helping prevent caries in the permanent dentition.

Evidence from studies in the UK appears to be contradictory. Effectiveness has been demonstrated in a cross-sectional study but not in a longitudinal study, (Riley, et al 2005, and Ketley et al, 2003).

Since 1993, fluoridated milk has been used as a preventative measure in 16 districts in the UK where the level of dental decay has been high and it has not been possible to introduce water fluoridation. **In England approximately 28,000 children at 10 sites around the country, drink fluoridated milk in either the school or pre-school setting at an annual cost per head of £1.00-£5.39. (Borrow Foundation, unpublished data) There are currently no plans to introduce a milk fluoridation scheme in Warrington.**

Distribution of toothpaste containing at least 1000 parts per million (ppm) fluoride

Toothbrushing with fluoride toothpaste is by far the most common form of decay control in use today. The intensive promotion of fluoride toothpastes by the oral health care industry has been a major factor in their increased use and in the developed world. Since the 1980's, nearly all commercially available toothpaste formulations contain fluoride. Consensus amongst researchers and public health authorities places fluoride toothpaste as the method of choice for preventing decay as it is convenient and culturally approved. Because of its widespread use, fluoride toothpaste is commonly linked to the decline in decay prevalence in many countries, (Marinho et al, 2003). The usual concentration of fluoride in 'family' toothpastes is 1000-1450 parts per million (ppm).

An extensive systematic review of the benefits of fluoride toothpaste for children and adolescents, undertaken in 2003, concluded that "children aged 5-16 years who used a fluoridated toothpaste had fewer decayed, missing and filled permanent teeth after three years. Twice a day use increases the benefit. No conclusions could be reached about the risk that using fluoride toothpaste could mottle teeth (fluorosis), an effect of chronic ingestion of excessive amounts of fluoride when children are young," (Marinho et al, 2003).

The most recent systematic review of the benefits of fluoride toothpastes by Walsh et al (2010), confirmed the benefits of using fluoride toothpastes in preventing decay in young children and adolescents. However, the review also found that decay preventive effects of fluoride toothpaste increases with higher fluoride concentrations and that below 1000 ppm, the benefits are not clear. The review also pointed out that an unwanted result of using fluoride toothpaste in young children may be mottling of teeth and the possibility of mottling should be discussed with the **family dentist**.

There is evidence that fluoride toothpaste distributed through the post to young children has a positive effect on child dental health (Davies et al, 2003) and in some PCTs large-scale distribution of fluoride toothpaste and toothbrush to children's homes has resulted in oral health improvement. (Halton and St Helens PCT, 2011).

Warrington PCT's Dental Commissioning Strategy (2008-13) includes a targeted fluoride toothpaste distribution programme. The salaried dental service oral health promotion team in Warrington provides free toothbrushes and toothpaste to **Children's Centres across the town**. This resource is prioritised according to local need. As part of the 'Brushing for Life' government oral health initiative, Warrington's health promotion team have continued to provide free brushes and toothpaste to children under the age of 4 years in the areas of highest dental health need. Approximately 700 packs containing a tube of family strength toothpaste and **toothbrush are distributed annually**. **The team continues to work closely with the health visitors** to ensure the packs of toothpaste and toothbrush reach those children in areas of greatest **social disadvantage**.

It should be remembered that there is a potential risk of mild dental fluorosis in family strength fluoride toothpaste. This issue has been considered in a Cochrane Review in 2010, (Wong et al 2010). The authors suggested that there is some weak evidence that the use of fluoride toothpaste (1350ppm -1450ppm) before 24 months of age may be associated with the risk an increased risk of developing mild fluorosis.

Implementation by dentists of 'Delivering Better Oral Health – an evidence based toolkit for prevention

In 2005, The Department of Health published Choosing Better Oral health: An Oral Health Plan for England, (Department of Health, 2005). This document identified that dental health in England had improved considerably over the last 30 years, which would, in turn, bring about radical changes in the way in which dentistry is delivered in this country, moving it away from a service focussed mainly on treatment to a more preventive model of care.

The document identified that there are still inequalities in dental health across the country and primary care trusts have a responsibility to implement effective population based preventive programmes. Dentists also have a duty to provide preventive advice where they judge it to be clinically appropriate for patients who attend for dental treatment. In order to support both PCTs and dental teams in the delivery of a more preventive approach, the Department of Health commissioned a prevention guide for primary dental care, designed for use by all the dental team within the surgery setting, (Department of Health and British Society for the Study of **Community dentistry, 2009**) **This toolkit provides clear and simple messages that are based firmly on the current available research evidence endorsed by a wide range of specialist organisations that were consulted during its development.**

This preventive toolkit provides evidence based advice for dentists to pass onto their patients on a wide range of oral health issues. Every dentist in Warrington PCT has access to this document and the PCT's Dental Commissioning Strategy requires all dentists to follow the guidance set out **in document**.

The Department of Health guidance for dentists, (Department of Health and British Society for the Study of Community dentistry, 2009) recommends that children and young adults for whom the dentist has concern should be offered fissure sealants. Sealants are coatings applied by the dentist or other suitably trained individuals on the grooves of permanent molar teeth. These **coatings are intended to prevent the growth of bacteria that promote decay in grooves of these**

teeth. A systematic review undertaken by Ahovuo-Saloranta et al, (2008) suggested that children who have their molar teeth covered by sealants are less likely to have dental decay in their molar teeth than children without sealants.

2. Interventions that improve access to dental services

Access to NHS dental services is an essential element of any programme to improve and maintain the oral health of a community. The North West Strategic Health Authority has set dental access targets for all PCTs in the region. For Warrington, the March 31st 2011 target for patients treated (patients seen within the previous 24 months) was 127,381. The actual number of patients seen was 126,138.

In order to ensure that NHS dental access targets are met in Warrington, a dental procurement exercise was undertaken in 2010. One new dental practice has been procured and it is anticipated that once a patient base has been established in this practice, the dental access target set by the Strategic Health Authority for Warrington PCT will be met.

In addition to expanding the size of the dental provision in Warrington, steps are also taken to ensure that the dental contract is managed efficiently. Using the Department of Health Dental Contract Management Handbook (Department of Health, 2010), all local dental contracts are reviewed regularly. In particular the recall interval of adult patients is expected to follow National Institute for Clinical Excellence guidance (NICE, 2004), which states that adults should be recalled between three months and two years depending on their clinical needs.

In terms of the interface between primary and secondary care, The PCT also requires dentists to adopt NICE guidelines for the referral of patients for the extraction of wisdom teeth, (NICE, 2000).

In addition to providing 'High Street' dental services, Warrington PCT also provides a Salaried Dental Service (SDS). The SDS offers a range of specialist services within the primary care setting as well as providing routine dental care for those patients who, because of disability, are unable to access dental care within the 'High Street'. Prison dental services are also commissioned from the Salaried Dental Service.

Warrington PCT also provides a primary care 'Out of Hours' dental service for patients who have **urgent dental care needs after 6pm in the evening, at weekends and on Bank Holidays.**

Access to secondary dental care services is also a key element of Warrington's dental provision. Warrington District General Hospital provides a referral centre for patients requiring oral surgery treatment and orthodontic care.

[Return to chapter contents](#)

6) (Target) Population/Service User Views

The Department of Health commissions a quarterly survey designed to capture the patient experience within general medical services. This survey includes a number of questions relating to patients' ability to access NHS dentistry. During the year to 31st March 2011, the data from this national questionnaire indicate that 94% of those Warrington residents who attempted to access NHS dental services were successful. Nationally, the same figure was 92%.

[Return to chapter contents](#)

7) Unmet Needs and Service Gaps

NHS dental access is good in Warrington. Those patients that want regular dental care are able to access services from a range of 'High Street' dentists. The PCT is satisfied that the level of 'High Street' dental provision currently available is sufficient to meet demand, both for those that seek regular dental care and also for those who are satisfied to access NHS dental care on an irregular basis. According to data provided by the SHA, approximately 64% of Warrington's population have visited a dentist within the last 24 months. The remaining 36% of the local population should be regarded as 'irregular attenders'. (Dental Access Monthly Report. Northwest NHS, online)

The dental health of the local child population can be regarded as similar to the national average and generally getting better. The exception is amongst young children where oral health improvement has stalled over that last few years. The PCT may wish to consider introducing evidence based population preventive approaches to address this issue.

[Return to chapter contents](#)

8) Recommendations for Commissioning

The important issue for dentistry locally is to safeguard the current level of NHS dental service provision, which overall is sufficient to meet the needs of the local population.

One key area for consideration should be how to address the oral health of the child population. Whilst the level of oral health amongst young children in Warrington is similar to the national average, we need to be aware that more could be done to improve the position. The dental health of young children in Warrington specifically and in England as a whole has shown little sign of improvement over the last 10 years. Given that dental decay is a preventable disease, and its prevention is possible using evidence based approaches, thought should be given to commissioning appropriate programmes that would address this issue.

Further, the middle aged population of Warrington, who have already undergone extensive dental care for the treatment of decay, can be expected to make significant demands on NHS dental services for the foreseeable future and service planning in dentistry should acknowledge this.

[Return to chapter contents](#)

9) Recommendations for Needs Assessment Work

The available dental epidemiological data associated with child dental health is of a high quality both locally and nationally. This provides sufficient information for the PCT to understand the changes that are occurring over time and to plan dental services accordingly. Information on the dental health of the adult population is much less comprehensive and whilst Warrington can rely on high quality national adult dental epidemiological data, there is a dearth of information about the dental health of adults locally. Unfortunately, gathering high quality local adult dental health data is difficult and expensive.

[Return to chapter contents](#)

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[Return to chapter contents](#)

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[Return to chapter contents](#)

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[Return to chapter contents](#)