
NHS
SCOTLAND
Towards Better Oral Health in Children
A Consultation Document on Children's Oral Health in Scotland
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Ministerial Foreword

Our National health: a plan for action, a plan for change set out a clear statement of priorities for health in Scotland and the NHS. It prioritised health improvement, with a special focus on the health of children. It also included a commitment to carry out a wide-ranging consultation on children's oral health and the range of measures which might – with the Executive, health professionals, parents, and others working together – start to transform the oral health of Scotland's children.

This document honours that commitment, and, more significantly, begins an important dialogue about how best to achieve our goal. There is a great deal to do. At 5 years of age 55% of children in Scotland have dental decay. I am determined to address this challenge and I look forward to hearing your views on the way ahead.

Malcolm Chisholm MSP
Minister for Health and Community Care

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Introduction

A healthy mouth is an asset to be prized. Yet, despite some improvements in oral health over the last 30 years, too many people in Scotland still suffer from tooth decay and other oral diseases, with the attendant miseries of pain, infection, disfigurement, absence from school and work, and occasionally, even more serious consequences.

In Scotland at present:

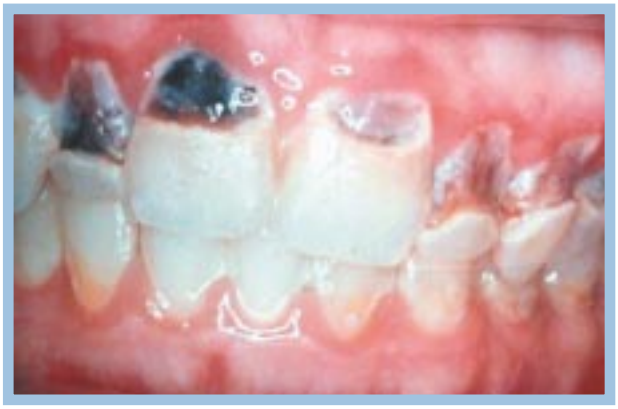
- By the age of 3, over 60% of children from areas of severe deprivation have dental disease.
- By the age of 5, 55% of children have dental disease.
- Over a quarter of a million (250,000) teeth are extracted from children each year.
- By the age of 14, 68% of children already have decay in their adult teeth.
- Tooth extraction remains the largest single reason for children receiving general anaesthesia in hospital.
- By middle age (35-44), the average adult has lost seven adult teeth and has 11 teeth filled.
- Over 65 years of age, 56% of adults have lost all their teeth.

At the same time, there are some encouraging signs that the many measures taken in recent years in the health service, schools and other settings are leading to better oral health in Scotland.

In Scotland:

- Compared with 1996, 38,000 more children under 5 have registered with a family dentist.
- Compared with 1983, there has been a reduction by over a third in the average number of teeth affected by disease in 5-year-old children.
- Since 1983 there has been a reduction of over 60% in the average number of teeth affected by decay in 14 year olds in Scotland.

Severe dental decay affecting the permanent teeth



By the teenage years extensive restoration may be needed to restore teeth so badly affected by tooth decay.

- Since 1972, the number of general anaesthetics for extraction of teeth has reduced from an estimated 200,000 per year to less than the 25,000 now, all offered within a safer environment.
- Since 1972, the number of people over 16 years with no teeth has fallen dramatically from 44% to 18% in 1998.

Much remains to be done if we are to bring our children's oral health up to a level of which we can be proud. Dental decay is a preventable disease and tackling children's dental health will contribute to future improvement in adult oral health.

The main reasons for our continuing high dental disease rates in Scotland are the high consumption of sugar in our diet and poor oral care – mainly lack of toothbrushing – on the part of many children and adults. As is the case for health generally, we find the worst oral health where deprivation is most evident.

A great deal of work is going on to bring further improvement, and we hope that the initiatives being taken by the Scottish Executive, right across its range of functions, and by the Health Education Board for Scotland and the Food Standards Agency, will help create a climate where oral as well as general health can get better. In the past we set ambitious targets, with limited results. Yet, for any individual child, we only have one short opportunity to get things right. Other countries do much better. Why can't we?

We need much more urgency and commitment to this task, and in particular we need everyone to share that urgency and commitment if we are to make a significant difference.

This consultation document sets out the problem, describes what is being done to address it, and seeks your views on how we can make quicker progress to improve the oral health of children in Scotland.

Please take the time to consider the issues and send us your views to the address at the end of this document.

The Problem

Pre-school children

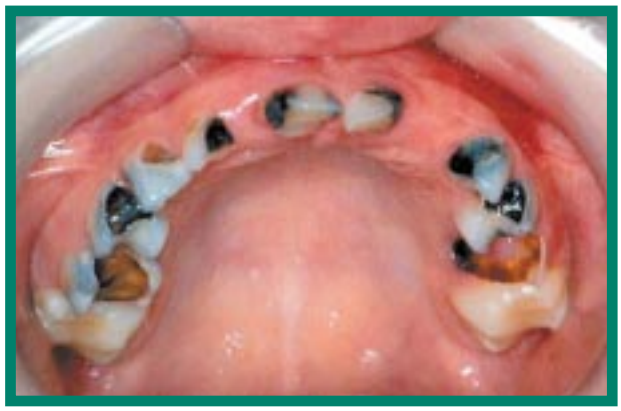
- By the age of 3, over 60% of children from areas of severe deprivation have dental disease.

Surveys in the West of Scotland have consistently shown high levels of dental decay in very young children. When consumption of sugar is high, decay begins, almost as soon as teeth erupt into the mouth. Children as young as 3 regularly need extractions for infected and abscessed teeth and often require general anaesthesia. "Nursing" caries (decay seen in the front teeth of infants due to high dietary sugars used around weaning), is a particular problem in very young children. Principally, this is related to the use of sugared drinks in baby bottles and the use of sugar products with comforters (dummies). To help tackle this, targeting prevention and treatment services at pre-school children has begun and, with over 38,000 extra registrations with family dentists, including 25,000 aged 2 and under since 1996, a significant start has been made. But further impetus is needed.

- By the age of 5, over 55% of all Scottish children have dental disease.

In Scotland on first attending school, children have an average of 2.5 teeth affected by decay. Of those children with decay attending school, the average number of affected teeth is more than four. Around 27% of children who have dental disease at age 5 have already had to have a tooth taken out.

Severe decay affecting the deciduous dentition. Age 6 years



Very extensive tooth decay may have developed by the time a child is attending school.

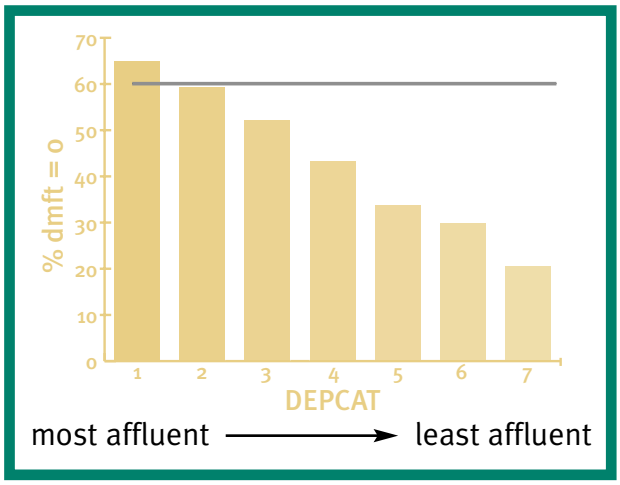
Our poor performance as a nation is underlined when we compare ourselves with other countries. For example, 70% of 5 year olds in the Netherlands are decay-free, and 71% in Denmark.

Children from the most deprived areas are three times more likely to have already had dental decay at the age of 5 years than children from the least deprived area.

The sad fact is that four times as many 5-year-old children in the most deprived categories require extractions or endodontics (advanced treatment of the dental pulp), compared with children in the most advantageous circumstances. The 33% reduction in decayed and filled teeth among 5 year olds achieved since 1983, while encouraging, is most evident among more affluent children.

The proportion free of dental decay (d3mft=0) by Deprivation Category (DEPCAT)

Line represents National target of 60% 5 year olds decay-free by 2010.



The chart demonstrates the enormous gap in dental health which exists between those living in the most affluent sectors of our society (5 year olds) when compared with those 5 year olds who live in our most deprived communities. With the most deprived children least likely to be free from decay.

However, if we use changes in the proportion of children free of dental decay as a monitor of improvement, there has actually been no meaningful improvement since the late 1980s in children aged 5 years.

School children

Around the age of 6, the adult teeth start to erupt and almost immediately, for the reasons already mentioned, decay may start. The result is that, by the time they are 14, 68% of children have suffered from dental caries in their adult teeth. In Scotland for this age group there is an average of 2.75 decayed teeth per child. Of those children with decay the average number of affected teeth is over four. Although there have been consistent improvements in the oral health of this age group, with reductions in decay of over 60% since 1983, recent information again points to a considerable slowing in improvement rates.

Adults

Over the past 30 years, oral health improvement has been most dramatic in adults. Dental decay is less prevalent. Loss of teeth through gum disease has also decreased. One million more of the adult population of Scotland now have some natural teeth compared to 1972. This improvement has been achieved through a combination of more positive attitudes to prevention and improved dental services.

In 1972, 44% of adults over the age of 16 had lost **all their teeth**. Even with large improvements in oral care by 1998, the average adult had, by middle age (35-44), still lost seven adult teeth and had 11 teeth filled. Oral health continues to deteriorate with age and, by 65, 56% of adults have lost all their teeth.

The main oral disease in adults continues to be dental decay, although periodontal disease (gum disease) starts to become a more significant problem after middle age.

The lesson here is that good habits, when we are young, will help ensure healthy teeth when we are older.

Other Oral Problems in Children

Dental erosion

Dental erosion is the progressive loss of the hard component of the teeth, enamel and dentine, resulting from chemical action on the teeth, other than that which is caused by bacteria. Causes include carbonated (fizzy) acidic drinks and consumption of acidic fruit drinks.

Scotland has the highest level of erosion of teeth in the UK. Compared with a UK average of 24% Scottish surveys have recorded 34% of 5 year olds suffering from the problem. This is directly linked to the consumption of acidic drinks.

Accidental damage to teeth

Accidental damage to teeth is one of the commonest reasons for young children attending health services for treatment of trauma. Surveys show that 8% of boys and 5% of girls aged 14 years have damaged front teeth. Environmental changes to play areas and prompt action by carers and professionals can limit damage due to such injuries.

Enamel defects and mottling

41% of 12 year olds in Scotland have some type of enamel defect. The appearance of these can range from milky-white to yellow and can affect one or more than one tooth. These defects arise in the developing tooth from a variety of causes, including trauma, fluoride, infections and nutritional disturbances. Usually, there is minimal effect on the long-term health of the mouth. (This is illustrated later in the document.)

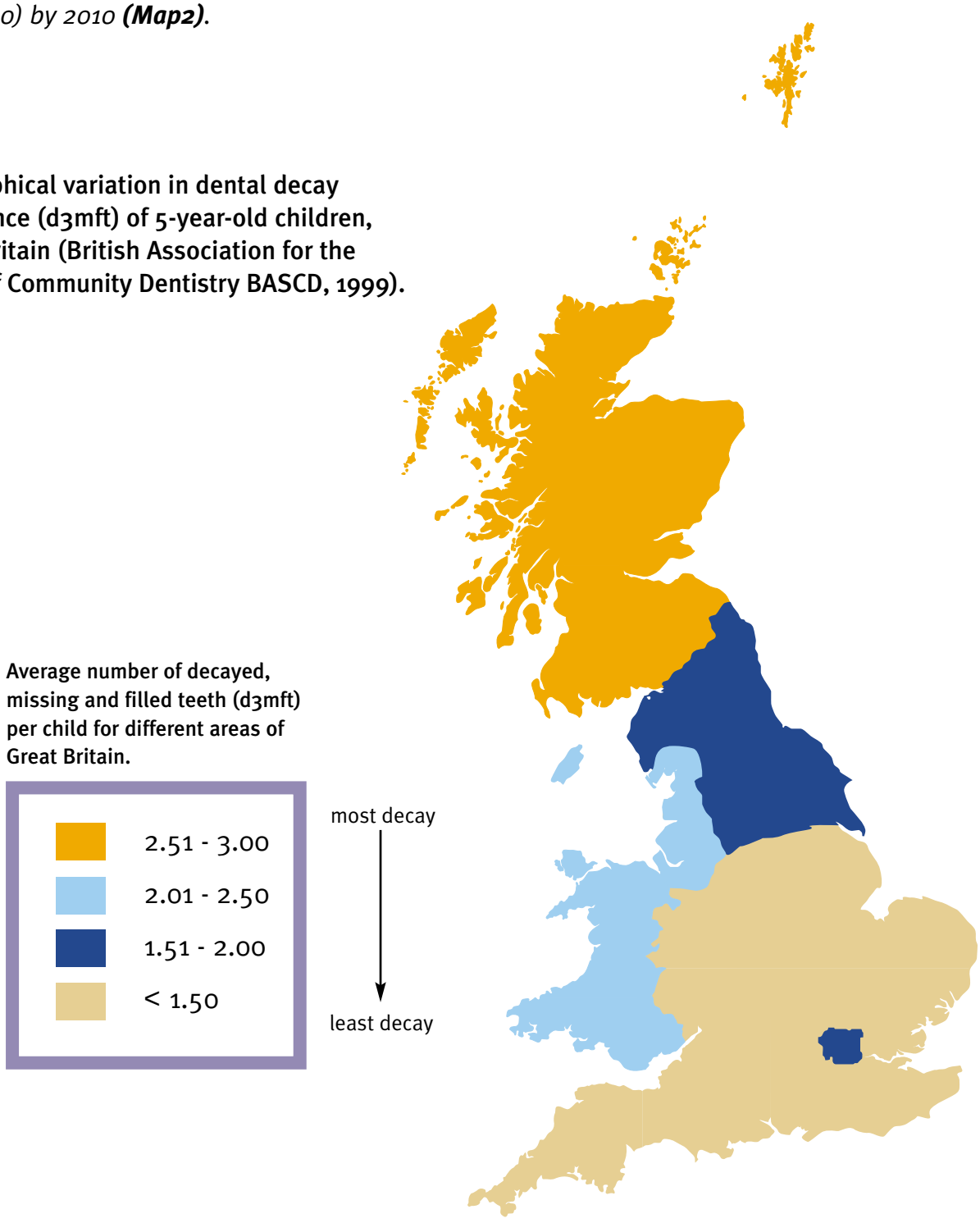
Conclusion

These statistics tell a contrasting story. Despite some significant improvements, we still have unacceptably poor levels of oral health. Scotland's children still have too many diseased teeth. Dental disease still results in extreme pain and discomfort, infection, social embarrassment and interrupted work and education for a significant part of the Scottish population.

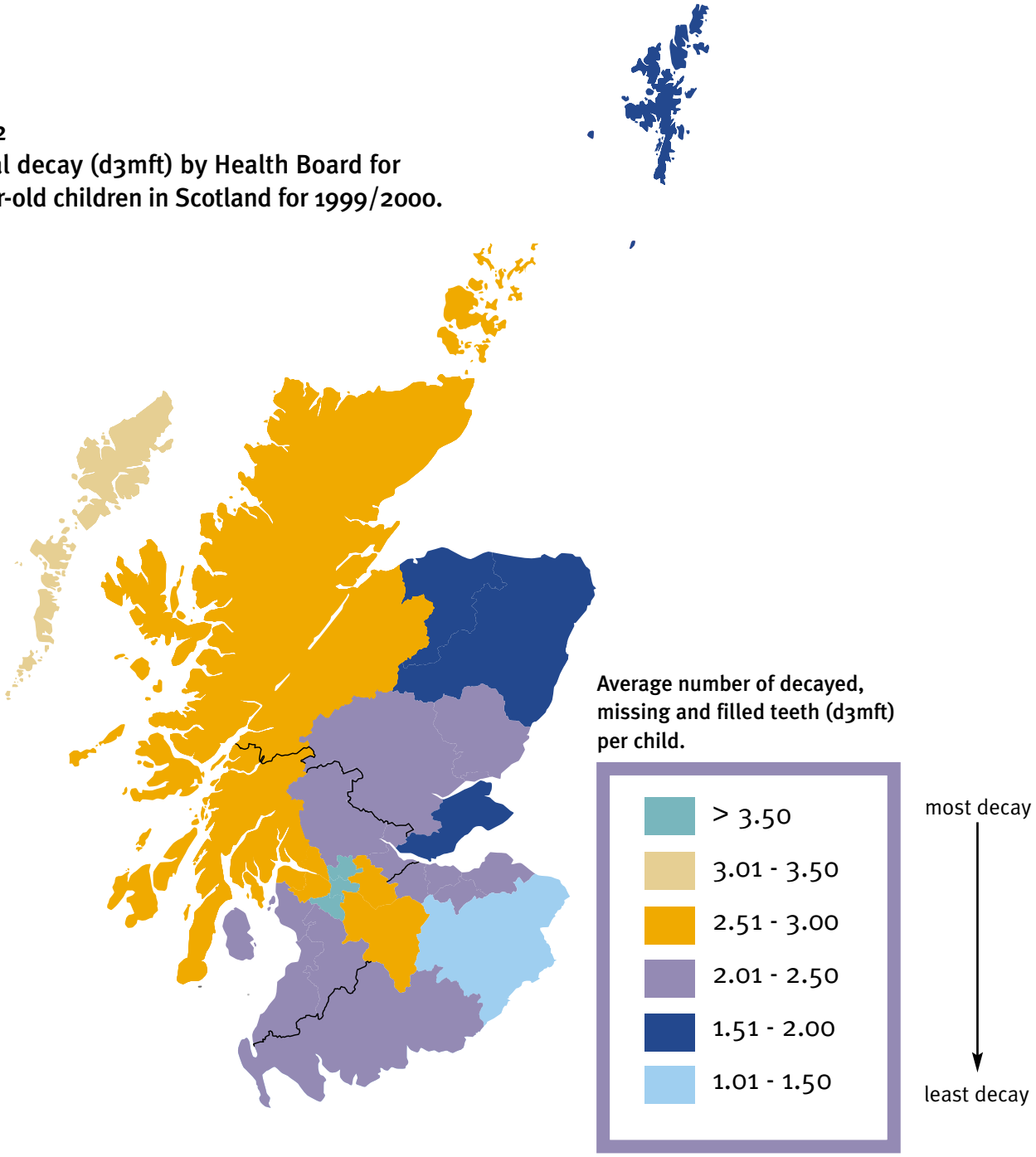
We extract over half-a-million teeth from all Scots, and fill over 2 million teeth every year. We spend over £200 million a year on dental services and there are over 7,000 staff in Scotland treating patients with oral problems. Most of this resource is spent treating dental decay, a disease which can be prevented.

Scotland lags behind other areas of Great Britain, with substantially higher decay levels recorded for Scotland than for England and Wales ***(Map1)****. It should also be noted that there is large variation in average recorded decay levels between Scottish health boards, with some boards much closer to meeting the National Target of 60% of 5 year olds free from decay (d3mft=0) by 2010* ***(Map2)****.*

Map 1
Geographical variation in dental decay experience (d3mft) of 5-year-old children, Great Britain (British Association for the Study of Community Dentistry BASCD, 1999).



Map 2
Dental decay (d3mft) by Health Board for
5-year-old children in Scotland for 1999/2000.



The Causes

Scotland's diet

Dental disease in childhood may be broadly attributed to a high sugar diet – especially sweets and confectionery, fizzy drinks and sugar-sweetened foods.

A contributory factor is the lack of self-care through use of protective measures, mainly toothbrushing with a fluoride toothpaste and restriction on the use of foods and drinks containing sugar.

In both these respects, deprivation is a key influence in the emergence of dental and oral disease.

60 teaspoons of sugar per day.

Average daily sugar consumption of a 12 year old in an area of deprivation in Scotland.

Regular consumption of sweets and confectionery, sugar-sweetened foods and high-sugar fizzy drinks are the major causes of the development of dental decay. Sugars encourage acid production, which gradually dissolves teeth, leading to dental caries (decay).

Cutting down on the frequency and amount of sugar intake is crucial. After a sugary snack, the **acid attack lasts for approximately 60 minutes**.

Teeth can recover after a single attack but our eating habits prevent this. Why? Because another high sugar snack comes along soon after, and the acid attack continues. This repeated cycle of events eventually rots the teeth (dental decay).

Fact

A chocolate bar, a can of sugary fizzy drink and a sweetened yoghurt provides the equivalent of 20 teaspoons of sugar.

Diet in Scotland is, therefore, a significant factor in the poor status of our oral health. This is well documented in *The Scottish Diet Report*, which pointed to the fact that patterns of infant sugar consumption are related to those of their mothers. There was a direct link between the use of sweetened comforters in infancy and the consumption of sugar-containing snacks and drinks in later years. The report also identified the particularly damaging effect on dental enamel of high sugar carbonated drinks and the fact that rusks, commercially-prepared desserts, puddings, baby foods and drinks nearly all have high levels of added sugar. These substances not only contribute to dental decay but also establish a habit of sugar consumption throughout life – often described as a "sweet tooth". Conversely, the report said that many children never ate fresh fruit or vegetables, with many eating exclusively snack foods and high-sugar fizzy drinks.

Fact

The 1998 Scottish Health Survey showed that most children ate chocolate, crisps or biscuits every week, and most did so daily. Four in 10 were eating these foods more than once a day. A third of children ate sweets or ice cream more than once a day. For just over half of children, drinking high-sugar soft drinks was a daily event and many boys (37%) and girls (33%) consumed these drinks more than once a day.

A mother brushes her young child's teeth

To keep teeth healthy and free from decay, it is important that good toothbrushing habits are established early in life.

Fizzy, sugary and acidic drinks are a major feature of the poor Scottish diet. These drinks, as well as being highly acidic, can contain between six and eight teaspoons of sugar. They are often consumed regularly by children throughout the day, sometimes starting at less than 3 years of age. High frequency use, combined with high sugar and high acid content, makes these drinks highly damaging to teeth.

Although dental health attitudes amongst Scottish people are improving, poor dental hygiene remains a problem. Too many children and adults still do not brush their teeth regularly with fluoride toothpaste. Adequate toothbrushing helps to remove dental plaque (the soft bacterial deposits which form on teeth) from the tooth. Importantly, the toothpaste acts as a vehicle for delivery of fluoride to the teeth and the largest benefit to children's oral health is the fluoride in the toothpaste. Children in disadvantaged areas do least well. And 5-year-old children from more affluent groups are more likely to brush their teeth twice daily compared with those from poorer households.

Regular visits to the dentist are an important part of caring for your child's teeth

The dental team are a valuable source of advice in caring for your child's teeth. Regular visits will help to keep teeth healthy and free from decay.

Visiting the dentist for regular advice, check-ups and treatment can contribute to changes in behaviours and attitudes to oral health. However, less than half of adults in Scotland are registered with a dentist, and fewer still attend regularly. There may be reasons for this, including difficulty in finding a dentist, fear, anxiety and cost. But the most common reason is often apathy. A recent survey has shown that the age of children at their first dental visit was found to be closely related to the maternal attendance pattern, with children of mothers who are regular attenders more likely to be regular attenders than those whose mothers only attended when in pain.

Deprivation again influences visits. Five year olds from unskilled backgrounds are less likely to have visited a dentist compared to children from non-manual or professional backgrounds.

Current Action

In 1991, the target was set that, by the year 2000, 60% of 5-year-old school entrants should have neither cavities nor have had fillings or extractions. Little progress was made and so the White Paper *Towards a Healthier Scotland*, published in 1999, revised the target, which is now to have 60% of 5 year olds with no experience of dental disease by 2010. To try to achieve it, we plan – and are carrying out – a wide range of actions. But will these be enough?

Diet

Diet is a crucial factor in oral health as recognised in the appointment of the Scottish Food and Health Co-ordinator. A broad spectrum of activity is being carried out, within the framework of the Scottish Diet Action Plan, to bring about improvements in the Scottish diet, with a particular focus on children.

We believe everyone should have the opportunity to enjoy eating more fruit, vegetables and starchy carbohydrates and less sugar, salt and fat. The plan encourages schools to ensure school meals, tuck shops and vending machines provide a range of healthy food and drink choices, and the aim is for all schools, both primary and secondary, to build on current good practice to provide high quality food and drinks, which are attractive to children and which result in consistent nutritious balanced meals and snacks, and healthy teeth. A number of schools have already implemented helpful initiatives, such as breakfast clubs, fruit projects, healthy eating vending machines, smart card systems for school meals, the "Smart Cooking" cookery course and School Nutrition Action Groups to encourage pupils to eat more healthily.

Two specific initiatives established as a direct result of the Scottish Diet Action Plan and which have a particular focus on improving diet, including oral health, are the Scottish Community Diet Project and Scottish Healthy Choices Award Scheme.

- The Scottish Community Diet Project was established in October 1996 to work with low income communities. This widely acclaimed project, which in 2000 was awarded the prestigious BBC Derek Cooper Award for the most outstanding contribution to improving diet in Great Britain, was developed by the Scottish Consumer Council and HEBS, and is supported by over half-a-million pounds of Scottish Executive funding. A particular focus of the project is its grant scheme to encourage the development of Community Food Initiatives. Many of these initiatives have a focus on improving oral health, including healthy food tasting sessions, breakfast clubs, and cooking skills classes.
- The Scottish Healthy Choices Award Scheme, developed by the Scottish Consumer Council and HEBS, and funded by the Scottish Executive, was established in 1998. The scheme encourages catering interests to provide and promote healthy food choices. Schools are showing increasing interest in the scheme and a number have already received this award for promoting healthy eating as part of their school meal provision.

Pre-school and school children

Schools are the key vehicle for the promotion of healthy lifestyles to children and young people, and a main focus of this activity is the promotion of good oral health. Education Authorities are increasingly on board with this concept and every school is being encouraged to become health promoting. To help schools promote good health, the Scottish Executive launched in May this year a Health Promoting Schools Unit in conjunction with HEBS, CoSLA and Learning and Teaching Scotland.

Dental health is a priority for a school's health education programme, and oral care is given attention throughout the curriculum from pre-5 through to S6, but with the most emphasis in pre-school and primary education. All NHS boards, through their primary care trusts and their health promotion departments, have a large and varied input into dental health education. Many schools and nurseries are supported by regular visits from dental health educators. Schools and groups benefit most when programmes are collaborative and involve a range of health professionals, parents and carers. New Community Schools, which focus on the provision of integrated services, provide a good opportunity for this collaborative work.

The Scottish Executive Expert Panel on School Meals published *Hungry for Success: National Standards for School Meals*, for consultation, in July 2002. In addition to producing nutritional standards, the panel reported on measures to eliminate stigma and improve the presentation of school meals. The report sets out a vision for a revitalised school meals service in Scotland and presents a number of far-reaching recommendations connecting school meals with the curriculum as a key aspect of health education and health promotion. For the first time in the UK, national nutrient-based standards for school lunches are proposed and detailed options for monitoring these standards are set out. The key agents of success in implementing these standards are Local Authorities working in partnership with catering professionals, schools and the school communities – teachers, parents and pupils themselves. The report is seen as a first step on a journey towards a whole-child, whole-school approach to food in all schools in Scotland.

A review of breakfast club provision in Scotland is underway. Once the review is complete (later this year), a breakfast club challenge fund will be used to sustain services or ensure that services are targeted at children who most need them. Breakfast clubs in schools can reduce in-between-meal snacking and provide an opportunity to re-enforce other healthy lifestyle habits including toothbrushing.

This report is currently out for public consultation
(July-October 2002) and is available at:
www.scotland.gov.uk/education/schoolmeals

Health Education Board for Scotland (HEBS)

HEBS regularly support national oral health initiatives. In 1996, the Board produced the resource "Healthy Teeth in Healthy Mouths". The pack, which is still in use, was distributed free of charge to all primary schools in Scotland, with a particular focus on the 7- to 9-year-old age group.

Along with their work on healthy eating health education, HEBS are also involved in the development of materials for health professionals, voluntary organisations and the public on the prevention and early detection of dental and oral health problems, including oral cancer. The "Give Teeth a Chance" pack was part of a pharmacy initiative in 1996 in which key dental and oral health messages are promoted to the public. This initiative contributed to the publicity campaign for National Smile Week, which is supported annually by HEBS. Newer developments include a Child and Family Health initiative, for which dental health will be a priority topic, and production of support material for dental team members to use in the practice setting.

More recently HEBS, in liaison with the Executive produced material to support and promote the recently introduced caries prevention programme for 6 and 7 year olds. This is suitable for use with children of primary school age.

Food Standards Agency

The Food Standards Agency is looking to work with consumers, enforcement authorities and industry to develop a set of guidelines on best practice in labelling and promotion for foods aimed at children. This is to help parents choose more easily when trying to make healthy choices for their children.

Of particular concern are products such as those which are depicted as "healthy" when they may contain high levels of sugar, salt or fat.

The Agency is undertaking a series of activities which will help support parents who are trying to provide their children with a healthy, balanced diet. These activities include:

- commissioning a review of research concerning the effects of promotional activities on the eating behaviour of children;
- working with industry to tackle misleading "healthy" messages; and
- developing Agency advice on healthy eating aimed specifically at parents.

NHS boards

NHS boards have a responsibility for the dental health of children in their area. Specifically they are required to make arrangements for dental health education appropriate to local circumstances, and are presently recommended to inspect all children in local education authority schools at least three times in each child's school life.

In areas of poor dental health and where availability of general dental services is poor, inspection may be more frequent. This activity makes contact with thousands of children, and often their parents, annually, and can be used as a health education tool to promote change.

Community dental services and health promotion departments are involved in a wide variety of initiatives to improve oral health. Toothbrushing schemes, healthy eating activities, and encouraging parents to register their children with a dental practice are the core elements of these programmes.

Action Plan for Dental Services

The Action Plan for Dental Services in Scotland, published in August 2000, has a special focus on improving oral health in children. Particular initiatives include:

- Over 100,000 pre-school children have already received free toothbrushes and free fluoride toothpaste to encourage prevention of dental disease. In addition, locally co-ordinated community programmes, targeted at pre-school children and their parents, encourage registration with a dentist, regular toothbrushing and consumption of low sugar food and drink products. Many of these programmes are run in collaboration with initiatives on fruit and healthy eating, funded from the Health Improvement Fund.
- NHS boards are continuing to expand nursery toothbrushing schemes, with several areas, such as Ayrshire and Arran, Lanarkshire and Fife, already achieving comprehensive coverage of nurseries. Through these programmes additional steps are being taken to promote positive health practices in young children, linked to the provision of dental educational material and healthy eating initiatives.
- The strategic review of the dental workforce in Scotland is now delivering a workforce better structured to support the prevention of dental disease. Expansion of, and improved training for, the professions complementary to dentistry, has begun. This will result in an increased supply of these dental professionals from 2003 onwards. New post-registration training for these professions is enhancing the

contribution dental nurses, therapists and hygienists can make to good oral health in children in Scotland.

- Enhanced payment schemes have been introduced, targeted at preventive treatments offered to children aged 6 and 7. This extensive programme, which includes fissure sealants (plastic coating to prevent dental decay) of the first adult molar (back) teeth as soon as they erupt into the mouth, is now being offered by hundreds of local family dentists. Over 50,000 children will benefit from this scheme every year, representing over half of all Scottish children, aged 6 and 7. The scheme will be extended to older children, if the results of this stage are positive. Early signs are encouraging. Caries reductions are expected to be similar to what has been achieved in Orkney and Shetland, where community dental service schemes involving the extensive use of sealants show considerable improvements in the oral health of 12 and 14 year olds.
- The Action Plan has encouraged NHS boards to look at how they can best use resources for programmes targeted at those in most need. For example, the Greater Glasgow Pre-5-year-old Oral Health Gain project is being extended, following successful assessment, to include a number of other areas of need in Glasgow and best practice is being shared and expanded throughout Scotland.

Health Improvement Fund

The National Health Improvement Fund, resourced from tobacco tax revenues to the tune of £26m per year, is also supporting oral health in Scotland through:

- fresh fruit for infants to improve their diet, delivered in every NHS board area in Scotland through local playgroups and other day care services according to local needs;
- free toothpaste and toothbrushes for over 100,000 pre-school children each year from 2001 onwards.

A mother brushes her baby's teeth

Toothbrushing programmes are now underway in nursery age and other young children in Scotland.

- additional resources have been made available to extend toothbrushing programmes in nursery age and other young children in Scotland;
- the expansion of the health service support offered through Sure Start Scotland;

- a major expansion of school breakfast clubs, beginning with schools in deprived areas and spreading across the country;
- the introduction of fruit and salad bars, building on work already started in new community schools.

Starting Well

The "Starting Well" project is being developed in two areas of socio-economic deprivation within Greater Glasgow. The project is providing intensive home-based education and support for families and has a significant oral health element. This is emulating elements of innovative programmes such as the Greater Glasgow Pre-5-year-old Oral Health Gain Project (the "Possilpark Initiative"). The multi-disciplinary Oral Health Action Team and Oral Health Promoter in each location are working closely with Starting Well's Health Visitors and health support workers. These staff are facilitating links between parents, nursery schools and dental practitioners in the General Dental Service and Community Dental Service. Starting Well is providing clear information on weaning and nutrition practice guidelines for Health Visitors and is encouraging dental practice registrations.

Conclusion

A significant programme of work is underway, supported by a wide range of organisations, which will impact on oral health. Research confirms that, where initiatives rely only on health education, change may be slow but where initiatives are combined with either preventive measures or with wider health programmes delivered in combination with other professionals, there is increased evidence of effectiveness in changing behaviours and health.

Additional Measures We Might Take

A lot is going on to help improve our children's oral health. But the pace needs to be accelerated. The unpalatable fact is that virtually no progress or sustained improvement in our youngest children's oral health has been achieved since 1991 when a target was first set. Radical steps are needed now if present and future generations of Scottish children are to avoid the legacy of poor teeth.

What more can be done? Certainly we need to maintain and build on current activity, through health education, toothbrushing schemes, dietary initiatives and preventive treatment services. No single approach will, on its own, deliver improvement to our oral health on the scale needed. Dietary change, in particular, is one of the key cornerstones on which we must build, but our deeply entrenched dietary habits will not be changed overnight, and it may need a whole generation of children to pass through current health promoting programmes. This will equip them, and parents themselves, to help and guide their own children to better health and oral health.

Urgent, effective concerted action now is required. A number of options follow which need not be mutually exclusive. Indeed, a cluster of approaches is required, if we are to realise, in the short and longer terms, lasting oral health gains.

We want to have your views on these options and any other suggestions you might have for improving our children's oral health.

Eating for oral health

Healthy eating will result in healthy mouths. Diet is therefore especially crucial from the earliest age. Baby foods, for example, often contain high sugar levels. The "sweet tooth" acquired at this young age can last into later life. We need, therefore, to work with manufacturers and major retailers to minimise the sugar content of baby foods to ensure our children's oral health gets off to a healthy start. Products also need to be clearly labelled to identify sugar content. Preventing "nursing" caries in young children aged as young as 18 months must be a priority.

As noted earlier, high-sugar fizzy drinks can damage teeth. Schools and pre-school organisations can exert considerable influence here in the products offered for sale in tuck shops, and with meals. Where fizzy drinks are sold, for example within public sector buildings, opportunity could be taken to display notices, warning of the potentially adverse consequences for oral health. Appropriate publicity materials could be provided for this purpose. Also, as described on p15, the Food Standards Agency is taking forward work on the promotion and labelling of foods for childen. A separate international review of advertising to children noted that many European countries have introduced restrictions on advertising and promotions. Examples include Denmark, Finland, Norway and Sweden. Conversely, low sugar products should be encouraged and similarly identified, and milk and wholesome water supplies made available. Many excellent examples of this kind of approach exist: a number of Family Learning Centres in Glasgow provide a water cooler in the entrance to the building, where parents and children can get cups of water free of charge, thus reducing the need for soft drinks to be brought in. This simple measure has been very successful in cutting down on fizzy drinks.

Local authorities could also be encouraged to make water fountains and other wholesome water sources more widely available in leisure centres, sports grounds and facilities which are used by children. These centres should also be encouraged to promote semi-skimmed milk and low-sugar, non-acidic fruit drinks as an alternative to high-sugared acidic fizzy drinks.

The appointment of the Scottish Food and Health Co-ordinator will revitalise the push to improve diet. The Co-ordinator will be involved in activity to support primary producers, manufacturers and retailers to realise, to the full, their potential contribution towards improving health through diet. This will be taken forward by addressing a range of issues, such as reducing the sugar content of processed food.

Health promotion

Good oral health habits must start early. Special responsibilities devolve on parents: they themselves need to set positive examples in caring for their own teeth and must be equipped to instruct their children in the basic behavioural skills, which will stay with them throughout their lives. What needs to be imparted is:

- every encouragement should be given to the mother to attend dental services before the birth so that she can receive free dental treatment and advice. This would also give the dental team the opportunity to advise her about her own dental health as well as the importance of early registration and dental care of her child;
- the importance of preventive action as soon as possible after birth, focusing on the need to cut down on the intake of sugar in children's diets both in total quantity and frequency. It is especially important to ensure that parents are advised of the oral health dangers of using sugary juice in babies' bottles and of the benefits of receiving advice from the dental team when the child is still very young (3-6 months). Midwives and health visitors have a major role in giving such advice;
- mothers should be encouraged to breastfeed exclusively for the first six months, in line with World Health Organization recommendations and the UNICEF Baby Friendly Initiative in the UK;
- toothbrushing is important twice daily with a suitable fluoridated toothpaste to reduce levels of tooth decay and gum disease later in life;
- visiting the dentist, and encouraging parents and children to pay regular visits to get advice, care and treatment. Early intervention can prevent disease or facilitate less extensive treatment.

Health education is a crucial part of achieving change by providing guidance and information to enable parents and children to develop the habits necessary for good oral health and hygiene. The earliest impressions and influences are vital, a fact acknowledged in *Nursing for Health* which sets out proposals for developing the work of health visitors with young children and their families to ensure that parents are both well informed and enabled to make healthy choices about their

own and children's health. The development of Family Health Plans will have this focus. And a shift towards community development approaches, in collaboration with initiatives like Sure Start Scotland, Social Inclusion Partnerships and New Community Schools, will support the development of more consistent approaches to oral health and hygiene within communities.

Information distributed from different sources is often contradictory. HEBS will continually review and develop material to this end, including:

- "Ready Steady Baby", a resource for new mothers in Scotland which, among other things, covers oral and dental health.
- A new information and training resource for carers of pre-5s which will include both nutritional and dental/oral health information, along with ideas for activities to promote key messages, among them, toothbrushing, enjoying fruit and vegetables.

Nurseries, playgroups and Family Centres all provide a suitable environment for the dissemination and discussion of oral health messages and for practical measures to encourage good habits, especially among the most disadvantaged children. There is wide scope for many varied and different initiatives on dental themes to provide an element of fun, combined with learning.

Toothbrushing schemes in nursery schools are being targeted at deprived communities although some NHS boards have already extended these schemes to cover the whole nursery school population. These settings, along with schools, offer scope for such schemes and linked initiatives to tackle the particularly acute problems in deprived areas.

Dental services

The dental professions have a vital contribution to make; and significant increases in resources have already been announced in the Action Plan for Dental Services. Expansion of the whole dental workforce and, in particular, the professions complementary to dentistry for example hygienists, dental therapists and dental health educators, is planned.

Expansion of the workforce does not, in itself, improve health. Accompanying strategies are required, as Scotland, at present, has only 50% of the adult population registered with a dentist and only 65% of children. Often those not registered are the ones most likely to need dental treatment. Much of the current work done by the dental services is treatment-based. The Action Plan highlights the need to change to a more preventive approach with wider application of treatments like fissure sealants. With the appropriate workforce and incentives, a more prevention-oriented regime could be introduced. We are working to achieve this, but it will take time before the full benefits are realised.

Through joint planning between local authorities and NHS boards, and greater use of the professionals complementary to dentistry, scope exists to bring the dental workforce closer to people in nurseries, family centres, play groups and so on, both through visits and advice.

However, in order to ensure that all children receive appropriate and timely advice and treatment, we will ensure that by 2005 all children by the time they enter primary education at age 5 years will have received dietary advice and support to improve oral health and have accessed or been offered access to dental services.

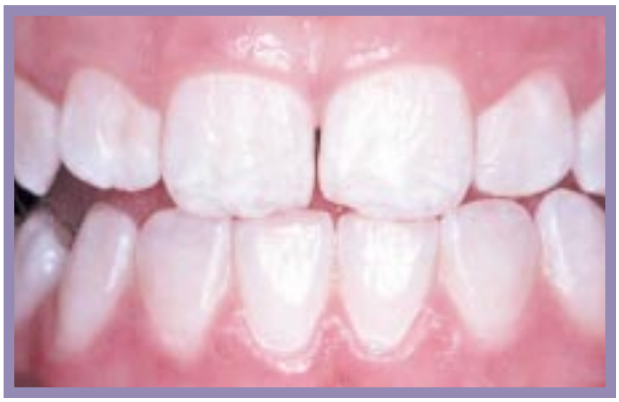
Fluoride

The beneficial effects of fluoride in preventing dental decay have been apparent for many decades. It works by making the tooth more resistant to acid attack. Fluoride is present naturally in the environment and in some foods as are, for instance, calcium, sodium and potassium. Different foods contain different quantities. Most natural drinking water supplies contain minute quantities of fluoride, but only one public drinking water supply in Scotland is at present at a level to have an effect on dental decay (optimum concentration 1 part per million). Fluoride is also present naturally in tea, fish and sea water.

The safety of fluoride has been the subject of much discussion – indeed it is one of the most extensively researched health measures. What can be said is that the balance of evidence suggests that fluoride, where properly used, offers a safe and effective route to better oral health.

No one, of course, can ever say that a substance is completely harmless in all instances as it depends on how it is used. If used to excess, any supplement that can be of benefit to health, whether vitamin or mineral, can produce undesirable effects. Recommended supplement dosages are calculated to maximise positive outcomes and to minimise adverse effects. So, as with all substances, care would be needed to ensure that the use of fluoride from different sources did not exceed recommended optimal doses.

Child with fluorosis



A typical case of fluorosis observed in Scotland

It is the daily exposure of tooth surfaces to very low concentrations of fluoride that increases a tooth's ability to withstand the damage which results from the acid produced following sugar consumption. At present, in Scotland, many people's eating habits expose them to frequent consumption of sugar in foods and drinks with insufficient exposure to fluoride.

There has been much debate about the use of fluoride supplementation to prevent dental decay. One area of debate centres on the way in which fluoride is used. So, for example, freedom of choice is an issue if it is placed in the water supply but not if it is placed in milk, where choice would be available. Milk, salt and water are vehicles by which dietary fluoride supplements can be delivered. Fluoride tablets and drops are further sources.

Milk

Fluoride can be added to milk without changing its flavour and without diminishing its nutrient content. Milk has the benefit of itself being a healthy drink for children, particularly where it is semi-skimmed. Fluoridated milk programmes are being evaluated in England and have been undertaken previously in Scotland. The present use of milk as a healthy drink needs to be encouraged and expanded if fluoridated milk is to be introduced successfully. Fluoridated milk with appropriate labelling could be sold through retail outlets and therefore be available to all age groups and could preserve an element of choice. Alternatively, programmes could be developed in primary schools and nurseries where both fluoridated and non-fluoridated milk could be provided. The programme would have to offer fluoridated milk to children from pre-school until the end of primary education to secure a sustained and effective oral health effect.

Salt

Fluoride can also be added to salt. It is used widely in Europe. Salt producers or major retailers could be encouraged to import the product and to market it accordingly. Clearly a careful balance needs to be struck here, given the Executive's target of reducing salt consumption, but it could be marketed on the basis, not of encouraging salt intake but simply of ensuring that where salt is purchased, the product is available with or without fluoride and is clearly labelled. Benefits could be enhanced by use in commercial settings such as restaurants or by use in prepared foods and drinks. Appropriate labelling of products would ensure that choice is preserved.

Toothpaste

Fluoride toothpaste was being used widely in developed countries by the 1970s and its effectiveness in reducing dental decay is well recognised. Unfortunately, not all children have teeth brushed regularly and are therefore less able to benefit from this method of delivering fluoride.

Tablets/drops

There is a reluctance in Scotland for children to take tablets and drops when they are well. It is just not done. Hence, compliance with daily fluoride tablet/drop regimens in the home setting is very limited over the long term. One option would therefore be to make tablets available to primary schools and nurseries for use, if desired. This has been piloted in some NHS boards but results, whilst showing improvement, did reveal operational and supervision difficulties as the number of schools and pupils in the scheme increased. Choice can be offered in these schemes.

Mouthrinses

The effectiveness of fluoride rinsing in reducing dental decay is acknowledged. However, the need for sustained use over a lengthy period of time reduces the potential effectiveness of this method of fluoride delivery.

Water

There are strongly held views both in favour of, and against, fluoridation of the public water supply. Opponents of fluoridation claim that it amounts to mass medication. Supporters consider it to be the single most effective step

that can be taken to secure lasting oral health benefits in the population, and particularly children. Clear significant benefits for children would be seen within three to four years of the initiation of water fluoridation.

Debate has continued over the years on both the efficacy and the health consequences of water fluoridation. There have been numerous reviews by health organisations throughout the world on water fluoridation. To help provide an objective view of the situation, the UK Government commissioned the Centre for Reviews and Dissemination at York University to carry out an expert scientific review of fluoride and health. This review, which was published in 2000, looked at thousands of papers and identified over 200 individual studies of fluoridation which were of an appropriate standard. The review concluded that:

- water fluoridation does reduce caries levels;
- additional benefits accrue from water fluoridation when fluoride toothpaste is also used;
- the prevalence of dental fluorosis of aesthetic concern may be increased;
- there is no evidence of other adverse effects on health.

The University of York Report recognised the fact that much of the research evidence concerning water fluoridation was conducted many years ago, and in response the Department of Health (England) commissioned the Medical Research Council (MRC) to provide advice on current scientific evidence and to consider what further research in this field is required. We will consider if further research on fluoride may be relevant to Scotland following this consultation.

Studies have shown that in fluoridated areas, children suffer fewer abscesses, there are less episodes of toothache, and a reduced need for general anaesthetics. By way of illustration, in 1987, the prevalence of dental abscesses was five times higher amongst 5 year olds in Northumberland, which is non-fluoridated, than Newcastle which was fluoridated. The number of tooth extractions in Newcastle among 5 year olds was also less than half the number in Northumberland. What is more, fluoridated water is beneficial to everyone with teeth, not just children.

There are at present no artificial fluoridation schemes in Scotland, although legislation exists to enable their introduction. On the other hand, under existing schemes in England, over 5 million people in the West Midlands and the North East receive artificially fluoridated water. Birmingham was fluoridated in 1964. Since then, the dental health of 5 year olds has been consistently and significantly better than the national targets in England and considerably better than Scotland.

Many other countries base their oral health improvement strategies on use of fluoride.

Regular reviews of health statistics have not identified any associated health issues. In the United States over 150,000,000 people receive fluoridated water daily. The Republic of Ireland has recently confirmed its commitment to water fluoridation although it has reassessed the recommended concentration in the water supply.

Fluoride occurs naturally in water, and is present at optimal concentration in the water supply to some communities in Moray, Scotland. A study there has shown that 87% of 5- to 6-year-old children were free of caries, compared with 32% in a socially matched group nearby. There are no recorded harmful effects to health in areas of natural fluoridation where levels match those recommended for artificial fluoridation i.e. one part of fluoride to a million parts of water.

Conclusion and consultation

We have set out the poor state of children's oral health in Scotland and described the action being taken to bring about improvements.

In order to guarantee further action on children's oral health we will ensure that by 2005, all children will have received dietary advice and support to improve oral health and have accessed or been offered access to dental services before entry to primary education at age 5 years.

But we want to have your comments on the measures you believe should be taken to accelerate progress. We would particularly like to have your views on:

- diet and health promotion programmes including:
  - extension of fresh fruit initiatives
- enhanced dental services and preventive treatments including;
  - strengthening current links between the primary care medical team and dental services
  - encouraging greater use of professionals complementary to dentistry in the dental care of children.
- alternative ways of using fluoride, including:
  - expanded toothbrushing with fluoride toothpaste in nurseries and schools
  - use of fluoridated milk or salt in various settings
  - fluoridation of the largest public water supplies in Scotland.

Your comments and requests for additional copies should be sent to:

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This document may also be viewed on the Scottish Executive website at www.scotland.gov.uk

To help inform debate on the issues set out in this consultation paper, the Scottish Executive intends to follow its normal practice of making available to the public, on request, copies of the responses received. The Executive will assume, therefore, that responses can be made publicly available in this way.
If respondents indicate that they wish all, or part, of their responses excluded from this arrangement, confidentiality will be strictly respected.

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