CHILDSMILE: THE CHILD ORAL HEALTH IMPROVEMENT PROGRAMME IN SCOTLAND

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Childsmile is the Scottish Government's oral health improvement programme for children. It commenced in 2006 against a background of the poor oral health and oral health inequalities observed in children in Scotland. *An action plan for improving oral health and modernising NHS dental services in Scotland* was published in 2005[1] and provided the basis for the development of the Childsmile programme. The action plan included new investment for improving oral health, and successive administrations have continued to provide this funding since 2005.

The process of establishing and developing the Childsmile programme has been previously described,[2,3] as have the arrangements for monitoring and delivery.[4] The programme aims are to:

- Improve the oral health of children in Scotland.
- Reduce inequalities in dental health and access to services.

Childsmile involves recognised evidence-based approaches for health improvement. These include the common risk factor approach with multi-agency participation; upstream and downstream working;[5] community development; a focus on early years; and proportionate universalism. This latter approach acknowledges that to reduce the gradient of health inequalities, actions need to be universal, but with the intensity proportionate to the level of disadvantage and need.[6] Thus Childsmile's programme consists of distinct but integrated components – some universal and some targeted. These extend from birth to adolescence (Figure 1) and consist of:

- A core programme – including universal daily tooth-brushing in all nurseries and targeted tooth-brushing in primary schools.
- A targeted nursery and school fluoride varnish programme.
- A universal practice programme.

The core programme pre-dates 2005 and was incorporated into Childsmile, and further refined as the latter programme developed. From 2001, funding became available at the national level for a standardised tooth-brushing programme. A systematic approach has been employed such that all children in nurseries (local authority and private) and five- and six-year-old primary school children in the most deprived population quintile are now offered daily supervised tooth-brushing with a fluoride toothpaste. In addition, oral health packs (containing an age-appropriate toothbrush and a tube of fluoride toothpaste) are given to children at various key stages in their pre-school lives. This includes a free feeding cup given to every child during the first year of life. The tooth-brushing programmes in nursery and school are supported by national standards which are used by a number of stakeholders including the Care Inspectorate – the independent scrutiny and improvement body for care services in Scotland. This joint approach has been particularly helpful. A recent study has shown that an improvement in the dental health of Scottish five-year-olds was associated with the uptake of nursery tooth-brushing.[7]

The Targeted Fluoride Varnish programme delivers twice-yearly fluoride varnish applications to children in nurseries and primary schools in the most deprived quintile of the population. This is done by mobile teams of extended duty dental nurses (EDDNs) and dental health support workers (DHSWs) who have successfully completed a training course and clinical assessment, delivered through NHS Education for Scotland and local Health Boards. In some Boards with higher levels of multiple deprivation, a larger proportion of children are offered fluoride varnish – these commissioning decisions are taken at local Health Board level. Entry to the nursery and school fluoride varnish

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programme is on the basis of a single initial consent, with rolling twice-yearly updates to the medical questions. There is a detailed fluoride varnish application protocol which underpins the intervention, and an electronic database which is commissioned from the University of Dundee Health Informatics Centre.

The Practice programme involves a wide age range of children, from birth throughout childhood. Its principal objectives are to:

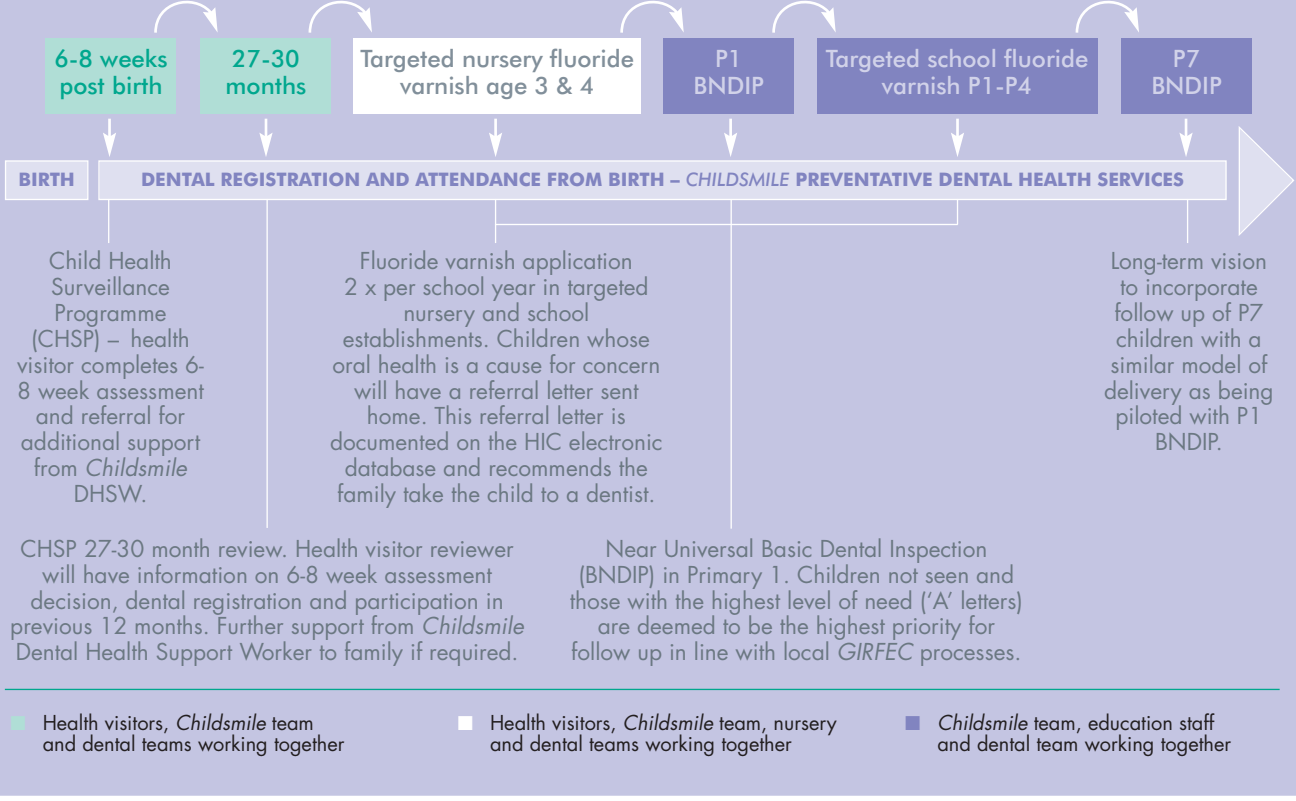
- Raise parental awareness of good oral health behaviours and support parents/carers to put them into practice.
- Increase the provision of oral health promotion and clinical prevention within dental primary care.

Every newborn child in Scotland is linked to Childsmile via their health visitor. At the universal six-to-eight-week child health assessment, the health visitor must complete a mandatory referral box on the assessment form to indicate whether a formal referral for additional DHSW support is required. DHSWs essentially support families to register and regularly attend a dental practice. They also provide enhanced home or community visits and can link families to community health improvement activities (such as healthy eating). Attendance at a dental practice is encouraged by the time the child is six months old. Evidence-based advice and support[8,9] is provided to the parent or carer, with key messages on tooth-brushing and healthy eating tailored to the age and needs of the child and family. Fluoride varnish applications commence from the age of two years old, together with oral health assessments and ongoing care through childhood. The elements of Childsmile Practice were incorporated into the dental payments system from 2011 onwards, and it is now mainstreamed into primary care dental practice. A recent national survey of general dental practitioners, using the Theoretical Domains Framework, has identified the reported frequency of fluoride varnish application by children's age and risk status, and the factors influencing practitioners' decisions concerning this intervention.[10]

Developments

The Childsmile programme has undergone substantial and ongoing development since its inception in 2006. These developments are heavily influenced by *Getting it Right for Every Child (GIRFEC)*.[11] It is Scottish Government policy to ensure *GIRFEC* is being threaded through all

FIGURE 1
THE CHILDSMILE ORAL HEALTH PATHWAY



policy, practice, strategy and legislation affecting children, young people and their families; this includes Childsmile.

GIRFEC describes how practitioners across all services should meet the needs of children and young people, working together where necessary. It promotes a shared approach and accountability that:

- Builds solutions with and around children, young people and families.
- Enables children and young people to get the help they need when they need it.
- Supports a collaborative shift in culture, systems and practice.
- Involves working better together to improve life chances for children, young people and families.

In March 2014, these *GIRFEC* policy provisions were enacted as part of the *Children and Young People (Scotland) Act.*[12] This means there is a legal duty on all practitioners to adopt *GIRFEC* policy, principles and practice. All practitioners now have a legal duty to appropriately share information where there is a concern for the wellbeing of a child they are working with. This information sharing is with the child's Named Person. The role of the Named Person is also part of the legislation, and is vital in gathering information about a child's circumstances in order to fully understand the potential range of factors impacting on their health and wellbeing, and act accordingly. If asked for support or information by the Named Person, practitioners have a duty to provide this. Childsmile developments resulting from this legislative policy context include incorporation of child level data on dental registration and dental attendance into the 27-30 month child health review, to help health visitors identify potential unmet oral health needs. This review is a holistic, universal assessment of a child's development. The health visitor is the Named Person for pre-school children, and the inclusion of Childsmile in the 27-30 month review allows them to consider a child's oral health in the context of all factors impacting on the child's wellbeing. Any child presenting for review with a concern over their oral health can be flagged to Childsmile and appropriate support and care offered.

Another recent development is the provision of Childsmile support for the follow-up of children who have been found to have unmet oral health needs via Scotland's National Dental Inspection Programme (NDIP). The aim is to link NDIP outcomes and nationally held data on dental registration and attendance with the Childsmile programme to achieve better oral health outcomes. Parents of P1 (five-year-old) and P7 (11-year-old) school children receiving basic NDIP inspections are sent a letter detailing the level of risk and/or need observed, advising of the action required and offering help to find a local dentist if the child does not have one. To date, there has been no

FIGURE 2

TRENDS IN THE PROPORTION OF CHILDREN WITH NO OBVIOUS DECAY EXPERIENCE AND MEAN d^3mft/D^3MFT IN THE P1/P7 POPULATION IN SCOTLAND

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systematic follow up of these letters. Local partnerships are now being established, linking Childsmile and NDIP teams, local dental practitioners, national databases and education colleagues. Once a child reaches school age, the child's Named Person will be a senior teacher in their school. The structure of our follow-up approach not only requires close working between dental professionals, but also involves the school and, where required, the Named Person. In this way the model being developed fits well with *GIRFEC* principles and practice and promotes a way of working which is compliant with duties of the *Children and Young People (Scotland) Act.*

Evaluation

Evaluation forms an integral and critical component of the Childsmile programme. The programme's national evaluation adopts a comprehensive, theory-based evaluation[13] approach in order to meet the challenges posed by Childsmile's complex, evolving nature. The Childsmile website[14] contains a number of documents that set out the detail of the evaluation and record the current list of monitoring and evaluation reports and publications.

The evaluation aims to assess the effectiveness and cost-effectiveness of the programme, clarify causal mechanisms and actively contribute to improved delivery via formative evaluation. This requires an ongoing mixed methods approach that provides data on the uptake and fidelity of implementation of the programme across the country in relation to the envisioned theory-based model. The findings provide opportunities to amend components of the programme at both national and Health Board level to optimise delivery and outcomes.

The summative evaluation involves the development of a large cohort of children to measure the impact of the programme on health and health economic outcomes. At an individual child level, Childsmile data link to national data sets via a safe-haven. This work is ongoing and variables include NDIP results for P1 and P7 children; general anaesthetic data for dental extractions; body mass index (BMI) findings from school health screening; and dental registration and treatment data. From an inequalities perspective, socio-economic position and ethnicity data are also included.

The NDIP findings for P1 and P7 children (Figure 2) have shown a major and continuing improvement in oral health from the commencement of the national tooth-brushing programme in 2001.[15,16] For example, the percentage of P1 children with no obvious caries experience has increased from 45% in 2000 to 68% in 2014. Additionally, a cost analysis model has compared the cost of providing the national nursery tooth-brushing programme in Scotland with the estimated NHS expected cost savings associated with an improvement in the oral health of five-year-old children, and found the costs to be considerably lower than the estimated cost savings.[17]

A paper reporting the extent of child oral health inequalities in Scotland has shown some narrowing of the social gradient,[18] and between 2000 and 2014 the Significant Caries Index (mean d^3mft of the third of the population with most caries) for P1 children has reduced from 6.6 to 3.7 teeth.[15] However, clear inequalities in the oral health of children persist.

Future direction of programme

It is now 10 years since the publication of the action plan for improving oral health in Scotland and, as outlined above, clinically and statistically significant improvements in the dental health of children have occurred over this period. However, a major challenge persists in relation to reducing the social gradient in oral health. A strategic review of Childsmile is now underway to ensure that, as the work continues to evolve, current guidelines and recommendations regarding tackling health inequalities[19,20,21] are incorporated into the programme and its impact measured through ongoing evaluation.

Acknowledgement
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