PLATFORM FOR BETTER ORAL HEALTH IN EUROPE – BEST PRACTICES IN ORAL HEALTH CARE CRITERIA
CHILDSMILE

	Criterion	Criterion weight	Categories	Category Weight	Information provided in the Childsmile Best Practice[1]	Score[2]
1	Aims & Objectives	10	The objectives of the best practice are Specific, Measurable, Acceptable for the target population, Realistic and Time-framed (SMART)	100	The programme aims are to: • Improve the oral health of children in Scotland; and • Reduce inequalities in dental health and access to services. When Childsmile started in 2005 a national government target was set – 60% of P1 children to be free from obvious caries by 2010. The 60% caries free target came from the same Dental Action Plan that led to the development of Childsmile. Progress was measured against this target through the National Dental Inspection Programme (NDIP). NDIP is carried out in schools across Scotland and school participation is ensured through government legislation. The programme's theory of change linking intended inputs and activities to outputs, outcomes and longer term impact (as described in the programme's over-arching aims above) are clearly delineated within a series of logic models which describe all programme components). The programmes over-arching aims and underlying	

[1] In this column, information is given on whether information corresponding to the categories under the different criterions are given in the Childsmile intervention description. It does not give an evaluation on the completeness or quality of the information given and serves merely to facilitate the evaluation of the Best Practice.
[2] Members of the Oral Health Platform Best Practice Task and Finish Group can fill in their score under this column, based on their evaluation of the information provided in the Childsmile intervention description.

					theories of change were tested against SMART criteria by a multi-disciplinary group of key stakeholders as part of strategic programme development (during development of the programme's logic models) as advocated in a theory-based evaluation approach).	
2	Description of intervention strategies and methods of implementation	9	This addresses the intervention's sequence, frequency, intensity, duration, recruitment method and location	50	Childsmile, the Scottish Government's oral health improvement programme for children, is a complex multi-faceted intervention. An action plan for improving oral health and modernising NHS dental services in Scotland (2005) provided the basis for the development of the Childsmile programme. It commenced in 2006 against a background of the poor oral health and oral health inequalities observed in children in Scotland. National implementation but some local variation at NHS board level is required to take into consideration local variation in terms of populations, geography, service structure and staffing (e.g. large urban environment such as Glasgow compared to a rural island environment such as Orkney)	
			The method of the intervention is described in concrete activities	50	Childsmile involves recognised evidence-based approaches for health improvement. These include the common risk factor approach with multi-agency participation; upstream and downstream working; community development; a focus on early years; and proportionate universalism. Childsmile consists of three distinct components extend from birth to adolescence: • A core programme – including universal daily toothbrushing in all nurseries and	

					targeted toothbrushing in primary schools; • A targeted nursery and school fluoride varnish programme; and • A universal practice programme. **The Core programme** All children in nurseries (local authority and private) and 5 and 6 year old primary school children in the most deprived population quintile are now offered daily supervised toothbrushing 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 toothbrushing 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, and Health Protection Scotland – the NHS body responsible for supporting services that protect people from infection and environmental hazards. This joint approach has been particularly helpful. **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 decisions are taken at local Health Board level **The Practice programme** Every newborn child in Scotland is linked to Childsmile via their Health Visitor. At a universal 6-8 week child health assessment Health Visitors complete a referral to indicate whether additional Dental Health Support Worker support is required. DHSWs essentially support families to register and regularly attend a dental practice and they can provide enhanced home/community visits and link families to community health improvement activity (e.g. breast feeding support, weaning groups, financial inclusion services). Attendance at a dental practice is encouraged by the time that the child is 6 months old. Evidence-based advice and support is provided to the parent/carer. This includes toothbrushing instruction and demonstration, and healthy eating advice tailored to the age and needs of the child/family. Fluoride varnish applications commence from the age of two years, together with on-going care through childhood. The elements of Childsmile Practice were incorporated into the dental payments system from 2011. As stated above, programme activities are clearly delineated in the programme's logic models.	
3	Equity (combined with) Target Population	9	Target different dimensions of equity: gender, socioeconomic status, education level, ethnicity, rural-urban area, minority groups	25	Childsmile adopts the principles of proportionate universalism which 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. Thus Childsmile's programme consists of distinct but integrated	

					components – some universal and some targeted (as described above). All Childsmile printed resources are available as easy read versions and in core languages – Polish, Traditional Chinese and Urdu. Requests can be made for translations into other languages. In 2016 the Scottish Government published a national action plan for tackling inequalities. One of the actions involved providing additional funding to health boards with the greatest national share of the most socioeconomically deprived families. In 2018 the Scottish Government launched their Oral Health Improvement Plan which commits to setting up a Challenge Fund for third sector organisations to submit funding bids which will support community led approaches to improving oral health and reducing oral health inequalities. Childsmile operates an 'island model' which takes into account the challenges of providing the service in a remote and rural environment.	
			Document specific characteristics and strengths of target population	25	(Partly) included All children from birth are supported by a health visitor (specialist qualified general nurse). Health visitors will refer children deemed to be at greatest risk of decay to a Childsmile Dental Health Support Worker for additional support. All children will receive 6 toothbrushing packs by age 5 and a free-flow drinking cup in the first year of life. We offer free, supervised toothbrushing programmes operating in all nurseries for 3 and 4	

					year old children. This is also provided in targeted schools at P1 and P2 (age 5 and 6 years). In schools, it is common for programmes to brush more widely and further up the school. All children attending dental practices are offered Childsmile preventive services (e.g. dietary advice, toothbrushing instruction and demonstration and fluoride varnish application) as part of the NHS dental services contract.	
			Improve accessibility for minority groups to relevant services	25	All Childsmile printed resources are available as easy read versions and in core languages – Polish, Traditional Chinese and Urdu. Requests can be made for translations into other languages. In 2018 the Scottish Government launched their Oral Health Improvement Plan which commits to setting up a Challenge Fund for third sector organisations to submit funding bids which will support community led approaches to improving oral health and reducing oral health inequalities. The DHSW role within Childsmile is a targeted service, specifically set up to support access to dental (and other community) services for those most in need.	
			Address relevant stakeholders to promote the use of participation in the intervention	25	The toothbrushing 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.	

					Partnerships with local education authorities are crucial to secure the involvement of schools and nurseries in the Childsmile programme. Local teams work hard to foster relationships between head teachers and Childsmile. The development of partnerships with schools and nurseries has been supported through the introduction of complementary government policy and legislation which requires educational establishments to give strong consideration to the health and wellbeing of their pupils. Childsmile has been developed and sustained through 4 different governments (so far), receiving broad support throughout.	
4	Adequacy, capacity and resources	9	Estimation of the human resources, material, non-material and budget requirements	50	Programme finance and governance processes has been developed and reviewed by Scottish Government in partnership with health boards, and overseen by a Childsmile Programme Board.	
			Sources of funding are specified dependent on stability and commitment	50	Project funded by successive Scottish Governments, highlighting broad support across the political spectrum.	
5	Comprehensiveness	8	The best practice is aligned with a policy plan at a local, national, institutional or international level	100	Childsmile has its origins in the Dental Action Plan (2005). Since then it has been further supported through inclusion in national health targets (e.g. 60% P1 children free from obvious caries at age 5yrs), further national policy (e.g. Fairer Scotland (2016) and inclusion in the national financial contract for GDPs. In 2018 Scottish Government published a new	

					Oral Health Improvement Plan which committed to further expansion and development of the Childsmile programme.	
6	Empowerment and Participation (combined with) Multi-Stakeholder Approach	8	Different dimensions of a multi-stakeholder approach are taken into consideration (i.e multidisciplinary, multi-/inter-sector, partnerships and alliances)	50	- Close working between Childsmile dental health support workers and health visitors to ensure at risk children are identified at a young age and referred by health visitors to Childsmile. - Close working with other agencies which can support a child's journey, including voluntary sector agencies - -close working between Childsmile teams and local schools to establish relationships which support supervised toothbrushing and the application of fluoride varnish in a community setting - Close working with public and private sector early learning establishments to ensure universal supervised toothbrushing and targeted application of fluoride varnish - Working with GDPs to deliver Childsmile preventive interventions as part of the normal offer of service in GDP clinics (e.g. inclusion in contract)	
			The best practice creates ownership of the intervention among the target population and stakeholders	50	Delivery in Dental Practice has been mainstreamed through Scotland's Dental Remuneration System. Each territorial health board has executive responsibility for delivering all components of the Childsmile programme. Key delivery detail is decided nationally and rolled out locally according to local resources and circumstances.	
7	Evaluation	8	Results are linked to the stated goals and objectives at each	17	Evaluation forms an integral and substantive component of the Childsmile programme. The	

			stage of implementation process		programme's national evaluation adopts a comprehensive, Theory Based Evaluation approach with both formative and summative aims. The use of logic models to set out the programme's 'Theory of Change' (ToC) prior to implementation (as well as being revisited during delivery) has ensured a clear and explicit rationale linking programme activities to outcomes (The programme's 'theory of change'). Logic models have been used as a framework or 'road map' for evaluation thus by design linking results (outcomes) to stated goals and objectives at each stage of implementation. The Childsmile website contains a number of documents which set out the detail of the evaluation, including its theoretical approach. http://www.child-smile.org.uk/professionals/research-and-evaluation.aspx	
			Information/monitoring systems are in place to deliver data aligned with evaluation and reporting needs	17	As illustrated in more depth below, the availability of data (and therefore ability) to test Childsmile's theory of change was fully considered at the time of logic model development. Where measures are not available from existing administrative databases, the evaluation team have gathered bespoke data. At times this has involved developing appropriate measures and validating them. Those involved in the evaluation of Childsmile in Scotland have been at the forefront of linking data from existing administrative databases with bespoke indicators of programme delivery in order to evaluate the programme. Several peer reviewed publications describing the methods and results of this data-linkage work are under submission.	

			Use of validated evaluation methods and/or tools	17	Theory-based evaluation methods and more specifically a 'Theories of Change' approach are widely recognised as being appropriate and beneficial to the evaluation of complex interventions implemented in the community setting. Moreover, Childsmile adopts an 'integrated' evaluation approach wherever possible combining robust research designs e.g. RCTs with theory-based methods and capitalising on the strengths of each method as appropriate. For example, an embedded randomised control trial investigating the effectiveness and cost-effectiveness of the nursery fluoride varnish programme has just concluded. Additionally, standardised and validated outcome measures are used where available (e.g. DmFT for caries outcomes). When this is not the case measures are developed and validated prior to use (e.g. oral health related quality of life for pre-school children).	
			The intervention is assessed for impact (i.e. health impact and any consequences derived) and for efficiency	17	The summative impact 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 are linked to national data sets via a safe-haven. This work is on-going and variables include NDIP results for Primary 1 and 7 children; GA data for dental extractions; 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. Childsmile's impact evaluation is ongoing. However, there is some early evidence of positive effect.	

					National Dental Inspection Programme findings for P1 and P7 children in Scotland have shown a major and continuing improvement in oral health from the commencement of the national toothbrushing programme in 2001 (NDIP, 2016; NDIP, 2017). For example, the percentage of P1 children with no obvious caries experience has increased from 45% in 2000 to 69% in 2016 (NDIP, 2016). Additionally, a cost analysis model has compared the cost of providing the national nursery toothbrushing 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 (Anopa et al, 2015). A paper reporting the extent of child oral health inequalities in Scotland has shown some narrowing of the social gradient (Blair et al, 2013), and between 2000 and 2016 the Significant Caries Index (mean $d_3$mft of the third of the population with most caries) for P1 children has reduced from 6.6 (Blair et al, 2013) to 3.6 teeth (NDIP, 2016). However, inequalities in the oral health of children persist. Results of an embedded randomised control trial investigating the effectiveness and cost-effectiveness of the nursery fluoride varnish programme over and above Childsmile's core toothbrushing programme will soon be published. Additionally, two natural experiments undertaken as part of Childsmile's evaluation, exploring early implementation of Childsmile's Dental Health Support Workers' Role and the impact of introducing a financial incentive for fluoride varnish application in general dental practice are under submission.	

					National Dental Inspection Programme (NDIP) 2016. Available at: http://ndip.scottishdental.org/wp-content/uploads/2016/10/2016-10-25-NDIP-Report.pdf Accessed Apr 2018 National Dental Inspection Programme (NDIP) 2017. Available at: http://ndip.scottishdental.org/wp-content/uploads/2017/10/ndip_scotland2017-P7.pdf Accessed Apr 2018 Anopa Y, McMahon AD, Conway DI, Ball GE, McIntosh E, Macpherson LMD. Improving child oral health: Cost analysis of a national nursery toothbrushing programme. PLoS ONE. 2015; 10.1371/journal.pone.0136211. Blair YI, McMahon AD, Macpherson LMD. Comparison and relative utility of inequality measurements: as applied to Scotland's child dental health. PLoS ONE. 2013; 8(3):e58593.	
			Defined evaluation framework assessing structure, process and outcome	16	Evaluation forms an integral and critical component of the Childsmile programme. As stated above, the Childsmile programme is evaluated using a comprehensive theory-based approach which includes the use of logic models to set out the programme's 'Theory of Change' (ToC). The resulting theory-based evaluation framework has both formative and summative aims. It aims not only to assess programme effectiveness (impact evaluation) but to sufficiently document delivery and context in order that reasons for success or failure can be ascertained and causal mechanisms clarified (process evaluation).	

					The evaluation also aims to assess the cost-effectiveness of the programme. Meeting all evaluation aims requires an on-going mixed methods approach which provides data on the uptake and fidelity of implementation of the programme across the country in relation to the envisioned theory-based model including the measurement of costs and outcomes. Measurement of outcomes (impact evaluation)– see above. Measurement of delivery (process evaluation) As part of the comprehensive strategy for the evaluation of Childsmile, a process evaluation (PE) is undertaken to documents and learn from delivery across Scotland. The process evaluation explores delivery in relation to the programme's agreed ToC. The process evaluation aims: • To document delivery (and context) of the Childsmile programme, in order to aid interpretation of outcome findings (summative); • To inform programme improvement (formative). The following research questions support the overarching aims; 1. Is the programme delivered as intended? 2. How does the programme vary from the intended model?	

					3. Are there potential risks to the programme achieving its goals? What are they? 4. Are there enablers/good models of practice? What are they? 5. Are there unintended consequences? What are they? Additionally, a programme of recording or 'mapping' other health initiatives, that may influence the measurement of outcomes that are attributed to Childsmile activity is undertaken. The aim of this exercise is: • To map other initiatives/programmes/studies (collectively termed "activities") and national policies that could have an impact on Childsmile outcomes or that impact on the interpretation of outcomes. A number of detailed research studies also come under the umbrella for Childsmile's national evaluation- see several examples noted above. As stated previously, further information, on all aspects of the programme's national, theory-based evaluation (including process evaluation methods and further detail of in-depth research studies focussing on particular programme components) is available on the evaluation section of the Childsmile website.	
			Regularity of monitoring reports	16	Annual quantitative monitoring reports provide descriptive data on key aspects of programme implementation. Trends in delivery over time are	

					documented through these reports. Please see Childsmile website for access to reports -published annually in November). Qualitative annual process evaluation reports, which further describe implementation (and are used formatively by programme stakeholders) are also produced yearly. Again, these are available from the evaluation section of the Childsmile website. A third yearly report also records any activity out with the Childsmile programme which may impact on intended programme outcomes or the interpretation of trends in intended outcomes. Results from other bespoke research studies evaluating particular components of the programme are disseminated via publication in peer reviewed journals (and at national and international meetings and conferences) on an on-going basis. These will shortly include the results of an RCT investigating the benefits of Fluoride varnish application over and above toothbrushing in the nursery setting, an early impact evaluation of Childsmile's Dental Health Support Worker Role, an assessment of the impact of introducing a fee-per item payment for dentists to apply fluoride varnish to their child patients' teet and outcome evaluation linkage results. A current list of monitoring and evaluation reports and publications is available on the Childmsile website.	
8	Sustainability	7	The continuation of the project is ensured through means such as ownership, follow	50	See previous sections	

			up funding, human resources, structural continuity and/or institutional anchoring			
			Broad support for the intervention amongst those who implement it and the target populations	50	It is worth noting the Childsmile Programme has received sustained support and finance through successive Scottish Government administrations and continues to benefit from cross Parliamentary party support.	
9	Scalability	7	There are specific knowledge transfer strategies in place (evidence into practice)	50	Formative cycles of evaluation are key to the ongoing development of Childsmile and underpinning programme theory. Regular exchange with interested providers within other parts of the UK and internationally. Lastly, exchange with the academic community through conferences, seminars and peer reviewed academic publications.	
			Intervention scalability is assessed in terms of sustainability (sufficiency of resources, commitment, ownership and institutional anchoring), potential size of the population and an analysis of requirements for scaling up	50	The Childsmile programme is already an established national programme.	
10	Leadership and capacity building	7	Clear leadership commitment and well-defined responsibilities of the	20	There is clear commitment to the Childsmile programme within the Scottish Parliament, from the Secretary of State for Health, the Chief Dental Officer and each of the health boards. A programme	

			different partners and the relationships among them		board provides general oversight of programme development and delivery with the support of the Childsmile Executive. Day-to-day delivery is led by each health board and their partners (e.g. education leads and health teachers)	
			Trained and competent professionals to support individual's self-management (e.g. professional development programmes to promote patient empowerment)	20	Close working with NHS Education Scotland has provided a range of training for Childsmile staff. This includes core Childsmile training undertaken by all and CPD covering areas such as motivational interviewing.	
			There was a defined strategy to align staff incentives and motivation with the objectives	20	All staff are committed professionals with a good level of awareness of the epidemiological data driving the introduction and delivery of the programme. All DHSWs and EDDNs are required to attend a core training programme and complete an assessment prior to their involvement in the Childsmile programme. This training helps to develop knowledge of wider factors which clarify objectives and provide motivation for what we do (e.g. epidemiological data, better understanding of inequalities and the challenges some families face).	
			The provision of resources covers all the elements for the intervention	20	All supervised toothbrushing resources are provided to participating establishments. Families are provides with free dental packs in the home and dental practices are support with dental packs and loose toothbrushes. Programme components are supported with written materials, all of which are provided by the Childsmile programme.	
			The information generated by the intervention was	20	Information is recorded on dental practice systems which allow NHS Information Services to gather data	

			systematically recorded and is accessible to professionals and patients, and where appropriate embedded in existing information systems.		and analyse activity in practice. All EDDN and support worker delivered interventions are recorded on a dedicated Childsmile system (HIC). The data recorded is used to support the patient journey as well as provide monitoring information to help inform future decision making	
11	Ethical Considerations	6	The intervention's objectives and strategy are transparent	25	These are written into national policy and health boards are informed of key performance measures.	
			The intervention is implemented equitably	25	Delivery is based on a proportionate univeralism model. All children are offered some degree of support but efforts are undertaken to ensure those children with the highest need/risk are offered more preventive services. A key aim of programme delivery is to address oral health inequality.	
			Benefits and burdens of the intervention are fairly-balanced	25	See 11.2	
			Potential burdens of the intervention for the target population are addressed	25	At present we are unaware of any potential burdens for the target population.	
12	Innovation	6	The intervention utilises the latest techniques and technology to advance its aims	50	Childsmile has innovated in many ways. The development of the dental nurse role to that of the primary deliverer of Childsmile in schools and nurseries was a major innovation in staff roles and responsibilities. Close working with other non-dental health professionals (e.g. health visitors, head teachers) has shown the importance of engaging non-dental professionals in delivering successful programmes. The Childsmile programme evolves and adapts to changing environments to ensure it continues to be effective.	

			The intervention utilises existing techniques and technology in new ways	50	See above	
13	Context and Needs Analysis	6	The intervention was based on a clear assessment of the needs of the target population	33	Persistent poor child oral health in Scotland (amongst the worst rates in Europe) Wide inequalities in child oral health and disease in Scotland – with those from poorest backgrounds bearing the greatest burden. Poor dental service / preventive service access and delivery for very young children. Limited pathways into this care.	
			Assessment of cost-effectiveness of relevant interventions	33	See Category 7.3.	
			The intervention was based on a clear understanding of the contextual factors that would affect the outcomes (i.e. characteristics of the health system, coverage, specifics of population, socio-economic, legal and political environment).	33	In the late 90s/early 2000s it was acknowledged that Scotland's oral health record was poor. Around 60% of 5 year old children had obvious caries by 5 years old. Dental caries showed a distribution associated with socioeconomic deprivation. The more deprived sections of the Scottish population shouldered the greatest burden of decay. Water fluoridation was not an option in Scotland due to political decisions. Scotland has a well structured and effective NHS system which involves the responsibility for service delivery being devolved to 14 territorial health boards. These territorial boards are supported by 'special' boards providing dedicated support with things such as data, training, and resource development and procurement.	

					Limited effectiveness of previous health educational approaches to tackling problem, and Scottish Government decision not to pursue water fluoridation.	
		100				