



The Greater Manchester Child Friendly Dental Practice Scheme: Using a Transformational Commissioning Approach to Align Paediatric Dental Service Provision with Childhood Oral Health Needs in Greater Manchester

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In response to the impact of the COVID-19 pandemic on access to already oversubscribed specialist paediatric dental services, a pilot of an enhanced primary care paediatric dental pathway, known as the Child Friendly Dental Practice (CFDP) scheme, was commissioned by the Greater Manchester Health and Social Care Partnership. Supported by a transformational commissioning approach, the ambition of the CFDP pilot was to manage or stabilise the oral health of high-need paediatric patients who had been referred to specialist dental services within Community or Hospital Dental Service settings, through timely access to primary care clinicians who were confident and experienced in treating children. The theory of change of the CFDP pilot proposed that rapid access to enhanced primary dental care would reduce the need for onward referral to specialist paediatric dental services, whilst also stabilising the oral health of children who require more complex management in specialist services. A formative evaluation of the phase one pilot implementation of the CFDP Scheme has demonstrated the potential of the CFDP Scheme to improve access to dental services for paediatric patients referred from their General Dental Practitioner. Comparison of waiting times between the CFDP pathway and the standard paediatric dental referral pathway have revealed substantially reduced waiting times to access care along the CFDP pathway, while less than 30% of those who attended CFDPs required onward referral to specialist paediatric dental services. Encouragingly, similar attendance and treatment completion rates were noted among patients from all levels of socio-economic deprivation, reducing concerns regarding the potential for service-based interventions to increase oral health inequalities. Following successful completion of the phase one pilot implementation and evaluation, the CFDP Scheme has now been rolled out across all localities in Greater Manchester as part of a second phase pilot implementation.

Public Health Competencies

- Equitable healthcare provision
- Partnership working
- Evidence-based public health
- Systems thinking
- Transformational commissioning
- Healthcare evaluation

Keywords: primary care, paediatric dentistry, childhood oral health, transformational commissioning, health service redesign, health service evaluation

Impetus for Action

Children within Greater Manchester (GM) experience disproportionately high levels of dental caries in comparison with other areas in England, while significant inequalities also exist between localities within GM (Public Health England, 2019). Only one of the ten GM local authority areas has childhood caries rates below the national average (23%), while seven of the thirty local authority areas with the worst childhood oral health outcomes in England are within GM (Public Health England, 2018). Such high rates of childhood dental caries, combined

with the severity of disease experienced, have resulted in large numbers of children being referred from primary care dental services to specialist paediatric dental services, including the community dental service (CDS) and hospital-based dental general anaesthetic services (British Dental Association, 2017; Levine, 2021). Demand for these services has resulted in extensive waiting times for initial assessment following referral, followed by further delays for the provision of care. Before the COVID-19 pandemic, children in GM experienced waiting times of more than twelve months for the extraction of carious teeth under general anaesthetic (XGA). Delays

in the receipt of dental care can prolong dental pain and infection, often resulting in sleepless nights and leading to poorer quality of life. These manifestations of poor oral health widen broader health and societal inequalities through impacts on school readiness and missed school/work days (British Dental Association, 2017; Goodwin *et al.*, 2015; Levine, 2021).

The COVID-19 pandemic has been described as the ‘perfect storm’ for paediatric dental services, exacerbating existing challenges in access to care through a reduction in capacity across all levels of service provision (Westgarth, 2021). In the North West of England, 31.7% of children saw a National Health Service (NHS) dentist in primary care in the 12 months leading up to December 2020, compared to 63.0% during the equivalent period in 2019 (NHS Digital, 2021; NHS Digital, 2020). This figure increased to 45.2% during 2021, though still remaining well below pre-pandemic levels (NHS Digital, 2022). Diminished dental attendance has been predicted to contribute to even greater increases in referrals for paediatric dental extractions under XGA, given the risk of caries progression to a more advanced stage in the absence of early detection and preventive interventions (Royal College of Surgeons of England, 2021). Within secondary care, limited availability of theatres and paediatric anaesthetists/nurses, as well as the re-deployment of hospital dental teams during the pandemic have exacerbated backlogs of paediatric patients awaiting XGA and other specialist-led services (Westgarth, 2021; Okike, 2021). Paediatric patients in GM are now waiting up to two years for the extraction of carious teeth under XGA. The potential for these factors to result in further deterioration in childhood oral health and inequalities required local action to improve paediatric dental access as a matter of priority.

Solution Suggested

The Greater Manchester Health and Social Care Partnership Dental Commissioning Team, with support of the Local Dental Network and the Paediatric Dentistry Managed Clinical Network, commissioned a pilot of an enhanced primary care paediatric dental pathway, known as the Child Friendly Dental Practice (CFDP) scheme in late 2020. The ambition of the CFDP pilot was to manage or stabilise the oral health of high-need paediatric patients who had been referred to specialist dental services within CDS or Hospital Dental Service (HDS) settings, through timely access to primary care clinicians who were confident and experienced in treating children. The theory of change of the CFDP pilot proposed that rapid access to enhanced primary dental care would reduce the need for onward referral to specialist paediatric dental services, whilst also stabilising the oral health of children who require more complex management in specialist services.

The CFDP pilot started in two primary care dental practices in GM from November 2020, followed by a third practice in February 2021. Test practices were selected based on the dental teams’ previous participation in Local Dental Network paediatric dentistry projects and experience of managing children with high dental needs. One clinician from each practice delivered care under the terms of the CFDP Service Level Agreement (SLA), with support from the wider team in the administrative and organisational

aspects of the pilot. The CFDP pilot was supported by a transformational commissioning approach, which directed supplementary funding, in addition to the standard unit of dental activity-based payment, to general dental practitioners (GDP) treating paediatric patients under the CFDP SLA (Holland, 2020). The remuneration agreement reflected the time investment required for the dental team to undertake additional training and peer review, administer the scheme, deliver dental care for high-need paediatric patients and submit evaluation and monitoring data.

As part of the CFDP pilot SLA, practices were expected to ensure that at least one clinician had undertaken recent training in paediatric dental care, including the GM ‘Baby Teeth DO Matter’ e-learning programme. Practices were also required to ensure that policies were in place to facilitate access by families with children and to ensure that staff were up to date with safeguarding training and current childhood dental caries prevention guidelines. In line with the preventive focus of the CFDP pilot, the SLA emphasised the delivery of three evidence-based techniques for the prevention and management of childhood dental caries; silver diamine fluoride application, placement of pre-formed metal crowns using the Hall technique, and fluoride varnish application.

Two distinct referral models were trialled during the pilot. The first involved the direction of new referrals from GDPs via the electronic central referral management system and the second, the redirection of patients from an existing CDS waiting list. Referrals from both sources were triaged by specialists in paediatric dentistry to identify patients with a level of oral health needs suitable for the CFDP scheme. Referrals deemed unsuitable for the CFDPs, for example, due to medical/behavioural challenges increasing the likely complexity of care delivery or the need for sedative adjuncts to enable the delivery of care, continued to be directed to specialist paediatric dental services.

CFDPs were commissioned to treat five CFDP patients per week and did not hold a waiting list. Rather, each month CFDPs accessed the referrals triaged as suitable from the central referral management system or CDS waiting list and arranged a remote consultation to assess the oral health needs of the child referred and their willingness to attend the CFDP. Patients were then invited for a face-to-face assessment, followed by the provision of care as dictated by clinical need. Patients whose oral health needs were fully met within CFDPs were discharged back to their referring GDP, while those who required further management within CDS/HDS settings were referred onwards. Under the SLA, CFDPs agreed to provide ongoing care for referred patients who did not have a regular dentist.

Actual Outcome

Between December 2020 and September 2021, a formative evaluation of the phase one pilot was undertaken in collaboration with the University of Manchester. The dual aims were to explore the feasibility of the CFDP model and to develop and test the evaluation monitoring metrics prior to a wider phase two pilot. This report details the initial findings from the phase one pilot and makes recommendations for future development.

Evaluation Question

To what extent does the CFDP pilot have the potential to improve access to dental services for high-need paediatric patients referred by their GDP for an oral health assessment in specialist dental services in GM?

Evaluation Objective

To quantify the referrals, service activity and outcomes of a sample of patients referred to pilot CFDPs, observing correlation with the anticipated theory of change.

Evaluation Methods

After developing a CFDP pilot logic model between stakeholders, a quantitative case-study of the referrals, service activity and outcomes of two pilot CFDPs, referred to as CFDP 1 and CFDP 2, was undertaken. This approach enabled preliminary assessment of whether the implementation of the CFDP pathway achieved the intended short and medium-term outcomes of the logic model (Figure 1). Pseudonymised data were collected contemporaneously by clinicians from each practice and submitted to the Greater Manchester Health and Social Care Partnership monthly. The patient data included age, sex, resident postcode, referral source, time from referral to initial appointment, outcome of initial appointment, treatment undertaken, whether treatment was successfully completed and whether onward referral was required. CFDP 1 also recorded the total number of primary and secondary teeth that were obviously decayed, missing or filled due to caries. Home postcodes were used to assign Index of Multiple Deprivation (IMD) 2019 deciles to each patient (Ministries of Housing, Community and Local Government, 2022). Data were analysed using Microsoft Excel. After data cleaning, descriptive statistics for the outcomes of interest were produced, including mean, median and standard deviation for continuous variables and frequency distributions for categorical variables.

Evaluation Results

A total of 505 referrals were directed through the CFDP pilot between November 2020 and April 2021, 308 to CFDP 1 and 197 to CFDP 2. The average age of the patients referred was 8 years old, with an even distribution between males and females. The mean number of primary and secondary teeth that were obviously decayed, missing or filled due to caries was 3.49 (SD 2.97). Most patients were from areas of high deprivation as indicated by the IMD 2019; 343 of 500 patients (68.6%) for whom postcode data was available were from the three most deprived IMD deciles (Noble *et al.*, 2019). Overall, 310 of 505 referrals (61.39%) triaged as suitable for the CFDPs resulted in an initial face-to-face appointment. Common reasons for an appointment not being made were: inability to contact parents/guardians (40.51%); parents/guardians preferring their child to stay on CDS/HDS waiting lists (25.13%) and parents/guardians stipulating that the CFDPs were too inconvenient to travel to (14.36%). There were high rates of attendance among those for whom an initial appointment was made (82.31%), while similar attendance and treatment completion rates were noted across patients from all IMD deciles (Table 1).

CFDP 1 accepted new referrals through the central RMS, while referrals to CFDP 2 were redirected from the existing CDS waiting list. Two hundred and fifty-two (81.82%) referrals to CFDP 1 resulted in an initial appointment, in comparison to only 58 (29.44%) of those to CFDP 2. The average waiting time for an appointment for CFDP 1 was 23 days from referral, compared to 209 days for CFDP 2, which included time spent on the CDS waiting list. Almost all (99.6%) patients from CFDP 1 were allocated an initial appointment within eight weeks of referral, compared to just 3.7% of patients initially referred along the standard paediatric dental care pathway to CDS.

Data on treatment provision was available for 241 of the patients who attended a CFDP. Of these, 56.8% had treatment successfully completed. One hundred patients (41.7%) had extractions under local anaesthetic. Figure 2 describes the treatment provided at each CFDP. Many received oral health improvement (92.53%) and dietary (95.02%) advice. Less than one-third (29.1%) of all patients attending CFDPs required onward referral to specialist paediatric dental services. The mean number of primary and secondary teeth that were obviously decayed, missing or filled was higher for those patients who required onward referral (4.53) than for the total population attending CFDP appointments (3.49), and the subgroup who successfully had treatment completed (2.64).

Challenges

Stakeholder engagement with CFDP clinicians, commissioners and dental public health and paediatric dentistry specialists yielded informal feedback on the practicalities associated with pilot implementation. CFDP clinicians described several challenges, including concerns about the routine nature and quality of some referrals, as well as examples of the failure of the triage process to manage inappropriate referrals and direct patients to the most suitable setting for care.

Several parents declined attendance at the CFDP practice, stating that they wished their child to remain on the waiting list for CDS/HDS care. Anecdotal evidence from CFDP clinicians also described parents questioning 'Why couldn't my own dentist do this?' suggesting a lack of understanding regarding the purpose of the CFDP pathway. Substantial differences in referral outcomes between CFDPs were noted, likely due to the different referral models. Feedback provided by CFDPs suggested that patients on the existing CDS waiting list were more difficult to contact, more likely to have had treatment completed elsewhere or to no longer require treatment, given the length of time since initial referral.

Although the significant proportion of patients who had extractions under local anaesthetic without the need for more invasive intervention was encouraging, there was generally low implementation of the Hall technique or silver diamine fluoride application (Figure 2), despite an emphasis on the utilisation of these techniques within the CFDP SLA. These findings may reflect barriers reported within the literature, which suggest that a lack of familiarity or a preference for more traditional techniques may contribute to limited implementation in practice (Timms, 2020; Dean, 2011).

Figure 1. Logic model outlining the anticipated theory of change of the CFDP Scheme, including anticipated outputs and outcomes. The elements highlighted are those which were possible to explore using the data available during formative evaluation.

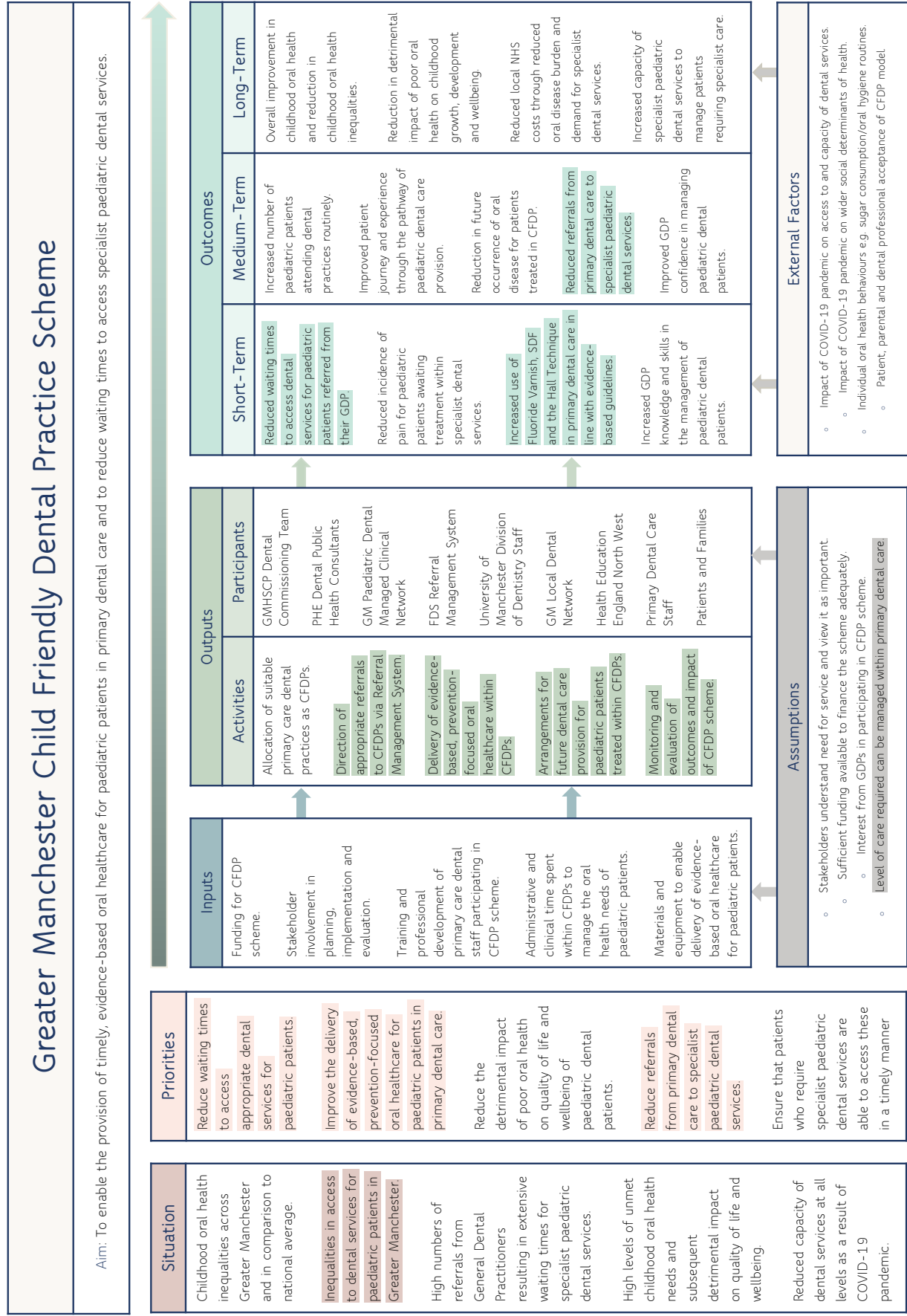


Table 1. Patients Referred, Attended and Successfully Treated by IMD Decile

IMD Decile	Patients referred <i>n</i> = 500*	Patients referred who attended (%)	Patients referred who had treatment completed (%)
1	174	51.72	24.71
2	108	49.07	28.70
3	61	50.82	31.15
4	33	39.39	27.27
5	26	34.62	15.38
6	19	52.63	26.32
7	33	48.48	30.30
8	18	55.56	38.89
9	13	30.77	30.77
10	15	33.33	26.67

*Postcode data missing for 5 patients referred to the CFDP Scheme

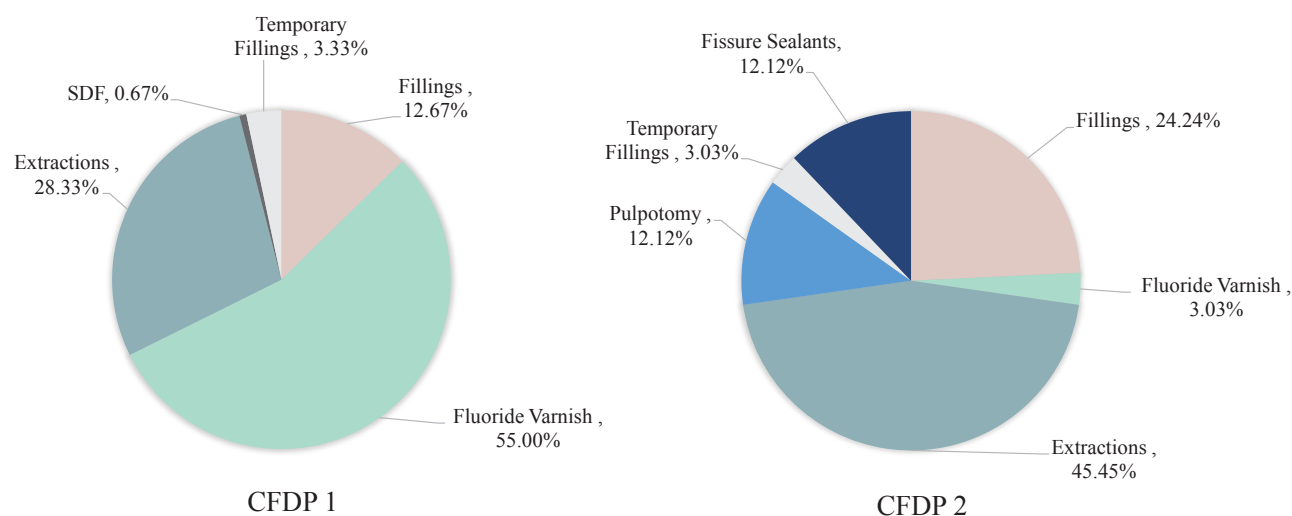


Figure 2. Treatment provided within CFDPs.

During evaluation, the restricted utility of several of the metrics recorded, as well as inconsistencies in data collection between pilot CFDPs was noted. In particular, recording the total number of primary and secondary teeth that were obviously decayed, missing or filled due to caries meant that it was not possible to capture any change in treatment need.

Future Implications

Funding has now been secured by the Greater Manchester Health and Social Care Partnership Dental Commissioning Team to roll-out a second phase of the CFDP pilot to ten practices, including two of the two initial pilot practices, across all localities in GM. To facilitate the successful expansion of the pilot, a series of recommendations was developed to address some of the key challenges. These included:

- Provision of training for non-CFDP GDPs in paediatric dentistry, thereby reducing the need for children to be referred outside their own primary care dental practice.
- Collaboration with GDPs to improve the quality and completeness of paediatric referrals, to better inform the allocation of patients to suitable settings for care.

- Clear communication with parents/guardians regarding options for their child's care following GDP referral, including average waiting times and the level of care provided in each setting.
- Establishment of clearly defined referral and triage criteria for the CFDP Scheme, through consultation between GDPs, CFDPs, commissioners and the Paediatric Dentistry Managed Clinical Network.
- Adoption of the CFDP 1 referral model, triaging new referrals rather than those from the CDS waiting list.

Recommendations were also made to facilitate the design of future evaluations, including:

- Alterations to the design and content of the CFDP data form to enable efficient data entry and analysis and collate additional commissioning and monitoring information. For example, adding restricted cell entry, and collecting 'number of carious teeth requiring treatment' as opposed to total number of primary and secondary teeth that were obviously decayed, missing or filled due to caries.
- Engagement with patients and parents/guardians to establish what influences their paediatric dental care preferences and perceived acceptability of the CFDP pathway.

- Qualitative feedback from CFDP clinicians on the barriers and facilitators to implementation of the CFDP pathway, including the evidence-based techniques highlighted in the SLA.

Learning Points

A key strength of the development and evaluation of the CFDP pilot has been the sustained engagement of a variety of stakeholders. The consultation process fostered a shared understanding of the intervention and supplemented quantitative data with informal feedback on the challenges encountered. A dedicated role for evaluation was created and fulfilled by the author of this paper, a Master of Public Health student from the University of Manchester. This enabled the planned and systematic evaluation from the early stages of pilot implementation.

Analysis of the initial data from the pilot CFDPs has suggested that the model is feasible and has the potential to substantially reduce the number of patients being referred to specialist paediatric dental services, as well as waiting times to access care. A large proportion of the referred patients were from areas of high socio-economic deprivation and treatment completion rates were similar across all IMD deciles. These findings suggest that the intervention did not widen oral health inequalities; this will continue to be monitored in future.

The next phase of evaluation will test if these findings are replicated when the programme is scaled-up and look at the longer-term impacts, as well as identifying if improvements to the programme have addressed the key challenges. There is also the potential that similar models could be applied more widely and adapted to other local contexts, as part of efforts to address the universal challenges in access to NHS paediatric dental services on a national level.

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