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## RESEARCH ARTICLE

# Transferability of the NHS low-calorie diet programme: A qualitative exploration of factors influencing the programme's transfer ahead of wide-scale adoption

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## Abstract

**Introduction:** Although behavioural interventions have been found to help control type 2 diabetes (T2D), it is important to understand how the delivery context can influence implementation and outcomes. The NHS committed to testing a low-calorie diet (LCD) programme designed to support people living with excess weight and T2D to lose weight and improve diabetes outcomes. Understanding what influenced implementation during the programme pilot is important in optimising rollout. This study explored the transferability of the NHS LCD Programme prior to wider adoption.

**Methods:** Twenty-five interviews were undertaken with stakeholders involved in implementing the LCD programme in pilot sites (health service leads, referring health professionals and programme deliverers). Interviews with programme participants (people living with T2D) were undertaken within a larger programme of work, exploring what worked, for whom and why, which is reported separately. The conceptual Population–Intervention–Environment–Transfer Model of Transferability (PIET-T) guided study design and data collection. Constructs of the model were also used as a deductive coding frame during data analysis. Key themes were identified which informed recommendations to optimise programme transfer.

**Results:** *Population:* Referral strategies in some areas lacked consideration of population characteristics. Many believed that offering a choice of delivery model would promote acceptability and accessibility of the eligible population. *Intervention:* Overall, stakeholders had confidence in the LCD programme due to the robust evidence base along with anecdotal evidence, but some felt the complex referral process hindered engagement from GP practices. *Environment:* Stakeholders described barriers to accessing the programme, including language and learning difficulties. *Transferability:* Multidisciplinary working and effective communication supported successful implementation.

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**Conclusion:** Referral strategies to reach underrepresented groups should be considered during programme transfer, along with timely data from service providers on access and programme benefits. A choice of delivery models may optimise uptake. Knowledge sharing between sites on good working practices is encouraged, including increasing engagement with key stakeholders.

#### KEYWORDS

diabetes remission, implementation, low-calorie diet, total diet replacement, transferability, type 2 diabetes

## 1 | INTRODUCTION

Systematic reviews and clinical trials have evidenced that a low-calorie diet (LCD) delivered through a total diet replacement (TDR) programme can lead to clinically significant weight loss and support remission of T2D.<sup>1-4</sup> The NHS committed to testing a LCD programme designed to support people living with excess weight and T2D to lose weight and improve diabetes outcomes.<sup>5</sup> NHS England (NHSE) commissioned independent service providers to deliver programmes, which included 12 weeks of TDR, 6 weeks phased food re-introduction and a 34-week weight maintenance, with different delivery models according to area, including in-person or remote one-to-one, in-person or remote groups or digital (app-based) one-to-one. This programme was initially piloted in 10 geographically diverse areas in 2020, with a further 11 areas included in the second stage of the pilot in 2022, ahead of national rollout beginning June 2023. Prior research has highlighted the role of the delivery context (e.g., local variations in delivery model and challenges to recruiting participants) in influencing implementation and service user outcomes.<sup>6,7</sup> Therefore, it is important to understand how transfer of the LCD programme from its pilot to the national rollout can be optimised.

Understanding transferability of an intervention, means to understand the extent to which successful intervention outcomes observed in a particular context, or contexts can be replicated in a new (target) context.<sup>8</sup> Contextual factors that are considered during a transferability assessment include the characteristics of the target population (e.g., health status and perceived health needs), the organisational environment in which the intervention is delivered (e.g., readiness and awareness) and the intervention itself (e.g., robustness of evidence base), along with exploring the interactions between them.<sup>1,2</sup> Undertaking a transferability assessment of an intervention prior to wider rollout helps commissioners to understand the extent to which adaptations or improvements may be needed, and how to mitigate barriers to implementation.

### What's new?

- Low-calorie diets (LCD) delivered through total diet replacement can lead to clinically significant weight loss and remission of type 2 diabetes.
- To optimise transferability, a choice of a delivery models should be considered to promote acceptability and accessibility and equitable referral strategies should be planned to prevent issues of inequity.
- Multidisciplinary working and establishing a multitude of communication strategies could promote engagement from GPs and other health professionals.
- Findings of this study can be considered by new sites of similar programmes to understand the extent to which the intervention is well suited, and how to mitigate implementation barriers.

A theoretical model, PIET-T (Population, Intervention, Environment, Transfer), to assess transferability was developed by Schloemer et al.<sup>8</sup> *Population* is concerned with an understanding of the service user characteristics and their needs, perceptions and attitudes. *Intervention* content is considered, along with exploring how to balance useful adaptations with maintaining the fidelity of the intervention. An understanding of the *Environment*, or setting, in which the intervention is delivered includes consideration of the skills, knowledge, attitudes and resources of the health care delivery team, and the organisational and policy structure. The criteria for the *Transfer* process consider knowledge transfer and communication between actors, strategies for optimum adoption and implementation, evaluation requirements and intervention operational sustainability.

As part of the wider programme of evaluation (ReMission study<sup>9</sup>), we used the constructs of the conceptual PIET-T to explore transferability of the LCD programme during of its

national rollout. This transferability assessment was undertaken across 11 Integrated Care Systems (local partnerships between NHS bodies, local authorities and other local organisations) across England (referred to hereon in as ‘localities’) who delivered the LCD programme during the second stage of the pilot. The aim was to gain a broad understanding of factors that may influence its transferability when delivered nationally. We sought the perspectives of three stakeholder groups involved in the programme’s implementation: health service leads (referred to hereon in as ‘locality leads’) with responsibility for coordinating local mobilisation of the programme; health care staff involved in referring individuals to the programme (referred to hereon in as ‘referrers’), and representatives of the commercial service providers that were responsible for delivering the programme (programme deliverers). The perspectives of programme participants (people living with T2D) were explored within the wider programme of work<sup>10–12</sup> and were considered in the development of this study. This paper presents findings of the LCD programme transferability assessment and provides recommendations of how other contexts may optimise delivery of the LCD or similar programmes.

## 2 | METHODS

### 2.1 | Study Design

We used the STAR-LITE survey,<sup>13</sup> a standardised tool to report behavioural weight management programmes, to understand how the programme was delivered across the 11 localities. Stakeholders across the 11 localities were recruited to take part in a semi-structured interview. This study received ethical approval from University of York Department of Health Sciences Research and Ethics committee (HSRGC/2022/537/A) and is reported using COREQ guidelines (see Additional File 1—Data S1).

### 2.2 | Participants and sampling

#### 2.2.1 | Survey participants

The survey was distributed via email (Qualtrics software) to one representative from each of the five commercial service providers who delivered the programme across the localities (three of which had also delivered the programme in stage one of the pilot). Where the survey had already been completed as part of the wider ReMission study, providers were asked to provide an update on any changes to their previous response. New providers were asked to complete the survey in full. Specific questions relevant to assessing transferability were as follows: method

of delivery, profession of programme deliverer, referral route, TDR product range, nature of dietary and physical activity advice, and how programmes were tailored according to population group.

#### 2.2.2 | Interview participants

Participants included locality leads, referrers and programme deliverers. A purposive sampling framework was used to ensure representation of the range of delivery models, socio-economic status (informed by index of multiple deprivation score) and participant job roles. Locality leads from all 11 localities were approached about taking part via email from one of the researchers explaining the purpose of the research and to highlight their independence from the programme, but four did not respond or declined. Locality leads were asked to nominate health professionals that referred individuals to the programme to be contacted about taking part. Programme deliverers from all five service providers were represented. All interviews ( $n=25$ ) were undertaken between April and June 2023. (Table 1).

#### 2.2.3 | Interview procedure

Interviews took place and were recorded via the Zoom platform and lasted between 30 and 60 min. Interview topic guides were guided by PIET-T constructs and the sub-constructs within them (see Table 2 for example). Emerging findings from the wider ReMission evaluation also guided specific areas of interest to explore within the PIET-T constructs (including people experiences of the programme during stage one the pilot). Three members of the research team undertook the interviews (WB, LP and NN), one with a PhD in public health and two with a master's degree in a relevant discipline (clinical nutrition and health research).

### 2.3 | Analysis

Survey responses were analysed descriptively and summarised to provide a brief description of programme characteristics across providers.

A deductive thematic analysis using constructs of the PIET-T model as an a priori coding frame was conducted on the interview data. Each interview transcript was coded by one researcher (LP, WB or NN) before codes were organised into tables (MS Word) to present data summaries according to PIET-T constructs, sub-constructs and stakeholder type. Researchers (LP, WB

TABLE 1 Interview participant characteristics.

Stakeholder type	n	Delivery model	Population deprivation levels within the participant's locality	Gender (male/female)
Locality lead	7	3 group 3 one-to-one 1 digital	3 working in locality with lower than average deprivation 4 working in locality with higher than average deprivation <sup>a</sup>	7 female
Referrer	9	3 group 4 one-to-one 2 digital	4 working in locality with lower than average deprivation 5 working in locality with higher than average deprivation <sup>a</sup>	7 female 2 male
Programme deliverer	9	1 group 4 one-to-one 1 digital 3 deliver all three models	1 working in locality with lower than average deprivation 5 working in locality with higher than average deprivation <sup>a</sup> 3 work across multiple localities	8 female 1 male

<sup>a</sup>With the exception of some unique districts that have lower than average deprivation levels.

TABLE 2 Example questions within each PIET-T construct.

Population	The population characteristics in the primary context	Can you explain how you consider the characteristics of your local population when making referrals?
Intervention	Characteristics of the evidence base in terms of utility/ usefulness and quality	Can you explain what you understand to be the evidence base surrounding the programme?
Environment	Characteristics of the health care system and service provision	How has the rollout and delivery of the programme been influenced by wider system priorities?
Transfer	Characteristics of adoption and implementation	What has been important to facilitate rollout of the programme in your local area?

and NN) familiarised themselves with each other's data summaries and convened to discuss coding discrepancies and uncertainties, along with initial interpretations of the data. The lead author (WB) further reviewed data coded to each construct and sub-construct to explore characteristics of the data according to stakeholder type and delivery model. Connections and relationships between sub-constructs were then considered to identify themes within each of the broader PIET-T constructs. Themes were reviewed against the constructs, sub-constructs and data summaries to ensure they were an accurate representation of the data. Proposed themes were sent to the other team members (LP and NN) for review before finalising.

### 3 | RESULTS

Between January and March 2023, survey responses were received from five service providers (Table 3). One provider delivered the programme via one-to-one in-person appointments, one via in-person group programmes, one used remote delivery of group programmes and two offered a range of models dependent on area, both including a digital (app-based) version of the programme.

Upon completion of the qualitative analysis, seven themes were constructed. The following section presents these themes, along with exemplar quotes.

#### 3.1 | Population

##### 3.1.1 | Consideration of population characteristics

Within all stakeholder groups (locality lead, referrer and programme deliverer) and across all delivery models, there was variance in knowledge around local population characteristics. Some described a diverse range of sociodemographic and cultural characteristics, or a lack of diversity, but others (across all stakeholder groups) were less aware, suggesting this information was not utilised within their day-to-day roles.

*Off the top of my head, I absolutely can't (describe characteristics of the population)*  
(Locality lead, one-to-one)

Characteristics of the eligible population did not often appear to be considered within strategies to engage individuals with the programme. A common referral strategy

TABLE 3 Summary of programme characteristics by each service provider.

Service provider	How is programme delivered	Profession of programme deliverer	Product range available during TDR phase	What kind of dietary advice is issued during programme	Physical activity component	Tailoring
1	One to one in person appointments	Registered nutritionist ×2	Soups and shakes	Healthy eating principles, personalised meal plan, low-carbohydrate diet	Included in weight maintenance phase (no further details provided)	No
2	In person group programme accessed by maximum of 15 individuals	Trained non-specialists (although mainly registered dietician and nutritionists)	Soups, shakes, bars, pre-prepared meals	Healthy eating principles	Physical activity advice, signposting to local programmes and provided Physical activity app	Coaches available who can facilitate women only groups and Urdu-speaking groups. Workbooks enable individuals to follow-up after session if needed due to language difficulties or learning disabilities
3	Remote group programme accessed by maximum of 15	Health coaches—Dietitians and nutritionists	Soups and shakes	Healthy eating principles, personalised meal plan	Physical advice only, signposting to local services	No
4	Dependent on area—in person 1:1, digital (app based with live chats or app texts), remote group	Diabetes practitioners	Soups and shakes	Healthy eating principles	Physical activity explored with service users including how to overcome barriers. Information on local leisure activities also provided.	Gender specific groups if required. Language specific groups Additional resources to meet differing learning styles Tailoring also available to meet other needs including, visually and hearing impaired and anthropophobia
5	Dependent on area—in person 1:1, digital (app based with live chats or telephone calls), remote group	Dietitians and health coaches with varying professional backgrounds (including nutritionist, dietetics assistants)	Soups and shakes	Healthy eating principles (5-a-day, Eatwell Guide), Personalised meal plan Intermittent fasting Low fat diet Low-carbohydrate diet Prescribed energy deficit	Physical activity advice only	The dietitian delivering the programme ensures tailoring to the individual people need, for example, of content or access requirements

included ‘searches’ undertaken by personnel in GP practices to identify all eligible people within the locality to invite them to take part.

*We sent a hundred SMS messages out from a practice two weeks ago to eligible patients, and so far only eight have come forward*  
(Locality lead, one-to-one)

Two locality leads (group and one-to-one) did describe a more targeted approach to ensure that particular target

groups were represented, including populations living in areas of high deprivation.

*What we’re trying to encourage is that the programme lead tries to actively engage with deep-end practices, the ones in really deprived areas*  
(Locality lead, group)

But there was agreement across all locality leads and referrers that their recruitment strategy was to engage

the highest number of people as possible, as opposed to a targeted approach to fill the programmes. For example, one locality lead (one-to-one) described how they tried to instil some urgency in GP practices by suggesting there was a cap on the number of spaces available.

*We opened up the gates right at the beginning and said, We've got 600 places; first come first served*

(Locality lead, one-to-one)

### 3.1.2 | Stakeholder perceptions of service user's attitudes towards the intervention

#### *Acceptability of programme delivery models*

All interviewees perceived that acceptability of the programme's delivery model was influenced by a person's individual circumstances. One locality lead (group) explained that digital access was a problem in rural areas and within the older population, and two programme deliverers (delivering a range of delivery models) felt that digital delivery was more suitable for people in full-time employment. All stakeholders described the pros and cons of each delivery model and said that personal preferences of the participants were also likely to influence acceptability.

*I think in my opinion I would like a bit of a choice for people. Some people are shy; they don't want to go in groups. They would rather be maybe one-to-one or even a Teams, something over Teams. Some of these people have chaotic lifestyles anyway and trying to get to the church hall on a Wednesday night at six o'clock might not be possible (Locality lead, group).*

#### *Acceptability of TDR products*

Views of the TDR products were positive amongst all stakeholder groups, although some locality leads and referrers acknowledged a limited choice of products, unfavourable taste or lack of a vegan option. One referrer explained that people know what to expect from a liquid diet.

*It's just a liquid diet really which doesn't sound appealing, even if you're engaged. It looked pretty good to me, and most people are aware of meal replacement kind of regimes, for better or for worse (referrer, one-to-one).*

The majority of locality leads, referrers and programme deliverers perceived that once people were signed up to the LCD programme, compliance with TDR was high, as

it negated the need to plan and prepare cooked meals. One locality lead (group) and two referrers (one-to-one and group) remarked on the perceived cost savings to peoples as the TDR products were provided free of charge.

*I think the fact that the soups and shakes are provided free of charge is definitely a bonus*  
(Locality lead, group)

#### *Barriers to sustaining motivation*

Interviewees across all stakeholder groups raised concerns about sustaining motivation on the programme beyond the TDR phase. Programme deliverers (one-to-one) expressed that they felt unable to meet the needs of individuals who requested more support around meal planning due to a lack of time. Many referrers and programme deliverers described how service users could feel disheartened after gaining weight, or felt anxious about reintroducing food, leading them to drop out.

*There is an extra anxiety about [re-]introducing food, because people have seen the results from the TDR shakes, and even if they were to introduce 900 calories of actual food, they still feel quite anxious*

(Programme deliverer, one-to-one)

A person's personal circumstances were also perceived by referrers and programme deliverers to be influential on sustaining motivation, for example, some described that maintained engagement was more likely if service users had family support and high psychological well-being.

*I've sometimes got clients that live on their own or they maybe are on antidepressant tablets, things like this, they find it a bit more difficult*  
(Programme deliverer, one to one)

## 3.2 | Intervention content

### 3.2.1 | Stakeholder perceptions of supporting evidence base

Interviewees across all stakeholder groups and delivery models perceived there to be a strong supporting evidence base for the LCD programme. During interviews, locality leads, referrers and programme deliverers described the randomised controlled trials that had taken place to measure effectiveness. However, it was expressed by locality leads (one-to-one), referrers (one-to-one, group) and a programme deliverer (one-to-one) that long-term outcome data were currently lacking.

*I thought the DiRECT trial was astonishing... but we can't 100% hand on heart say we know that it's going to actually save your life because we haven't got the data yet*

(Referrer, one-to-one)

Locality leads and referrers also described how they needed to rely on anecdotal evidence to understand programme impact, as participant level outcome data (and data on who attended and completed the programme) were not consistently reported back to them.

*It would be nice to get more collated feedback from [service provider] about the people we've referred because it's been sporadic*

(Referrer, one-to-one)

### 3.2.2 | Character of intervention

#### *Complexity of the referral process*

The referral process was described as complex by almost all interviewees, involving the completion of a multiple-page form and, in some cases, undertaking a de-prescribing process for peoples (if on medication) before they could start. This complexity was perceived to cause 'bottlenecks' in the process, resulting in delays to programme start dates and disengagement of some referrers.

*It has been a challenge, getting referrals in, you know, a referral takes at least 20 minutes for a GP*

(Programme deliverer, delivering range of delivery models)

#### *Core elements and key functions*

All interviewees agreed that the core element of the LCD Programme was the 12-week TDR phase. Locality leads, programme deliverers and referrers described that as service users tended to be compliant with this phase, weight loss and the possibility for remission of T2D usually followed. Some programme deliverers (one-to-one and digital) mentioned other elements of the programme, such as behavioural elements that were proposed to support long-term behaviour change (e.g., goal setting). But one referrer believed the programme offered only a short-term fix.

*It is a short-term fix, it's a tool to get you somewhere. It's not a long-term lifestyle view*

(Referrer, one-to-one)

Programme deliverers implementing the one-to-one model described flexibility in its structure, which was

mostly led by the service user who would attend the session with issues or questions that formed the basis of the session. This was in contrast to group sessions which was described by one locality lead (group) as being more prescriptive.

## 3.3 | Environment

### 3.3.1 | Characteristics of local and organisational setting

Locality leads and referrers involved in implementing all delivery models expressed frustrations around T2D care. For example, one described a fragmented way of working, and a lack of joined up thinking. Wider issues were also described including being overworked, a large turnover of staff and underfunding.

*Certain surgeries have their own problems with staffing or engagement, particularly with diabetes and things like that. But it is just a national issue when it comes to primary care*

(Referrer, one-to-one)

However, these issues were not universally voiced and, in general, locality leads and referrers felt optimistic about the programme and described successful ways of working to reduce pressures on GPs, including the involvement of clinical pharmacists and specialist nurses in the referral process.

*I suggested we get the pharmacists on board because the pharmacists probably had a bit more time available...and usually that worked well*

(Referrer, one-to-one)

### 3.3.2 | Stakeholder's perception of accessibility

The upper age restriction within the eligibility criteria was described by one referrer as limiting access, which they felt was disappointing.

*I referred one person who I was really keen on referring, and they were outside the age band and that was a bit of a disappointment because they were 66 or 67*

(Referrer, one-to-one)

Locality leads, referrers and programme deliverers across all delivery models gave examples of population



groups that were perceived as being unable to access the programme including individuals who did not speak English or with learning disabilities:

*We have asked if the materials for the course are suitable for people with learning disabilities...and what they have said is they don't have any videos. People can come along and join the programme, however, there is a level needed as to whether they retain, understand all of the information*

*(Locality lead, group)*

Some programme deliverers (group) described how they had attempted to make the programme more accessible for their local population by scheduling programme start dates to fit around religious holidays and adding spices to products. One also described how they had been able to run a group in Urdu and developed culturally appropriate resources.

### 3.4 | Transferability

#### 3.4.1 | Methods to promote GP engagement

From a locality lead and referrer perspective, the main barrier to implementation of the programme was securing engagement from GP practices. Some described how they convened multidisciplinary groups to agree strategies on how to secure engagement. Some locality leads described using a multitude of communication methods to promote interest and knowledge, such as webinars, bulletins and training.

*We decided to do three group sessions for patients who were eligible [...] then as part of the session we offered to refer anybody who then wanted to be referred and almost everybody took it up, which is brilliant (Referrer, digital)*

## 4 | DISCUSSION

This study describes factors that could influence transferability of the LCD programme from its pilot to the national rollout. Although many interviewees understood some characteristics of their local populations, few described how this influenced their referral approach. Instead, efforts often focused on filling referral places by using 'cold', non-targeted methods that were less resource-heavy.<sup>14</sup> These referral approaches were also reported by localities implementing the programme in

stage one of the pilot,<sup>15</sup> reflecting the widely acknowledged challenge to balance quantity over quality of referrals.<sup>16</sup> Prior research in the wider Remission evaluation also found that some commercial providers preferred referrals from those more likely to succeed to demonstrate the programme's effect.<sup>17</sup> However, ensuring uptake from target populations or subgroups which are identified as having the greatest need promotes effectiveness of the programme overall, precisely because it promotes the equitability of the programme.<sup>18,19</sup> Efforts to address equity during the planning and organisation of programme mobilisation or transfer can be taken by using tools, such as the equity impact assessment tool. Doing so ensures that an equity perspective is adopted from the start, which can be subsequently managed throughout programme delivery.<sup>20</sup> However, in order to refine a targeted referral approach, a precise understanding of the local population is needed, along with agreement amongst stakeholders on where inequities exist, through the provision of good quality and timely data. The need for routine data to monitor referrals in real time was also highlighted in the national evaluation of the NHS Diabetes Prevention Programme delivered in England.<sup>6</sup>

Offering participants a choice of delivery model was perceived by interviewees in this study as promoting acceptability and accessibility of the programme. Factors such as age, employment status and digital access were described as influencing whether service users found the programme acceptable. Although this element of the study did not explore experiences of service users directly, these findings are in line with previously reported factors influencing participation in similar programmes.<sup>21-23</sup> Going forward, digital methods are likely to be favoured in the delivery of health interventions, particularly in T2D and obesity care.<sup>24</sup> It is planned that service users will be offered the choice of digital or one-to-one in the national rollout of the LCD programme. One-to-one delivery of the LCD programme was valued amongst programme deliverers in this study, due to the intensive support they were able to provide to individuals. Previous research has also demonstrated that service users value one-to-one delivery.<sup>25</sup> However, the benefits of group delivery of TDR interventions are also accepted, including opportunities for peer support, greater potential for scalability and reduced dropouts.<sup>26</sup>

Our findings highlighted differences in the way the programme was delivered in respect to the delivery model. The one-to-one model was reported to be service user led, and more aligned to a person-centred approach which has been found to help service users address specific barriers to weight management within their own life circumstances.<sup>27,28</sup> In a previous study exploring participant's

experiences of a TDR intervention delivered one-to-one, participants explained that the counsellor who delivered the programme was the most important aspect of taking part, including their knowledge of dealing with common difficulties and ways to improve the flavour of TDR products.<sup>29</sup> A study undertaken as part of the wider ReMission evaluation reported that person-centred delivery was also more successful in one-to-one sessions.<sup>30</sup>

Some programme deliverers described ways in which they had been sensitive to their service user's cultural context during delivery of the programme, such as consideration of religious holidays and ensuring meals were culturally appropriate. Previous research explored the experiences of individuals from a South Asian ethnicity undertaking the LCD programme which found that participants valued ethnically matched peer support, language specific groups and cultural tailoring in the delivery of the programme, again highlighting the importance of person centred, culturally appropriate delivery of the programme.<sup>31</sup>

The core element of the LCD programme was mainly described as the 12-week TDR phase. The theoretical basis of the wider programme was described less by interviewees. This could be due to interviewees understanding less about the impact of behaviour change components. An earlier study reported a lack of underpinning theory and fidelity to BCTs within the pilot of the LCD programme.<sup>32</sup> But, unless programme theory is explicitly used and understood, evaluation of a programme's impact is challenging, along with understanding a programme's suitability to a new context during transfer.

The referral process for the LCD programme was perceived as being complex. Previous studies have reported worries around the volume of work and disturbed workflow introduced by new and existing programmes as influencing engagement from primary care practitioners.<sup>33</sup> In this study, some described engaging a wider pool of health professionals to support programme referrals, such as enlisting clinical pharmacists to undertake de-prescribing of medications. Indeed, the potential role of pharmacists in the management of T2D is increasingly being recognised.<sup>34</sup>

## 4.1 | Strengths and limitations

This study used a theoretical approach to understand transferability of the LCD programme by understanding its implementation across 11 pilot sites. The PIET-T model developed using a rigorous approach and informed by the literature provided structure to the study and prompted consideration of pertinent factors that could influence transferability: characteristics of the population, intervention, environment and the transfer process. The

model itself suggests that these factors should be explored within individual contexts where an intervention has been known to be effective, before considering the intervention's suitability to a new 'target' context. Here, we have explored PIET-T constructs across 11 sites to draw broad conclusions about optimising its transfer. Our sampling strategy sought to explore the perspectives of three stakeholder groups (locality leads, referrers and programme deliverers) involved in delivering the programme, ensuring representation from all delivery models. Our results did not highlight a contrast in experiences between stakeholder groups or delivery models, suggesting the findings were consistent between sites. We suggest commissioners and/or service leads from target contexts undertake their own assessment of comparability to inform the development of strategies to mitigate challenges or consider potential adaptations. Our transferability assessment did not capture the perspectives of service users directly to consider transferability of the programme. However, exploration of service user experiences was undertaken at length within the wider ReMission study to explore what works for whom and why, and so interviews with this population group were not repeated for this study. Emerging findings from these interviews were considered when developing our topic guides (e.g., preferences for delivery models and accessibility of the programme) and the full findings are reported separately.<sup>10-12</sup> We suggest perspectives of service users should be considered by those within target contexts to understand how their own population might interact with the programme.

## 4.2 | Recommendations

Based on our transferability assessment, we provide the following recommendations on how to optimise transfer of the LCD or similar programmes.

- Ensure that all involved in programme planning and delivery are aware of local characteristics of the population so that strategies to reach underserved groups can be developed. Utilise population data as available to refine referral approach.
- Undertake local equality impact assessments at the start of programme planning to consider how to prevent issues of inequity, and ensure that these assessments are actively reviewed on a regular basis.
- Ensure timely reporting and collation of good quality data on service user referrals and outcomes, to enable local teams (including referrers) and peoples to understand who is enrolled on the programme locally and their progress/outcomes. Reviewing national health audit data (e.g., National Diabetes Audit data) to

highlight how programmes supports service users after the programme has ended should also be considered.

- Consider offering a range of delivery models to optimise both acceptability and accessibility of the programme.
- Ensure referrers have a good understanding of cultural implications of the programme across a wide range of communities.
- Ensure person-centred support is offered, including adequate support during food re-introduction, signposting for anyone with ongoing mental health complications and tailoring programmes to meet the needs of individuals, particularly those with learning difficulties or who do not have English as their first language.
- Ensure programme deliverers receive appropriate training on behaviour change delivery and underpinning theory of change.
- Work with health professionals to consider how referral processes can be streamlined to ensure minimal burden on GPs.
- Ensure eligibility criteria are regularly reviewed to ensure people are not excluded from programmes who could benefit.

## 5 | CONCLUSIONS

Stakeholders in this study had confidence in the LCD programme and were happy to refer people, suggesting new localities may also view the LCD programme favourably. A greater understanding of long-term outcomes could further increase confidence. Population demand and accessibility of the programme are likely influenced by the delivery model on offer, suggesting that a range of delivery methods could be offered to optimise transferability. Referral strategies to reach underrepresented groups should be considered from the start of programme planning to ensure equity in uptake and impact, based on a precise understanding of the local population. Good quality and timely data are needed to inform localities of who in their area is accessing and benefiting from the programme.

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### CONFLICT OF INTEREST STATEMENT

All other authors confirm that they have no conflicts of interest to declare.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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