



Digital Health & Care
Innovation Centre

Digital solutions supporting healthy
weight management and the type 2
diabetes prevention framework

2021

Authors

Ciarán Morrison, University of Strathclyde

For referencing please use:

Morrison, C. (2021). Digital solutions supporting healthy weight management and the management of type 2 diabetes.

Acknowledgements

This research was funded by The Diet and Healthy Weight Team of the Scottish Government.

Disclaimer

Disclaimer

This document has been prepared in good faith using the information available at the date of publication without any independent verification.

Readers are responsible for assessing the relevance and accuracy of the content of this publication. University of Strathclyde, acting through the Digital Health & Care Innovation Centre, will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on information in this publication.

Copyright

First published April 2021.

This document has been written and prepared by the Digital Health & Care Innovation Centre.

This publication is subject to copyright. No part may be reproduced in any form without written permission from University of Strathclyde acting through the Digital Health & Care Innovation Centre (DHI).

The DHI was established as a collaboration between the University of Strathclyde and the Glasgow School of Art and is part of the Scottish Funding Council's Innovation Centre Programme. The DHI is also part-funded by Scottish Government.

DHI supports innovation between academia, the public and third sectors, and businesses in the area of health and care.

© 2021 University of Strathclyde acting through Digital Health & Care Innovation Centre.

All rights reserved





Table of Contents

Executive Summary.....	4
Introduction.....	5
NHS adult weight management guidelines.....	6
Aims.....	7
Method.....	7
Pre-diabetes.....	8
Hitachi diabetes solution.....	8
Buddi Nujjer.....	9
Liva Healthcare.....	9
Oviva.....	9
Second Nature.....	10
Type 2 diabetes management.....	11
Ascensia Diabetes Care (The Low Carb Programme).....	11
Changing Health.....	12
Type 2, gestational and pre-diabetes education.....	12
DESMOND.....	12
My Diabetes My Way (MDMW).....	13
X-PERT Health Diabetes Digital.....	15
Gestational diabetes.....	15
GDm-Health.....	15
Inhealthcare.....	16
Conclusion.....	17
Bibliography.....	18
Appendix 1: Summary of features.....	20
Appendix 2: Adult Type 2 Diabetes and Weight Management Digital Service Provider Matrix.....	32

Executive Summary

The most recent addition to Scotland's diabetes policy environment came in July 2018, when the Scottish Government released 'A Healthier Future – Framework for the Prevention, Early Detection and Early Intervention of type 2 diabetes'. The Framework provides guidance to delivery Public Sector partners for the implementation of new and enhanced weight management pathways. These pathways will sit within and beside integrated weight management services that will support its delivery partners in achieving the shared aim of improved weight management service to support better outcomes for people across Scotland.

This report, produced by the Digital Health & Care Innovation Centre (DHI), has been commissioned by the Diet and Healthy Weight Team of the Scottish Government in response to current policy. The report aims to present a brief view of the current options available for digital solutions supporting healthy weight management and type 2 diabetes prevention.

The solutions, identified via desktop research, were included on the basis that they are based in the United Kingdom and provide one or more of the following services:

- early intervention;
- type 2 diabetes prevention;
- type 2 diabetes management;
- management for adolescents with type 2 diabetes;
- gestational diabetes management;
- childhood weight management;
- overall weight management;
- prenatal weight management services; and
- educational resources for all listed categories.

The research revealed little to no new information on novel solutions to digital type 2 diabetes and weight management from what has been discovered in previous DHI research into digital management and education solutions [30 & 31]. No specific digital solutions to support postpartum and child weight management were found. However, the approach to weight management should remain roughly the same with amendments made for the individual categories, meaning the solutions listed above may be of use across type 2 and gestational diabetes as well as adult, postpartum and child weight management categories.

Throughout the report the Quality Institute for Self-Management Education & Training (QISMET) will be referred to, QISMET develops standards for good practice in self-management education and certifies products against said standards. Additionally, the report discusses the NHS App Library and solutions implemented by Clinical Commissioning Groups (CCGs) within NHS England. Whilst not all of these solutions are available in Scotland, they show that certain digital solutions already meet the standards required for type 2 diabetes and weight management in NHS England.

Although further assessment is required to ensure they meet Scottish standards, they are in principle well-placed to be rolled out in NHS Scotland and they are ready to scale in areas that adopt them. A working example of this is the Oviva solution being implemented and tested in NHS Tayside, which is also being used by NHS in England. Interoperability was used as a key criterion in the approval process for all Digital Diabetes Prevention Programme (DDPP) solutions.

While their involvement in the programme highlights their interoperability, there is a lack of evidence as to the extent of that interoperability and what the potential for these solutions to integrate with the board architecture within NHS Scotland is. Therefore, that will warrant further consideration.

Introduction

Within the last 10 years, digital solutions that support the management of diabetes have both increased in number and in features available. A select number of these solutions contain all, or most, of the features that are demanded by current policy in the area of type 2 diabetes prevention, care and self-management, alongside improved resources for education and healthy weight management.

The most recent estimates made by the 2019 Scottish Diabetes Survey place the number of people living with diabetes in Scotland at 312,390, accounting for a prevalence of 5.7% [1]. Of this population, 87.9% are recorded as having type 2 diabetes (274,442 people) [1]. This indicates that Scotland saw a total of 18,530 new cases of type 2 diabetes with an incidence rate of 361 per 100,000. These numbers have continued to grow on an annual basis over the last two decades, causing ever increasing pressure on NHS Scotland resources.

The most recent addition to Scotland's diabetes policy environment came in July 2018, when the Scottish Government released a follow up to their 'Diabetes Improvement plan' in the form of 'A Healthier Future – Framework for the Prevention, Early Detection and Early Intervention of type 2 diabetes' [2]. The framework was developed in 2018 building on the 2014 improvement plan to ensure everyone diagnosed with, or at risk of, type 2 diabetes or with pre-diabetes has access to good quality weight management services [2].

The Framework provides guidance to delivery partners for the implementation of new and enhanced weight management pathways for those 'at risk' of the type 2 diabetes, those diagnosed with pre-diabetes, type 2 diabetes, and gestational diabetes (figure 1 provides an outline for the various levels of intervention). These pathways will sit within and beside integrated weight management services and will require multidisciplinary and multi-organisational teams to work together in partnership with the public to deliver a fully supported service.

The framework was developed in 2018 building on the 2014 improvement plan to ensure everyone diagnosed with, or at risk of, type 2 diabetes or with pre-diabetes has access to good quality weight management services NHS adult weight management guidelines



NHS adult weight management guidelines

Both the current UK guidelines and Public Health Scotland’s standards on weight management recommend the provision of multi-component lifestyle weight management programmes offered by the NHS to promote modest weight loss as part of the NHS 4-tiered care weight management pathway [3]. This system is endorsed within the ‘Healthier Futures Framework’, see figure 1 below, with additional type 2 diabetes specific features [2 & 4]. Tier 1 focuses on universal interventions including national campaigns and provision of weight loss advice. These are delivered by local and regional health teams [2 & 4]. Tier 2 consists of lifestyle weight management services, usually time-limited to 12 weeks. These are delivered locally and provide diet, nutrition, lifestyle, and behaviour change advice, usually in a group setting. In some instances, commercial providers have been seen to be effective at this tier of intervention [2 & 4]. Tier 3 involves a clinician led multidisciplinary team approach providing non-surgical intensive medical management for the patient [2 & 4]. The final tier 4 involves Bariatric Surgery with support from a multidisciplinary team performing pre- and post-op care and support [2 & 4].

This report will aim to provide an outline of digital solutions and tools that can support those at risk of type 2 diabetes, those diagnosed with pre-diabetes, type 2 diabetes, gestational diabetes and overweight/obesity and allow for increased access to educational and interventions for people in Scotland. This includes, for example, early intervention, childhood weight management, management for adolescents with type 2 diabetes, gestational diabetes, overall weight management and prenatal weight management services. The report will first investigate weight management solutions before moving on to structured education and intervention solutions for those at risk of type 2 diabetes, those diagnosed with pre-diabetes, type 2 diabetes, and gestational diabetes. All diabetes and weight management solutions have been identified via desktop research using standard search engines and PubMed. For a detailed summary of the features of the solutions listed throughout the report, please view Appendix 1. Additionally, the DHI have developed a Matrix in Appendix 2, detailing which weight categories each solution is appropriate for in conjunction with the Scottish Government’s Diet and Healthy Weight Management Team.



Fig 1. Details the different levels of intervention, the associated cohorts and what are the features at each level [2].

Aims

This Market Review was commissioned by the Diet and Healthy Weight Team of the Scottish Government to provide a broader understanding of relevant solutions in the management of prevention and management of type 2 diabetes and healthy weight management.

To enable the Scottish Government to support Scottish Health Boards in the implementation of the type 2 diabetes prevention framework, the policy team identified the need for the identification and comparison of digital solutions that provide a specific set of functions.

These are UK-based solutions with patient self-administered education products that span at-risk, pre-diabetes, type 2, and gestational diabetes, and which provide targeted content for each stage and tier cohort of weight management. The content of these education packages is augmented with face-to-face online coaching services for the middle and higher tier cohorts and with glucose monitoring equipment and activity trackers for gestational diabetes.

The Digital Health & Care Innovation Centre (DHI) have an extant commission for diabetes-related work for the Technology Enabled Care (TEC) Programme and are well-placed to deliver a targeted market analysis of this nature. A key aspect of the DHI's work is to provide our partners and key stakeholders in the digital health and care sector with information on key policy and market solutions in the field, as evidenced in our previous work in the field of diabetes, including:

- Digital Health and Care Institutes Scottish Diabetes Policy and Market Report (2019): <https://doi.org/10.17868/72029> [5]
- Structured Education and Digital Learning for Diabetes Care in Scotland (2019): <https://doi.org/10.17868/72032> [6]

Method

The digital solutions in this report were identified through desktop research using standard online search engines, including Google, Google Scholar and PubMed, and through search functions within NHS and third party (digital technology company) websites. Searches included key phrases such as 'Pre-Diabetes', 'Type 2 Diabetes', 'Gestational Diabetes', 'Management', 'Prevention', 'Weight Management', 'Child Weight Management', 'Digital', 'Technology', 'Remote Monitoring', 'Education', and 'Structured Education'.

These were paired together using search engine function phrase 'AND', 'OR', and must include functions (for example "type 2 diabetes") to ensure that results contained the exact criteria of the research. Results were analysed and solutions that met the criteria outlined by Diet and Healthy Weight Team were reviewed and summarised in the report below.

The purpose of this form of research is to identify and present a high-level overview of the results using publicly available information.

Digital technology providers were contacted to provide further information; if this revealed any additional detail relevant this was included in the report. The research does not include any in-depth cost-analysis, or technical specification reviews.

Pre-diabetes

Pre-diabetes is a term that is not wholly accepted by medical organisations around the globe. In this report, the term is used to describe people with [7]:

- Impaired glucose tolerance.
- Above normal blood glucose concentration after fasting.
- Above normal glycated haemoglobin.

If this population cohort can be treated, it is possible that it can delay or prevent people developing type 2 diabetes and therefore the overall prevalence of type 2 diabetes. As stated, digital tools can be invaluable in this preventative effort. The NHS England Digital Diabetes Prevention Programme (DDPP), officially launched in 2016, represents the largest programme to explore and test digital diabetes prevention and management solutions in the UK [7]. While there have been programmes (see NHS Tayside reference below) delivered in individual Scottish Health Boards, there is currently no equivalent programme in Scotland to the DDPP. It presents a solid example to introduce certain key digital diabetes solutions. The DDPP has focussed on the below technologies [7]:

- Hitachi Diabetes Solution
- Buddi Nujjer
- Liva Healthcare
- Oviva
- OurPath

Each technology specifically targets the onset of type 2 diabetes from the perspective of weight management. The technologies below are the most relevant weight management solutions per the remit of this report [8]. These technologies underwent a self-assessment exercise exploring eight criteria:

- safety;
- privacy and security;
- pricing;
- evidence based or indicators of effectiveness;
- usability and accessibility;

- technical stability; and
- change management and interoperability.

Following this self-assessment exercise, the solutions underwent further review by subject matter experts including behaviour change theory experts, clinical safety officers, GPs, diabetologists, diabetes specialist nurses and dietitians to arrive at the final five solutions [8].

Hitachi diabetes solution

In April 2018, Hitachi Consulting began a partnership with the Salford Clinical Commissioning Group (CCG) piloting a digital diabetes prevention solution. The focus of Hitachi's solution is that users can make sustainable lifestyle changes by setting lifestyle goals that can help prevent the development of type 2 diabetes [9]. Hitachi's solution is a platform that comprises of a self-assessment app that allows users to monitor and record their diet, weight, physical activity and BMI. The actual components that make up the Hitachi platform are [10]:

- clinically led telehealth coaching (from NHS Health Advisor);
- a digital suite of wearables to support effective weight self-management;
- data-driven insights to develop personalised approaches to support and coaching;
- peer-support networks;
- AI-augmented coaching support;
- signposting to 3rd party groups (i.e. fitness providers and community groups) to help foster a wider health and wellbeing environment.

The solution is predominantly a telehealth platform. This means that while the solution provides a multifaceted approach for prevention, it relies on the platform provider to supply a number of resources, including the aforementioned wearable technologies, and a workforce to provide the clinical telehealth coaching and additional support.

In the Salford pilot, users set their goals with an NHS health advisor, who also provided regular coaching throughout the pilot via digital telehealth coaching [8]. The results of this pilot are yet to be made publicly available and the costs of the solution are not readily available to the public.

Interestingly, a study by Coventry et al. (2019), separate to the DDPP, showed that users saw no significant differences in physical health improvement and overall utility whether using Hitachi's digital telehealth solution or an alternative analogue solution, with similar features [11].

Buddi Nujjer

Nujjer is a 12-month digital behavioural change solution, whose aim is to help users to get active, have a healthier diet, lose weight and reduce their risk of type 2 diabetes. The features that encapsulate the solution are critical components in the prevention of the onset of type 2 diabetes [12 & 13]. The solution is available on the NHS App Library (albeit it is currently under review due to changes to GDPR) and is QISMET approved [11]. The solution is a combination of a wristband tracker, which monitors activity, sleep and diet (including eating frequency) of the wearer, and a linked smartphone application. Nujjer users have access to 22 educational sessions via the official app. These provide information on the causes and consequences of type 2 diabetes and highlight the benefits that come from significant lifestyle changes [13]. The other features include tracking and recording of diet, physical activity and wearer's mental resilience. It also has a function to set targets to enable users to view their progress [12 & 13]. The solution provides personalised feedback on their data to help in the changing of lifestyles and it provides support to help users achieve their individual goals. The wristband device itself costs £99 upfront with a monthly charge of £9.99 for the overall service [13]. Nujjer has been rolled out across 52 practices in the Somerset CCG to determine its validity as a real-world health solution. A final report on the results of this test phase will likely be released in 2021 [13].

Liva Healthcare

Liva Healthcare is a digital platform that helps users to manage several long-term conditions – including diabetes, obesity, cardiovascular conditions and COPD – and helps introduce lifestyle changes that tackle these long-term conditions [14]. The application is available on the NHS app library and is QISMET approved. The Danish-based solution allows for a dedicated coach to pair up with the user over the course of 12 months. Coaching begins with personal face-to-face meeting (not specified if in person or videoconference), followed by a year of approximately 26 digital personal coaching sessions with the personal coach using communication features on the platform. Coaches are not registered dietitians but nutritionists. The Liva platform and patient app support users with goal setting and planning, lifestyle tracking, video communication and online peer-to-peer support to encourage participation and lasting lifestyle change. Liva has been shown to help 85% of users to reduce their HbA1c levels and to lose 6kg of weight at the end of the 12-month programme [14]. It is currently active in 17 CCGs across the UK as part of the DDPP [14]. Furthermore, in May 2020 it was announced that four new CCGs awarded contracts to Liva Healthcare, meaning that approximately 11,000 patients at risk of type 2 diabetes will have access to Liva's personal health coaching [15].

Oviva

Oviva is a personalised support application that aims to help users make long-term improvements to their overall health [16]. Oviva offers Healthier You, a QISMET approved structured education programme, as part of its service and is available for free via GP referral on the NHS App Library, this is QISMET approved. Oviva offers remote and technology-enabled structured education and behavioural change programmes for:

- diabetes prevention in the form of the 'Diabetes Prevent' programme;
- living with type 2 diabetes in the form of the 'Diabetes Support' programme;

- diabetes remission in the form of the ‘Diabetes Remission’ programme; and
- tier 3 weight management in the form of the ‘Adult Nutrition Support’.

Specifically, for pre-diabetes Oviva’s Diabetes Prevent is 6 to 12-month specialist healthy lifestyle programme that offers one-on-one remote (digital/telephone) support with a registered dietitian and other healthcare professionals with access to a wealth of evidence-based educational materials [16]. Oviva costs vary depending on the service and number of interventions procured.

Each programme runs for different lengths of time and allows for patients to self-monitor their progress against their individual goals through the Oviva application, which also provides a food diary and a communication channel with a registered dietitian, health coach or other healthcare professional such as a clinical psychologist [16]. To date, Oviva has been commissioned in over 81 CCGs. Additionally, Oviva has partnered with NHS Tayside, NHS Argyle and Bute and NHS Dumfries and Galloway Health Boards to provide a remote alternative to traditional services. In 2020, in response to the COVID-19 Pandemic, the use of Oviva was accelerated in NHS Scotland and many other Health Boards are interested in procuring this service. Within the testbed CCGs Oviva has shown [16]:

- an average uptake of 75%, with 85% of all participants completing its programme;
- clinically meaningful improvements in diabetes treatment targets, with a 13mmol/mol reduction in HbA_{1c} and 6kg loss in body weight six months after completing the programme; and
- an estimated savings of approximately £1,000 per participant based on reduced medication need and service utilisation.

Furthermore, Oviva internal research (obtained via DHI information request) has shown that 92% of referred patients attended the Oviva programme in comparison to <60% seen in face-to-face programmes. Eighty-four percent of these participants complete the programme in comparison to <50% in face-to-face programmes.

Finally, Oviva participants showed on average a weight loss of 6.5kg (4.9% of body weight) compared to 1-2kg in the traditional face-to-face programmes [16]. While these results are from a small number of CCGs, they are indicative of how a more engaging and innovative digital experience can benefit the users’ health when compared to older service models.

Second Nature

Second Nature is a weight loss programme that has been adopted across over 50 CCGs in NHS England. Available on the NHS App Library and QISMET approved, Second Nature offers both an analogue and digital subscription service. Second Nature consists of a 12-week programme in which patients work with their healthcare provider to set and achieve realistic weight goals [17 & 18]. When patients sign up to the digital plan, they can receive 3G scales and an activity tracker that link to the Second Nature app. The app was developed by registered dietitians, but user support is provided by nutritionist during the programme.

The app allows for the user to monitor and track their progress, providing a recipe book and a dedicated health coach to help achieve a sustainable lifestyle change [17 & 18]. Following on from the initial 12-weeks patients have the option to continue as members of the Second Nature programme [17].

At the time of publication, the cost of Second Nature’s programme is £8.25/week, this provides users with access to personalised advice, access to support groups and health coach via chat function, full access to the app, recipe book and supplementary articles to support healthy living [17]. It has been reported that those who have completed the programme (there is a 79% completion rate) have shown an 8.3% weight loss after 6 months, a reduction of 13.3 mmol/mol after 3 months and a 40% decrease in HbA_{1c} levels below the diagnostic threshold for diabetes [17].

Each of these prevention solutions focuses self-management of type 2 diabetes by means of weight management.

Table 1 provides an overview of the primary features that are promoted by each solution and which can be seen inside their public facing resources. As is visible from this summary, these solutions do not allow for tracking of health information specific to type 2 diabetes such as blood glucose or HbA1c levels. Rather, they focus on the features most useful in combatting type 2 diabetes through weight loss.

	Hitachi	Buddi Nujjer	Liva Healthcare Healthcare	Oviva	Second nature
Blood Glucose Tracking	X	X	X	X	X
Advertised Tier 3 weight management	X	X	X	✓	X
Access to registered dietitians	X	X	X	✓	X
Additional Support	✓	✓	✓	✓	✓
Activity Tracking	X	✓	✓	X	✓
Nutrition Tracking/Support	X	✓	✓	✓	X
Meal Planning	X	X	X	X	✓
Wearable Technology	X	✓	X	X	✓
Education Provision	X	✓	X	✓	X
Available on NHS App Library	X	✓	✓	✓	✓
Evidence of interoperability with clinical systems	✓	✓	✓	✓	✓

Table 1. A brief summary of the features found in each of the solutions taking part in the DDPP. A more thorough breakdown is available in Appendix 1

Type 2 diabetes management

Ascensia Diabetes Care (The Low Carb Programme)

The Low Carb Programme is an NHS England commissioned tool that has been introduced to the NHS App Library and is QISMET approved. The programme is an automated, structured solution for people living with type 2 diabetes and those diagnosed with pre-diabetes. It provides users with a three-year access to the Low Carb Programme’s web platform and mobile application [19 & 20]. The solution provides different educational resources, peer support, virtual buddy system, behaviour change mentoring, goal identification and setting, a food diary, health tracking and device integration [19 & 20].

The Low Carb Programme’s food diary tool allows for the personalisation of food lists and units, and allows for the tracking of weight, blood glucose, medication blood pressure, cholesterol and mood [19 & 20]. Additionally, the online platform allows for the use of other digital tools to submit self-monitoring data on other variables such as HbA1c levels [19 & 20]. The programme can be synchronised with Apple HealthKit and FitBit. Data-driven insights to allow users to track their own trends and the platform offers a wide range of resources to healthcare professionals that offer the platform as part of their care provision [19 & 20].

The programme can be synchronised with Apple HealthKit and FitBit. Data-driven insights to allow users to track their own trends and the platform offers a wide range of resources to healthcare professionals that offer the platform as part of their care provision [19 & 20].

In 2018, Saslow et al. showed that if a user with type 2 diabetes fully engages with the Low Carb Programme living, it can be effective towards achieving glycaemic control, weight loss, and reducing hypoglycaemic medications [20].

While the programme is currently free for users in selected CCGs in NHS England, access to the platform costs either £14.99/month or £69.99/year independently. This suggests that the solution is in a position of strength in terms of adoption at scale, potentially in Scotland, as a lot of the background infrastructure already meets the demands of Health Care organisations.

Changing Health

Changing Health is a behavioural change platform for people living with type 2 diabetes, offered for free via GP referral in available areas (outside of Scotland). The solution allows users to access a short QISMET approved educational course via the built-in app, which provides additional resources to support weight loss, make dietary improvements and improve the users overall condition [21].

The Changing Health platform provides access to what is described as dedicated lifestyle coach that will provide users with a personalised diet and exercise regime based on user specific needs. The same coach will monitor user progress and provide support to ensure adherence to the programme. Coaches are not clinically qualified but are approved lifestyle coaches.

Changing Health has shown a mean reduction in HbA1c of 6.8mmol/mol at 3 months and an average of 7.4KG in weight loss [21]. The solution is suitable in type 2 diabetes prevention and weight management as well.

Type 2, gestational and pre-diabetes education

The area of diabetes education is well-established with a number of long-existing programmes that set the standard for structured education in the subject of diabetes. For type 2 diabetes specifically, Diabetes Education and Self-Management for Ongoing and Newly Diagnosed (DESMOND) is the most well-established educational resource.

DESMOND

Focusing on its digital provision, DESMOND host the MyDESMOND platform and online self-management type 2 diabetes education programme. It focuses on supporting people living with type 2 diabetes and people existing in the pre-diabetes category. The content is based on the NICE approved face-to-face DESMOND content. It provides a tracker for activity including a pedometer and tracking of self-reported blood pressure, weight, BMI, diet and smoking habit, alongside its educational resources. The overall reported features of the platform include [22]:

- Core interactive, educational material that mirrors original DESMOND content. This content being based around understanding:
 - thoughts and feelings of the users around type 2 diabetes;
 - diabetes and glucose: the biomedicine of type 2 diabetes;
 - the risk factors and complications associated with type 2 diabetes;
 - more about monitoring and medication;
 - how to take control of diet and physical activity;
 - planning for the future.
- Eight-weekly educational booster sessions which build on the core material.

- A number of health trackers including HbA_{1c}, weight/shape, healthy eating and blood pressure – where users can self-report their latest data and track their progress.
- A range of activity tracking options including steps and minutes, and the ability to link to wearable technologies.
- Access to experts.
- Peer-to-peer communication via chat.
- Buddies – an innovative function where users can invite family & friends to join in with their type 2 diabetes journey.

The programme is on the NHS App Library and is free via GP referral in available areas. MyDESMOND is currently undergoing evaluation and results on its effectiveness will be published in the future.

MyDESMOND also hosts the Babysteps programme. This is a digital programme that provides users living with gestational diabetes with [22]:

- Interactive learning and eight weekly booster sessions to help increase knowledge and confidence about preventing type 2 diabetes.
- The ability to track activity levels and link up to wearable devices.
- Track changes in weight, blood pressure, HbA_{1c}, diet and cholesterol levels.
- Set daily and long-term goals.
- The chance to chat and compete with other members in the MyDESMOND community.
- Invite friends and family to join in via the ‘Buddies’ feature.
- Connect with educational support and health professionals at the Leicester Diabetes Centre.

My Diabetes My Way (MDMW)

MDMW (known as MyWayDiabetes (MWD) outside of Scotland) is a class 1 CE marked online self-management platform/ mobile application giving access to personal data and delivering personalised advice/ self-management support. It enables:

- Access to/ tracking of diabetes electronic health record data through health record integration
- Remote monitoring data linkage (glucose meters/ activity monitors (e.g. Fitbit))
- Personalised data driven advice/ self-management recommendations
- Goal Setting
- QISMET approved moderated structured education online courses for people living with type 2 diabetes, diabetes prevention, gestational diabetes, and type 1 diabetes
- >250 multimedia education resources including multi-language content

MDMW is delivered by the University of Dundee in Scotland and by MyWay Digital Health (www.mwdh.co.uk) outside Scotland. Currently available across Scotland (MDMW), Somerset, Cheshire and Merseyside, Lancashire and South Cumbria, Greater Manchester, Northeast London (MWD) and Northwest London (known as ‘know diabetes’). The platform allows users to access their own up-to-date type 2 diabetes clinical results and provides interoperability through bi-directional FHIR-based API [23].

MWD also run a national NHS England Type 1 Diabetes platform (www.mytype1diabetes.nhs.uk). The standard service provides reliable and accurate information and educational resources to help users manage their type 2 diabetes more effectively [23].

The platform provides resources in the form of e-learning, interactive, hardcopy, audio and video materials. The e-learning modules cover various aspects of type 2 diabetes, but for the purposes of this report MDMW/MWD hosts structured online education courses covering [24]:

- My Gestational Diabetes: The Online Education Course.
 - What is gestational diabetes?
 - Diagnosing gestational diabetes.
 - What to expect?
 - Managing diabetes with lifestyle.
 - Managing diabetes with medication.
 - Monitoring diabetes.
 - Gestational diabetes and labour.
 - Living with gestational diabetes after pregnancy.
- My Type 2 Diabetes: The Online Education Course.
 - What is diabetes?
 - Diagnosing diabetes.
 - Managing diabetes with lifestyle.
 - Managing diabetes with medication.
 - Monitoring diabetes.
 - Complications of diabetes.
 - Living with diabetes.
- Type 2 Diabetes Prevention:
 - What are the chances of me developing type 2 diabetes?
 - How does losing weight help with preventing type 2 diabetes?
 - What impact does exercise have?
 - How can I make changes to my diet?
 - Other factors that can increase my risk of developing type 2 diabetes

There is a large evidence base around user satisfaction and effectiveness of the MDMW/ MWD platform summarised at www.mwdh.co.uk/sope, including impact on metabolic outcomes, short term acute admissions and cost savings with a ROI of around 5:1 based on a £1-2 per person/ year operating cost [25].

Patients report that MDMW/ MWD has helped to improve their knowledge and motivation of type 2 diabetes. In addition, there was an overall reduction in HbA1c for active users within one-year of follow-up [25].

X-PERT Health Diabetes Digital

The X-PERT Health platform provides users with QISMET-certified educational resources, in adherence with NICE guidelines, to aid in the prevention and management of type 2 diabetes. X-PERT Health's type 2 diabetes digital platform, costing £99 for 12 months of access, includes the standard six sessions of the X-PERT Health structured group education [26]. The content includes:

- All sessions from the standard group programme, delivered in via 2D and 3D animated videos, text, quizzes, questionnaires and games.
- “How to” exercise videos and integration with commercial services (Google Fit and Apple Health) helping users to integrate physical activity into their daily routine.
- Support from a personalised health coach – users can book telephone consultations with their X-PERT Health Coach at their own convenience to access help and support users in making the right lifestyle changes.
- Sleep and mood trackers with support for improving both aspects of lifestyle.
- Motivational prompts to support users in reaching their goals.
- Rewards for reaching milestones.
- Access to a database for recipes.
- A live chat function that is available 24/7.
- A group chat function and access to an online forum providing support and allowing users to share experiences with one another.

While there is little research into the impact of the type 2 diabetes digital feature of X-PERT, Deakin et al. (2006) found that participation in the original structured education programme by adults with type 2 diabetes, after 14 months, led to improved glycaemic control, reduced total cholesterol level, body weight, BMI and waist circumference, reduced requirement for diabetes medication, increased consumption of fruit and vegetables, enjoyment of food, knowledge of type 2 diabetes, self-empowerment, self-management skills and treatment satisfaction [27].

As the diabetes digital platform acts as an extension of the original programme we can expect similar results.

Each of these programmes have been outlined as key tools in providing remote consultation during the COVID-19 lockdown [28].

Gestational diabetes

GDm-Health

GDm-Health is described as a prescribed digital therapeutic personalised care platform for women with gestational diabetes in pregnancy. Freely accessible on the NHS App library, the platform consists of a patient app that can receive measurements from blood glucose meters via wireless communication, and an online dashboard use by healthcare professionals [29]. The platform allows users to:

- Upload and track blood glucose readings.
- Show blood glucose readings as a list, in diary view and in a graph form.
- Filter blood glucose readings to show trends.
- Provide additional notes to and request call backs from their care team.
- Receive care guidance from their health care professional direct to the app.
- Keep a log of all previous blood glucose readings.
- Use a visual aid to help track their blood glucose monitoring.
- Learn about gestational diabetes.
- Take better control of their condition.
- Access information about food/diet, weight management, and activity and fitness during their pregnancy.

The service was developed within the NHS for the NHS, in accordance with and approved by NICE guidelines and is integrated with NHS systems. A randomised controlled trial carried out with 203 patients showed that use of GDm-Health was associated with:

- Sixty-four percent reduction in pre-term births.
- Sixteen percent reduction in women transitioning to pharmacological treatment.
- Significantly higher patient satisfaction with care.
- Significantly better compliance with Blood Glucose monitoring increased from 61% to 80%.

Additionally, the mean health care costs of the GDm-Health group have been found to be over £1,000 less than the control group [30]. GDm-Health is in use in NHS Dumfries and Galloway Health Board with other Boards currently involved in procuring GDm-Health.

Inhealthcare

Inhealthcare works with several NHS organisations to provide remote health pathways for example, digital maternity pathways which remotely monitors patients at risk of gestational diabetes as well as other chronic and long-term conditions. NHS Scotland currently have a 12-month contract with Inhealthcare and are exploring a diabetes pathway. This means that NHS Boards can use Inhealthcare platform free for the duration of the national contract, until June 2021.

The service encompasses a mobile application, telephone, Alexa, online portal or SMS to help keep users in contact with their healthcare professional to access regular results and information about their diabetes remotely [31]. The solutions afford a number of diabetes related remote health monitoring protocol for type 2, type 1 and gestational diabetes. Users are asked to test and submit their blood glucose levels a number of times a day, depending on their condition. Readings are communicated to users via their preferred channel.

The platform allows healthcare professionals to observe how users are managing their conditions, review submitted readings and have greater opportunity to intervene and reduce the risk of adverse events. Inhealthcare report to have an Open Architectural Infrastructure (API) which enables integrations with key NHS information Systems including Emis and SystemOne, while integration with SCI Store is currently being explored [31].

The solution has limited features specifically to support Weight Management beyond its intended function and does not boast the vast array of features that other solutions offer.

Conclusion

TConclusion

The desktop research approach performed in developing this report revealed little to no new information on novel solutions to digital type 2 diabetes and weight management from what has been discovered in previous DHI research into digital management and education solutions [30 & 31]. There were no immediate results in the search for digital solutions specifically focussing on postpartum and child weight management. Despite the lack of results regarding these cohorts, the listed solutions could be adapted to be suitable for all cohorts, meaning the solutions listed above may be of use across type 2 and gestational diabetes as well as adult, postpartum and child weight management categories.

Throughout the report, the NHS App Library and solutions implemented by CCGs have been mentioned to demonstrate current levels of activity across the UK. Whilst not all these solutions are available in Scotland, they show that certain solutions already meet the standards required for type 2 diabetes and weight management in England, and although further review and assessment is required to ensure they meet Scottish standards, it could be suggested that digital solutions are well placed to be rolled out in NHS Scotland.

A working example of this has been alluded to before in the Oviva, Second Nature and GDm-Healthsection. Oviva is a solution being tested in a few NHS Boards and showcases an example of a solution appropriate for use by both NHS Scotland and NHS England.

This further suggests that solutions shown to be successfully used by large CCGs have the potential to be adopted by other health service organisations in other areas of the UK, and that they have higher levels readiness for scale up in areas that adopt them. While simultaneously, SME's and industry are well placed to respond to meet the needs and demands of the Scottish market.

Interoperability between systems and solutions, was used as a key criterion in the approval process for all DDPP solutions. While their involvement in the programme highlights their interoperability, there is little published evidence as to what the extent of that interoperability and how this was achieved.

As stated in previous DHI reports, there is a wealth of digital management solutions for type 1 and 2 diabetes. In February 2021, ORCHA released their report on 'Digital Health for Weight Management Services' listing their top 10 highest scoring weight management applications, of these only three relate to diabetes related weight management, these being MDMW/MWD, Liva and Second Nature [32].

The majority of other solutions, not included above, are mobile applications that tackle single aspects of diabetes management, e.g. diet, weight tracking, activity tracking etc. Very few of these are approved for use in healthcare organisations and fewer still in NHS organisations [4 & 5]. With all this in mind, it is sufficient to say that simply making these solutions available to patients will not help prevent the onset of type 2 diabetes or allow patients to successfully manage their condition.

Instead, consideration should be given to utilising the solutions mentioned in this report with a view to selecting a preferred solution that best meets NHS Scotland standards and ICT requirements. To aid in this endeavour, the appendices below provide a summary and comparison of the core features of the solutions listed above and a matrix that categorises the solutions by stage of type 2 diabetes and weight category.

Once any preferred solutions are identified they require to be tested and thoroughly evaluated including their adoptability within Scotland, with an emphasis on co-production and service design to enable new digitally enabled models of care to emerge. Ensuring optimum patient adoption and adherence to help yield the positive results and improved health outcomes that the Scottish Government are aiming to achieve.

Bibliography

1. Scottish Diabetes Data Group. (2021). Scottish Diabetes Survey 2019. Edinburgh: NHS Scotland. Accessed from: <https://www.diabetesinscotland.org.uk/wp-content/uploads/2020/10/Diabetes-Scottish-Diabetes-Survey-2019.pdf>
2. Scottish Government (2018). A Healthier Future: type 2 Diabetes prevention, early detection and intervention: framework. Accessed from: <https://www.gov.scot/publications/healthier-future-framework-prevention-early-detection-early-intervention-type-2/>
3. Public Health Scotland (2019). Standards for the delivery of tier 2 and tier 3 weight management services in Scotland. Accessed from: <http://www.healthscotland.scot/publications/standards-for-the-delivery-of-tier-2-and-tier-3-weight-management-services-in-scotland>
4. Obesity Empowerment Network (2017). NHS Tiered Care Weight Management Pathway. Accessed from: <https://oen.org.uk/managing-obesity/nhs-tiered-care-weight-management-pathway/>
5. Morrison, C (2019) Digital Health and Care institutes: Scottish Diabetes Policy and Market Report. Accessed from: <https://doi.org/10.17868/72029>
6. Morrison, C (2019) Structured Education and Digital Learning for Diabetes Care in Scotland. Accessed from: <https://doi.org/10.17868/72032>
7. NHS England (2016) NHS Diabetes Prevention Programme – digital stream. Accessed from: <https://www.england.nhs.uk/diabetes/digital-innovations-to-support-diabetes-outcomes/nhs-diabetes-prevention-programme-digital-stream/>
8. Murray, E., Daff, K., Lavidia, A., Henley, W., Irwin, J., & Valabhji, J. (2019). Evaluation of the digital diabetes prevention programme pilot: uncontrolled mixed-methods study protocol. *BMJ open*, 9(5), e025903.
9. Digital Health (2018) Salford CCG to trial Hitachi diabetes solution under NHS programme. Accessed from: <https://www.digitalhealth.net/2018/04/salford-ccg-to-trial-hitachi-diabetes-solution/>
10. Open Access Government (2018) Digitally enabled pathway personalisation: Journey to Diabetes Prevention 3.0. Accessed from: <https://www.openaccessgovernment.org/digitally-enabled-pathway-personalisation-journey-to-diabetes-prevention-3-0/47386/?elqTrackId=4b3a89e4ba3544f6b8984b8bef52cf1&elqaid=1152&elqat=2>
11. Coventry, P., Bower, P., Blakemore, A., Baker, E., Hann, M., Li, J., ... & Gibson, M. (2019). Satisfaction with a digitally-enabled telephone health coaching intervention for people with non-diabetic hyperglycaemia. *NPJ digital medicine*, 2(1), 1-9
12. NHS Apps Library (2020) nujjer. Accessed from: <https://www.nhs.uk/apps-library/nujjer/>
13. Nujjer (2020) Accessed from: <http://nujjer.com/>
14. Liva healthcare (2020) Accessed from: <https://livahealthcare.com/>
15. Businesswire (2020) Liva Healthcare Wins Four New NHS Contracts. Accessed from: <https://www.businesswire.com/news/home/20200513005029/en/Liva-Healthcare-Wins-New-NHS-Contracts>
16. Oviva (2020) Accessed from: <https://oviva.com/uk/en/>
17. Second Nature (2020) Accessed from: <https://www.secondnature.io/our-programme>
18. NHS App Library (2020) Second Nature. Accessed from: <https://www.nhs.uk/apps-library/second-nature/>
19. Low Carb Program (2019) Low Carb Program. Accessed from: <https://www.lowcarbprogram.com/>
20. Saslow, L. R., Summers, C., Aikens, J. E., & Unwin, D. J. (2018). Outcomes of a digitally delivered low-carbohydrate type 2 diabetes self-management program: 1-year results of a single-arm longitudinal study. *JMIR diabetes*, 3(3), e12. Accessed from: https://diabetes.jmir.org/2018/3/e12/?utm_source=TrendMD&utm_medium=cpc&utm_campaign=JMIR_Diabetes_TrendMD_o
21. Changing Health (2020) Digital behaviour change at scale. Accessed from: <https://www.changinghealth.com/>
22. MyDESMOND (2020) Accessed from: <https://www.mydesmond.com/>
23. My Diabetes My Way (2020) Accessed from: <https://www.mydiabetesmyway.scot.nhs.uk/MyDiabetes.aspx#gsc.tab=o>

24. My Diabetes My Way (2020) eLearning. Accessed from: <https://diabetesmyway.nhs.uk/elearning/>
25. Cunningham, S., Pokrajac, A., Allardice, B., Brillante, M., Wilson, L., & Wake, D. (2019). My Diabetes My Way: clinical outcomes impact and user experiences for an electronic personal health record for diabetes. *Future healthcare journal*, 6(Suppl 1), 13. Accessed from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6616717/pdf/futurehealth-6-1-s13.pdf>
26. X-Pert Health (2020) Diabetes Digital. Accessed from: <https://www.xperthealth.org.uk/digital-programmes/>
27. Deakin, T. A., Cade, J. E., Williams, R., & Greenwood, D. C. (2006). Structured patient education: the Diabetes X-PERT Programme makes a difference. *Diabetic medicine*, 23(9), 944-954 Accessed from: <https://www.xperthealth.org.uk/wp-content/uploads/2019/12/X-PERT-Randomised-Controlled-Trial-Diabetic-Medicine-2006-1.pdf>
28. Diggle, J. (2020). Sources of information and education for people with diabetes to support remote consulting. *Diabetes & Primary Care*, 22(4) Accessed from: <https://www.diabetesonthenet.com/journals/issue/617/article-details/glance-factsheet-sources-information-and-education-people-diabetes-support-remote-consulting>
29. Sensyne Health (2020) GDM-health. Accessed from: <https://www.sensynehealth.com/gdm-health>
30. NIHR (2018) Gestational diabetes app study show positive results. Accessed from: <https://oxfordbrc.nihr.ac.uk/gestational-diabetes-app-study-show-positive-results/>
31. InHealthcare (2020) Gestational Diabetes. Accessed from: <https://www.inhealthcare.co.uk/digital-health-marketplace/gestational-diabetes/>
32. ORCHA (2021) Digital Health and Weight Management. Accessed from: https://www.orchacare.co.uk/media/1750/orcha_bda-report_jan_2021.pdf

Appendix 1: Summary of features

The below tables present a quick summary of our findings in this immediate market scoping activity. For the purposes of this report N/a denotes that we were not able to confirm the existence of the associated feature in our initial research. Further analysis of the individual solutions may confirm that features marked as N/a are present.

Name	Hitachi diabetes solution
Diabetes Category	Type 2 diabetes and pre-diabetes
Solution type	Prevention and Management
Where available	Available in Health organisations that have procured solution from Hitachi Consulting
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App
Education resources	Not provided through solution
Behavioural Change	The entire focus of the solution is to foster behavioural change
Digital F2F consultation	Provides clinically led digital telehealth coaching and provides AI-augmented coaching support
Digital group support	Provides access to peer-support networks and signposts to 3rd party groups
Wearable technology	Available from healthcare provider hosting the solution but not from Hitachi
Evidence Interoperable with health systems	Interoperability was used as part of the decision process to determine which solutions should be used in the DDPP
Link to Source	
https://www.hitachivantara.com/go/hitachi-consulting/solutions/hitachi-smart-healthcare.html	

Name	Buddi Nujjer
Diabetes Category	Type 2 diabetes
Solution type	Digital behavioural change solution
Where available	Is available for free in certain CCGs and privately with an upfront cost of £99 and £9.99/month for the service
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App
Education resources	App provides 22 educational resources
Behavioural Change	Personalised feedback based on user data is used to help in the changing of lifestyles and behaviours
Digital F2F consultation	N/a
Digital group support	Support provided in the form of data feedback and text messages via app
Evidence Interoperable with health systems	Interoperability was used as part of the decision process to determine which solutions should be used in the DDPP
Link to Source	
http://nujjer.com/	

Name	Liva Healthcare
Diabetes Category	Type 2 diabetes
Solution type	Long-term condition management
Where available	It is available both publicly and privately in selected areas that have procured Liva's solution
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App
Education resources	N/a
Behavioural Change	While the overall effect of the solution will cause behavioural change, specific behavioural change actions are N/a
Digital F2F consultation	Use of the service begins with a face-to-face meeting, followed by 26 digital personal coaching sessions across the course of 12 months
Digital group support	Group coaching is provided via the solution
Evidence Interoperable with health systems	Interoperability was used as part of the decision process to determine which solutions should be used in the DDPP
Link to Source	
https://livahealthcare.com/	

Name	Oviva
Diabetes Category	Type 2 diabetes and pre-diabetes
Solution type	Personalised support application
Where available	It is available to be commissioned into health services, is freely available in parts of NHS England
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App provides meal plans for users
Education resources	Offers the Healthier You structured education programme
Behavioural Change	While the overall effect of the solution will cause behavioural change, specific behavioural change actions are N/a
Digital F2F consultation	Offers one-on-one support with a registered dietitian and other healthcare professionals
Digital group support	N/a
Evidence Interoperable with health systems	Interoperability was used as part of the decision process to determine which solutions should be used in the DDPP
Link to Source	
https://oviva.com/uk/en/	

Name	Second Nature
Diabetes Category	Not specified
Solution type	Weight management solution
Where available	It is available to be commissioned into health services and offers a tech package for £55/month for the 12-week programme
Features	
Diet tracker	Via patient App
Activity tracker	Using wearable tech via patient App
Education resources	App offers daily informal learning resources
Behavioural Change	While the overall effect of the solution will cause behavioural change, specific behavioural change actions are N/a
Digital F2F consultation	N/a
Digital group support	Service offers digital support group
Evidence Interoperable with health systems	Interoperability was used as part of the decision process to determine which solutions should be used in the DDPP
Link to Source	
https://www.secondnature.io/	

Name	Ascensia Diabetes Care (The Low Carb Programme)
Diabetes Category	Type 2 diabetes and pre-diabetes
Solution type	Lifestyle change QISMET-accredited platform
Where available	The Low Carb Program App is free via GP referral in some areas. Subscriptions cost either £14.99 a month or £69.99 a year.
Features	
Diet tracker	Offers meal planning but not diet tracking
Activity tracker	Via patient App
Education resources	Offers personalised evidence-based education for people with type 2 diabetes, prediabetes etc.
Behavioural Change	Overall function of the app is to effect behavioural change, behaviour mentoring is available as part of this
Digital F2F consultation	Offers behaviour change mentoring, goal identification and setting
Digital group support	Peer support and virtual buddy system
Evidence Interoperable with health systems	Works with CCG's or Health boards upon commission, not enough evidence to establish the nature of the solutions interoperability functionality
Link to Source	
https://www.lowcarbprogram.com/	

Name	Changing Health
Diabetes Category	Type 2 diabetes and pre-diabetes
Solution type	Behavioural Change platform
Where available	Available in commissioned areas via GP referral
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App
Education resources	Provides access a short educational course via the built-in app, which provides additional resources to support weight loss, make dietary improvements and improve the users overall condition
Behavioural Change	The overall functionality of the solution is aimed towards behavioural change
Digital F2F consultation	Access to health coach via app
Digital group support	N/a
Evidence Interoperable with health systems	Solution provides access to NHS staff remotely, but no definitive evidence was found to confirm interoperability with clinical systems. Further investigation would likely yield positive results.
Link to Source	
https://www.changinghealth.com/	

Name	MyDesmond
Diabetes Category	Type 2 Diabetes and Gestational diabetes
Solution type	Self-management diabetes education
Where available	Available via GP referral
Features	
Diet tracker	Via patient app
Activity tracker	Via patient app
Education resources	Online self-management type 2 diabetes education programme
Behavioural Change	N/a
Digital F2F consultation	N/a
Digital group support	Peer-to-peer communication via chat
Evidence Interoperable with health systems	N/a
Link to Source	
https://www.mydesmond.com/home/	

Name	My Diabetes My Way
Diabetes Category	Type 1, type 2 and gestational diabetes
Solution type	Online web and mobile diabetes management application
Where available	Currently available across Scotland (MDMW), Somerset, Cheshire and Merseyside, Lancashire and South Cumbria, Greater Manchester, North East London (MWD) and North West London (known as ‘know diabetes’)
Features	
Diet tracker	N/a
Activity tracker	Integrated with Fitbit
Education resources	Offers multiple online education resources
Behavioural Change	N/a
Digital F2F consultation	N/a
Digital group support	N/a
Evidence Interoperable with health systems	Interoperability through bi-directional FHIR-based API. Service integrates with various glucose meters either directly or through integrator software like diasend.
Link to Source	
https://www.mydiabetesmyway.scot.nhs.uk/#gsc.tab=o	

Name	X-PERT Health Diabetes Digital
Diabetes Category	Type 2 diabetes
Solution type	Structured education resource
Where available	Available online
Features	
Diet tracker	Via patient App
Activity tracker	Via patient App
Education resources	Group structured education delivered via 6 sessions
Behavioural Change	N/a
Digital F2F consultation	Individual support from health coaches
Digital group support	N/a
Evidence Interoperable with health systems	N/a
Link to Source	
https://www.xperthealth.org.uk/digital-programmes/	

Name	GDM-Health
Diabetes Category	Gestational diabetes
Solution type	Personalised care platform
Where available	Available online
Features	
Diet tracker	N/a
Activity tracker	N/a
Education resources	Offers informal educational resources about food/diet, weight management, and activity and fitness during pregnancy
Behavioural Change	N/a
Digital F2F consultation	Allows for text communication via the app
Digital group support	N/a
Evidence Interoperable with health systems	Built by the NHS for the NHS the solution is integrated with NHS systems
Link to Source	
https://www.sensynehealth.com/gdm-health	

Name	Inhealthcare
Diabetes Category	Gestational diabetes
Solution type	Remote monitoring solution
Where available	Available in NHS England
Features	
Diet tracker	N/a
Activity tracker	N/a
Education resources	N/a
Behavioural Change	N/a
Digital F2F consultation	Provides access to a healthcare professional via the App, online portal or SMS
Digital group support	N/a
Evidence Interoperable with health systems	Confirmed through communication with Inhealthcare, the solution is integrated with Emis ad SystemOne
Link to Source	
https://www.inhealthcare.co.uk/	

Appendix 2: Adult Type 2 Diabetes and Weight Management Digital Service Provider Matrix

This matrix is designed to pull together the current service providers who provide full digital service interventions and not just education or digital gadgets.

	Healthy Weight (<25 BMI)	Overweight or Obese (>25 BMI)	Crossover platforms per condition	Crossover platforms all conditions except GDM and remission
At risk of T2D (moderate/high risk)	Oviva Prevent, Second Nature, Hitachi diabetes solution, nujjer, myDesmond: lets prevent, Changing Health, Inhealthcare, MDMW/MWD, X-PERT Health	Oviva Prevent, Oviva Way to Wellness, Second Nature, Hitachi diabetes solution, nujjer, Low Carb Program, Liva Healthcare, myDesmond, Changing Health	Oviva Prevent, Oviva Way to Wellness, Second Nature, Hitachi diabetes solution, nujjer, Changing Health, myDesmond	Oviva, Second Nature, Changing Health, MyDesmond
Pre-Diabetes	Oviva Prevent, Hitachi diabetes solution, Liva Healthcare, Changing Health, Second Nature, myDesmond: lets prevent, nujjer, Inhealthcare, MDMW/MWD, X-PERT Health	Oviva Prevent, Way to Wellness, Hitachi diabetes solution, nujjer, Liva Healthcare, Low Carb Program, Changing Health, Second Nature, myDesmond, Inhealthcare	Oviva Prevent, Oviva Way to Wellness, Hitachi diabetes solution, Liva Healthcare, Changing Health, Second Nature, myDesmond: lets prevent, nujjer, Inhealthcare,	
New T2D	Oviva Diabetes Support, Liva Healthcare, Changing Health, myDesmond, Second Nature, Inhealthcare, MDMW/MWD, X-PERT Health	Oviva Diabetes Support, Oviva Way to Wellness, Liva Healthcare, Low Carb Program, Changing Health, myDesmond, Second Nature, Inhealthcare	Oviva Diabetes Support, Oviva Way to Wellness, Liva Healthcare, Changing Health, myDesmond, Second Nature, Inhealthcare	
New T2D Meeting Remission		Oviva Remission 800, Low Carb Program	Oviva Remission 800, Low Carb Program	
GDM	GDM health, Inhealthcare, myDesmond: babysteps, MDMW/MWD, X-PERT Health	GDM health, Inhealthcare, myDesmond: babysteps	GDM health, Inhealthcare, myDesmond: babysteps	

List of solutions	Target Cohort	QISMET Approved	Links to solution
<p>Oviva provides remote (tel and digital) support to people (Dietetic support with other professionals e.g. clinical psychologists). Oviva offers multiple interventions (see below for details) that are available remotely and digitally on their platform. The Oviva service is open from 8am-8pm Mon-Sat and in is available in 22 different languages. People can be aligned to dietitians from their own ethnic group and can self-manage through their own platform. It currently does not link to SCI store. All diabetes interventions are QISMET approved. They also have the ability to screen GP records and identify those who could gain benefit from their platforms. They will also bring key aspects of one programme into another if needed eg Way to Wellness will have key elements of Oviva Prevent if the patient requires weight management and is diagnosed with Pre-DM.</p>	See below	Oviva support is QISMET approved	https://oviva.com/uk/en/
<p>Oviva Prevent - 6–12-month intervention focussing on healthy weight/weight loss, improving blood glucose and reducing risk of T2D</p>	At risk/Pre-DM	Oviva support is QISMET approved	https://oviva.com/uk/en/diabetes-prevent/
<p>Oviva Support - 8–12-week intervention focusing on healthy weight/weight loss, reducing risk of T2D and improving confidence over managing diabetes and improving blood glucose</p>	DM	Oviva support is QISMET approved	https://oviva.com/uk/en/diabetes-support/
<p>Oviva Diabetes Remission 800 - 12-month intervention focusing on weight loss, reducing medications, lowering blood glucose, reducing risk of DM.</p>	Remission DM	Oviva support is QISMET approved	https://oviva.com/uk/en/diabetes-remission/
<p>Oviva Weight to Wellness - 12-month intervention focusing on weight loss, mood and emotion, improving health.</p>	Obese	Oviva support is QISMET approved	https://oviva.com/uk/en/way-to-wellness/
<p>Second Nature - Is a 12-week programme delivered wither digitally or by telephone. The solution was developed by dietitians but user support is mainly provided by nutritionists. The digital solution provides users with 3G scales and an activity tracker that links to the Second Nature app, and the solution offers both group and 1:1 support. The digital package is £55/month for three months and the analogue package is £40/month for three months. It is recognised by ORCHA as a top 10 weight management app.</p>	At risk DM, Pre-DM, DM, Overweight	QISMET Approved	https://www.secondnature.io/

List of solutions	Target Cohort	QISMET Approved	Links to solution
Hitachi Diabetes Solution - A smartphone app (Android and iOS) that is accessible on tablet and desktop, that provides a blend of digital and non-digital features. These include a monitoring app for diet, weight and physical activity. Comes with NHS health advisor telehealth coaching and a suite of wearable technologies to support the self-management app. solution supports the prevention of type 2 diabetes. An action plan is developed between users and health advisors at the beginning of the programme.	At risk DM, Pre-DM	Not confirmed	
nujjer - Is a 12-month programme that consist of a smartphone app that links to a wristband for monitoring physical activity. App allows for diet and activity tracking, automated support and 22 learning modules. Does not come with clinical support. The programme is intended for the prevention of type 2 diabetes. Wristband costs £99 and service costs £9.99.	At risk/Pre-DM	QISMET Approved	http://nujjer.com/
Liva Healthcare - Is a 12-month programme delivered via online platform available on smartphone, tablet and desktop. Provides face to face appointment with health coach for goal setting, followed by 26 follow up sessions. These coaches are nutritionists and not dieticians. The platform monitors physical activity, sleep, mood, nutrition, and biomarkers such as blood sugar and blood pressure. Liva support behavioural change programmes for prediabetes, diabetes, obesity, and heart disease. Has purpose for individuals in obese category in multiple health states. It is one of the highest-scoring weight management apps recognised by ORCHA.	At risk, Pre-DM, DM, Overweight	QISMET Approved	https://livahealthcare.com/
Low Carb Program - Is a digital solution for people with prediabetes, type 2 diabetes, or are overweight or obese. Users get three-year access to a online platform and mobile application. This provides educational resources, peer support, a virtual buddy system, behavioural change mentoring, goal setting, a food diary, health tracking (including tacking HbA1c levels) and integration with other health related software and hardware. Programme support is not delivered by clinical staff, put supports healthcare professionals. Service costs £14.99/month or £69.99/year. *	At risk, Pre-DM, DM, Overweight	QISMET Approved	https://www.lowcarbprogram.com/
Changing Health - Is a digital behavioural change platform for people who are overweight or obese, at risk of or living with type 2 diabetes. The solution includes a short educational course, a lifestyle coach that provide a diet plan and exercise plan.	At risk, Pre-DM, DM, Overweight	QISMET Approved	https://www.changinghealth.com/

List of solutions	Target Cohort	QISMET Approved	Links to solution
myDesmond - Is a digital solution that supports people who are classified as having prediabetes or living with type 2 diabetes. Solution hosts multiple educational resources, health tracking for HbA1c, weight/shape, healthy eating and blood pressure, peer-to-peer communications, and support, and the babysteps programme for gestational diabetes.	At risk, Pre-DM, GDM	Currently undergoing review, pending QISMET approval.	https://www.mydesmond.com/home/
MDMW/MWD - MDMW/MWD is an online platform and mobile application for people living with type 2 diabetes. The platform allows users to access their own up-to-date type 2 diabetes clinical results and provides interoperability through bi-directional FHIR-based API. The platform provides resources in the form of E-learning, Interactive, hardcopy, audio, and video materials. The eLearning modules cover various aspects of type 2 diabetes and gestational diabetes. It is one of the highest-scoring weight management apps recognised by ORCHA.	GDM, at risk, Pre-DM, DM, Healthy Weight	QISMET Approved	https://www.mydiabetesmyway.scot.nhs.uk/
X-PERT Health - Is a digital platform for the prevention and/or management of Type 2 diabetes. The platform, costing £99 for 12 months of access, includes the standard six sessions of the X-PERT Health structured group education. Sessions are delivered via video, text, games and quizzes, and the platform comes with a personalised health coach, sleep and mood tracking, and a live chat with group chat function.	GDM, at risk, Pre-DM, DM, Healthy Weight	QISMET Approved	https://www.xperthealth.org.uk/digital-programmes/
Inhealthcare - a mobile application with online or SMS support for users in contact with their healthcare professional, solution is for type 2 diabetes and gestational diabetes. Users test and submit their blood glucose which is integrated into Emis and SystemOne and Inhealthcare clinical online platform for clinicians to view.	GDM, at risk, Pre-DM, DM, Overweight	Not confirmed	https://www.inhealthcare.co.uk/digital-health-marketplace/gestational-diabetes/
GDM Health - The GDm-Health app is part of a system that helps clinicians manage gestational diabetes. The platform consists of a patient app that can receive measurements from users blood glucose meters via wireless communication, and an online dashboard to be used by healthcare professionals. Using the dashboard, clinicians can view blood glucose readings in real-time and proactively manage their patients condition.	GDM, at risk, Pre-DM, DM, Overweight	Not confirmed	https://www.sensynehealth.com/gdm-health

Solutions marked with * include a calorie restricted diet that may omit it from matrix above)