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Real-world Evaluation of the Hywel Dda University Health Board Diabetes Prevention Programme: Interim Report

Report Produced on 20 May 2024

TRITECH Sefydliad Institute

Report prepared by:

Dr Gareth Davies, Innovation Technologist, TriTech Institute,
Hywel Dda University Health Board

With input from:

Dr Matthew Lawrence, Deputy Head of TriTech, Hywel Dda University
Health Board

Clinical Lead(s):

Claire Hurlin, Strategic Head Community and Chronic Conditions,
Hywel Dda University Health Board

Evaluation Lead:

Professor Chris Hopkins, Consultant Clinical Scientist & Head of Innovation &
the TriTech Institute, Hywel Dda University Health Board

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Here at the TriTech Institute, we support the development of healthcare solutions on a local, national, and global level offering designers and manufacturers a single point of access to the NHS through a collaborative and agile approach.

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We provide specific services and solutions for clinical engineering, research and innovation and Value-Based healthcare, and can also support with grant writing and submission.

Executive summary

Overview

This real-world evaluation presents the interim findings of the diabetes prevention programme (DPP) in Hywel Dda University Health Board (HDdUHB).

The HDdUHB DPP included the standard national DPP offering, as well as an additional HDdUHB offering that was not included in the national DPP. The national programme was funded through a Welsh Government (WG) grant to be delivered in primary care across Wales to March 2024. At the heart of the approach was a targeted, standardised weight management 'brief intervention' with an embedded national evaluation, to assess the fidelity of intervention delivery and effectiveness against a core set of clinical outcomes and aims to explore the factors for successful implementation across Wales. In addition to this, the HDdUHB DPP included the additional offerings of the National Exercise Referral Scheme (NERS) and the 'Foodwise for Life' programme to service users. The HDdUHB DPP was offered to service users across all 7 cluster, with the TriTech Institute commissioned to carry out a full evaluation across all sites.

The evaluation aims to determine a change in the prevalence of those at risk of developing T2DM, from baseline to follow-up post and to explore the value of the diabetes prevention programme, by considering the impact on service users, staff and the economic benefits of the programme towards the wider health board.

The first individuals were referred to the HDdUHB DPP in January 2023.

Methodology

Data for the evaluation were provided by the DPP team. Data included number of referrals, location, clinical information and PROMS (EQ-5D and PHQ-2). Baseline characteristics were determined, and where available compared to 6-monthly follow-up values. Differences in baseline and follow-up data were investigated via parametric and non-parametric testing where appropriate. The EQ-5D index values were determined utilising the value set from England [4].

Results

1374 invites were sent between January 1st and December 31st in 2023, with 542 service users enrolling on the programme (39.4%). The largest cohort was from Carmarthenshire (n = 277), followed by Pembrokeshire (n = 166) and Ceredigion (n = 99). The mean age of service users included on the programme was 67.1 ± 9.5 years, 52.8% of which were female. The mean HbA1c of those enrolled on the programme was 43.7 ± 1.5 mmol/mol (pre-diabetic range 42 – 47). 242 service users (44.6%) were referred to the foodwise level 2 service and 170 (31.4%) to the National Exercise Referral Scheme (NERS). Follow up appointments were carried out for 70 service users. Individuals that underwent follow-up experienced a significant reduction in diastolic blood pressure (DBP) (82.3 ± 11.3 to 78.2 ± 8.9, p = 0.011), as well as a significant reduction in weight (86.6 ± 18.0 to 84.8 ± 17.8kg, p = 0.002) and Body Mass Index (BMI) (30.8 ± 5.4 to 30.1 ± 5.3, p = 0.001). There were also trends towards a reduced HbA1c, improved quality of life and reduced depression at 6 months, though these data were not statistically significant.

Conclusions

The diabetes prevention programme has successfully recruited a large number of service users across all seven clusters of HDdUHB in 2023 (n = 542). Initial findings have shown a positive impact, with a significant positive change in DBP, weight and BMI observed in service users that attended a follow-up appointment. The programme has also shown promise with positive trends observed towards quality of life, reduced depression and reduced HbA1c, although these were not statistically significant. As this is an interim report, the follow-up data is relatively small in sample size, and it is anticipated that a larger number of follow-ups will be captured for the final evaluation report. A larger number of follow-ups are required to fully evaluate the impact of the service on users and the wider effects on staff and the health board.

Based on this evaluation, several key recommendations are made for the project moving forward:

Recommendation 1:
Target follow-up

Limited follow-up of service users was observed in the interim report. For the service to realise its potential and to be effectively evaluated, it is important that consistent follow-up is achieved.

Recommendation 2:
Safeguarding of Service Users

It is important that the service considers safeguarding particularly for those who answered positively to the PHQ-2 questionnaire. Service users with a PHQ-2 score of 3 or above could be vulnerable, and it is important that the service follows up or signposts these individuals as per the appropriate guidelines.

Recommendation 3:
Ensuring Adequate Understanding of the Process for Managing a New Service

The project was significantly delayed by the staff recruitment process and training requirements. This led to a 9–18-month delay in the implementation of the service. It is recommended that for future implementation to be carried out in a timely manner that a period of at least 4-6 months is accounted for to carry out the process of creating job descriptions, and ensuring successful candidates are able to undertake the training package.

Table of Contents

Index of Tables and Figures

Abbreviations

BMI	Body mass index
DBP	Diastolic Blood Pressure
DPP	Diabetes Prevention Programme
HbA1c	Glycated Haemoglobin
HDUHB	Hywel Dda University Health Board
IQR	Interquartile Range
NERS	National Exercise Referral Scheme
NHS	National Health Service
PHQ-2	Patient Health Questionnaire-2
PROM	Patient Recorded Outcome Measure
R&D	Research and Development
SBP	Systolic Blood Pressure
SD	Standard Deviation
T2DM	Type 2 Diabetes Mellitus
WG	Welsh Government

Acknowledgements

Situation

Service Background and Context

More than 7% of the adult population in Wales (over 200,000 people) live with diabetes, with a further 350,000 people thought to be at risk of developing type 2 diabetes [1]. Each week, diabetes leads to more than 169 amputations, 680 strokes, 530 heart attacks, 2000 cases of heart failure [2]. In 2017 the annual cost of treating diabetes in Wales was estimated at £500m, equating to approximately 10% of the NHS budget [3]. Approximately 90% of people with diabetes have type 2 diabetes, which is preventable. The initial pilot projects carried out in North Ceredigion and Afan have shown promise in terms of benefits in reducing the onset of diabetes to help shape Hywel Dda University Health Board (HDdUHB) implementation.

The project aims to evaluate a pre-diabetes programme across HDdUHB. This pre-diabetes programme aims to reduce the development of type 2 diabetes mellitus (T2DM) through targeting people in the community that are deemed a high risk.

The Diabetes Prevention Programme (DPP)

The programme commenced in early 2023, and targeted individuals at risk in primary care, with DPP staff working with GP practices across HDdUHB to identify and recruit suitable individuals to the programme. At risk individuals were defined as those with a glycated haemoglobin (HbA1c) measurement of between 42 and 47 mmol/mol. Service users identified as high-risk were offered the national pathway for pre-diabetes or the Hywel Dda plus model. The national pathway offer involved a 30-minute brief intervention with a trained health and wellbeing facilitator, in which there was a dietary and physical activity conversation and written resources provided. The service users HbA1c was then repeated annually, along with the collection of a minimum dataset.

For the Hywel Dda plus model, the brief intervention was an hour long, with the option of an additional 8-week foodwise intervention and the additional option of attending the national exercise referral scheme (NERS) programme. The Hywel Dda plus model also included an additional follow-up at 6 months during which outcome measures were repeated.

For both the national model and the Hywel Dda plus model, the changes in HbA1c were monitored at each follow up, and depending on changes in HbA1c, the individual was either removed from the pre-diabetes pathway (HbA1c in healthy range), referred to the DM pathway (HbA1c increased into diabetic range), or invited to continue with the pre-diabetes pathway (HbA1c remains in the pre-diabetic range).

Location of the DPP service

The diabetes prevention programme was offered across Carmarthenshire, Ceredigion and Pembrokeshire in HDdUHB, and across all seven clusters:

Carmarthenshire:
- Amman Gwendraeth
- Llanelli
- Tywi / Taf

Ceredigion:
- North Ceredigion
- South Ceredigion & Teifi Valley

Pembrokeshire:
- North Pembrokeshire
- South Pembrokeshire

The programme is run by seven health and wellbeing facilitators working across the health board, a clinical lead dietitian and the Education Programme for Patients team in partnership with the National Exercise Referral Scheme (NERS).

Referral to the DPP – Eligibility Criteria

Individuals in the community that were identified as high-risk for type 2 diabetes mellitus were offered the service. This was defined as individuals that had a glycated haemoglobin (HbA1c) level of between 42 and 47 mmol/mol as outlined by National Institute for Health and Care Excellence (NICE) or considered at risk based on clinical observation to include a BMI greater than 30 and aged over 45. The intervention was not available for individuals who already had diabetes. Towards the end of 2023, the AWDPP also included an exclusion criterion so that the intervention was not available for individuals aged over 79 years.

Service Aims

The service aims to improve the health of the population in West Wales by reducing the incidence of type 2 diabetes mellitus (T2DM) and encouraging a healthier lifestyle in those enrolled on the programme.

T2DM is associated with many consequences to health, and thus reduction in the development of T2DM would have a highly positive impact on the health of the population in HDUHB. This programme is ambitious and aims to recruit thousands of potential participants across West Wales.

HDdUHB could also see benefits due to the long-term reduction in resource utilisation that would be associated with long-term diabetes prevention across the region.

Evaluation Plan

Rationale and Aim of the Evaluation

As the DPP is a new service in HDdUHB, with a number of components unique to the region, an evaluation is required to determine the overall benefits of the service in West Wales and to additionally determine the added value of the additional components being offered.

The TriTech Institute based in HDdUHB have been commissioned to evaluate the project, to determine the effects of the different pathways on service user wellbeing and outcomes, and to determine the overall impact and value of the service on both service users and NHS staff and infrastructure in West Wales.

The primary outcome of the evaluation is to determine a change in the prevalence of those at risk of developing T2DM, from baseline and follow up, which in the long term will potentially reduce the prevalence of T2DM.

Evaluation Introduction

In June 2022, the Hywel Dda University Health Board (HDdUHB) Tritech Institute team was commissioned to undertake a service evaluation of the HDdUHB diabetes prevention programme. The evaluation was funded by HDdUHB.

The evaluation is to be conducted over two phases; phase 1 covering the findings from the first six months of implementation (this interim report). Phase two will lead to a final report which will present the findings from 18 months of running the service. This is necessary to include the 12 month follow up of service users that have been referred to the service in the first six months.

Change in Scope

Due to delays in the commencement of the service and recruitment, it was agreed that the interim report would be produced in May 2024, to include data from the commencement of the service up until the end of March 2024, with the aim of producing the final report towards the end of 2024.

This report presents the findings of the evaluation to date, which covers the period 01/01/23 to 01/04/24.

Evaluation Methodology

A quantitative approach was utilised to meet the aim of the evaluation via the objectives and outcomes set out below.

HDdUHB provided TriTech with anonymised service user data, which included:

- Demographics
- HbA1C
- BMI
- Blood Pressure
- Waist Circumference
- Patient Reported Outcome Measures (PROMs)
- EQ-5D
- Patient Health Questionnaire-2 (PHQ-2)
- Referral to additional programmes e.g. Foodwise, NERS.

Recruitment data were analysed and presented to provide a snapshot of the yearly recruitment to the DPP by month. Groups were characterised at baseline by those referred and those enrolled onto the programme. Quantitative data were reported as baseline characteristics for each group. Outcome measures were quantified at baseline and at 6-months where data was available, to determine changes from baseline to follow-up.

The EQ-5D index was calculated for each service user by utilising the value set for England as recommended [4].

Evaluation Aims

- The primary outcome of the evaluation is to determine a change in the prevalence of those at risk of developing T2DM, from baseline to follow-up post intervention.
- Changes in service user reported outcome measures will also be evaluated to determine changes in health-related quality of life (EQ-5D) and mental health (PHQ-2).
- The evaluation aims to determine the value of the diabetes prevention programme, by considering the impact on service users, staff and the economic benefits towards the wider health board.

Value-Based Health Care Analysis

Data were insufficient at present to carry out a Value-Based analysis, which will be carried out in the final report.

Data Analysis

Statistical analysis was carried out using IBM SPSS v.27.0. Distribution of data were assessed using Shapiro-Wilk test. Normally distributed data were presented as mean ± SD whereas non-normally distributed data were presented as median (IQR). Differences in normally distributed paired data were assessed using paired t-test, whereas differences in non-normally distributed paired groups were determined using Wilcoxon signed rank test. Differences in frequencies between groups were determined using chai-squared test.

Findings

Recruitment

The first letters were sent out to service users on 3rd January 2023, with the first appointment booked in for 9th January 2023 in Cardigan Health Centre, South Ceredigion.

Recruitment at the different sites across HDdUHB and the respective dates are shown in table 1 below:

Table 1. List of different recruitment sites and the dates of when the first invitation was sent and the first appointment at the site was carried out.

A graph illustrating the total number of letters sent out and total number of clinics held by month for all

Figure 1. Cumulative monthly recruitment for the programme during 2023 – the total letters sent out for all sites and the total clinics held at
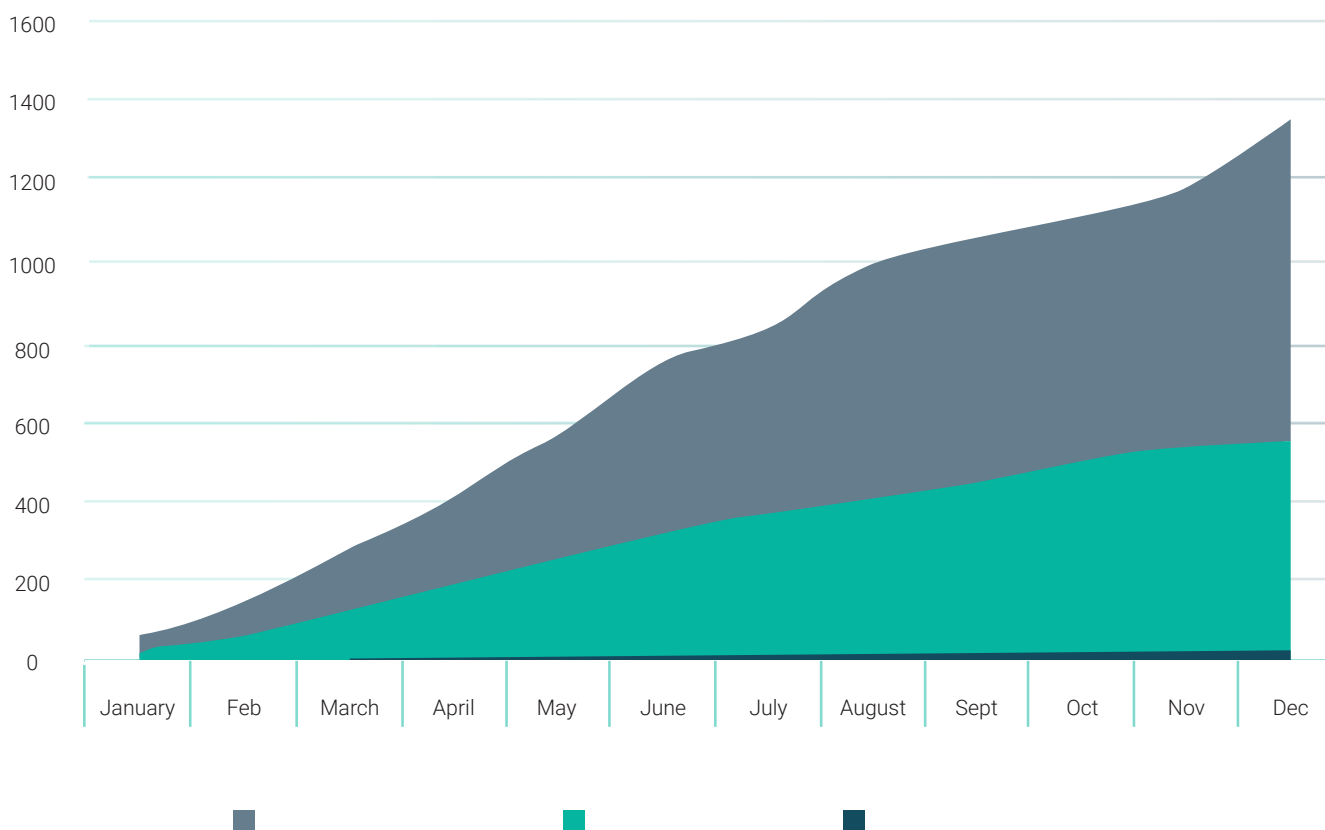
As can be seen in figure 1 above, a total of 1374 letters were sent out across all sites, which lead to a total of 542 clinics that were held in 2023. This equates to an uptake of 39% in 2023. The total percentage of uptake amongst service users is likely to be higher than this reported value, as the data analysed were for 2023, with a number of the December invites being followed up with clinics held in January of 2024. The majority of service users attended clinics after signing up, with only 11 that did not attend (2.0%).

Table 2. Recruitment at each site in 2023, organised by cluster and county.

Region	Recruitment		
	Letters Sent	Clinics Held	Uptake %
Carmarthenshire	**685**	**277**	**40.4**
Amman Gwendraeth Cluster	**252**	**97**	**38.5**
Penygroes Surgery	143	60	42.0
Meddygfa'r Sarn	61	18	29.5
Tumble	48	19	39.6
Llanelli Cluster	269	94	34.9
Ash Grove	61	29	47.5
Llwynhendy	50	4	8.0
Fairfield	44	13	29.5
Meddygfa Tywyn Bach	31	17	54.8
Ty Elli	83	31	37.3
Taf / Tywi Cluster	164	86	52.4
Furnace House	46	24	52.2
St Peters Surgery	37	23	62.2
Meddygfa Teilo	81	39	48.1
Ceredigion	**292**	**99**	**33.9**
North Ceredigion Cluster	**122**	**35**	**28.7**
Ystwyth Medical Group	122	35	28.7
South Ceredigion and Teifi Cluster	**170**	**64**	**37.6**
Cardigan Health Centre	170	64	37.6
Pembrokeshire	**397**	**166**	**41.8**
North Pembrokeshire Cluster	**264**	**113**	**42.8**
Barlow House	102	60	58.8
The Surgery, Robert Street	37	14	37.8
St Davids	36	12	33.3
Newport Surgery	89	27	30.3
South Pembrokeshire Cluster	**133**	**53**	**39.8**
Saundersfoot Medical Centre	133	53	39.8
TOTAL	**1374**	**542**	**39.4**

As can be seen in table 2, the highest number of letters were sent to service users in Carmarthenshire, with 685 letters sent. This was followed by Pembrokeshire and Ceredigion with 397 and 292 letter respectively. Uptake was similar in the three counties, at 40.4% in Carmarthenshire, 33.9% in Ceredigion

Baseline Data

Baseline characteristics of service users that were contacted for referral to programme are shown in

Parameter	Value
Age Years ± SD Not recorded (n)	65.7 ± 10.3 (n = 1361) 13
Gender Male (n, %) Female (n, %) Not recorded (n, %)	680 (49.5) 683 (49.7) 11 (0.8)
First Language English (n, %) Welsh (n, %) Polish (n, %) Not recorded (n, %)	268 (19.5) 3 (0.2) 4 (0.3) 1099 (80.0)
HbA1c mmol/mol ± SD	43.7 ± 1.6 (n = 1365)

Table 3 shows the mean age of service users contacted regarding the service was 65.7 years old. Service users were evenly matched between males and females, with the majority indicating English speaking as their first language where data was available. The mean HbA1c of service users approached to be included on the DPP was 43.7 ± 1.6 mmol/mol.

Parameter	Value
Age Years ± SD Not recorded (n)	67.1 ± 9.5 (n = 542) 0
Gender Male (n, %) Female (n, %) Not recorded (n, %)	256 (47.2) 286 (52.8) 0 (0.0)
First Language English (n, %) Welsh (n, %) Polish (n, %) Not recorded (n, %)	117 (21.6) 2 (0.4) 2 (0.4) 421 (77.7)
HbA1c mmol/mol ± SD Not recorded (n)	43.7 ± 1.5 (n = 541) 1

Baseline characteristics of service users enrolled on the programme are shown in Table 4.

Table 4 shows the mean age of service users that attended a clinic was 67.1 ± 9.5 years old. More females than males attended clinics (52.8% female), with the majority indicating English as their first language where information was available. The mean HbA1c of service users that attended a clinic was 43.7 ± 1.5 mmol/mol.

		n
SBP/DBP		
SBP/DBP ± SD	142.5 ± 20.7/81.9 ± 10.1	408
Not recorded (n)	N/A	134
Heart Rate		
BPM ± SD	73.1 ± 12.8	333
Not recorded (n)	N/A	209
Height		
Meters ± SD	1.68 ± 0.10	488
Not recorded (n)	N/A	54
Weight		
Kilograms ± SD	87.0 ± 17.5	487
Not recorded (n)	N/A	55
BMI		
Kg/m2 ± SD	30.7 ± 5.1	480
Not recorded (n)	N/A	62
Waist Circumference		
Metres ± SD	1.06 ± 0.14	290
Not recorded (n)	N/A	252
Waist to Height Ratio		
Mean ± SD	0.64 ± 0.10	205
Not recorded (n)	N/A	337

As shown in table 5, the mean blood pressure of service users who attended a clinic was 142.5/81.9 indicating a prevalence of hypertension in the group. The mean BMI of the group was also elevated at 30.7 ± 5.1 indicating a prevalence of obesity in the group.

Service User Referrals

At the clinic, if appropriate and suitable, service users were offered a referral to additional programmes.

Referral	Value
Foodwise Level 2 Yes (n, %) No (n, %) Not recorded (n, %)	242 (44.6) 285 (52.6) 15 (2.8)
Weight Management Level 3 Yes (n, %) No (n, %) Not recorded (n, %)	12 (2.2) 499 (92.1) 31 (5.7)
National Exercise Referral Scheme Yes (n, %) No (n, %) Not recorded (n, %)	170 (31.4) 350 (64.6) 19 (3.5)
Referral to Other Smoking Cessation (n, %) GP (n, %) Walking Group (n, %)	2 (0.4) 1 (0.2) 1 (0.2)

As seen in table 6, out of the 542 service users that attended a clinic in 2023, 242 were referred to foodwise, 12 were referred to weight management level 3 and 170 were referred to the natural exercise referral scheme. Four of the 542 service users were referred to other programmes, (two to a smoking cessation programme, one to their GP and one to a walking group).

Referral			USUAL ACTIVITIES n (%)	PAIN / DISCOMFORT n (%)	ANXIETY / DEPRESSION n (%)
Level 1 (No problems)	265 (48.9)	404 (74.5)	295 (54.4)	157 (29.0)	270 (49.8)
Level 2 (Slight problems)	111 (20.5)	48 (8.8)	92 (17.0)	158 (29.2)	124 (22.9)
Level 3 (Moderate problems)	73 (13.5)	28 (5.2)	68 (12.5)	122 (22.5)	77 (14.2)
Level 4 (Severe problems)	39 (7.2)	9 (1.7)	28 (5.2)	44 (8.1)	13 (2.4)
Level 5 (Extreme problems / unable to do)	0 (0.0)	0 (0.0)	7 (1.3)	10 (1.8)	7 (1.3)
Data Missing	54 (9.9)	53 (9.8)	52 (9.6)	51 (9.4)	51 (9.4)
Total	542 (100)	542 (100)	542 (100)	542 (100)	542 (100)

EQ-5D

Service users EQ5-D frequencies and proportions reported by dimension and level are shown in table 7.

Table 7 indicates the majority of individuals who attended clinics had no problems with mobility (48.9%), however a high percentage (41.2%) of service users did report some mobility issues, ranging from slight problems (20.5%) to severe problems (7.2%). No service users reported extreme problems with mobility.

The majority of service users reported no problems with self-care (74.5%). Around 15% reported some problems with self-care, ranging from slight problems (8.8%) to severe problems (1.7%). No service users reported extreme problems with self-care.

The majority of service users reported no problems with carrying out their usual activities (54.4%). Around 35% reported some problems with carrying out their usual activities, ranging from some slight problems (17.0%) to extreme problems/unable to do (1.3%).

The majority of service users reported some form of pain or discomfort, ranging from slight problems (29.2%) to extreme problems (1.8%).

29% of service users reported no problems with pain or discomfort.

The majority of service users also reported no problems with anxiety or depression (49.8%), however a high percentage (40.8%) did report some issues with anxiety or depression, ranging from slight problems (22.9%) to extreme problems (1.3%).

Around 10% of data was missing across all dimensions.

The EQ-5D index for each service user was calculated using the value set for England as recommended in the literature [4]. Mean EQ-5D index for all service users who attended a clinic was 0.816 ± 0.227, where 1 is perfect health and 0 is a state as bad as being dead.

The EQ-VAS was also completed on the day of clinic and provides an indication of the overall health on the day of the questionnaire completion. A total of 482 EQ-5D VAS responses were recorded, with 62 missing (11.4%). Distribution of the EQ-5D VAS responses can be seen in figure 2 below. The median (IQR) EQ-5D VAS score was 75 (60, 85), indicating a relatively good overall perception of health, but still with room for improvement.

EQ-5D-5L VAS
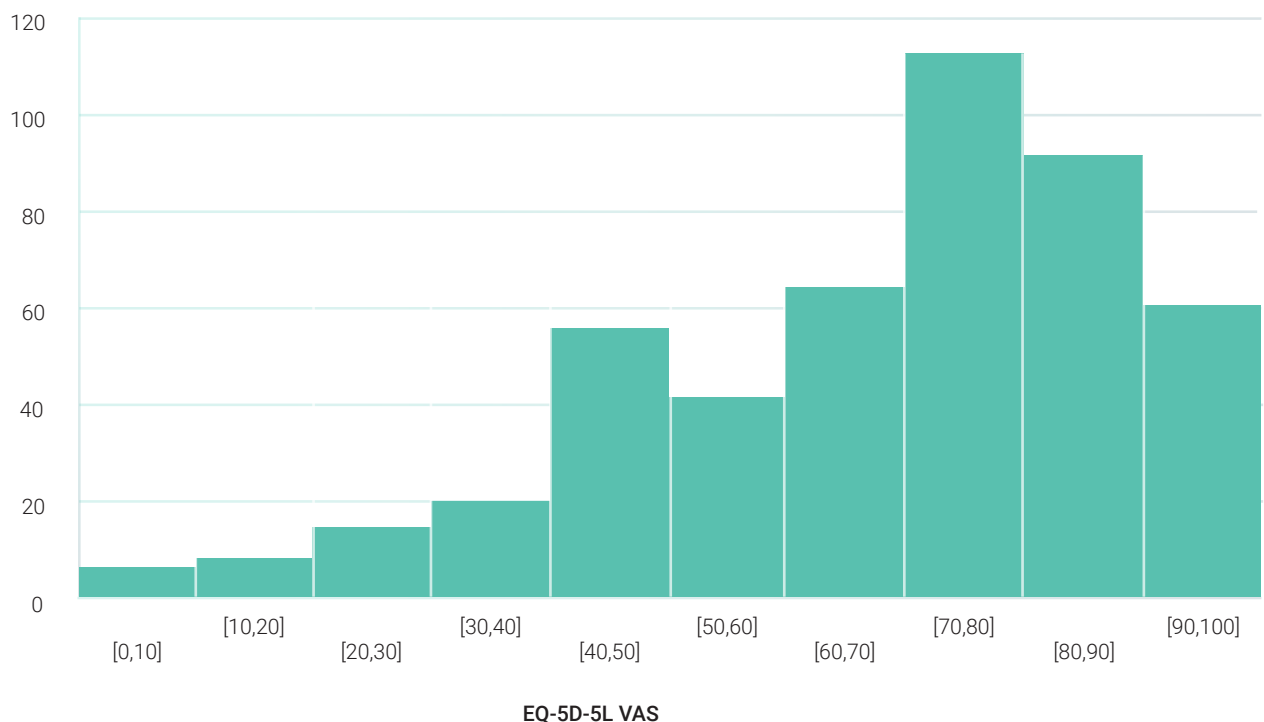
PHQ-2

PHQ-2 data for each service user who attended clinic is shown in table 8 below.

Table 8. Frequency of different PHQ-2 responses for service users who attended a clinic.

PHQ-2 Score	
0	245 (45.2)
1	46 (8.5)
2	47 (8.7)
3	31 (5.7)
4	25 (4.6)
5	9 (1.6)
6	15 (2.8)
Data Missing	124 (22.9)
Total	542 (100)

Table 8 indicates the majority of service users who attended a clinic did not show signs of any depressive disorder, with a PHQ-2 score of zero (45.2%). A PHQ-2 score of 3 or above has been identified as the optimal cutoff when using PHQ-2 to screen for depression, with a major depressive disorder likely in those with a score of 3 or greater [5]. A total of 80 of those who completed the PHQ-2 had a score of 3 or greater (19.1%). It is recommended that service users with a score of 3 or greater are evaluated further to determine whether they meet the criteria for a depressive disorder [5]. This information indicates that 1 in 5 of all the service users screened should be followed up for evaluation regarding their mental health. Data were missing for 124 attendees (22.9%).

Follow-up Data

Service users were followed up at 6 months. Total recruitment and clinics attended at 6 months for each of the sites can be seen in table 9 below.

Table 9. Recruitment and clinics attended at 6 months for each site as of end of March 2024, organised by cluster and county.

Region	Follow-up Attendance		
	Letters Sent	Clinics Attended	
Carmarthenshire	**80**	**21**	**26.3**
Amman Gwendraeth Cluster	**43**	**14**	**32.6**
Penygroes Surgery	30	8	26.7
Meddygfa'r Sarn	9	5	55.6
Tumble	4	1	25.0
Llanelli Cluster	**9**	**0**	**0.0**
Llwynhendy	2	0	0.0
Fairfield	4	0	0.0
Meddygfa Tywyn Bach	1	0	0.0
Ty Elli	2	0	0.0
	28	7	21.9
Furnace House	12	4	33.3
St Peters Surgery	3	0	0.0
Meddygfa Teilo	13	3	23.1
Ceredigion	**87**	**38**	**43.7**
North Ceredigion Cluster	**28**	**12**	**42.9**
Ystwyth Medical Group	28	12	42.9
South Ceredigion and Teifi Cluster	**59**	**27**	**45.8**
Cardigan Health Centre	59	27	45.8
Pembrokeshire	**34**	**11**	**32.4**
North Pembrokeshire Cluster	**8**	**1**	**12.5**
Barlow House	8	1	12.5
South Pembrokeshire Cluster	**26**	**10**	**38.5**
Saundersfoot Medical Centre	26	10	38.5
TOTAL	201	70	34.8

A total of 201 service users were sent a follow-up letter, with 70 service users attending a follow-up clinic.

A comparison of clinical measures at baseline and 6 months is shown in table 10. Significantly reduced

Table 10. Comparison of clinical data at baseline and 6 months.

HbA1c	33	43.3 ± 1.4	42.4 ± 3.5	0.159
SBP	27	143.4 ± 18.5	143.7 ± 21.2	0.928
DBP	27	82.3 ± 11.3	78.2 ± 8.9	0.011*
Weight	57	86.6 ± 18.0	84.8 ± 17.8	0.002*
BMI	55	30.8 ± 5.4	30.1 ± 5.3	0.001*
Waist Circumference (m)	14	1.13 ± 0.14	1.11 ± 0.15	0.072
	14	0.68 ± 0.07	0.66 ± 0.08	

Mobility			
No problems	27 (51.9)	29 (55.8)	**0.479**
Slight problems	12 (23.1)	10 (19.2)	
Moderate problems	9 (17.3)	12 (23.1)	
Severe problems	4 (7.7)	1 (1.9)	
Unable to walk about	0 (0.0)	0 (0.0)	
Self-care			
No problems	42 (80.8)	41 (78.8)	**0.796**
Slight problems	5 (9.6)	7 (13.5)	
Moderate problems	5 (9.6)	4 (7.7)	
Severe problems	0 (0.0)	0 (0.0)	
Unable to wash or dress	0 (0.0)	0 (0.0)	
Usual activities			
No problems	30 (57.7)	31 (59.6)	**0.678**
Slight problems	11 (21.2)	10 (19.2)	
Moderate problems	7 (13.5)	9 (17.3)	
Severe problems	2 (3.8)	2 (3.8)	
Unable to do usual activities		0 (0.0)	
Pain/discomfort			
No pain/discomfort	22 (42.3)	21 (40.4)	**0.153**
Slight pain/discomfort	15 (28.8)	10 (19.2)	
Moderate pain/discomfort	10 (19.2)	16 (30.8)	
Sever pain/discomfort	2 (3.8)	5 (9.6)	
Extreme pain/discomfort	3 (5.8)	0 (0.0)	
Anxiety/depression			
Not anxious/depressed	31 (59.6)	31 (59.6)	0.545
Slightly anxious/depressed	13 (25.0)	17 (32.7)	
Moderately anxious/depressed	7 (13.5)	3 (5.8)	
Severely anxious/depressed	1 (1.9)	1 (1.9)	
Extremely anxious/depressed	0 (0.0)	0 (0.0)	

As can be seen in table 11, of the 70 service users who accepted a follow up visit, 52 completed the EQ-5D at both baseline and 6-month follow-up clinics. No significant change in the distribution of responses was seen between baseline and 6-month follow-up.

Changes in EQ-5D index from baseline to 6 months for the 52 service users where data was available is shown in table 12. Table 12 shows no significant difference in the EQ-5D index was seen between baseline and 6 month follow up.

0.809 ± 0.225	0.826 ± 0.175	0.323

The VAS score was also recorded at baseline and six months, where service users indicated an overall picture of their health from 0 to 100. The changes in EQ-5D VAS are shown in table 13. Table 13 shows there was no significant change in EQ-5D VAS in service users who completed the questionnaire at

72.5 (58.8, 86.3)	75.1 (68.8, 84.8)	0.219

PHQ-2

Distribution of PHQ-2 scores in service users that attended baseline and follow-up clinics is shown in table 14. As shown in table 14, no significant difference in the PHQ-2 score was found in service users who completed both a baseline and 6-month follow up, although there was a trend towards lower scores

0	19 (52.8)	25 (69.4)	0.171
1	6 (16.7)	7 (19.4)	
2	4 (11.1)	3 (8.3)	
3	3 (8.3)	0 (0.0)	
4	0 (0.0)	1 (2.8)	
5	2 (5.6)	0 (0.0)	
6	2 (5.6)	0 (0.0)	

Impact

Impact on Service Users

A large number of service users (n = 542) were recruited to the diabetes prevention programme in 2023. Early data is already showing the significant positive impact of the service, with a significant and positive change in diastolic blood pressure, weight and body mass index observed in individuals who attended a 6-month follow-up clinic. Other positive but non-significant trends were a reduction in HbA1c, reduced depression and an increase in the EQ-5D index and VAS. This highlights the potential for the service to positively impact not only physical health, but also the mental health of those utilising the service, as well as their overall quality of life.

Impact on Staff and NHS Infrastructure

As limited follow-ups have taken place so far, it is difficult to assess the impact of the project on staff and NHS infrastructure. However, several positive outcomes on service users are emerging in the dataset. If these positive trends are maintained across larger numbers, the service could have a clear positive impact on staff and the NHS in general by reduction of development of type-2 diabetes and other related comorbidities across Wales. The service has a great potential to reduce resource requirements across the region.

Conclusions

The diabetes prevention programme has successfully recruited service users across all seven clusters of HDdUHB in 2023. Initial data shows promise, with a significant reduction in weight, BMI and diastolic blood pressure observed in programme participants. Furthermore, trends were observed towards a reduced Hb1Ac, reduced depression and improved quality of life, albeit lacking statistical significance. Although a larger number of follow-ups are required to fully evaluate the impact of the service on users and the wider effects on staff and the health board, it is clearly demonstrated that the HDdUHB DPP is effective in improving the physical health of service users. Furthermore, the programme has been shown to have additional impact through improved mental health as well as improved quality of life for some service users.

Recommendations

Recommendation 1:
Target follow-up

Limited follow-up of service users was observed in the interim report. For the service to realise its potential and to be effectively evaluated, it is important that consistent follow-up is achieved.

Recommendation 2:
Safeguarding of Service Users

It is important that the service considers safeguarding particularly for those who answered positively to the PHQ-2 questionnaire. Service users with a PHQ-2 score of 3 or above could be vulnerable, and it is important that the service follows up or signposts these individuals as per the appropriate guidelines.

Recommendation 3:
Ensuring Adequate Understanding of the Process for Managing a New Service

The project was significantly delayed by the staff recruitment process and training requirements. This led to a 9–18-month delay in the implementation of the service. It is recommended that for

future implementation to be carried out in a timely manner that a period of at least 4-6 months is accounted for to carry out the process of creating job descriptions, and ensuring successful candidates are able to undertake the training package.

References

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3. Welsh Parliament. A picture of diabetes in Wales (27/04/2017). Available at https://research.senedd.wales/research-articles/a-picture-of-diabetes-in-wales-27-04-2017/.

4. Devlin NJ, Shah KK, Feng Y, Mulhern B, van Hout B. Valuing health-related quality of life: An EQ-5D-5L value set for England. Health Econ. 2018 Jan;27(1)7-22. doi: 10.1002/hec.3564.

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Appendices

Appendix 1 – EQ-5D

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

I have no problems in walking about ☐

I have slight problems in walking about ☐

I have moderate problems in walking about ☐

I have severe problems in walking about ☐

I am unable to walk about ☐

SELF-CARE

I have no problems washing or dressing myself ☐

I have slight problems washing or dressing myself ☐

I have moderate problems washing or dressing myself ☐

I have severe problems washing or dressing myself ☐

I am unable to wash or dress myself ☐

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

I have no problems doing my usual activities ☐

I have slight problems doing my usual activities ☐

I have moderate problems doing my usual activities ☐

I have severe problems doing my usual activities ☐

I am unable to do my usual activities ☐

PAIN / DISCOMFORT

I have no pain or discomfort ☐

I have slight pain or discomfort ☐

I have moderate pain or discomfort ☐

I have severe pain or discomfort ☐

I have extreme pain or discomfort ☐

ANXIETY / DEPRESSION

I am not anxious or depressed ☐

I am slightly anxious or depressed ☐

I am moderately anxious or depressed ☐

I am severely anxious or depressed ☐

I am extremely anxious or depressed ☐

- We would like to know how good or bad your health is TODAY.

- This scale is numbered from 0 to 100.

- 100 means the <u>best</u> health you can imagine.
  0 means the <u>worst</u> health you can imagine.

- Please mark an X on the scale to indicate how your health is TODAY.

- Now, write the number you marked on the scale in the box below.

The best health
you can imagine

YOUR HEALTH TODAY =

100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0

The worst health
you can imagine
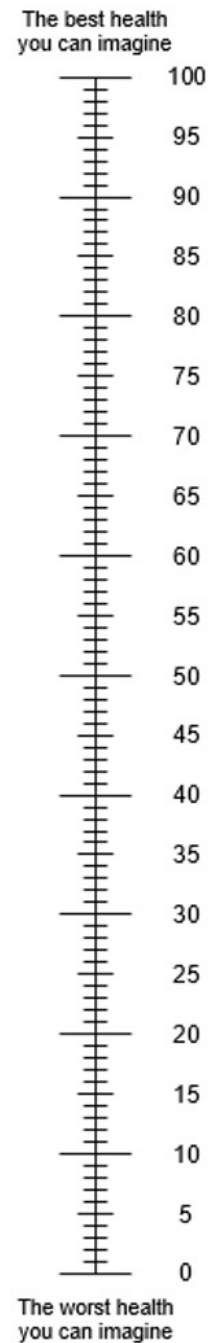
Appendices

Appendix 2 - PHQ-2

Over the **last 2 weeks**, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	○ 0	○ +1	○ +2	○ +3
2. Feeling down, depressed or hopeless	○ 0	○ +1	○ +2	○ +3

Hywel Dda University Health Board

TriTech Institute
Unit 2 Dura Park
Bynea
SA14 9TD

0300-303-6115
Tritech.HDD@wales.nhs.uk

🌐 **tritech.nhs.wales**   🐦 **@tritech_hd**   **in Tritech Institute**