

Implementing Self- Management and Shared Care Projects

Summary of findings and implementation advice

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Overview

This purpose of this document is to summarise the findings of the pre-diabetes and self-management pilot projects that were undertaken to test a range of different approaches. Also, to provide information that may be used by District Health Boards (DHBs) and Primary Health Organisations (PHOs) to implement, monitor and refine programmes aimed to prevent diabetes and manage long-term conditions. Organisations should, however, take care in interpreting the findings of these projects (eg, the clinical significance of the changes and methodological limitations), and consider the affordability at any scale for their population and the opportunity cost of investing in such programmes.

Objectives

The main objectives of this report are to:

1. summarise the results of each of the projects
2. describe the key barriers and facilitators to implementation
3. provide advice that can be used by DHBs and PHOs to implement, monitor and refine programmes aimed to prevent diabetes and manage long-term conditions.

Sections

The report is separated into three sections, covering each of the objectives. To help provide some context to this report, the first summarises the diabetes innovation and self-management and shared care projects. The second summarises the key barriers and facilitators to implementation for both groups of projects, and the third sets out some advice and considerations for implementing future projects.

Section 1: Summary of projects

(1) Diabetes innovation fund projects

Evidence from randomised controlled trials indicates that the risk of progression from pre-diabetes (HbA1c in the range 41-49 mmol/mol) to type 2 diabetes can be substantially reduced through lifestyle modification (increased physical activity and improved nutrition). In September 2013, the Ministry of Health (the Ministry) sought proposals from organisations that could contribute to a Green Prescription (GRx) service tailored to better meet the needs of patients at risk of, or living with, type 2 diabetes.

There were four projects, whose programmes and results are described below and summarised in Table 1 (pages 14-15).

Harbour Sport

The Choose Change project examined an innovative delivery model to improve GRx best practice in the management of pre-diabetes and type 2 diabetes in at-risk target populations. The primary objectives were to:

1. test the effectiveness of a coordinated multi-disciplinary, multi-ethnic approach, including psychologist and dietitian input, in the control and management of pre- and type 2 diabetes
2. reduce HbA1c in people with pre and type 2 diabetes into normal ranges, and improve biometric measures (waist circumference, weight, BMI) with evidence of sustainable lifestyle changes occurring.

The programme

The programme was delivered by four regional sports trusts who each targeted one high risk ethnic group; Counties Manukau Sport (Pacific), Harbour Sport (NZ European/Other), Sport Auckland (South Asian) and Sport Waitakere (Māori). The intervention consisted of:

- weekly consultations with a Healthy Lifestyle Coordinator for the first 12 weeks, reducing to fortnightly visits for weeks 13-24. Consultations included goal setting and biometric measures
- 1:1 dietitian consultations and nutritional workshops
- 1:1 psychology consultations or group psychotherapy
- weekly exercise options, for example: low impact circuit classes, aqua and bolly aerobics, walking groups, boxing classes, sports activities, gym workouts and hydrotherapy.

A full-time Healthy Lifestyle Coordinator was employed at each site, with dietetic and psychology expertise contracted as required.

The programme utilised the three key components (food, activity and behavioural support) recommended by the Clinical Guidelines for Weight Management in New Zealand Adults.¹ A psychological component was included to address some of the psychological reasons for eating, and to assist with health behaviour change.

Participants

Participants were recruited from primary care and lists from GRx providers (regional sports trusts). At one site (Harbour Sport), promotion to general practitioners (GPs) and practice nurses (PNs) was seen as the most successful approach. However, it took time to develop relationships with GPs/PNs. A media release and article was provided for additional marketing and advertising. The key facilitators in recruiting participants were calls and visits to GPs/PNs, as well as reminders and feedback. At one site (Counties Manukau Sport), extensive promotional activity was undertaken to try and increase referrals of Pacific people to the programme.

Not all people enrolled into the programme were motivated or ready to change their lifestyle. Due to the intensive nature of the programme, the aim was to accept only highly motivated individuals onto the programme. The enrolment of people motivated or ready to change their lifestyle improved over the duration of the programme, except for the South Auckland programme which focussed on Pacific peoples. The need to reach enrolment targets was seen as a contributing factor for enrolling people who were not ready to make lifestyle changes.

A total of 331 people with pre- or type 2 diabetes were enrolled (the number of people who were invited to take part was not available in the report). The majority of participants (79 percent) were aged 50+ years and 63 percent were female. The total cost of the programme (excluding the evaluation) was \$480,280, giving a cost per enrolled participant of \$1,451.

Outcomes

The main outcomes were changes in: HbA1c, weight, waist circumference, fat mass, muscle mass, physical activity levels and blood pressure at 12 and 24 weeks. A Bioelectrical Impedance Analysis (BIA) machine was used to measure fat and muscle mass and percentage.

A total of 287 participants (87 percent) completed the intensive stage (week 1-12). This is a high completion rate for a healthy lifestyle intervention.

In total, 78 percent and 80 percent of participants reduced their HbA1c at 12 and 24 weeks, respectively. However, it is important to note that: (a) this data represents only around half of participants (54 percent and 49 percent at 12 and 24 weeks respectively); and (b) data from those with pre-diabetes is combined with data from those with type 2 diabetes. Mean HbA1c in people with type 2 diabetes decreased from around 62 mmol/mol at baseline to 55 mmol/mol, which suggests that the programme got close to delivering the required outcomes. For participants with pre-

diabetes, the mean HbA1c levels decreased from around 44 mmol/mol to 42 mmol/mol (ie, just missing the target of < 41 mmol/mol).

At 52 weeks, HbA1c was measured in subsamples of 89 people with pre-diabetes (62 percent of the original sample) and 65 people with type 2 diabetes (39 percent). Those with pre-diabetes showed a mean reduction of 3.6 mmol/mol between baseline and 52 weeks (from 44.2 to 40.6 mmol/mol), with 48 percent of the sample showing HbA1c levels of less than 41 mmol/mol. Those with type 2 diabetes showed a mean reduction of 6.9 mmol/mol between baseline and 52 weeks (from 66.6 to 59.7 mmol/mol), with 49 percent of the sample achieving a level of less than 55 mmol/mol.

At 24 weeks, 81 percent of participants showed a reduction in blood pressure, 71 percent showed decreased fat mass and 89 percent reported increased physical activity.

Weights and waist measurements were missing for the majority (57 percent) of participants at follow-up, so caution needs to be applied to the interpretation of these results. For the subsample of 52 people with pre-diabetes, mean weight loss at 24 weeks was around 2.7 kg, and for those with diabetes (n=90) this was around 1.6 kg. It was reported that 40 percent of participants lost > 5 percent of their baseline fat mass.

Overall, there was an increase in agreement scores across all domains of the Health Perception Questionnaire. Of the participants that provided feedback (n=188), the majority (95 percent) found the weekly consultations useful. The least useful component of the programme was the psychological support, although this was still seen as useful by 74 percent of participants.

Factors that were important in implementation included:

- the holistic nature of the Choose Change Project
- delivery of the programme in areas of high-risk populations
- the organisational capacity of the regional sports trusts meant that additional resource could be provided in times of high demand
- strong connections with the community
- good relationships with leisure centres and gyms
- provision of a range of options for physical activity
- considerable flexibility for participants in consultation times (early mornings, evenings, weekends)
- home visits, if needed
- provision of transport to and from physical activity sessions
- facilitated financial support through WINZ for some participants to pay for extra psychology sessions or gym fees

Summary

The programme had very good retention rates (87 percent) to the 12-week follow-up. There are indicators that the programme was effective and had a positive impact on many participants. However, it is difficult to fully appraise the effectiveness (in terms of reduction in HbA1c or weight) using the data that was provided. There appears to

be a significant amount of missing data (eg, of the 287 participants that completed the 12-week intensive programme, only 180 (63 percent) provided a follow-up blood test). The evaluation provides an excellent summary of the barriers and facilitators to establishing and running a programme aimed at lowering HbA1c and improving a healthy lifestyle.

Further analyses of the data would be useful to determine the effectiveness of this project in reducing HbA1c in people with pre- and type 2 diabetes. The project does, however, contribute significantly to our understanding of implementing these types of programmes.

Sport Bay of Plenty

The objectives of this programme were to connect those people identified with pre-diabetes with information, education, nutrition and physical activity to reduce their risk of progression to type 2 diabetes.

The programme

Advisors supported participants to set and achieve nutrition and physical activity related goals. Nutrition educational sessions were offered, including a nutritional workshop, one-on-one session with a dietitian and two healthy cooking classes. Participants were offered new options for increasing physical activity and/or were linked to existing physical activity programmes.

Monthly follow-up meetings were provided for up to six months, where advisors motivated and supported participants to achieve their goals. Measures (blood pressure, weight and waist circumference) were taken at baseline and six months.

Participants

Identification of pre-diabetes (HbA1c 41-49) took place in the Bay of Plenty GP practices via a blood test. Those identified as having pre-diabetes were then referred by their GP practice to the project via a secure e-referral process, if available, or via a hand-written referral script.

A total of 274 participants (68 percent female; 65 percent age 50+ years; 50 percent Māori; 44 percent Pākehā) were referred, and 174 (64 percent) engaged in the programme. Only 6 percent declined the offer of support and the remainder could not be contacted. The total cost of the programme (excluding the evaluation) was \$329,136, giving a cost per enrolled participant of \$1,891.

Outcomes

The attendance of participants on the various programme components was relatively good: 137 participants (79 percent) attended one of 25 cooking classes; 107 participants (61 percent) attended one of 23 dietitian clinics; and 104 participants (60 percent) attended one of 19 nutritional workshops. However, a lot of effort went

into encouraging people to attend these sessions (*“To get a client to a nutrition session could take up to 10 phone calls”*).

A total of 177 (102 percent*) participants provided HbA1c at six-month follow-up. The majority of participants (66 percent, N=117) showed a decrease from their baseline HbA1c measurement. Participants from Rotorua were less likely to show a reduction (49 percent) than those from Western (70 percent) and Eastern (75 percent) Bay of Plenty regions.

Of those enrolled, 130 participants (75 percent) provided a weight measurement at six-month follow-up, with 51 participants (39 percent) losing at least 1.6kg of their baseline body weight.

Ninety-two participants (53 percent) provided blood pressure data. Of these, 17 (18 percent) and 15 participants (16 percent) decreased their systolic and diastolic blood pressure by at least 11mmHg.

There were also improvements in lipid profiles. The following shows the number and percentage of participants whose results shifted from the abnormal to normal ranges:

- Cholesterol: 17 percent (n=12/70)
- Triglycerides: 20 percent (n=14/70)
- HDL cholesterol: 6 percent (n=4/70)
- LDL cholesterol: 13 percent (n=8/60)

Only seven participants provided HbA1c data at 12-month follow-up. The average values at enrolment, 6 and 12 months were 44 mmol/mol, 39 mmol/mol, and 40 mmol/mol, respectively. The very small number of participants who provided follow-up samples makes this data difficult to interpret.

Summary

This project provided less intensive support than others (eg, the Choose Change project had weekly support for 12 weeks), but produced broadly similar results. The proportion of participants who reduced their HbA1c at six months was lower than the proportion observed in the Choose Change project (66 percent vs. 80 percent), but this may have been because of differences in populations.

Sport Waikato, Gisborne- Tairawhiti and Taranaki

Energized Practices was a collaboration between Waikato, Taranaki and Gisborne/Tairawhiti regions, district health boards, regional sports trusts, and Midlands Health Network (MHN). The project focussed on the development of resources, systems and processes in these primary health practices to improve healthy eating and healthy lifestyles for patients.

* It is not clear where data for an additional 3 participants came from.

The aim of the programme was to reduce the number of people with pre-diabetes progressing to type 2 diabetes. This was to be achieved by increasing the number of people receiving consistently high quality GRx support provided by GPs and PNs.

The programme

The programme sought to offer GPs and PNs information, support, training, advice, resources and other activities to assist them in providing healthy lifestyle advice to patients (Lite GRx). In addition, each practice established its own 'lifestyle champion' (a member of the primary care team who was particularly motivated about the initiative) to help drive the implementation and sustainability. 'Energizers' were also employed to help drive change within practices, and 'engagers' worked alongside energizers to promote the project and create buy-in from practices.

Participants

A total of 493 patients with pre-diabetes or type 2 diabetes received lite GRx (it is not clear how many declined the offer of support). Of these, 59 percent were female, 70 percent aged 50+ years, 60 percent NZ European, 29 percent Māori, and 2 percent Pacific. The majority (59 percent) were diagnosed with type 2 diabetes and 41 percent had pre-diabetes.

The total cost of the programme (excluding the evaluation) was \$430,000, giving a cost per enrolled participant of \$872.

Outcomes

The target was to enrol 37 practices into the programme – the project team enrolled 36. The project increased awareness of the importance of healthy lifestyles and there was good engagement from practice staff.

The project resulted in an increase in referrals to the standard GRx programme. Overall, 73 percent of practices increased the number of GRx referrals, and among the 24 fully engaged practices, there was a mean increase of 33 referrals to standard GRx, compared with baseline.

The project did not measure the number of people with pre-diabetes who progressed to type 2 diabetes, but anecdotal data suggests that some people lost weight and reduced HbA1c.

Like other projects, lack of time during the set-up phase meant that the project was under time pressure, which resulted in some practices choosing not to participate and some resources not being ready in time. Establishing partnerships and good working was seen as a necessary first step.

Some key facilitators during the set-up phase were to provide: informal conversations with PNs; a small pack of key resources; very short education sessions about resources; ongoing support and education about lite GRx; and standard and enhanced referrals.

Although many practice staff were ambivalent about the programme initially, by the end they were positive and enthusiastic about their role in helping people make healthy lifestyle changes. The four key areas identified for future development were: strengthening of relationships; sharing knowledge; giving and receiving support and assistance; and overcoming barriers for staff and patients.

Summary

This project provided a good example of what can be done in primary care at a 'whole practice' level. The extensive qualitative data gives insight into a range of barriers and facilitators to the implementation of such a project. However the evaluation lacks key information on the clinical effectiveness of the programme. Gathering data on clinical outcomes would greatly enhance the findings of this project.

Health Hawke's Bay

The main objective of the Health Hawke's Bay pre-diabetes lifestyle support programme was to compare the effect of a multilevel pre-diabetes lifestyle intervention delivered by PNs with usual care on weight and HbA1c in patients with newly diagnosed pre-diabetes.

The project used a pragmatic non-randomised design where four general practices in Napier delivered the intervention and four practices in Hastings delivered usual care. Details regarding the recruitment of these eight practices were not provided in the report.

The main outcome measure was change in HbA1c, with secondary measures of change in weight and levels of physical activity.

The evaluation also included a process evaluation component that aimed to determine the feasibility of implementing a pre-diabetes intervention in a primary care setting and to look at barriers and facilitators to implementation. Data for this evaluation was collected from PNs and participants, as well as other key informants, using a range of tools (eg, interviews, surveys).

The programme

The intervention consisted of multiple components, which are summarised in Box 1 below. The control practices provided 'usual care' advice on nutrition.

All practices continued to provide advice on physical activity (ie, 30 minutes of moderate intensity physical activity of on most days of the week) and provided participants with educational material ('Be Active Every Day' leaflet²).

Box 1: Hawke's Bay pre-diabetes intervention

Training

PNs participated in a six-hour training course that covered nutrition principles, dietary assessment, goal setting, the context within which nutrition advice is given, and how to measure height, weight and waist circumference

Dietary assessment

Provided by PNs at baseline (lasting 30 minutes). Whānau were encouraged to attend. Participants completed a brief dietary assessment - Starting the Conversation (STC)³, which PNs used to ask further dietary and contextual information questions to gain a better understanding of the participants' dietary habits.

Goal setting

Aimed for 5 percent weight loss over six months. Three dietary goals were negotiated with the participant. These were incorporated into the general practice patient management systems and facilitated opportunistic targeted advice and guidance by GPs.

Follow-up

Fifteen-minute follow-up sessions were arranged three-four weeks later, then at three months and six months, where progress was measured and goals were reviewed and updated.

Nutritionally supportive primary care environment

Practices reinforced messages provided by PNs by providing material (eg, magazines, posters, leaflets) that supported reputable dietary messages and active living.

Community-based group nutrition education sessions

These were delivered by community nurses from the local Sport Hawke's Bay, and consisted of six weekly sessions lasting between 60 and 90 minutes that provided generic dietary knowledge and advice. Courses were run at different locations and different times, so as to minimise barriers for participants to attend the sessions.

Written materials

Diabetes New Zealand booklet: *Diabetes and healthy food choices*⁴

Participants

The programme worked with general practices to identify participants from practice management systems. Eligible participants (newly diagnosed pre-diabetes; aged ≤ 70 years; BMI $> 25\text{kg}/\text{m}^2$; not prescribed Metformin; and not pregnant) were sent a letter inviting them to participate in this project.

A total of 156 eligible participants were enrolled (the number of potential participants this sample was drawn from is not stated). Men comprised 53 percent of the sample, 31 percent were Māori, and the mean age was 59 years. The average BMI was $34\text{kg}/\text{m}^2$, indicating that the sample was obese. Forty percent had a family history of type 2 diabetes, and 18.6 percent were current smokers. Baseline data for

participants from each of the intervention and control practices was not provided in the report.

The total cost of the programme (excluding the evaluation) was \$234,000, giving a cost per enrolled participant of \$1,500.

Outcomes

Data from the six-month follow-up was available for 67 and 66 of the intervention and control participants, respectively. The intervention group had a higher number lost to follow-up (n=18) than the control group (n=6).

Of those available for six-month follow-up, fewer people in the intervention group progressed from pre-diabetes to diabetes (4/67; 6 percent) than in the control group (8/66; 12 percent). Conversely, more of those in the intervention group regressed to normoglycaemia (28/67; 42 percent) compared with the control group (24/66; 36 percent). Similarly, a greater proportion of people in the intervention group decreased their HbA1c (47/67; 70 percent) compared to the control group (32/66; 49 percent).

The above analyses, however, do not take into account the people that were lost to follow-up. Using an intention to treat approach that assumes that people who were lost to follow-up did not achieve any reduction in HbA1c, the differences between groups are less. For example, regression to normoglycaemia would be 33 percent (28/84) for the intervention group and 33 percent (24/72) for the control group. A decrease in HbA1c would have been observed in 56 percent (47/84) of the intervention group and 44 percent (32/72) of the control group.

PNs managed to integrate the programme into their daily workload; however, follow-up of some patients was time consuming. PNs found the training helpful in empowering them to provide good dietary advice. They also commented positively on having access to a range of patient resources and to a nurse advisor and dietitian for additional support.

The incorporation of patient goals into the practice management system helped GPs motivate their patients, and participants appreciated the input from their GP.

Regarding the use of the community group sessions, these were attended by around half of the intervention participants, with two-thirds completing all six sessions. The process evaluation found that the interface between the PNs and group sessions could be strengthened by PNs giving a clearer explanation to participants of the role of the group support. This may have been facilitated by stronger relationships between the group educators and PNs. It was also thought that the number of group sessions could be reduced to three or four, but whilst also allowing for ongoing contact for people who want this.

Participant feedback confirmed that a diagnosis of pre-diabetes was a strong trigger to act. They valued the regular contact with a trusted healthcare professional and liked the accountability of having to report back on their progress.

Participants liked the programme approach that focussed on simple, achievable goals that were reviewed at follow-up. Having supportive whānau at home was also found to be helpful. They also liked the resources provided, and learning how to read food labels was popular.

A number of social factors were identified as barriers to lifestyle change. These included the costs associated with buying healthy food; lack of whānau support, attending social events where you felt compelled to eat; entertaining or having visitors; and being busy with no time to plan for meals. Having other chronic health conditions was also seen as a barrier for some.

Summary

This project provides an example of a PN-led pre-diabetes intervention delivered in a primary care setting. One of the strengths of this project is that it included a control group and so comparisons could be made. The pilot indicated some positive changes in clinical outcomes. Limitations include small numbers of participants in each group and the analyses do not account for those people who were lost to follow-up.

Table 1: Green Prescription Projects

Provider	Setting & recruitment	Treatment	Results
<p>Harbour Sport</p> <p>The Choose Change project</p>	<p>Four regional sports trusts who each targeted one high risk ethnic group</p> <ul style="list-style-type: none"> • Counties Manukau Sport (Pacific Islanders) • Harbour Sport (NZ European/Other) • Sport Auckland (South Asian) • Sport Waitakere (Māori) <p>Recruited anyone with BMI >30kg/m² and waist circumference > 94cm/80cm (men/women, respectively).</p> <p>331 people with pre- or type 2 diabetes were enrolled, with 287 (87 percent) completing the intensive stage (week 1-12); 79 percent were aged 50+ years, 63 percent female.</p>	<p>Weekly consultations with a Healthy Lifestyle Coordinator (weeks 1-12), reducing to fortnightly (weeks 13-24).</p> <p>1:1 dietitian consultations and nutritional workshops.</p> <p>1:1 psychology consultations or group psychotherapy.</p> <p>Weekly exercise options, for example: low impact circuit classes, aqua and bolly aerobics, walking groups, boxing classes, sports activities, gym workouts and hydrotherapy.</p>	<p>Of those who provided blood tests, 78 percent and 80 percent of participants reduced their HbA1c at 12 and 24 weeks, respectively.</p> <p>Mean HbA1c decreased in all ethnicities by a minimum of 3.3mmol/mol at 24 weeks.</p> <p>Of those who attended the 24 week follow-up, 81 percent showed a reduction in blood pressure, 71 percent showed decreased fat mass and 89 percent reported increased physical activity.</p> <p>Cost per enrolment: \$1,451</p>
<p>Sport Bay of Plenty</p> <p>Diabetes Prevention Programme</p>	<p>Identification of pre-diabetes took place in the Bay of Plenty GP practices via a blood test.</p> <p>Those identified were then referred by their GP practice to the project via a secure e-referral process or hand-written referral.</p>	<p>Advisors supported clients to set and achieve nutrition and physical activity related goals.</p> <p>Nutrition educational sessions were offered, including a nutritional workshop, one-on-one session with a dietitian and two healthy cooking classes. Clients were</p>	<p>In total, 104 participants (60 percent) attended one of 19 nutritional workshops, 107 (61 percent) attended one of 23 dietitian clinics, and 137 (79 percent) attended one of 25 cooking classes.</p> <p>At 6 month follow-up, 117 (66 percent) showed a decrease in HbA1c from baseline.</p>

	274 participants (68 percent female; 65 percent age 50+ years; 50 percent Māori; 44 percent Pākehā) were referred; 174 (64 percent) engaged in the programme; 6 percent declined and the remainder could not be contacted.	offered new options and/or linked to existing physical activity opportunities. Monthly follow-up meetings for up to six months, where advisors motivated and supported participants to achieve their goals.	At six-month follow-up, 130 (75 percent) participants were weighed: 51 (39 percent) lost at least 1.6kg of their baseline body weight. Cost per enrolment: \$1,891
Sport Waikato, Gisborne, Tairāwhiti, & Taranaki Energised practices	Lite (in practice) GRx was delivered to 493 patients with pre-diabetes (59 percent) or type 2 diabetes (41 percent). Of these, 59 percent were female; 70 percent aged 50+ years, 60 percent NZ European, 29 percent Māori, 2 percent Pacific.	Focussed on providing GPs/PNs information, support, training, advice, resources and other activities designed to assist them in providing healthy lifestyle advice to patients. The support was provided by Energizers. The Energisers worked on engaging the practices and assisting them in developing activities to meet local need.	Most (36 of 37) practices targeted were enrolled. Of these, 73 percent increased the number of GRx referrals. Among the 24 fully engaged practices, there was a mean increase of 33 referrals to standard GRx compared with baseline. Anecdotal data suggests that some people lost weight and reduced HbA1c. Cost per enrolment: \$872
Health Hawkes Bay Pre-diabetes lifestyle support programme	Eligible participants (newly diagnosed pre-diabetes; aged ≤ 70 years; BMI $> 25\text{kg/m}^2$; not prescribed metformin; and not pregnant) were identified from GP practice management systems. Two practices provided the intervention and two provided usual care. 156 participants were enrolled: 53 percent male; 31 percent Maori; mean age 59 years; mean BMI 34 kg/m^2	Intervention: PNs trained to give dietary advice and set goals to participants in an initial 30 min session and then 3 x 15 minute follow-up sessions (up to six months). They also referred patients to 6 x 60-90 minute group-based educational sessions Usual care: usual dietary advice.	The results for the intervention vs. control in those who attended follow-up were as follows: Progression from pre-diabetes to diabetes: 6 percent (4/67) vs. 12 percent (8/66) Regression to normoglycaemia: 42 percent (28/67) vs. 36 percent (24/66) Decreased HbA1c 70 percent (47/67) vs. 49 percent (32/66) Cost per enrolment: \$1,500

(2) Self-management and shared care projects

Long Term Conditions (LTCs) such as cardiovascular disease and diabetes are leading causes of mortality in New Zealand. Two thirds of New Zealand adults and one third of children have at least one LTC. The traditional medical model is unlikely to be able to deal with such a demand and so a new model of care, which focuses on empowering people with a chronic disease to successfully self-manage their condition, is needed.

The Ministry contracted with three providers to set up demonstration sites (rural and urban) to assess how new models of care focussed on empowering people with a chronic disease to self-manage their condition will work in different settings, and to help make decisions regarding implementation across New Zealand. These projects are described below and summarised in Table 2 (pages 24-25).

Alliance Health Plus Trust

The programme

Alliance Health Plus Trust delivered a self-management and shared care programme in three general practices located within two DHBs. The Self-Management Programme (SMP) was based on the Stanford model, which is run in 2.5 hour sessions once weekly for six weeks. The practices had initially opted for a five-week course, then shortened this further to four weeks as they considered that five-six weeks was too long for patient retention. The PHO supported practices to develop their own SMP, so there was no consistency in what was provided across practices. Care plans were developed by the PN for patients when they enrolled into the programme. These plans were different at each site.

Participants

Participants with a medical need of Level 2 or 3 (see Box 2) were invited to participate. Although there were a large number of potential participants registered with practices, recruitment was slow. One PN commented that for every 15 phone calls she would book 10 people, of whom 5 would attend. This is remarkably similar to other areas of health behaviour change (eg, smoking cessation). Overall, practice staff contacted 1,119 patients, of whom 752 (67 percent) enrolled and 242 (32 percent) completed the programme.

The total cost of the programme (excluding the evaluation) was \$380,000, giving a cost per enrolled participant of \$505.

Box 2 – Best Practice Intelligence Tool Level of Medical Need

Level 0: No needs

Level 1: Risk factors only

Level 2: Patients recorded as having 1 or 2 of: diabetes, atherosclerosis, chronic obstructive pulmonary disease, cerebrovascular incident, heart failure, neurodegenerative disease, multiple sclerosis, rheumatoid arthritis or stage 3 chronic kidney disease

Level 3: Patients recorded as having 3 or more of: diabetes, atherosclerosis, chronic obstructive pulmonary disease, cerebrovascular incident, heart failure, neurodegenerative disease, multiple sclerosis, rheumatoid arthritis OR Stage 4+ chronic kidney disease.

Outcomes

Outcome data was only available for 153 people. Of these, 53 percent (n=81) were female, 11 percent Māori, and 59 percent Pacific. The majority (72 percent) had a diagnosis of diabetes. The average time between enrolment and follow-up was around 33 weeks (eight months).

The data shows a decreasing trend in utilisation of secondary healthcare services following the implementation of the SMP. Conversely, there was an increase in utilisation of primary care services, with patients more likely to see both their GP and PN on the same day, as opposed to either one or the other.

In terms of short-term clinical outcomes, decreases in both HbA1c (2.7 mmol/mol) and weight (1.9kg) were observed, although these changes were not statistically significant. Some care also needs to be applied when interpreting these results as the data is from a subset only. Overall, blood pressure showed no clinical significant change between baseline and follow-up.

The Partners in Health scale (a generic assessment scale for chronic condition self-management) was used to measure changes in patient experience. Among 145 patients that attended four treatment sessions there was a 10-point increase (74 to 84) in the Partners in Health Score.

Participant feedback was largely positive. Being part of a group, learning from participants and receiving generic advice on food and physical activity was well received. Participants suggested that extending the length of the SMP would be useful as well as incorporating additional support outside of the weekly contact.

Feedback from the Tongan Health Society suggested that basic information on how to better manage chronic illnesses was important, which is likely to reflect the different levels of health literacy.

Care plans were often incomplete, did not always have timeframes, and were not revisited or updated. Participants could see the value in goal setting but some saw the plans as a bit 'childish'.

Summary

Recruitment of participants for group-based SMP is challenging and time intensive. Groups are important, but need to be facilitated correctly (eg, group orientated as opposed to therapist orientated) and include information relevant to the wider group. Flexibility is important to be able to meet the needs of patients. The project did not show significant changes in clinical outcomes such as HbA1c and weight, although improvements were seen in self-management, and participants generally liked the programme. With some strengthening of recruitment and treatment processes (eg, better use of care plans and facilitating group-based interactions with participants), this programme could play a useful role.

Hauraki PHO – Manawanui Whai Ora Kaitiaki

Hauraki PHO delivered a self-management and shared care project with a particular focus on change management. The project was delivered two locations, one urban (Hamilton) and one rural (Putaruru).

The programme

Manawanui Whai Ora Kaitiaki (MWOK) is a partnership pilot with Healthcare NZ (HCNZ) and Hauraki PHO. The focus of MWOK is on those patients with complex and chronic needs who have the highest hospital admission rates.

The MWOK model of care utilises the main components of an existing self-management programme called Te Whiringa Ora/Care Connections where case managers (registered nurses) and navigators (kaiawhina) support the process of holistic assessment and care planning.

Each client has a needs assessment and is assisted in the development of a shared care plan, followed by a series of home visits to provide self-management support. Referrals to other social, community, and health services are provided as required. GPs are informed of care plans but are not directly involved in the process.

The combination of the registered nurse and the kaiawhina role are central to this model. The nurses had technical knowledge regarding chronic disease management whereas kaiawhina (non-clinical) had expertise in engaging patients and the ability to build strong and trusting relationships. These skills are important in working with people who do not engage with mainstream health care and who often have significant social and cultural needs.

Participants

To be referred, clients must have at least two LTCs, which could include diabetes, cardiovascular disease (including stroke and heart failure), cancer, asthma, chronic obstructive pulmonary disease, arthritis and musculoskeletal disease, dementia, depression and anxiety.

During 13 months of operation, 165 people were referred to the MWOK pilot. Most clients were between the age of 40 and 70 years, but ranged from 1 to 97 years. The majority (61 percent) of referrals were Māori. Details of the total pool from which this sample was drawn were not reported.

The total cost of the programme (excluding the evaluation) was \$384,425, giving a cost per enrolled participant of \$2,329.

Outcomes

The evaluation looked at changes in indicators or perceptions of wellness or self-management, as well as barriers and facilitators of implementation and success.

MedTech data from the two practices showed an overall increase in the number of GP encounters of MWOK patients from an average of 12 in 2013-14 to 15 in 2014-15. When broken down by baseline GP utilisation there was an overall increase in GP encounters in initial low and medium users (3 to 10 and 12 to 16 encounters per year, respectively) and a decrease in initial high users (26 to 23) encounters per year.

A total of 54 patients had completed the Patient Assessment of Care for Chronic Conditions (PACIC),[†] but only 10 had completed both a pre- and post assessment that allowed measurement of change. In these 10 patients, there was a significant improvement in all of the five categories.

- patient activation from 3.3 to 4.9 ($p < 0.01$)
- decision support from 3.0 to 4.9 ($p < 0.01$)
- goal setting from 2.9 to 4.7 ($p < 0.01$)
- contextual counselling from 3.0 to 4.9 ($p < 0.01$)
- coordination from 2.8 to 4.4 ($p < 0.01$)

Seven patients completed the CollaboRATE assessment tool^{*} pre- and post-programme. Only one patient showed a significant improvement. However qualitative data demonstrated that the improvements seen in health literacy resulted in patients being more involved in their own care. For example, improved knowledge regarding risk factors for chronic illness led some patients to make changes to their smoking and diet. Others reported greater monitoring of their own health indicators. The programme also helped patients deal with some of their social needs, which in turn allowed them to focus on their health needs.

Patients also noted improvements in their health (eg, blood pressure, HbA1c), mental wellbeing and quality of life.

[†] The Patient Assessment of Care for Chronic Conditions (PACIC) measures different categories of LTC care: patient activation, decision support, goal setting, contextual counselling, and coordination. Patients' are scored on a five-point scale for each of the categories.

^{*} The CollaboRATE assessment tool is a 3-item measure of the Shared Decision Making process in partnership with patients.

Qualitative data demonstrated the importance of the nurse-kaiawhina partnership. The kaiawhina were particularly important for reaching highly disengaged or underserved patients, who were also Māori. Kaiawhina were seen as having a better understanding of the lived experience of the clients and were able to communicate more effectively than Pākehā health care professionals.

One of the GP practices changed to a more multidisciplinary practice model as a result of being involved in the MWOK pilot.

Summary

The MWOK model of care used a partnership approach in the management of LTCs, with a kaiawhina role being seen as critical to the success of this model. The kaiawhina staff were able to work more closely with the priority population and provided a 'bridge' between patients and GP practices.

The MWOK model was intensive and utilised home visits. This meant that a limited number of people could be accepted onto the programme. It also meant that the cost per enrolled patient was higher. However, the programme achieved its goals in reaching the priority population.

Quantitative and qualitative assessments showed some improvements in self-management. However, further work could be done to demonstrate quantitative improvements in health.

If this model is implemented on a wider scale, careful attention needs to be paid to recruitment, staff training and mentoring, communication with GP practices and monitoring of outcomes. This project had the most expensive per patient cost; however, given the hard-to-reach target population and geographical reach, this programme may still represent value for money. A more formal assessment of this should be considered before the model is implemented more widely.

ProCare

ProCare delivered a shared care and self-management project in two GP practices; Pukekohe Family Health Centre (PFHC) and Clendon Medical Centre (CMC).

The CMC is a Very Low Cost Access (VLCA) practice with a large population of Pacific patients and a locality with high rates of poverty and people with complex health needs. The PFHC is a rural practice with patients mainly of European descent, but with significant Māori and ethnic Indian and East Asian communities, and a mix of people from different socioeconomic groups.

The programme

This programme was rolled out in conjunction with the At Risk Individuals (ARI) project and involved a three-stage patient journey: (1) assessment and enrolment; (2) up to 12 months of coordinated care; and (3) transition off ARI or reenrolment as needed.

The programme utilised the six-week Stanford self-management programme (SMP). Groups were aligned according to need (eg, diabetes, chronic pain, and generic health issues). All patients enrolled into the programme were automatically referred to the PHO self-management coordinator who called and invited patients to the relevant practice programme. Programmes were run at either a local community centre or at the practice.

The CMC had trialled Stanford SMP in the past and had poor engagement from patients. Therefore, the nursing team worked with ProCare's Pacific dietitian to develop a shorter three-four week programme with a focus on diabetes and a strong nutrition component. However, when this modified diabetes-specific SMP was trialled only four of the 10 invited participants attended the first session and none returned for following sessions. Seeing the success of the Stanford SMPs run in PFHC, the CMC decided to adopt this approach by adding an incentives component where patients who attended at least five of the six sessions received a healthy food hamper.

Both practice programmes included input from a health psychologist, and a community health coordinator/social worker. The PFHC also included pharmacy medication support services and palliative care. The CMC included a mindfulness course. CMC GP visits were free, whereas the PFHC patients paid to attend. All nurse visits were free.

An eShared Care tool (Collaborative Care Management Solution or CCMS) was used. This allowed clinicians to develop and manage a patient-centred care plan that could be accessed by other clinical specialties not necessarily linked to the practice.

As part of implementation of the ARI programme, practices were supported through a change management process to inform and upskill team members. The change management components included executive sponsorship, delegated leadership, fortnightly project meetings, a focus on clinical outcomes, patient success stories/feedback, ongoing training requirements, and dedicated onsite change management support.

Both practices had a target of enrolling 3 percent of their population on the programme within 12 months of starting the pilot.

Participants

During the 16-month pilot the programme enrolled 332 patients at CMC and 792 patients from PFHC. The PFHC had greater numbers due to its size and the use of a more systematic implementation process. Details of the total pool that these samples were drawn from were not reported.

The majority of participants were between 45 and 75 years of age.

The CMC enrolled a slightly greater proportion of Pacific patients when considering both practice demographics and calculated risk. The proportion of Māori patients roughly matched the practice demographic. The PFHC had higher enrolment of both

Māori and Pacific people and fewer from 'Other' ethnic groups when considering both practice demographics and calculated risk.

The total cost of the programme (excluding the evaluation) was \$350,000, giving a cost per enrolled participant of \$311.

Outcomes

The Partners in Health (PIH) questionnaire was used to collect scores at the time of enrolment in the ARI programme, and again in ten to twelve months when individuals were either re-enrolled or graduated from the programme. The mean change score for CMC was 5.40 (95 percent CI 0.41 to 10.40) and 4.29 (95 percent CI 3.14 to 6.69) for PFHC. The number of patients completing both pre- and post-surveys is not stated, but the wide confidence intervals suggest that the number of respondents was low. As a comparison, in practices doing only the ARI model of care, the PIH change score was 3.47 (95 percent CI 2.43 to 4.52), which suggests that the more comprehensive model used in the two pilot practices might provide some additional benefit.

Health literacy (knowledge of health condition, knowledge of medications, knowledge of early warning signs of acute deterioration of LTCs and acting on these signs) improved significantly at both practices.

In terms of practice level changes (measured using the Primary Care Resources and Supports for Chronic Disease Self-Management questionnaire administered pre- and post-implementation), participants self-reported a general improvement in self-management processes at both patient/clinician and organisational levels.

Those patients who completed feedback questionnaires (11 percent from the CMC and 14 percent from the PFHC) showed a high satisfaction with the programme. For example, 95 percent of CMC and 94 percent of PFHC survey respondents agreed that the programme had improved their health and wellbeing. However, there is likely to be some response bias and so this data should be interpreted with some caution.

Qualitative feedback indicates that overall, the programme contributed towards improved wellbeing, understanding and confidence for patients to manage their own health, and better communication between patients and their care team. Patients also recognised that they were more motivated to achieve their goals.

The healthcare team reported that the programme provided better access to services and more opportunities to access care. The multidisciplinary approach was seen as favourable and a contributing factor to success.

Clinical outcomes associated specifically with the programme have not been reported. However, analysis of HbA1c data suggests a benefit associated with the ARI programme. Emergency department utilisation and acute admission data have also been examined, but no discernable change over time has been found.

Summary

The ProCare Shared Care and Self-Management programme utilised the Stanford SME model, combined with a change management process and an eShared Care tool. The programme was piloted at two GP practices that had different populations and practice business models.

The programme recruited 1,124 patients and showed significant increases in health literacy and self-management in those that completed assessments at enrolment and exit from the programme. Feedback from healthcare staff and patients who participated in the programme was also positive.

Although the programme produced some good outcomes, it is not clear in the final report how many patients completed the programme or assessments.

It is not possible to show if this programme had any impact on the use of secondary healthcare services, and so further evaluation is warranted.

Table 2: Self-Management and Shared Care Projects

Provider	Setting & recruitment	Treatment	Results
<p>Alliance Health Plus</p> <p>Year of Care Model</p>	<p>Three GP practices:</p> <ul style="list-style-type: none"> • Avondale • Tongan Health Society (THS) • Waiuku <p>Patients with level 2 or 3 risk: 3,979</p> <p>Patients contacted: 1,119 (28 percent)</p> <p>Enrolled: 752 (67 percent)</p> <p>Completed: 242 (32 percent)</p>	<p>Stanford SMP run by PNs and lay staff.</p> <p>Practice staff decided to reduce the SMP from 6 to 4 weeks on the basis that more people would attend.</p> <p>Focuses more on dietary and physical activity changes. <i>More didactic approach.</i></p> <p>Each site had at least one staff member trained in the SMP model.</p> <p>Sites developed their own resources.</p> <p>Care plans developed by PN with patient when they enrolled. Each site had their own plans.</p>	<p>Increase in primary care use (2,210 to 3,346), and decreases in ED visits (14 to 8) and hospital visits (51 to 30) compared to baseline.</p> <p>Clinical outcomes before and after enrolment:</p> <p>HbA1c: 63 to 60 mmol/mol</p> <p>BP: 134/76 to 135/75 mmHg</p> <p>Weight: 97 to 96 kg</p> <p>Partners in Health Scale used as a generic assessment scale for chronic condition self-management (rate 0-8, 8=best). Combined cores increased from 74 to 84.</p> <p>Cost per enrolment: \$505</p>
<p>Hauraki PHO</p> <p>Manawanui Whai Ora Kaitiaki</p>	<p>The project was delivered in two locations, one urban (Hamilton) and one rural (Putaruru).</p> <p>To be referred, clients must have had at least two LTCs.</p> <p>165 people were referred over 13 months</p>	<p>The model of care utilised the main components of an existing self-management programme called Te Whiringa Ora/Care Connections. Case managers (registered nurses) and navigators (kaiawhina) supported the process of holistic assessment and care planning.</p> <p>Each client had a needs assessment and was assisted in the development of a shared care plan, followed by a series of home visits to provide self-management support. Referrals to other social,</p>	<p>Mean number of GP encounters of MWOK patients: 12 in 2013-14 to 15 in 2014-15</p> <p>Number of GP encounters per year, according to baseline utilisation:</p> <ul style="list-style-type: none"> • <i>Low</i>: from 3 to 10. • <i>Medium</i>: from 12 to 16. • <i>High</i>: from 26 to 23.

	<p>Majority aged between 40 and 70 years (range 1-97 years)</p> <p>The majority (61 percent) of referrals were Māori.</p>	<p>community, and health services were provided as required. GPs were informed of care plans but are not directly involved in the process.</p>	<p>Ten patients completed the PACIC questionnaire pre and post programme and showed a significant improvement in all of the five categories.</p> <ul style="list-style-type: none"> • Patient activation from 3.3 to 4.9 • Decision support from 3.0 to 4.9 • Goal setting from 2.9 to 4.7 • Contextual counselling from 3.0 to 4.9 • Coordination from 2.8 to 4.4 <p>Qualitative data demonstrated the importance of the nurse-kaiawhina partnership. The kaiawhina were important for reaching highly disengaged or underserved patients.</p> <p>Cost per enrolment: \$2,329</p>
ProCare	<p>Two GP practices: (1) Pukekohe Family Health Centre (PFHC) rural practice, mainly NZ European; (2) Clendon Medical Centre (CMC), a Very Low Cost Access practice with a large Pacific population and high rates of poverty.</p> <p>Patients were automatically referred to the PHO self-management coordinator who called and invited patients to the relevant practice programme.</p> <p>Over 16 months: CMC 332 patients; PFHC 792 patients</p>	<p>Three-stage patient journey: (1) assessment and enrolment; (2) up to 12 months of coordinated care; and (3) transition off ARI or reenrolment as needed.</p> <p>The programme utilised the six-week Stanford SMP. Groups are aligned to need, eg, diabetes, chronic pain, and generic health issues.</p> <p>Programmes were run at either a local community centre or at the practice.</p> <p>Used an eShared Care tool (Collaborative Care Management Solution or CCMS) that allowed clinicians to develop and manage a patient-centred care plan that could be accessed by other clinical</p>	<p>Changes in the Partners in Health (PIH) questionnaire showed beneficial changes. The mean change score for each practice:</p> <ul style="list-style-type: none"> • CMC was 5.40 (95 percent CI 0.41 to 10.40) • PFHC 4.29 (95 percent CI 3.14 to 6.69) <p>Health literacy (knowledge of health condition, knowledge of medications, knowledge of early warning signs of acute deterioration of LTCs and acting on these signs) improved significantly at both practices.</p> <p>Patients who completed feedback questionnaires (11 percent from the CMC and 14 percent from the PFHC) showed a high satisfaction with the programme.</p>

	Most patients between 45 – 75 years of age	specialties not necessarily linked to the practice.	Qualitative feedback showed the programme contributed towards improved wellbeing and patients' understanding and confidence to manage their own health. Cost per enrolment: \$311
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Section 2: Barriers and facilitators to implementation

(1) Barriers to implementation

All projects faced barriers to implementation of programmes. Many of the themes that emerged were common to both the pre-diabetes and shared care self-management (SCSM) projects and so these are summarised together. Where a barrier is specific to a particular project, this is highlighted.

Recruitment

Most projects experienced some difficulty in recruiting participants. Although the pool of potential participants is large, not all are interested in assistance or see the need to participate in programmes to improve their health.

As an example, the Alliance Health Plus (a SCSM project) programme identified 3,979 patients with a medical need Level 2 or 3. Of these, 1,119 (28 percent) could be contacted and 752 (67 percent) enrolled over a 10-month period. Only 242 (32 percent) of those enrolled actually completed the programme. A nurse from one of the participating practices noted that for every 15 patients contacted, 10 would accept the offer of help and five would actually attend.

Differences in rates of recruitment were also noted in different ethnic groups. For example, Counties Manukau Sport utilised extensive promotional activity to try and increase referrals of Pacific people to the programme. However, the barriers faced were not just in getting key referrers (eg, GPs/PNs) to refer to the programme, which was difficult, but also getting the people referred to enrol in the programme. Face-to-face promotion (eg, at community events) generated a good number of 'sign-ups', but when people were called back to enrol in the programme the majority had changed their mind.

Identification of people with pre-diabetes was more difficult than identifying people with long-term conditions as the only way to identify it is to undertake a blood test, which needs to be initiated by the GP. One project report noted that identifying patients with pre-diabetes was not a priority in the current environment where the focus is more heavily weighted towards CVD risk assessment.

Targets

Enrolment targets can be good to drive practice change but can also act as barriers if they are unrealistic.

Timing

The majority of projects reported that the lead in time was not long enough time to adequately set up the interventions. Implementing the programmes in winter, when practices are typically busy, can have a significant negative impact on staff availability, as they were already busy.

Clinician barriers

Several projects reported on the lack of buy-in from practice staff. GPs in particular were noted to be slow to engage and refer patients. Common barriers to GPs engaging and referring included lack of time, lack of knowledge, failure to understand the need, and competing priorities. A finding from the Energised Practices project was that some staff perceived they had adequate knowledge to help people change their health behaviour, when in reality knowledge was inconsistent across practices.

Many of the SCSM projects needed a ‘culture change’ associated with a more holistic model of care. A change in focus from a clinical perspective to a wider holistic view of a patient’s wellbeing can be challenging for some clinicians. Clinical outcomes and patient feedback was seen to be helpful in changing these views.

Care plans

This was specific to the SCSM projects, where dedicated time was needed to understand the patients’ concerns and to develop a care plan with them. This process was essential in building the relationship between the patient and their care team. This had financial and staffing implications for some practices. As an example of the time that needed to be set aside, the ProCare pilots funded approximately one hour of nurse time to undertake the initial review and development of the care plan.

In one project (Alliance Health Plus), care plans were often incomplete, did not always have timeframes, and were not revisited or updated. Care plans need to be developed in such a way that they can be tailored to individual need, have space to set timeframes and provide detail of how the plans will be achieved. Care plans should also focus on what can be done by the person and/or their family.

Blood tests at follow-up

This was specific to the diabetes projects, where a number of barriers were encountered in getting people to complete follow-up blood tests. These included: money for GP visits; some GPs/PNs refused to write a follow up HbA1c script prior to six months; time to go to the GP clinic; transport to the GP clinic or laboratory; time to sit in a laboratory; lack of understanding of the rationale for a repeat test; and fear of the results.

Adapting content to suit the needs of individuals with different backgrounds and varying abilities

A number of projects reported on the difficulties in designing programmes that meet the needs of a wide variety of individuals. For example, it was a challenge to adapt exercise sessions for participants of varying abilities and ages to ensure they were all exercising at sufficient intensity. Also, food tastes vary, and so food demonstrations or examples of food switches were unlikely to suit everyone.

The length of some programmes was a barrier to some participants, although feedback was generally mixed. The good retention rate of participants in the Choose Change Programme (which lasted 24 weeks) suggests that the length was not a major barrier for all people. The Hawke's Bay community group sessions ran for six weeks, but it was thought that these could be reduced to three or four sessions.

The Choose Change project incorporated a psychological component. Whilst overall this was beneficial, some participants found having to see a psychologist disconcerting or felt stigmatised. A couple of statements from participants illustrate this: *"I must be crazy or there's something wrong with me if I need to see a psychologist"* and *"It's too touchy-feely for me."*

The Alliance Health Plus Programme utilised the Stanford model, which is a six-week course. However, the practice staff decided to reduce this to four weeks because they thought people would be more likely to attend a shorter course, and more courses could be run in the relatively short timeframe. This meant that topics needed to either be reduced or compacted into the shorter time frame. The latter appeared to have occurred, and as a result the programme became more didactic, which came across in the feedback (one of the facilitators stated *"I am doing most of the talking"*).

One of the practices in the ProCare pilot also shortened the Stanford model from six to four weeks, based on previous bad experience with the model. However, the shortened and more focussed programme did not perform any better and the practice reverted to using the original model.

Barriers to participant behaviour change

Behaviour change is influenced by capability, opportunity and motivation.

Factors that impact on motivation which were identified across projects include:

- ***Health literacy:*** Many patients, especially those from Pacific populations, had an overall low understanding of the relevance of pre-diabetes and its consequences. This contributed to low adherence to repeat blood tests to measure HbA1c.
- ***Patients do not see the need for support:*** This may partly be related to health literacy, but there is also a degree of disbelief that programmes will not help. This was illustrated by comments made by participants in the Alliance Health Shared Care project: *"I'm too old for that"*, *"I've lasted this long. You can't teach me anything that would prolong my life"*.

Factors that reduce capability, and which were identified in a number of the projects, include significant commitments (work, family, church), lack of transport, and mental health and social issues.

Capacity of programmes

This is relevant for both the diabetes and SCSM projects. The intensive and long-term support that some programmes provided meant that they reached capacity relatively quickly. This was illustrated by the Hauraki PHO model of care, where capacity was reached in just over a year, with one of the teams placing patients on a waiting list. The model of care was delivered in the home, which was associated with sometimes lengthy travel times to patients living in remote areas.

In the SCSM projects, as patient numbers increased, more time was required at each step of the process: initial assessment, care coordination, patient follow-up, documenting activities in the care plan and claiming for interventions. Use of healthcare assistants could provide a solution to some of these aspects.

Patient contact and follow-up

Some programmes described difficulty in contacting patients for follow-up. Reasons for this included patients did not have telephones or had changed their phone number, or patients changed addresses frequently. Multiple attempts to follow-up with patients also impacted on workload capacity. This was highlighted in the Hawke's Bay pre-diabetes project where PNs delivered the intervention. Whilst nurses managed to integrate the programme into their daily workload, the follow-up of some patients was time consuming.

Social barriers

Some projects noted that there were limited services available to assist patients who could not get themselves to clinics. Home visits attempted to address this but were time intensive and initially targeted only a small number of complex patients.

A number of social factors were identified as barriers to lifestyle change in the Hawke's Bay pre-diabetes project. These included: the costs associated with buying healthy food; lack of whānau support, attending social events where you felt compelled to eat; entertaining or having visitors; and being busy with no time to plan for meals.

Establishment of new roles

Where new roles were established, there were additional requirements for training and communication. An example of this was the establishment of the kaiawhina role in the Hauraki PHO model. This was an innovative role so there were no models to follow. Staff needed training, but this occurred after they had started to see patients. Kaiawhina needed clearer guidance on systems, processes and structures. Learning the social systems of a wide geographical area was challenging for the kaiawhina staff as they had to first understand the local systems before being able to help patients.

Communicating the new kaiawhina role to practices and providers was challenging. There was some doubt that this role was necessary and some staff questioned the value of the model in comparison to the status quo. This was less problematic with the Sports Trusts, presumably because the Green Prescription programme has been running for some time and there is an established relationship in place. Also, because the role of physical activity behaviour change sits largely outside of primary care.

Communication

Good communication between the SCSM staff, GPs and external organisations was seen as critical to the success of a programme. In some projects, communication between the SCSM project staff and practice staff tended to be ad hoc, and it was felt that communication could have been improved if there were more regular and structured communication channels in place.

GP practice business model

This barrier was described in the ProCare project where one of the practices noted that their fee for service business model did not fit with ARI programme funding and philosophy. The size of this practice also made it difficult to budget for the SCSM approach. The practice found that systems needed to be established for the finance team to monitor the overall impact of the model on the practice budget. This same practice also charged patients each time they saw a GP. Staff felt that this led many patients to avoid seeing the GP with their clinical concerns, assessing the SCSM coordinator instead. This poses some clinical risk if the coordinator does not escalate issues where necessary.

IT system issues

Technical issues with the new eShared Care software in the ProCare project impacted on user acceptability, coordination of patient care and tracking of progress against targets. IT connectivity may still be a challenge for some, especially rural, practices. Training and support needs to be available so that staff become confident in using the system.

Lack of patient input into systems design was also highlighted as a barrier. Systems that are meant for patients to use need to be simple and intuitive and meet patients' needs.

Staffing shortages

Staff absence due to leave (eg, maternity leave) and sickness, and staff working in part-time roles impacted on the delivery of the SCSM projects. The care models needed to have staff accessible to patients. Nurses from one of the projects reported that they felt patients were dissatisfied if they couldn't contact their care coordinator. A solution to this problem was to have two nurses sharing the care coordination role for each patient.

Lack of referral of patients back into the programme

The ProCare evaluation highlighted that neither practice were regularly referring patients to self-management courses. This may be due to factors related to the referrer (eg, uncertainty about whether another referral can be made, or the benefits of re-attending) or patient (reluctance to attend again, perceived benefit).

(2) Facilitators to implementation

Facilitators for referrals

Promotion to GPs/PNs was considered a successful approach for increasing referrals to the programmes. However a multistage approach is needed; starting with engagement with practices, promotion of the programme, simple instructions and tools on how to refer, and undertaking follow-up visits/calls and reminders.

Feedback to referrers was also seen as a good way to further promote the programmes. The Choose Change programme sent letters to GPs with participants' results for weight, waist circumference and physical activity levels at 12 and 24 weeks, and some GP practices referred a number of people once

they saw (and heard from their patients) the positive change they were experiencing. Feedback to referrers was also seen as a key improvement of the Sport Bay of Plenty project.

Simple referral mechanisms (eg, electronic referral from within the PMS) and processes can help facilitate referrals. Brief instructional training on how to refer can also facilitate referrals.

The Hawke's Bay pre-diabetes project included referral of participants by PNs, to a community group support session. This was attended by around half of all participants enrolled in the nurse programme. It was found that the interface between the nurses and group sessions could be strengthened by nurses giving a clearer explanation to participants of the role of the group support. This may have been further facilitated by stronger relationships between the group educators and practice nurses.

Engaging with GPs/PNs

Several projects reported on the benefits of engaging with key stakeholders at the very beginning of the projects. This needs to be a respectful approach, acknowledging that the GP practices are busy and have a number of other priorities. GPs/PNs have many skills, but may lack some specialist knowledge in lifestyle interventions. Projects should focus on the aspects that make GPs/PNs jobs easier and not force interventions that do not fit in with routine clinical practice.

The Energised Practices project found the key facilitators during the set-up phase were to provide: informal conversations with PNs; a small pack of key resources; very short education sessions about resources; ongoing support and education; and simple referrals. The evaluation also suggested a stepwise approach to the engagement and implementation process. The three steps identified were:

- **Engagement:** facilitated engagement with practices to develop and strengthen relationships
- **Negotiating:** describing what is on offer, but tailoring it to the needs to the practice and staff
- **Implementation:** training, tools, resources, updates, monitoring and feedback.

Communication

Effective communication of the programme was seen as a key facilitator in most of the projects. Communication tools included: programme information evenings for practice staff; practice presentations; and sharing of patient case studies.

More specific to the SCSM projects were communication tools such as team huddles to discuss patient centred care and multidisciplinary team meetings. It was noted that conversations between team members added greater value and understanding than relying on patient notes and progress reports alone.

Training

Training is known to facilitate change in clinician behaviour. Training in processes (eg, referral pathways, practice systems) and skills (eg, care plans and running SCSM programmes) were identified by many of the projects.

The practice nurses in the Hawke's Bay project found the training helpful in empowering them to provide good dietary advice.

Leadership

Engagement of respected clinical leaders helped to change clinician behaviour and was a core feature of some of the SCSM projects. The ProCare project also incorporated an onsite change manager to facilitate the practice change.

Multidisciplinary team (MDT)

There were examples of MDT in both the diabetes and SCSM projects. For example, the Choose Change (diabetes) and ProCare (SCSM) projects included psychology input. Overall, this was considered by staff and patients to be an important part of the interventions. A multidisciplinary approach also helped build relationships within the practice team and with external providers.

Bridging the divide between clinical practice and engagement with patients

Many of the projects used non-registered healthcare workers to deliver care. These people are often best placed to deliver these interventions and have the time to provide the level of support needed by patients with chronic illness or who are trying to make difficult health behaviour changes. This workforce sits outside the traditional medical model and there is often some difficulty in communicating between the clinical and non-clinical parties.

The kaiawhina/nurse model in the Hauraki PHO project is good example of community and clinical components working together.

The Energised Practices project suggests that in a best practice model there would be a senior person who has an experienced clinical background (eg, a PN from a primary health background) who can bridge the clinical-nonclinical divide. Clinical champions may also be able to fulfil this role.

Addressing non-health needs

This was identified in the Hauraki PHO SCSM project where being able to address the non-health needs of patients (eg, housing, and support with financial needs) was found to support changes in health.

Personal characteristics of staff

In the evaluation of the Hauraki PHO SCSM project, the personal characteristics of staff was pivotal to successful patient relationships and greater motivation to self-manage. They recruited staff who were approachable, professional, non-judgemental and good communicators. The ability of nurses to be able to engage in the community setting was also important.

Although not directly evaluated in the diabetes projects, staff working with patients to increase physical activity were generally encouraging, motivational, and had good rapport with their clients. This may have been a contributing factor to the high level of patient retention.

Integration with GP practice

Strong links with practices appeared to result in a greater level of engagement, generating more referrals and greater enthusiasm for continuing the work. Running treatment sessions within the practice, if possible (space is often a premium commodity), may provide better integration. The Energised Practices project found that staff enjoyed being able to observe the treatment/support sessions and were able to learn new skills that improved their own practice.

Good integration with general practices was important for referrals and feedback on particular patients' problems (eg, need for changes in patients medications).

In the Hawke's Bay pre-diabetes project, the incorporation of patient goals into the practice management system helped GPs to opportunistically motivate their patients, and participants appreciated this input from their GP.

The Hawke's Bay project also created nutritionally supportive environments at the participating GP practices. Here, practices reinforced messages provided by nurses by providing material (eg, magazines, posters, leaflets) that supported reputable dietary messages and active living.

Components of programmes

There were number of components of the project treatment programmes that appeared to facilitate engagement of patients. These included:

Support from peers: The benefits of group-based treatment where peers provided much of the support emerged as a common theme throughout. The Alliance Health Plus programme evolution, for example, showed that the most valuable input came from peers. Participants in programmes that had less group-based support commented that they would like more interaction with others. Learning from others was seen as important. Participants with pre-diabetes, for example, expressed an interest in hearing from people with type 2 diabetes.

Regular contact with the same practitioner: This was noted as an important factor and reflects the need for building and maintaining rapport in behaviour change interventions.

Accountability: Establishing patient accountability within treatment programmes can facilitate behaviour change. The Choose Change project utilised a commitment contract at enrolment that set out the expectations of the programme. This is likely to be one of the factors that contributed to a high retention rate. Concrete tasks (eg, doing 30 minutes of moderate intensity physical activity per day) and regular monitoring (eg, weekly weigh-ins) can help people achieve and maintain behaviour change. This is illustrated in a comment from one participant: *"For me, just the weighing in, I would have liked to have kept doing that a bit longer."* Similar feedback was found in the Hawke's Bay pre-diabetes project where participants liked the programme approach that focussed on simple, achievable goals that were reviewed at follow-up, and having accountability to the PN.

Participant engagement: Activities that are geared to the right level of health literacy are important. Cooking classes, for example in the Sport Bay of Plenty project, were more likely to be attended than the nutritional educational sessions. For some groups in particular, keeping the programme 'fun' will helping increase rates of participation.

Relevance to a wide audience: The project feedback, especially from those that supported patients in a group setting, suggests that programmes need to be generic in their content, but allow for tailoring where possible. For example, food preferences differ, especially between ethnic groups. So an intervention that focuses on healthy NZ European food would not be relevant to those from South Asian backgrounds. However, reducing portion sizes and eating more green leafy vegetables can apply to all. Advice on how to increase levels of physical activity would follow a similar, tailored approach.

Integration of behavioural support: Most programmes in the pre-diabetes projects focussed on changes in participants' diet and physical activity. The Choose Change project had a specific psychological component, and although not everyone liked this (see comment in 'Barriers' section above), the evaluation suggested this was an important part of the programme.

Tailored support for practices

Tailoring the degree of support for GP practices was highlighted as a facilitator for implementation in the Energised Practices project. Light involvement was needed for practices that have well-established processes, whereas more enhanced support was required for practices with staff that were not confident to deliver a clear and consistent effort.

Resources

Projects used a range of different resources. Feedback showed that it was important that these have clear messaging, are easy to read, and have creative presentation. Popular resources were ones that covered: how to read food labels; portion sizes; local physical activity options; how to plan a meal; plus information on sugary drinks and takeaways.

The Hawke's Bay project utilised existing materials (eg, the Diabetes New Zealand booklet: Diabetes and healthy food choices⁴). PNs commented positively on having access to a range of patient resources and access to a nurse advisor and dietitian for additional support.

Section 3: Summary and implementation advice

The projects outlined above provide the healthcare sector with important information regarding the implementation of interventions aimed at supporting self-management in people with long-term conditions and at preventing type 2 diabetes.

Three of the diabetes projects demonstrated beneficial outcomes of the programmes. The SCSM programmes demonstrated changes in patients' health literacy and self-management skills. Although these pilot projects were unable to show benefits in health outcomes, there is data to show that such programmes can produce positive outcomes.⁵⁻⁷ However, some trials that have attempted to embed self-management programmes in a real life setting have not replicated their effectiveness.⁸⁻⁹

The models piloted in the diabetes projects demonstrate the potential beneficial impact on weight and diabetes management. These may provide useful models to assist people who want to lose weight, especially those with, or at risk of, diabetes.

Several of the SCSM programmes adopted 'tried and tested' models such as the Stanford self-management programme. One implemented a partnership model combining the clinical expertise of practice nurses with the community knowledge and accessibility of kaiawhina.

Modifying programmes is often necessary for local implementation to help make it relevant to participants (eg, making it ethnically appropriate). However, care should be taken to ensure that changes to the structure do not diminish the outcomes of an established model. For example, the Alliance Health Plus project reduced the Stanford programme from six to four sessions, but maintained the same content. The risk of such an approach is that the group becomes more therapist (nurse)-oriented, ie, didactic in nature, which limits the interaction between peers.

The importance of peer-to-peer or social support was a recurring theme across the majority of the project evaluations. It was seen as an important factor in programmes that facilitated social support, and desirable in the projects that did not have it. Future programmes should aim to build and enhance social support into their programmes.

Another important factor in the provision of treatment programmes was flexibility. Programmes need to be responsive to the needs of the populations they are trying to serve. For example, by operating outside of normal working hours, providing pick-ups or home visits for patients that have no transport, and adapting to ethnic and age differences in terms of eating and physical activity behaviours.

One of the major barriers in implementing new programmes, especially those that sit outside the traditional medical model, is the slow change in healthcare professional behaviour in promoting and referring people to these programmes. In the smoking cessation field, five key levers have demonstrated success in changing health care professional behaviour.¹⁰ These are leadership, training, prompts and reminders for systems and tools, audit and feedback, and incentives), and are likely to work equally well in managing people with long-term conditions. Indeed, most of the project evaluations identify some of these levers as facilitating factors in project implementation.

GPs/PNs have an important role to play in providing advice on making lifestyle changes. This was reflected in the comment from one participant in the Sport Bay of Plenty project *“Everyone’s heard it before but when you get it from someone who’s qualified...good when you have that sort of information... Good to hear from a person.”* A diagnosis of pre-diabetes was seen as a trigger to make lifestyle changes. However, it did not necessarily lead to an understanding of the risks. This most likely reflects the lack of time that most GPs/PNs have to explain the implications of the diagnosis. There needs to be a step between diagnosis and referral that communicates some basic rationale for making a change in lifestyle. This step is like the brief advice component of smoking cessation and needs to convey the reason for making a change, and perhaps more importantly, how people can be supported to do this. It is important to consider the packaged approach that fits best with the general workflow in primary health care. This includes risk communication as well as the management of a range of CVD risk factors such as smoking, overweight and obesity, and diabetes, plus other associated co-morbidities.

The Hawke’s Bay pre-diabetes project demonstrated that PNs, when given appropriate training and dedicated time, can provide multi-session support for people with newly diagnosed pre-diabetes, with positive outcomes. PNs can be successful in providing lifestyle interventions such as smoking cessation¹¹ and weight management.¹² However, similar or better results may be achieved by referring to services established to provide specific support for these lifestyle changes.^{11,13} Careful consideration therefore needs to be given to the model of care that best suits local need.

There appears to be some ethnic differences in engagement and programme outcomes. This was highlighted for Pacific people in the Choose Change programme, where difficulty was encountered in enrolling people onto the programme and collecting key follow-up data. Differences were also observed in the Bay of Plenty project where attendance at the Rotorua groups was lower than those in the Western and Eastern Bay of Plenty. These issues should be carefully monitored and changes made to programmes as required.

As with many health behaviour change initiatives (eg, smoking cessation, weight management etc.), programmes frequently underestimate the interest from people, or the ability for them to fit the demands of the programme into their often-busy lives. Although many people know that they ought to change their health behaviours, offering them a programme does not necessarily mean that they will accept the help. Recruitment goals are often unrealistic. In areas like smoking cessation, of current smokers on a practice list, only 20 percent may be interested in help in quitting at any one time. Of those that say they want help, around 50 percent can be expected to engage with a smoking cessation service. Similar figures are seen with weight management programmes. Programmes may be wise to incorporate an information session, which gives people the chance to opt out. This approach was adopted by the Choose Change programme in Counties Manukau where all people referred to Choose Change who met the entry criteria were invited to attend an information evening prior to the start of the intake. Referrers may benefit from some brief training on how to best make an offer of referring to these programmes. Such training does not need to be long and can take a more instructional and motivational approach (ie, what to say and do) as opposed to training on the health risks/burden of disease of these chronic conditions. Healthcare workers need to be able to briefly describe the programme to their patients and its benefits.

The use of behavioural support for in these types of interventions is important. The Clinical Guidelines for Weight Management in New Zealand adults includes this as a key component.¹ The only programme that provided a structured behavioural support element was the Choose Change project which was delivered by psychotherapists, either in a 1:1 or group setting. The feedback indicated that there may

have been a degree of stigmatisation associated the need for psychotherapy. Programmes may be better to use softer, vaguer terms such as ‘support’ to limit fears about seeing a psychologist. There are evidence-based behaviour change techniques for weight-loss¹⁴ (see Appendix 1), and organisations offering programmes aimed at helping people to lose weight should ensure that these are incorporated wherever possible.

Costs associated with each of the programmes were reported as cost per enrolled participant. This very simplistic approach allows for some comparison between programmes (ie, it gives an indication of how cost-efficiency of the programme), but caution should be applied when interpreting these results. As the reported outcomes varied between programmes, no indication of cost-effectiveness can be given.

Considerations for future work

Perhaps the largest challenge in interpreting many of this data is the lack of consistency in reporting clinical outcomes. It is important to note, however, that these projects were pilot projects and no specific outcomes were specified. In future projects it would be useful to specify some standard outcomes so that the effectiveness of the programmes can be measured and compared. Whilst it can be argued that there are other measurable changes in behaviours and wellbeing, policy makers are most likely to be swayed by evidence of change in clinical outcomes. Taking the pre-diabetes projects, for example, the aims were typically to: (a) reduce HbA1c into normal ranges; or (b) reduce the progression of pre-diabetes to type 2 diabetes. Therefore a potential outcome measure for (a) might be the proportion of participants who reduce their HbA1c levels < 41 mmol/mol, and for (b) the proportion of participants who maintain their HbA1c levels < 55 mmol/mol. Standardised outcomes would also help to analyse the cost-effectiveness.

Similarly for weight, interventions that lead to at least 5 percent reduction in body weight can lead to health improvements (eg, a decreased risk of type 2 diabetes),¹⁵⁻¹⁸ and so reporting the proportion of people that reduced their baseline body weight by at least 5 percent would be clinically relevant. The Choose Change project focussed on change in body fat, which is a novel approach and one that participants liked. A systematic review of weight loss studies that measured weight, BMI and body composition found that there was agreement across measures. However, fat loss accounted for most of the weight loss and so there is good rationale for including percent body fat as an outcome measure. The downside is that the accurate measurement of fat mass (eg, using DEXA scan) is expensive. Bioelectrical impedance is a cheaper and easier measurement, but its accuracy can vary depending on the quality of the equipment and the equations used to estimate body composition.¹⁹

A major factor in any behaviour change programme is loss to follow-up (LTFU). A commonly reported contributor to this is that those who are unable to achieve the behaviour change do not want to be followed up, whereas those who do well are keen to show their progress. For example, in the Alliance Health Plus project 752 patients enrolled and 242 completed the programme, suggesting that 510 were lost to follow-up. How to deal with those LTFU is often debated. One option is to simply ignore those LTFU and analyse data on those that completed treatment only. The problem with this method is that it tends to overestimate the effect of the programme. Those that are doing well, eg, losing weight, are likely to keep attending, whilst those who do not lose weight drop out. Future evaluations should undertake sensitivity analyses. The most basic of these is to use baseline observation carried forward. Although this is not perfect, it is simple to undertake and represents a conservative approach.

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Appendix 1: Evidence-based behaviour change techniques for increasing healthy eating and physical activity

Behaviour change techniques for changing physical activity and health eating behaviours¹⁴

- Provide information on the consequences of behaviour to the individual
- Provide information about others' approval
- Provide normative information about others' behaviour
- Goal setting (behaviour)
- Goal setting (outcome)
- Action planning
- Barrier identification/problem solving
- Set graded tasks
- Prompt review of behavioural goals
- Prompt review of outcome goals
- Prompt rewards contingent on effort or progress towards behaviour
- Provide rewards contingent on successful behaviour
- Shaping
- Prompting generalisation of a target behaviour
- Prompt self-monitoring of behaviour
- Prompt self-monitoring of behavioural outcome
- Prompting focus on past success
- Provide feedback on performance
- Provide information on where and when to perform the behaviour
- Provide instruction on how to perform the behaviour
- Model/demonstrate the behaviour
- Teach to use prompts/cues
- Environmental restructuring
- Agree behavioural contract
- Prompt practice
- Use of follow-up prompts
- Facilitate social comparison
- Plan social support/social change
- Prompt identification as role model/position advocate
- Prompt anticipated regret
- Fear arousal
- Prompt self-talk
- Prompt use of imagery
- Relapse prevention/coping planning
- Stress management/emotional control training
- Motivational interviewing
- Time management
- General communication skills training
- Stimulate anticipation of future rewards