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Social prescribing evidence map: technical report

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1 Purpose

The Public Health Wales Observatory Evidence Service has produced this evidence map and narrative summary to enable the Primary and Community Care Development and Innovation Hub to share evidence related to the effectiveness and practice of social prescribing in support of colleagues looking to implement these interventions within primary and community care settings across Wales.

2 Key messages

This evidence map looks at social prescribing and explored the question *How, why and in what circumstances might targeted, non-clinical interventions, services or programmes benefit the health and well-being of individuals and families with social, emotional or practical needs?*

Evidence mapping identified two types of evidence. These were research evidence assessing the effectiveness of interventions and evidence from experience: the lessons learned from the experience of designing and implementing intervention programmes.

Based on the needs that were targeted, two main types of non-clinical programmes or interventions were identified:

- Schemes targeting psychosocial needs, including link worker programmes (schemes linking people to a facilitator who assessed them and referred them on to sources of support in the community), community arts programmes, a horticultural programme and referral to welfare rights advice. The research evidence base for these programmes is largely characterised by before-and-after evaluations without comparison groups. This means that the evidence base is insufficient to robustly answer questions about their effectiveness. However, the evaluations of these programmes contain much evidence on the experience of designing and implementing programmes.

- Exercise referral schemes and commercial weight loss programmes intended for those who are sedentary and/or overweight or obese. The research evidence base for these interventions is characterised by evaluations using a control group. It should be possible to answer questions about the effectiveness of these programmes, although these evaluations contain little evidence on the experience of designing and implementing programmes.

Key messages about the design and implementation of interventions, services and programmes

- Evidence from the experience of those setting up programmes suggests that the time required to establish social prescribing schemes is often underestimated.

- Where social prescribing is new to primary care staff and their patients, evidence from experience suggests that it is important to engage with both groups. Primary care staff need to understand the services and interventions available and what they can offer. Patients need to understand why they are being referred and what benefits are anticipated.

- Many evaluations note the need to establish a clear referral pathway, with documentation that supports assessment of eligibility and evaluation. Evidence from experience suggests that the social prescribing referral process should integrate with existing referral processes and be simple to use. Feedback to referrers on the outcome of this was seen to encourage appropriate referral.

- Many evaluations report difficulties in collecting outcome data. Evidence from experience suggests that evaluation and data collection to support this should be considered when programmes are set up. A particular issue was the expectation that community and voluntary organisations would collect outcome data. This may require them to set up processes to do this and may be particularly difficult when community and voluntary organisations do not receive specific funding to take part in social prescribing schemes.

- Evidence from experience suggests that a link worker model where post-holders are employees rather than volunteers might be the better option for a flexible service able to support patient need. Resources are necessary to recruit, train and support link workers. Experience from link work and other programmes where staff are not experienced in working with people with mental health problems suggests additional training will be required to ensure this client group is provided with the support needed to fully engage with interventions.

- Those involved in social prescribing initiatives in Wales should be encouraged to maintain a lesson log to help facilitate onward dissemination of learning no matter what is ultimately achieved.

Key messages about the research evidence base

- Many evaluations report that a substantial proportion of those referred do not take up or do not engage with or complete the intervention offered. Research could be undertaken to identify barriers and facilitators influencing uptake and adherence, actions to mitigate these barriers, and suggest how interventions might be targeted more effectively.

- Models for link worker schemes varied. Some were based in general practice (GP) premises and were seen as members of the primary care team, while others were based within voluntary organisations or saw clients in their own homes. Research could help to identify the best model to encourage appropriate referrals and investigate whether the model used has an impact on uptake of and engagement with interventions delivered.

- Research could consider the extent to which link workers are the active ingredient in social prescribing, in some schemes, the link worker role is intensive, involving in-depth assessment of clients. In some examples, this includes motivational interviewing and goal setting. Some link workers make appointments on behalf of clients with the services to which they refer, and may accompany participants to appointments or activities. Some are in regular contact with participants and offer ongoing support. The extent to which the link worker–participant relationship is in itself a psychosocial intervention could be explored.

- This evidence mapping exercise was informed by a theory of change which postulates that social prescribing interventions lead to a reduction in demand for primary and community care, which would in turn increase the long-term sustainability of the system. The evidence map suggests that there is insufficient evidence, in terms of both its likely quality and the outcomes reported, to be able to answer this question. Under these circumstances, with the goal of improving population health and well-being, appropriate attention should also be directed towards alternatives to social prescribing initiatives where the evidence base for intervention may be more robust, and the return on investment proposition more certain.

3 Background and context

3.1 Purpose of this document

The Public Health Wales Observatory Evidence Service has produced this evidence map and narrative summary to enable the Primary and

Community Care Development and Innovation Hub to share evidence related to the effectiveness and practice of social prescribing in support of colleagues looking to implement these interventions within primary and community care settings across Wales.

3.2 Definition and models of social prescribing

Social prescribing is a way of linking individuals to sources of non-clinical, community-based support and could include a wide range of interventions, programmes and services. There is no agreed definition encompassing what is prescribed, to whom, by whom, how or why. The idea is underpinned by a bio-psychosocial model that considers the interaction of physical, social and psychological factors in determining health and well-being. A range of models with a variety of names might be considered to be social prescribing. These include broad models such as community referrals and well-being services, but might also include narrower models such as housing services. The umbrella term social prescribing is not universally preferred, as it may unhelpfully medicalise the act of linking people to community assets. It is used in this document only as a common point of reference.

3.3 Role of evidence mapping

Evidence mapping describes the quantity, design and characteristics of research in broad topic areas. It is useful when the question or questions addressed are very broad and the potential body of research to be reviewed is very large. Evidence mapping enables systematic and comprehensive identification, organisation and summarising of evidence on a broad topic, but does not include critical appraisal of the identified sources. Evidence maps are also useful for identifying gaps in evidence.

4 Method

4.1 Question development

In a public health setting evidence reviews usually consider what works for whom and in what context. Social prescribing is a complex intervention. It may involve a series of actions, the effectiveness of which may be context-dependent (specifically influenced by the way in which they are delivered).

Definitions of social prescribing vary and relevant non-medical interventions or services might not be described as such in the literature. The approach adopted for this work attempted to ensure that relevant sources were not excluded by the search strategy or inclusion criteria, while simultaneously ensuring that the strategy was sufficiently focused

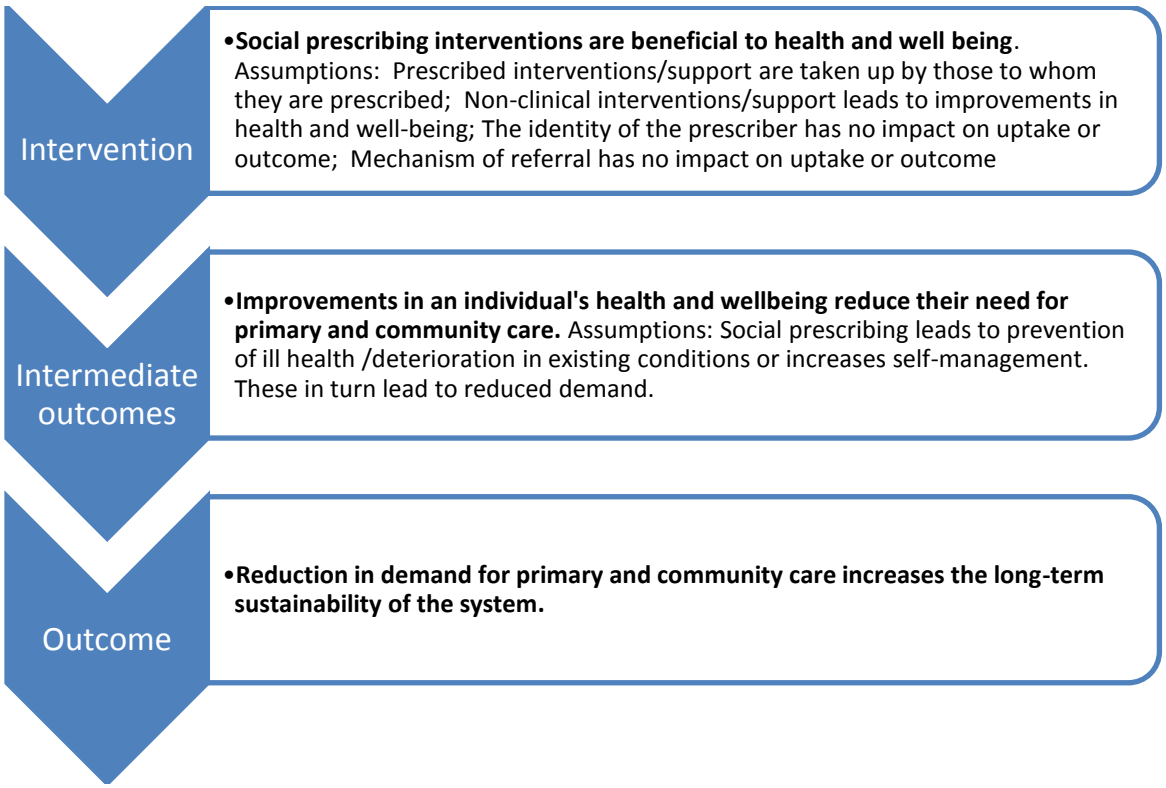
to ensure that the amount of material retrieved was manageable. Open-framed questions were used. Searching for and sorting of evidence in relation to these questions used a systematic process set out in an *a priori* protocol (available on request).

A theory of change was developed to describe how and why social prescribing might have an impact on the sustainability of primary and community care. This theory of change was used to develop the questions and inclusion criteria that were used for evidence mapping.

4.2 Articulating a theory of change

Social prescribing activities provide access to support and/or interventions that are considered (either directly or indirectly) beneficial to health and well-being, and could lead to reduced demand on primary and community care in Wales. Reduction in demand on primary care and community care contributes to system sustainability. While it is recognised that service impacts are not the only outcomes of interest, they appear to be an important driver of interest in social prescribing. Evidence mapping was used to identify whether evidence was available to test the assumptions made within a bespoke theory of change (Fig. 1).

Fig. 1: The theory of change used in developing this social prescribing evidence map.



4.3 Questions for evidence mapping

The primary question for the map is:

> *How, why and in what circumstances might targeted, non-clinical interventions, services or programmes benefit the health and well-being of individuals and families with social, emotional or practical needs?*

The secondary questions are:

> *What outcomes or intended benefits are reported as being of interest to social prescribing models?*
>
> *Which groups of beneficiaries are identified as suitable for targeting using a social prescribing approach?*
>
> *What intervention types are promoted within the context of social prescribing and do these have any shared characteristics?*

4.4 Source identification, selection and data extraction

A sensitive search[a] of databases was conducted, and authoritative websites were accessed for professional and grey literature.. Dates covered 2000 to December 2016. Quantitative evaluations of interventions that could be socially prescribed were included with no other limits on study type. Full details of the search strategy and results are included in a separate document, which is available on request. Outcomes of interested included improvements in health and well-being; measures of health care use and appropriate healthcare use and measures of uptake, retention in and completion of the intervention.

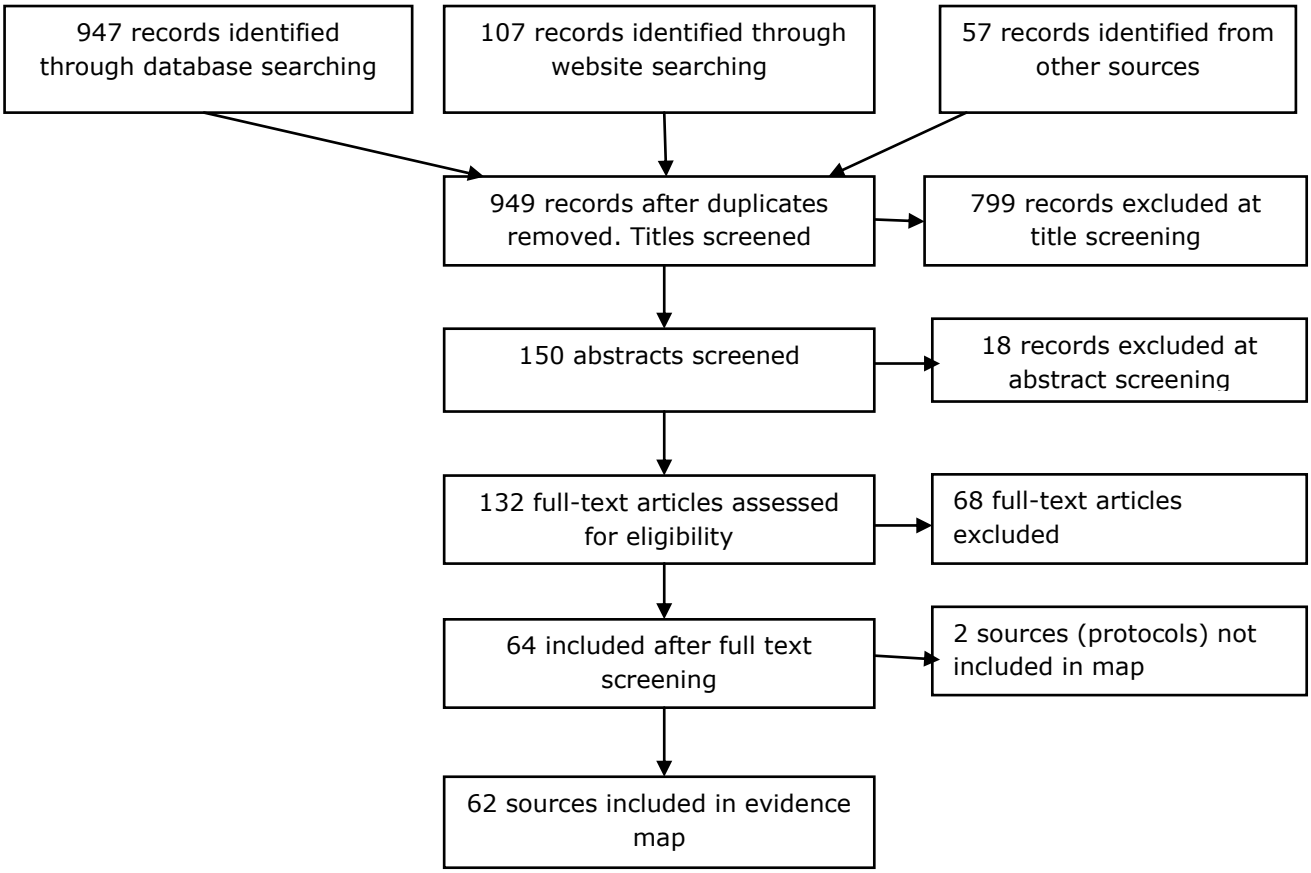
Titles were screened by one reviewer. Two reviewers screened all abstracts. Two reviewers screened full texts of all sources selected after abstract screening. One reviewer extracted data from the sources included at full text screening into an evidence map. Data on source type, intervention, population and outcomes measured were extracted. Data extraction was checked by the second reviewer. No critical appraisal of included sources was undertaken. The evidence map, in the form of summary tables, is included in the Appendix.

5 Results

[a] Sensitive searches increase the likelihood of retrieving relevant sources but can also increase the likelihood of retrieving irrelevant sources

The search yielded 949 unique sources, the majority of which were excluded at title screening. One hundred and fifty abstracts were screened and 62 sources met the inclusion criteria for the evidence map. The flow of sources through the mapping process is set out in Fig. 2.

Figure 2: Flow of information through the evidence mapping process



The sources in the map describe six different types of social prescribing programmes or interventions. These were link worker programmes (schemes linking people to a facilitator who assessed them and referred them on to sources and support in the community); community arts programmes; a horticultural programme; exercise referral schemes; commercial weight loss programmes; and referral to welfare rights advice. Although schemes were considered to fall into six different types, there was some overlap between the six types. The majority of sources were concerned with exercise referral schemes. The type of scheme and number of sources relating to each is set out in Table 1.

Table 1: Type of social prescribing initiative and number of sources found

Type of scheme/programme	Number of sources
Referral to link worker/ signposting	15
Community arts programme	8
Horticultural programme	1
Exercise referral scheme	33
Commercial weight loss programme	4
Welfare rights advice	1

Based on the problems they targeted these six types were considered to fall into two main types of non-clinical intervention. The first type predominantly targeted psychosocial need. These constituted link worker programmes; community arts programmes; the horticulture programme and referral to welfare rights advice. The second type included exercise referral and weight loss programmes, which targeted sedentary lifestyles and/or overweight and obesity.

5.1 Referral to link worker

5.1.1 Overview

Fifteen of the included sources looked at link worker and/or signposting programmes. Most of the evaluations did not include a comparison group. A summary of source types is included in Table 2.

Table 2: Referral to link worker number and type of source

Source type	Number
Systematic scoping review (3 RCTs, 1 cohort study, 3 evaluations)	1
Randomised controlled trial (RCT)	2
Non randomised controlled study	1
Project evaluation/uncontrolled before-and-after study	10
Uncontrolled – social return on investment	1

5.1.2 Intervention and model characteristics

Link worker programmes were those where participants were referred from health or social care services, or self-referred, to a facilitator who assessed their needs and then referred them on or signposted them to a broad range of community-based resources and interventions. The models described varied.

One scoping review focused on the mechanism for linking participants to interventions aiming to improve health and/or well-being by facilitating contact with other people, groups or community organisations[1]. Seven studies describing a range of models were included. One looked at an intervention to strengthen social networks by setting up small neighbourhood groups who met four times and discussed a particular subject, relevant to the local area, at each meeting: in this example, the link worker set up and facilitated these meetings. In other included studies the link worker arranged appointments and outings, made regular home visits, provided advice on local organisations, accompanied the service user to other organisations, offered one-to-one problem solving or developed a personal action plan[1].

A randomised controlled trial (RCT) in Avon looked at the Amalthea project[2]. The project was set up by general practitioners (GPs). Amalthea was a liaison organisation that facilitated access to voluntary organisations, both local and national, for primary care patients. Project facilitators were employed and trained by the organisation. Patients were offered an initial assessment within seven days of referral. They were followed up to provide support and encourage them to attend the voluntary, and occasionally statutory, services that were recommended to them. In some cases new support groups, for example one for single mothers, were established where no suitable provision existed. It is not clear in the report how this new support group was funded[2].

The Well London project was evaluated via an RCT[3]. The purpose of the project was to develop effective locally focussed, integrated, community-led approaches to improve community health and well-being that were sustainable even in the most deprived neighbourhoods[3]. Well London was made up of 14 different projects, some of which were delivered by local people who were recruited and trained, some by Well London Alliance partners (led by the London Health Commission which involved the Mayor, NHS, local government and the public), with others delivered by external providers. The projects varied considerably but included core projects intended to build community capacity and to encourage participation and eight themed projects. These themed projects encouraged participation in physical activity; made it easier for people to buy affordable and healthy food; promoted healthy diet; recruited and trained local people with experience of mental illness to deliver mental health awareness training; empowered women to take control of their mental well-being; trained local people to undertake mental well-being impact assessments; developed existing and new sites for community gardens, allotments and play areas; delivered healthy walks and community art projects and commissioned a wide range of arts and cultural activities[3].

The feasibility of using a graduate primary care mental health worker (recent psychology graduate) as a link worker with limited training in mental health and no knowledge of local community resources was evaluated in a before-and-after study[4]. A 'hub and spoke' model was used where the link worker was based at each of four GP practices for one half day each week, but accepted referrals from two other local surgeries. In a second model the link worker was based one half day a fortnight in each of seven practices. During the initial appointment, with the link worker made an assessment of the patients' psychosocial needs and advised them about which community resources might meet these. When necessary, the link worker supported attendance at the recommended organisations, either by making contact or by accompanying the patient[4].

A pilot project in Yorkshire and Humber involved six local Age UK organisations working with 12 GP practices[5]. In some practices a social

prescribing clinic was held in the surgery, others made telephone or fax referrals to the local Age UK office. Those referred were assessed by Age UK either in a surgery, their own home or by telephone. Onward referral was made to either Age UK services (for example befriending services, day and luncheon clubs, information and advice, benefit checks, trips and outing, activity clubs and groups) or to statutory and other voluntary or community organisations. The project was funded by Age UK, but one local Age UK received funding from its Primary Care Trust (PCT) to extend its services to a deprived area[5].

In the City and Hackney area of London 23 GP practices referred patients to three social prescribing coordinators employed by Family Action[6]. These assessed the individuals' needs and aspirations during an hour-long appointment before referring them on to mainly non-clinical community services delivered by statutory and voluntary groups. These were existing services and were not funded by the project[6].

A pilot project delivered by Voluntary Action Rotherham used a model with a project manager, who oversaw day-to-day running and liaised between voluntary sector services and the National Health Service (NHS), and five voluntary and community sector advisors[7, 8]. The advisors received referrals from primary care, made an assessment of care needs and referred onwards to voluntary and community services. Assessment was usually made during a home visit. The project was an element of an integrated case management pilot project: advisors were part of the case management team and attended meetings where patients who had been referred to them were discussed. Fifty five percent of project funding was used to support voluntary service activities. Patients could be referred to either existing mainstream voluntary sector activities or those specifically funded by the project [7, 8].

The development of a link worker service within existing voluntary services to enable health professionals to refer patients to non-clinical community services and networks was evaluated in Newcastle. Six GP practices and five voluntary and community sector organisations were involved. Patients were referred to the link worker whose role was to support them with personalised goal setting and buddying, and to signpost them to sources of information and support[9]. Buddying and its purpose was not described. A link worker specification was developed. This required them to have pre-existing knowledge and understanding of the local community and its services. Recruitment was among staff already working for the voluntary and community sector organisations: the role was said to be the same or very close to their existing role[9]. Interventions to which patients were referred were those already provided by voluntary sector services. There was no additional funding for voluntary providers beyond a small amount to attend project meetings and to support data collection and reporting. Project funding was used to

support project manager and link worker roles, as well as activity to engage GP practices[9].

A community navigation service in Brighton placed navigators in GP surgeries to assess patients non-medical support needs and to help them access groups, services and activities[10]. Funding seems to have been to support the project infrastructure. Navigators were volunteers with a background in helping people meet their health or social needs. They were recruited, trained and supported by a volunteer co-ordinator who worked for a voluntary sector organisation. Navigators offered up to six appointments of 45 minutes either in the GP surgery or patient's home. The services to which the people were referred seem to have been those already available in the community: service providers did not receive funding from the project[10].

A pilot scheme in one medical centre in Dundee (one of eight Scottish test sites sponsored by Scottish Government) took referrals from GPs and health visitors[11]. Link workers made contact with the patient to arrange the initial consultation, followed by up to three further consultations. Consultations explored the patient's psychosocial needs and the link worker facilitated access to existing local sources of support, activities and opportunities in the community. Part of the link worker role was to explore what services and activities were available. Link workers also considered if the referral to the social prescribing scheme was appropriate. The report contains no information on how the project was funded[11].

A project in Bradford was described as a patient empowerment project (PEP) [12]. Patients referred were assessed by the PEP and signposted or referred, or were supported to attend or access local groups and services. Read codes for *referred*, *enrolled* and *completed* created within the clinical system allowed patients to be tracked. Referrals were to existing services: there was no funding from the project to support or develop these[12].

The Wellspring Healthy Living Centre social prescribing project in Bristol offered GP referred patients 12 weeks of one-to-one support followed by 12 months of group support around a particular activity[13]. The centre used a key worker and goal-setting model, and took a co-production approach. The key worker supported the client to achieve the goals, working directly with them, using a range of approaches including motivational interviewing, brief interventions, and referral to a range of agencies, activities and services. These included housing and debt services as well as peer-support groups, physical and arts-based activities and training and employment opportunities. The project was funded from a variety of sources. The evaluation report suggests that the funding was used for the key workers and not the activities, agencies and services to which they were referred[13].

The Scottish Government Links Project ran for six months and involved 10 GP practices[14]. The project aimed to allow the GP teams time to explore the extent of their connections with the communities they served and how prepared they were both culturally and practically to signpost people to local groups and organisations. Each practice developed a directory of community resources, some of which were maintained online, and patients considered suitable were identified during consultations and signposted to these, but no link worker was involved[14].

Healthy Connections Stewartry, another project in Scotland, involved two GP practices both in rural settings[15]. The project was informed by a literature review, which had suggested that successful communication with stakeholders would enhance uptake. A marketing plan was developed. This included a 'Z-card' for GPs to hand to patients; a healthy reading postcard and a poster about the project that incorporated messages about how individuals can manage their own well-being. GPs referred patients to activities and services using the Scottish Care Information Gateway - the NHS Scotland system for the electronic exchange of information. This system can be linked with non-NHS providers. Patients were also encouraged to self-refer. A link worker is mentioned in the evaluation but the role is not made explicit. Meet and greet events were held in each practice so the GPs could meet the representative of each source to which they could refer and find out what they could offer. Social prescribing interventions were those already in existence in the local area and included exercise referral schemes; a listening project; art activities; learning opportunities; healthy reading literature; employment support and advice and financial advice[15].

5.1.3 Intended and actual beneficiaries

The scoping review identified schemes that targeted those with long-term conditions including mental health problems, those who were elderly and socially isolated and frequent users of primary care practices[1]. Indicators for suitability included poor social support mechanisms, psychological difficulties and vague or unexplained symptoms. Whether the intended beneficiaries were those who received the intervention was not discussed in the report[1].

The Amalthea project targeted those with psychosocial problems for whom the GP felt contact with the voluntary sector might be benficial[2]. Reasons for referral were interpersonal or relationship difficulties, anxiety or stress, bereavement or loss, depression, social isolation, financial problems, those having problems with psychological adjustment to illness and those with substance misuse problems.

The Well London project targeted communities rather than individuals[3]. Its focus was deprived neighbourhoods. These were selected to take part

by identifying the most deprived 11% of lower super output areas (LSOAs). From these boroughs the four most deprived LSOAs were identified and PCTs and local authorities were asked to select the LSOAs they thought would most benefit. A random process was used to select an intervention and control group LSOA from these[3a].

The study using a graduate primary care mental health worker as a link worker targeted those with psychosocial problems[4]. This included those with common mental health problems such as anxiety and depression and social problems such as isolation or relationship, housing or financial difficulties. Those referred were predominantly unemployed, had clinical symptoms of anxiety and depression and social problems. Those perceived to have been inappropriate referrals were those considered to need referral to specialist mental health services. This included those in crisis, with psychotic symptoms or considered at risk of suicide[4].

The Age Concern project in Yorkshire and Humber was intended to benefit older people with mild to moderate depression or who were lonely and socially isolated[5]. Sixty three percent of those referred lived alone. The evaluation report does not include any information on the numbers with mild to moderate depression referred[5].

The City and Hackney area project report did not specify its intended beneficiaries or include any detail on those who were referred[6]

The Rotherham Social Prescribing initiative was targeted at those with long-term conditions who were the most intensive users of primary care resources, with the intention of meeting their non-clinical needs. Their carers were also targeted[7, 8]. The majority of those referred were aged 75 years and over (66%), whereas 11% were under 60. The evaluation report does not provide information on why people were referred[7, 8].

The Newcastle project was targeted at people with long-term conditions, older people, carers, those with mental health problems and those who might benefit from lifestyle change[9]. Those referred predominantly had complex needs, most had one or more long term condition, but little detail on actual beneficiaries is included in the evaluation[9].

The intended beneficiaries of the Brighton and Hove community navigation scheme were those with long-term conditions and other vulnerabilities[10]. These included mild to moderate depression, bereavement, social isolation and financial difficulties. The most frequent reasons for referral were social isolation, low mood, stress, housing and financial issues[10].

The scheme in Dundee targeted those whose needs were not being met by existing services or who might be using services inappropriately[11]. The aim was to better address the factors that might be affecting mental well-being. Specifically, the scheme was intended for those who were, for

example, socially isolated; recently bereaved; lone parents; those on low income; those with mild to moderate depression and anxiety; those with long-term physical or mental health conditions and frequent users of primary care[11]. Those referred were predominantly from the target group. They were affected by social isolation, social phobia, low self-esteem and low mood and these phenomena in turn were related to unemployment, debt, physical and mental health problems and caring responsibilities[11].

The Bradford PEP targeted four long term conditions cardiovascular disease, chronic obstructive pulmonary disease (COPD), diabetes and depression[12]. A reported 7.5% of referrals had cardiovascular disease; 5.3% COPD; 12.1% diabetes and 66.1% depression. All were self-reported at baseline. However, 22.5% of referrals were not from the targeted groups[12].

The Wellspring Healthy Living Centre social prescribing project in Bristol targeted those with long-term conditions[13]. In this model, social prescribing was seen as an element of the recovery pathway for people with mental health problems.

The target of the Scottish Government Links Project was to improve the management of long-term conditions[14]. Needs identified during the project were mental health, addiction, unemployment, benefits/ financial, carer, social isolation, obesity, inactivity, relationship problems and cardiovascular disease risk[14].

Healthy Connections Stewartry targeted those aged 50 years and over with long-term conditions and their carers. It was intended as an early intervention approach to reshaping care for older people[15]. Of the 73 people referred, a small number were under 50, and the youngest referred was 17. No other detail on those referred was included in the report[15].

5.1.4 Anticipated and demonstrated outcomes and benefits

Anticipated benefits identified in the scoping review included strengthening of an individual's social networks; reduction in use of health care; improvement in psychosocial problems; an increase in the uptake of healthy behaviours; use of preventative services and an increase employment[1]. This review found two studies reporting reduction in depression, psychological distress or probable mental health problems. In one study with a control group, anxiety as measured by the Hospital Anxiety and Depression Scale (HADS) improved significantly in the intervention group, but depression did not not[1].

Social outcomes reported in the scoping review included reductions in social isolation and feelings of loneliness (four studies), and one of these

four found a statistically significant increase in frequency of social contacts when compared with the control[1]. Loneliness, measured using the Wenger Loneliness Scale, was reported in one study but there was no statistically significant reduction in this. The Amalthea RCT also used the DUKE-UNC Functional Social Support scale to assess effect on perceived social support, but again no significant impact was reported[1, 2].

Some studies included in the scoping review reported on health service use and the impact of social prescribing interventions on this was said to be variable[1]. One included study reported a significant reduction in the number of primary care appointments, number of consultations with a psychosocial aspect and in proportion of patients with prescriptions for psychotropic medication. However, there appeared to be no comparison group. Two further studies reported a reduction in primary care attendance, but neither appeared to have a control condition. Another study reported equal numbers of primary care contacts in both intervention and control arms, but fewer referrals of intervention patients to other services including mental health services[1, 2]. In another study, again with no comparison group, a significant increase in referrals to mental health services was reported following intervention[1].

The anticipated benefits of the Well London project were improvements in mental well-being, physical activity and healthy eating, as well as improvements in local environments and an increase in arts and cultural activities[3]. Participants reported that it helped improve their health and well-being[3]. Of those participants who returned an evaluation questionnaire, 80% reported an increased understanding of mental well-being; 86% reported feeling more positive; 83% that they had increased their levels of physical activity; it helped 63% improve their access to healthy food and 60% reported that they made more healthy eating choices[3a]. The project was evaluated using an RCT[3]. This showed no significant impact on healthy eating, physical activity or well-being, and therefore did not support the conclusions of the non-experimental evaluation of the project[3].

The feasibility study involving graduate mental health workers assessed client satisfaction, use of suggested services, clinical and social outcomes and primary care outcomes[4]. Satisfaction was reported as moderate. The General Health Questionnaire (GHQ-12) Clinical Outcomes in Routine Evaluation-Outcomes Measure (CORE-OM) and the Work and Social Adjustment Scale (WSAS) were used to measure outcomes. There was no comparison condition. Although the study reported that there was a reduction in the number of patients with a probable mental health problem on the GHQ-12, no test of statistical significance was reported. A statistically significant reduction in the number of face-to-face and telephone GP and other practice staff contacts was reported. An

improvement in WSAS score was found, but no test for statistical significance was reported[4].

The Age Concern project in Yorkshire and Humber wanted to improve mental health outcomes and community well-being and reduce social exclusion[5]. Improvement in mental well-being measured using the Warwick Edinburgh Mental Wellbeing Score (WEMWBS) was reported from initial assessment to completion of intervention, but it is not clear how many participants completed this measure[5].

The City and Hackney area project report did not specify intended outcomes[6]. The evaluation reports that although those who received social prescribing interventions described 'life changing' experiences when interviewed, there was no significant difference between those who received an intervention and the control group on measures of health, well-being, anxiety, depression, active engagement, quality of life and accident and emergency visits[6]. The GP consultation rate over the two-year life of the project was higher in the intervention than in the control group. The control group were reported to have lower health status[6].

The Rotherham social prescribing project assessed impact on the demand for hospital care however, no comparison group was included in the evaluation[7, 8]. Based on a sample of those referred, the evaluation reported a reduction in inpatient admissions, in emergency department attendances and in outpatient attendances. A tool to assess well-being outcomes was developed specifically for the project. This included eight measures said to be associated with aspects of self-management. The evaluation reports that 83% of those who completed the evaluation had experienced positive change[7, 8].

The anticipated outcome for the Newcastle project was that the number of unplanned hospital admissions would fall as a result of impact on people living with long-term conditions through the development of a more community-based preventative healthcare model[9]. Outcomes were assessed using the WEMWBS[9]. Of those for whom these data were collected, 69% had an increased score after intervention. Sixty four percent reported an increase in confidence to manage their condition. There was no control condition. Twenty six percent (32 of 124) of those referred achieved their set goal[9].

The Brighton project expected to have an impact on primary and secondary care but was unable to assess this[10]. No specific validated tools were used to assess patient outcomes. One hundred of those referred had follow-up telephone interviews and 84 reported improvements in their sense of well-being[10].

Outcomes expected of the Dundee pilot scheme were improvements in mental well-being and functional impairment[11]. The WEMWBS score and WSAS were used; the evaluation reports that 12 people completed these pre-and post-intervention, but no data are provided[11].

The Bradford patient empowerment programme anticipated improvements in BP (for those with cardiovascular disease); MRC score[b] (chronic obstructive pulmonary disease); HbA1C[c] (diabetes) and depression (Short WEMWBS). A score assessing health-related quality of life (EQ5D5L) was also used[12]. There was no statistically significant difference in HbA1C (diabetes); no statistically significant difference in MRC scores (COPD) and results for blood pressure (cardiovascular disease) were also not significant, although the proportion of those with a reading considered to fall within the threshold fell following the intervention. A small improvement was reported for mental well-being measured using the short WEMWBS, but this was not statistically significant. Scores for health-related quality of life, as measured by the EQ5D5L, had improved however this was not statistically significant.

A questionnaire on ability to self-manage was developed. This suggested that proportion of those who felt not at all confident was lower following intervention[12]. Primary care activity was also considered. The number of surgery appointments increased overall, but the number of appointments with GPs fell[12].

The Wellspring Healthy Living Centre social prescribing project was interested in a range of outcomes[13]. These were suicide prevention, preventing psychosis, preventing depression, reducing GP attendance, reduced prescribing, improved well-being, reduced social isolation, increased physical activity and increased employment. Data were available from 128 participants at baseline and 70 at three months. There was no control condition. There was a statistically significant increase in depression scores measured using the Patient Health Questionnaire. There was also a significant decrease in anxiety score measured using the Generalised Anxiety Disorder 7 item scale. A measure of social isolation showed a statistically significant increase in connectedness. There was a reduction in GP attendance rates (face-to-face contact) in the 12 months after the intervention when compared with the 12 months before for 60% of beneficiaries, although for 14% attendance increased[13].

The Scottish Government Links Project did not report on patient outcomes and benefits[14].

Healthy Connections Stewartry was specifically intended to test the impact on individual patient well-being and anti-depressant prescribing

[b] https://pcrs-uk.org/mrc-dyspnoea-scale
[c] Glycated haemoglobin is a measure of mean plasma glucose concentration

rates. The project included a self-management programme. The benefits and impacts of partnership working were also considered[15]. An increase in the mean WEMWBS score post-intervention was reported, but this was for only six of 73 people referred[15]. Of 36 individuals prescribed anti-depressants at the point of signposting, 14 were no longer prescribed afterwards, but the number of these who actually accessed a social prescribing intervention was not ascertained[15].

5.1.5 Intervention design and implementation lessons

The authors of the scoping review of studies on linking schemes identified involvement of health professionals in aiding the referral of patients to the interventions and the role of intervention facilitators as key components[1]. In six of the seven included studies health or social care professionals (GPs, practice nurses, social workers) screened patients for suitability before referring them to the link worker for further assessment. In the seventh study, which recruited through direct contact with intervention staff, 50% of patients refused to take part in the intervention[1]. Key characteristics of facilitators were identified as skills in tailoring activities to the needs and preferences of participants, a flexible approach (for example home visits and accompanying patients to community organisations) and being able to encourage participant attendance. A single point of contact and having link workers located in GP practices were reported by healthcare staff as making referral easy. Barriers identified by the review authors were lack of clarity around the role of link workers when they were located in GP practices, inappropriate referral to services, clinician apprehension over referring to voluntary organisations and the sustainability of services[1].

Engagement and retention of participants was a challenge[1]. Dropout rates before taking part in three included studies were reported at 35%, 41% and 50%, however, in one project all participants attended baseline assessment with 18% dropping out in the first month of receiving support. The highest dropout rate before assessment reported (50%) was in a study where the mean waiting time before initial appointment was 23 days. In the project where all attended their first appointment, the maximum waiting time was seven days. Other barriers to attendance reported in this review were transport, literacy, confidentiality and disclosure in voluntary groups and the appropriateness, availability and accessibility of activities[1].

The feasibility study on using a graduate primary care mental health worker as a link worker reported low uptake by those who were referred[4]. Of 234 people contacted by the link worker only 151 attended an assessment and 75 were followed up. No design lessons were discussed in the report[4].

The Age Concern project found that the support of all members of the primary care practice team is important when agreeing referral systems and that setting up the project can take longer than anticipated[5]. The evaluation authors reported that referral systems should be brief, easy to complete and fit in with the other referral systems already in use in the GP practice. Feedback to the referring health professional was found to be useful in encouraging referrals and a 'champion' within the practice was also useful for this. The evaluation authors also considered that initial assessment of the person referred should be by a skilled link worker and that this requires resources. This may imply a paid and not volunteer post, although this is not specified in the evaluation report[5]. The need for the collection of appropriate monitoring and impact/outcome information to discuss with commissioners was also identified as a key lesson[5].

In the City and Hackney project 11% of referrals did not attend their first appointment with the social prescribing coordinator[6]. The social prescribing coordinators were considered to be crucial and co-location in practices was considered to be important in creating rapport with clinicians, enabling GPs to book appointments directly with them. The evaluation reported that interviews with the community organisations to which patients were referred suggested that the coordinators referred appropriately and those referred had realistic expectations concerning the services available[6].The project gave no funding to the community and voluntary sector and the evaluation authors suggest that this created some challenges. The authors suggested that 'payment by results' could make such organisations more accountable, sustainable and facilitate monitoring of the intervention[6].

A series of in depth interviews were conducted as part of the evaluation of the Rotherham social prescribing project[7]. The lessons identified were the need to be able to respond flexibly to the needs of patients, their carers and provider organisations. For example, during the project gaps in service provision for carers were identified, so services were commissioned. Specific services were also commissioned to meet the needs of people from black and ethnic minority communities[7]. The project was managed by Voluntary Action Rotherham and some difficulty in getting GPs to engage with social prescribing was reported. Awareness amongst voluntary service providers about services provided by other providers involved in the project was also reported as an issue. This was addressed by holding a networking event to encourage providers to meet up and discuss their services in detail[7].

The Newcastle project had intended to use patient level data to provide evidence of impact but this proved impossible[9]. A lesson learned from the project was that this aspect should have been clarified before referrals started. The lack of resources to support evaluation to demonstrate the impact of the project was an issue. The need for all project documentation

intended for patients to have a consistent brand, simple messages and a clear focus on behaviour change was identified. The amount of time required to set up the project and build effective working relationships with the primary care practices was reported to have been underestimated. The need for active involvement of GP practices in agreeing and developing the referral process, including who should be referred, was highlighted. Having simple referral forms was seen as important. Practices reported some difficulties in getting patients to accept a social prescription. Seventy percent (87 people) of those referred engaged with the link worker and 79 of these went on to set goals. Patients reported that they did not always know why they had been referred. The evaluation report recommends that those referring patients to social prescribing need to explain the reason, potential benefits and emphasise behaviour change. It was reported that GPs felt link worker attendance at practice meetings would have been beneficial. Resources for, and provision of, link worker training was also seen as important[9].

The evaluation of the Brighton and Hove community navigators' project reported 393 referrals, 322 saw a navigator[10]. Seventy (18%) of those referred either did attend their appointment or did not want the referral. A further 16 patients were referred back to the GP because they had complex needs considered to require specialist support. The evaluation noted that feedback to referrers encouraged referral and increased the appropriateness of these. Lessons learned included the need for shared goals and perspectives across health and voluntary sectors; that using volunteers to undertake the navigator role is effective but requires a high level of emotional and mental resilience and the need for a flexible approach from the volunteers to enable patients to be accompanied to appointments with the services to which the navigator has referred them. The evaluation authors noted that volunteers have to be recruited, trained and supported and this requires resources. It was also noted that volunteers can be requested to do things but cannot be told, unlike paid staff. The evaluation also found that there needed to be a flexible approach to meeting the needs of the different GP practices. For example, there was not a common referral or recording system across the practices involved. In each practice the process to refer to a community navigator needed to fit in with each existing system. There was also a need to build relationships with the different GP practices and to provide training to GPs and surgery staff - this needed to be tailored to their availability. The authors of the evaluation noted that the navigators worked most effectively when they were treated as a member of the practice team[10].

The evaluation of the Dundee scheme reported that 123 patients were referred, 61 of whom (50%) met with the link worker[11]. A further 18 (15%) made telephone contact. Only 26 (21%) participants took up the services to which they were referred and 16 (13%) completed the programme. The report includes a series of key lessons. These were that

social prescribing was new and unfamiliar for both patients and those making referrals; the link worker role is essential; persistence and flexibility are needed to engage patients with complex needs and this requires skilled link workers and patient needs can only be addressed if a wide range of community services of appropriate quality are available[11].

Evaluation of the Patient Empowerment Project in Bradford found that the use of specific Read codes in clinical systems allowed them to assess changes in healthcare activity[12]. Uptake varied across the GP practices involved, the evaluation authors felt that additional engagement would be needed to embed social prescribing in all practices. Of patients referred to the project, 70% actually enrolled and of these 83% had a baseline assessment. Rates of uptake and engagement were reported by GP practice quintile of multiple deprivation. Of those having baseline assessments and completing follow up review: 17.9% were from practices in the least deprived quintile; 25% from those in the low deprivation quintile; 55.4% from practices in the middle deprivation quintile and the remaining 23.6% from practices in the high deprivation and most deprived quintiles[12].

Evaluation of the Wellspring Healthy Living Centre's programme noted the under-development of methods for data monitoring in the voluntary sector and the need for monitoring to assess impact[13]. The need to develop partnerships in order to address the complex needs among those with long-term conditions was also identified. One hundred and twenty-eight people had a baseline assessment, 70 (55%) of whom completed three month follow-up[13].

In Scotland the Links project found that in Glasgow of the 507 patients recommended to a resource, 287 (57%) expressed the intention to use this[14]. Over a five day recording period 131 patients were signposted to community resources. Eighty-three (62%) were followed up, and 50 (60%) had made contact with the resource. Of these, 35 were still using the resource four to six weeks later (27% of those originally signposted). The evaluation report authors observed that personalised, relationship-based approaches are important in connecting to services and need to be supported by up-to-date information on the local availability of services. Social prescribing was an unfamiliar concept for some primary care staff and they needed to have the opportunity to become familiar with the sources of support that were available[14].

The Healthy Connections Stewartry evaluation reported that separate link and community development worker posts are needed[15]. This is not explained in detail, but the suggestion seems to be that the link worker would provide one-to-one support and the community development post would be concerned with developing appropriate social prescribing activities[15]. Other design lessons from this project included the need for

early GP involvement in design of the process to ensure ownership; the integration of evaluation at the planning stage; sufficient funding to develop and commission local resources; the use of an assets-based approach to use existing local opportunities and the need for a common language understood by all involved[15].

5.2 Community arts programmes

5.2.1 Overview

Eight primary sources were found[16-23]. All these evaluations used a before-and-after approach in which there was no control or comparison condition.

5.2.2 Intervention and model characteristics

A practical arts workshop for older people with sensory impairments, run by Sense (a voluntary sector organisation) was accessed by GPs referring patients to a project coordinator[16].The coordinator made formal contact with the person referred and discussed their communication and transport needs with them. Participants were provided with transport to enable them to attend the workshops. Sense also provided support staff and communicator guides assisted a visual and tactile arts facilitator throughout all sessions. The project was delivered over 12 weeks. The project evaluation report does not discuss how it was funded, but the project was commissioned by Voluntary Action Rotherham[16].

In 2005 the UK Department of Culture Media and Sport commissioned a study to develop the evidence base in relation to arts participation and mental health[17]. Fifty one projects participated. These were a mix of projects to which people self-referred, were referred from secondary care or were referred by a GP, but the study does not detail the individual projects.

Colour Your Life was a social prescribing arts on prescription service delivered across County Durham by a consortium of seven voluntary organisations[18]. The service provided arts, ecotherapy and supported volunteering. It was commissioned by the Durham County Council Public Health Team. Some clients also accessed the service via an enablement fund, likewise funded from a council funding stream. This provided a personalised budget that allowed clients to choose what services to access. Applications to the fund were reviewed on the basis of measurable health benefits. Referrals to the service could be made by GPs, the probation service, domestic violence advisors, voluntary groups and Job Centre Plus. Those referred received a fully funded programme delivered over 10 weeks[18].

Start in Salford was an arts and well-being charity that had been operating for over 22 years when it launched a social prescribing service, Inspiring Minds, in 2006[18]. The service was commissioned by Salford PCT. The service offered training in woodwork, creative writing, music, drawing, painting, photography and horticulture. Referrals could be made by GPs, mental health teams and employment services. Those referred had their needs assessed and were offered a six month programme[18].

An arts on prescription programme in North West Leicestershire was funded through the district councils Staying Healthy Partnership grants[19]. The intervention was delivered by two small local social enterprises, in the GP practice premises in two blocks of six weekly workshops lasting two hours. Those attending the first block of workshops could be re-referred to attend the second block. All referrals were patients from the practice where the service was delivered, but not all were referred by the practice GPs. Some self-referred having seen information on posters in the practice, while others were referred through an Improving Access to Psychological Therapies programme[19].

Art Lift was a 10 week programme largely delivered in primary care settings in Gloucestershire[20]. The intervention involved art activities delivered by eight artists. These included working with words, ceramics, drawing, mosaic and painting. A health professional referred patients to the project. The evaluation report contains no information on how the project was funded[20].

A partnership between the NHS and a local authority cultural partnerships team, funded by Creative Scotland and the Fife Cultural Trust, enabled free arts courses to be offered[21]. Course content was decided after consultation with NHS Fife's Psychology Department service users. Six courses were made available: meditation, painting, photography, jewellery, arts and crafts and pottery. Courses were delivered by Fife Cultural Trust. Referrals were made by a range of healthcare professionals including community nurses but excluding GPs. Local voluntary organisations also made referrals and some participants self-referred[21].

The Creative Alternatives arts on prescription programme in Sefton was funded from the Invest to Save budget offered by the UK Government and commissioned by a local authority/NHS partnership[18, 22.] Creative activities were made available to clients for a period of up to six months. These included weekly core workshops (for example painting, sculpture and mosaic) and other regular workshops requiring specialist equipment (for example pottery and photography). All workshops were led by experienced arts facilitators. Outings to local galleries, festivals, concerts and other cultural events were also offered[22]. Referrals to the programme were from professionals (for example GP, psychologist, community

workers and job centre advisors) or self-referrals. Those referred were assessed by a referral officer before being accepted onto the programme. People who self-referred had to provide details of a professional who could be contacted as a referee. Once referred, clients were posted information and after initial screening were placed on a waiting list for face-to-face assessment. The referral officer also provided client support and signposted to other organisations. A 'moving forward' meeting took place on completion of the programme[22].

The Arts for Wellbeing scheme in County Durham was funded by the local PCT[23]. The scheme was intended as primary prevention and not an intervention service. Services were managed under 'a willing provider model' by a co-ordinating body (Pioneering Care Partnership) that commissioned services from an approved list of artists and art agencies. These delivered activities in blocks of six sessions. Referrers included Pioneering Care Partnership, Sure Start, self-referral, Job Centres and a range of voluntary sector agencies[23].

5.2.3 Intended and actual beneficiaries

The intended beneficiaries of the practical arts workshop delivered by Sense were older people experiencing social isolation and associated health problems, who had single or multiple sensory impairments[16]. Those referred ranged in age from 61 to 95. Four participants had hearing impairments, seven visual impairments and one multi-sensory difficulties. They also had a range of age-related cognitive, emotional and physical impairments and mobility problems[16].

The arts projects study commissioned by the UK Department of Culture Media and Sport focused on people with mental health problems[17]. Respondents had a range of diagnoses including depression, anxiety with depression, schizophrenia and bipolar disorder.

The intended beneficiaries of Colour Your Life were the people of Durham but not further described. The service was said to be tailored to meet the needs of isolated and rural communities[18]. The Inspiring Minds project was for people with enduring mental health difficulties and those with anxiety and depression, but there was no information on those who were referred[18].

In North West Leicestershire the arts on prescription programme was intended for people experiencing low-level mental ill health problems such as stress, anxiety and mild depression. All those referred met these criteria[19].

Art Lift was intended to make patients less dependent on health professionals, but which patients was not specified[20]. Those referred were

reported to have mainly mild mental health conditions although some were described as having secondary mental health conditions.

The project in Fife was for people with mild to moderate mental health problems such as anxiety, stress, depression and low self-esteem[21]. Those who were referred included people who had been prescribed anti-depressants and those seeing a psychologist or counsellor.

The Creative Alternatives programme in Sefton intended to offer a range of stimulating and challenging activities to people experiencing mild to moderate depression, stress or anxiety[22]. During the evaluation period 72% of those referred were unemployed, 73% were using other mental health services and 67% were prescribed anti-depressants and/or sedatives. Additional difficulties faced by the client group were physical health problems, sensory impairment, chronic pain, being a carer or single parent, housing issues, relationship difficulties and alcohol-related problems[22].

Arts for Wellbeing focused on new parents, carers and those with long-term conditions who were in a maintenance or recovery phase[23]. Those referred included people with chronic health conditions; people with autism; new parents; elderly residents in care homes; and those using day centres. Also referred were people with dementia; physical or sensory disabilities; stroke; brain or neurological disorders; mobility problems; arthritis; multiple sclerosis; severe complex needs; learning disabilities; mild mental health issues; depression and terminal illness[23].

5.2.4 Anticipated and demonstrated outcomes and benefits

The anticipated benefits or outcomes for the Sense workshops were increased self-confidence; reduced social isolation; the establishment of new friendships; belonging; group cohesion and improvements in mental well-being[16]. Impact on mental well-being was assessed using the WEMWBS, whereby the mean score for the group increased between the first and final weeks of the programme.

The arts projects study commissioned by the UK Department of Culture Media and Sport focused on outcomes related to mental health, social inclusion and empowerment[17]. Sixty two new arts projects participants (71% of the 88 who originally consented to taking part in the survey) from 22 different projects completed the survey. The Individual Empowerment Assessment Scale showed a small but statistically significant increase from project entry to six month follow-up. The CORE) measure was used to assess functioning: this decreased over the six months suggesting improved functioning, and this was statistically significant. A social inclusion measure was used which had been

developed specifically for this project. It showed a small positive change over the six months that was statistically significant. Changes in medication and service use were also assessed, but not reported[17].

Colour Your Life aimed to improve mental health and well-being but no outcomes were reported[18]. Start in Salford aimed to support people with mental health challenges by preparing them for work. The scheme also used the WEMWBS but no outcomes were reported[18].

Arts on prescription in North West Leicestershire set out to improve mental well-being, anxiety and depression scores through the delivery of quality art and craft activities with experienced practitioners[19]. Mean scores for mental well-being measured using the WEMWBS before and after the intervention increased. Mean score for anxiety measured using the General Anxiety Disorder Assessment fell. Mean score for depression measured using the Patient Health Questionnaire for Depression also fell. It is not clear if all participants completed these measures and is notable that there was no comparison group[19].

The Art Lift programme in Gloucestershire aimed to reduce stress; improve anxiety or depression; improve self-esteem, increase social networks; alleviate symptoms of chronic pain or illness and distract from behaviour related to health issues or to improve overall well-being[20]. Most outcomes were assessed qualitatively. Mental well-being was assessed pre- and post-intervention using the WEMWBS. The mean score of those who completed both the programme and the well-being scale showed a significant improvement[20].

The programme in Fife was seen as an alternative treatment promoting positive mental health for people with mild to moderate health problems who presented to GPs[21]. Outcomes were assessed using the HADS, the General Efficacy Scale and the WEMWBS. One hundred of 262 (38%) people who attended courses completed the evaluation. Mean scores for anxiety and depression showed statistically significant decreases after intervention; the percentage of participants scoring in the clinical range for depression was 62% pre- and 45% post-intervention, and for anxiety 93% pre- and 77% post-intervention. Statistically significant increases in self-efficacy and mental well-being were also reported[21]. The report authors noted that many participants were receiving other concurrent interventions.

Anticipated outcomes for the Creative Alternatives programme were a reduction in reliance on antidepressant or tranquiliser medication; reduction in the amount of GP contact time devoted to those with depression and/or anxiety; decrease in the symptoms of depression and/or anxiety; improvement in quality of life; increased self-esteem and confidence and improvement in a number of key and transferable skills

(for example social, literacy, planning) with the aim of increasing employment prospects[22]. Outcomes were assessed using the HADS; data were available from 64 clients before and after intervention. A statistically significant decrease in symptoms of both anxiety and depression was reported for 31 clients (48%). Dartmouth COOP[d] functional assessment charts were also used (72 clients). Statistically significant improvements in physical fitness, feelings, daily activities, social activities, health and quality of life were reported. Changes in pain and social support were not significant[22]. Forty-eight clients reported that they had reduced or stopped their medication and 53 clients reported a reduction in the number of occasions they had accessed GP services. No employment outcomes were considered[22].

The aim of Arts for Wellbeing was to increase the confidence and self-esteem of service users. The short WEMWBS was used to assess outcomes but no data were reported. The response rate was low and baseline and follow-up assessment scores could not be differentiated[23].

5.2.5 Intervention design and implementation lessons

The authors of the evaluation of the arts workshop delivered by Sense reported that the service raised awareness amongst GPs of the presence, needs and specific barriers facing those with sensory impairment[16].

There was no discussion of intervention implementation in the report on the arts project study[17]. The study authors highlighted the importance of considering intended outcomes when designing project evaluations. They also noted the need for controlled studies with sample sizes sufficient to detect a significant effect[17].

No information on implementation of the intervention or lessons on design were included in the reports on Colour your Life and Start in Salford[18].

Those delivering the North West Leicester arts on prescription programme noted that the project took longer to set up than they had anticipated. Of 15 referrals, 12 completed the project (80%) [19].

Of 202 referrals to the Art Lift programme, 157 (78%) attended and 100 (49.5%) completed the 10 week intervention[20]. The artists involved in the programme reported that they needed to be flexible, highly motivated and required enhanced support to enable them to work with people who had long-term mental health problems. Design lessons were: the need to

[d] http://www.dartmouthcoopproject.org/ The Dartmouth Primary Care Research Network chart system makes brief assessments of the functional status and adults and adolescents. The charts assess physical fitness, feelings, daily activities, social activities, pain, change in health, overall health, social support and quality of life.

promote the intervention to encourage referrals and uptake by those referred; to ensure that referral forms contain sufficient information to support evaluation; to consider evening and weekend sessions to increase accessibility: delivery of the intervention in GP premises created some problems with the amount of space available, access, the numbers that could be accommodated and sustainability. Where artists were not delivering the intervention in a surgery setting it was recognised that consideration should be given to making onsite support available to them to help them work with patients with mental health problems[20].

In Fife, following an initial pilot scheme it was agreed that the tutors providing the interventions should receive training on working with people with mental health problems, for example how to identify when someone is anxious and provide appropriate encouragement[21]. No information on the numbers referred and who subsequently attended or completed courses was provided.

In the evaluation period 355 referrals were made to the Creative Alternatives programme in Sefton[22]. Of these 187 were assessed and accepted on to the programme 168 (47%) did not meet with the referral officer. The evaluation report suggests that client attendance at workshops was poor but no data were provided. Design lessons were the need to limit the numbers attending each workshop (maximum capacity 12), and an attempt to reduce substantial waiting lists with a temporary increase in numbers temporary increase in numbers was considered to have placed additional strain on artists and programme officers and was therefore unsustainable. The client support element of the programme was seen as crucial. Clients required a high level of emotional support. There had been an intention to access this support through other local voluntary organisations but there was no budget for this and it could not be obtained. It was felt that the burden this placed on programme staff was not sustainable and support for them was considered to be inadequate. There was no budget to support clients on low incomes or with child care or travel costs and this was seen as a barrier to attendance[22].

Of 604 people referred to Arts for Wellbeing, at the point at which the evaluation was undertaken 198 were waiting, 108 were actively engaged, 291 had completed a course and 7 had withdrawn[23]. Lessons learned included the need for a feedback pathway as well as one for referral, so that participants could discuss the benefits of the scheme with their clinician. Venue was seen as important: the use of community venues to deliver the sessions rather than medical or academic settings was preferred. The importance of effective communication between commissioner, referrers and providers was highlighted. None of those attending the scheme were referred by GPs, so promoting the scheme to them was considered important. The willing provider model used by the

scheme (this had been adapted from a model used for smoking cessation services) was seen as creating unnecessary and expensive contracting arrangements. The evaluation authors concluded that this model should not be used in future; that artists services should be procured using a tendering process and the PCT should contract directly with providers and fees for artists should be determined by sessional costs rather than by participant. The need to provide a mix of urban and rural services and to offer fewer but more generic activities was identified. Establishment of a clear referral pathway, with documentation that supports assessment of eligibility and evaluation and consistent collection of outcome data were also design lessons[23].

5.3 Horticultural programme

One source evaluating a horticultural programme was identified. This was a service evaluation and outcomes were measured using a before-and-after approach with no comparison group[24]. The People, Life, Landscape and Nature (PoLLeN) programme was delivered by the Bromley-by-Bow Centre. It involved a range of horticultural activities, with the opportunity to gain a City and Guilds qualification, and creative activities. No information on how the programme was funded, delivered or how referrals were made is included in the report.

The intended beneficiaries were adults with direct experience of mental distress, but no information on who received the programme was provided. Anticipated benefits were: improvements in mental well-being and physical health; reduction in the stigma associated with mental ill health; improvement in social networks and social inclusion; development of new skills; facilitation of access to a range of volunteering, training and employment opportunities and support to participants with a range of social, welfare and health issues. Outcomes were measured using the 10-item short-form CORE 10 and the WEMWBS. However, complete data were reported from only 17 participants in the evaluation, the total number of participants in this time span was not reported[24].

No measures of uptake or retention were reported. Design lessons included the need for a more coordinated approach to evaluation that involved all health and social service professionals referring into and delivering programmes, and use of a common set of validated assessment tools at referral and at key points during programmes to collect useful quantitative information. Greater clarity on the place of social prescribing activity within clinical care and the need to link evaluation with medical records and biometric data were also design lessons, as was the need for project funding to support robust evaluation of projects and for more attention to be paid to costs and benefits of projects[24].

5.4 Exercise referral schemes

5.4.1 Overview

The greatest proportion of sources (53%) looked at exercise referral schemes and many of these had been evaluated using RCTs. Systematic reviews and primary studies have been included and some of the primary studies appear in one or more of the systematic reviews. Where this has occurred the primary studies are discussed in the context of the systematic reviews and have not been considered separately. Details are included in the evidence map in the Appendix.

Table 3: Exercise referral programmes number and type of source

Source type	Number
Systematic review and meta-analysis	1
Systematic review and economic evaluation	1
Systematic review	8
Non-systematic literature review	1
Randomised controlled trial	5
Randomised controlled trial with economic evaluation	4
Non-randomised controlled trial	1
Evaluation, uncontrolled before-and-after	8
Longitudinal study	1
Survey	2
Mixed methods	1

5.4.2 Intervention and model characteristics

A systematic review of RCTs and quasi-randomised controlled trials with a meta-analysis considered the effectiveness of aquatic exercise for musculoskeletal conditions[25]. Aquatic exercise was defined as any type of endurance, flexibility, strength resistance or aerobic exercise conducted in a pool. Included interventions varied in class and programme duration but included similar elements. No information on who delivered the intervention or how people were referred was included, so the assumption has been made that the interventions fall within the definition of social prescribing used to produce the evidence map[25].

A systematic review and economic evaluation of exercise referral schemes in primary care included schemes that involved a combination of counselling (face-to-face or telephone), written materials and supervised exercise training[26]. Route of referral was not specified. In one of the included studies participants were referred from primary care to a local walk coordinator, who telephoned them to explain the programme and invited them to attend a specific walk; they received a maximum of three telephone calls[42]. Whether the walk coordinator was a volunteer was not specified. In a second study patients were referred from primary care and

had an initial assessment conducted by a research assistant in the primary care premises[45]. Those assigned to the exercise referral intervention were given written information with reason for referral, their resting heart rate and any prohibited activities noted, and told to take this to the local leisure centre. They were offered a 10-week exercise programme, two sessions per week at half normal price[45].

A systematic review of community based exercise programmes looked at exercise interventions delivered outside institutional settings[27]. This included community facilities and interventions delivered in the participants own home. Formal rehabilitation programmes were excluded. Seventeen programmes were included (three of which were delivered by physiotherapists). They ranged from eight weeks to 18 months duration, some were land-based, some aquatic, some were supervised and some not. Programmes included walking, stretching and flexibility, balance training, aerobic exercise and resistance training. No information on the referral process was included[27].

Another systematic review of exercise referral schemes (StROLERS) included those where referrals were made either by primary care clinicians or participants were invited using the primary care record database[28]. Schemes involved an initial assessment, provided a programme tailored to individuals needs and included supervision and monitoring. These were usually existing services, delivered in a leisure centre, swimming pool or private gym. Walking schemes were also included[28].

A systematic review and meta-analysis focused on exercise in clinically depressed adults[29]. Little detail is included on the intervention model and characteristics. Participants were recruited from primary care and secondary mental health services. Exercise interventions were made at group or individual level. There is no information on who delivered the intervention, or where[29].

A systematic review of levels and predictors of exercise referral scheme uptake included schemes where a primary care professional referred to a third-party provider[30, 32]. To be included in the review exercise programmes or activities had to be tailored to the individual and involve initial assessment and ongoing monitoring. In addition they needed to offer either one or a combination of, counselling (face-to-face or telephone), written materials and supervised exercise training[30, 32]. A second systematic review by the same authors included the same studies but focused on health outcomes[31, 32].

A review of exercise referral schemes in adults looked at programmes where referrals were made by primary care clinicians[33]. To be included, programmes needed to involve an initial assessment, a programme

tailored to individual needs and involve monitoring and supervision throughout. Participants could be recruited during consultations or identified by searching the primary care medical record database[e]. Programmes were usually delivered in a leisure centre, swimming pool or private gym, but also involved gardening and walking[33].

A review of attendance at exercise referral schemes in the UK included studies where interventions were based in primary care and involved referral to an exercise professional[34]. Home-based activities were included. Most interventions lasted 10 to 12 weeks. Referral was generally by a GP[34]. A literature review on the evidence for exercise referral schemes included interventions providing access to exercise and/or facilities where referral was via a primary care clinician[35].

An RCT looked at leisure centres providing an exercise referral service[36]. Referrals were made by a GP or practice nurse. No information was provided on whether those referred had to pay for the intervention. This was described as a theory-based intervention (self-determination theory). The intervention began with a consultation with the health and fitness advisor where the participant's exercise history and the risks and benefits of increased physical activity were discussed. Participants were then offered an assessment and were given a self-management booklet designed to encourage a more autonomous perspective on physical activity initiation. There were further brief interactions between the health and fitness advisor at one and two months, focusing on sustaining any positive changes. There was a final consultation at three months and a further self-management booklet was provided. The standard (comparison) intervention was a one-hour consultation with the health and fitness advisor, a fitness assessment, and the offer of an appropriate group or individual programme. This group were also offered an exit consultation. The programmes lasted 10 to 12 weeks[36].

The effectiveness and cost-effectiveness of the exercise referral scheme in Wales was assessed in a range of studies based on a randomised controlled trials[37, 43, 44, 53]. Participants were recruited by primary care health professionals. Those receiving the intervention were offered a tailored, subsidised (£1 per session) 16 week exercise programme delivered by a qualified exercise professional in local authority leisure centres, four community centres and one countryside service. On entry to the programme participants had an initial consultation with the exercise professional. This used motivational interviewing, included a baseline assessment, involved goal setting and gave an introduction to the leisure centre. Participants received one-to-one exercise instruction and/or attended group exercise classes. After four weeks there was telephone contact with the exercise professional to review goals. At 16 weeks there was a final consultation, assessment and signposting to ways to continue

[e] This is very similar to source 28. Same authors, some differences in included studies.

exercise. At eight months there was further telephone contact from the exercise professional and at 12 months a repeat of the measures completed at entry[43, 44, 53].

An enhanced green prescription scheme in New Zealand was assessed using an RCT[38]. The intervention was already widely implemented in primary care at the start of the study. The intervention was prescribed by GPs or practice nurses. In addition, a 30 minute face-to-face visit with a primary care nurse took place at six months to monitor progress and provide additional support. Following completion of baseline measures participants were given a 'lifestyle script' recommending brisk walking, or an equivalent, at a suitable duration and frequency. This script was sent to the trained exercise specialists, who had training and experience in motivational interviewing. These provided telephone support to participants assisting with choice of activity and development of an activity plan that fitted the participant's lifestyle, involved goal setting and ways to overcome personal barriers to physical activity. This telephone counselling continued over a nine month period, with ongoing support focused on achieving goals. The exercise specialist provided the nurse with a written progress report to use as a discussion tool at the six month meeting. Information on physical activity and motivational aids such as fridge magnets and activity record charts were also offered[38].

In Spain an RCT was undertaken to assess the impact of a physical activity programme on the total number of primary care visits[39]. Patients were recruited from primary care. The intervention was delivered in the primary care facility by an exercise professional. Sessions were twice a week for three months and at no cost to participants. They included aerobic activity and strength training. During the last two sessions visits were made to community resources (for example sports facilities) and participants were introduced to physical activity specialists to help them continue with regular physical exercise. These sessions were offered at a special monthly rate[39].

The Bolton exercise referral scheme was evaluated using a randomised controlled trial[40]. Established in a local authority area, the scheme took referrals through primary care while community and secondary providers also made referrals. Funding was jointly provided by the local authority and NHS. Referrals were faxed or posted to an exercise referral officer who sent those eligible a written information pack then contacted them by phone to invite them to attend an exercise consultation. Programmes offered ranged from a structured programme at a local gym through to guided walks[40].

A multi-component weight control programme in South Gloucestershire involved exercise referral and attendance at a Weight Watchers® programme[48]. The scheme was evaluated using a before-and-after

approach, and there was no comparison condition. This NHS-offered scheme included dietary, physical activity and behavioural change components. Participants received vouchers to enable them to attend 12 weekly Weight Watchers® sessions at no cost. The South Gloucester Council exercise-on-prescription team provided participants access to local community-based leisure centre gyms for one-to-one physical activity sessions. The exercise-on-prescription practitioners had training in theory-led behaviour change techniques and used motivational interviewing with the aim of initiating behaviour change by strengthening and consolidating participant commitment and self-confidence to change[48]. Individual goals were agreed and barriers to change, or to engaging with the intervention addressed. The programme started with a 40-minute individual session with baseline assessment. Participants attended 12 weekly sessions of the dietary and physical activity components. All sessions were accessible using public transport[48]. Referrals were opportunistic and made by GPs and other health professionals.

A Type 2 diabetes prevention programme in New York State, delivered by the Young Men's Christian Association (YMCA), focused on improving nutrition and increasing physical activity[49]. The programme was evaluated using an uncontrolled before-and-after approach. Delivered by trained lifestyle coaches, the scheme had 16 weekly core sessions and six monthly maintenance sessions. It was provided free to participants and was funded by the state health federation. Staff from the New York State Diabetes Control Programme undertook face-to-face outreach with healthcare providers, some of whom had existing relationships with YMCAs, to encourage them to refer participants to the programme[49].

An exercise on prescription scheme for a multi-ethnic female population in the Netherlands was assessed in a non-randomised trial[51]. The scheme recruited from GP practice lists, from which women considered eligible were sent a letter from their GP. Participants were assessed by a lifestyle advisor who documented individual goals and their preferences with regard to physical activity. They were re-contacted when the next available exercise course started. At the start of the programme participants were asked to pay 50 euros, 10 of which were returned if they completed 85% of sessions. Participants were recruited from deprived neighbourhoods. Twenty sessions of supervised physical activity were provided. Participants were contacted immediately by the lifestyle advisor if they missed a session. Exercise sessions included fitness, aquarobics, aerobics and dancing. Daytime and evening sessions were available. Sessions were available at several locations across the city; these were easily accessible by public transport and in neighbourhoods with large ethnic minority populations[51].

In Wales, a survey of existing exercise referral schemes was undertaken before the national scheme was set up[52]. No model of scheme was specified. Questionnaires were sent to lead health promotion specialists in each of 22 local authority areas. Eighteen schemes led by local authorities were identified; other schemes were led by the local public health team; NHS Trust; joint local public health team and local authority; local authorities with other public sector partners and private health clubs. The referral mechanism was not discussed. The most common venue where the initial consultation took place was a local authority leisure centre; in two schemes this took place in a health centre; in seven a community facility was used and in a further two operated from private venues. Most exercise activity took place in local authority leisure centres or swimming pools. Fifteen schemes included outdoor activities and two included activities in people's homes or residential care. All offered some kind of supervised activity. Programmes generally lasted between 10 and 16 weeks but one offered a five-week, 10-session course, and one 52 weeks. Some courses offered schemes at no charge; the highest charge was £3.10 per session (2006). Funding for schemes varied: the scheme in private facilities received no funding, while others were funded by the NHS or local authorities and eight schemes received New Opportunities funding[52].

The Heartlinks project funded by Welsh Government was evaluated using a before-and-after approach[54]. It took place in Merthyr Tydfil and ran for six years. Previous attempts to establish an exercise on referral scheme had experienced limited GP engagement. Patients were initially referred by GPs and practice nurses. This was widened to all health professionals and a local back-to-work project; alternatively patients were identified from disease registers and invited to participate. Referrals were made to a project officer (sports scientist) who arranged to meet the participant for assessment. Individual circumstances were considered to identify potential barriers to activity and motivational interviewing used to help to agree on activities that were appropriate to the participant's domestic and physiological needs. They were given the option of a range of activities. These included home activity kits containing wrist and ankle weights, dumbbells an exercise ball and a tailored exercise programme; guided walks programme; gentle exercise classes; aqua exercise classes; t'ai chi; subsidised access to local sports facilities or subsidised access to a local health club[54]. The exercise programme lasted 12 months with follow up consultations for monitoring and review at one, three and six months.

An exercise-on-prescription scheme in South Gloucestershire was evaluated using a before-and-after design[55]. Little detail was provided on the intervention. The programme lasted for 12 weeks. Referrals could be made by GPs and other primary health care staff, physiotherapy clinics and drug and alcohol treatment centres. Programmes were tailored and supervised[55].

A service evaluation was undertaken for a pilot physical activity referral scheme in Belfast called Healthwise[56]. There was little detail of the intervention but it involved physical activity in a gym with an instructor.

A scheme in Lincolnshire was evaluated using a before-and-after approach[57]. Health professionals made referrals for supervised exercise but little detail on the intervention is contained in the evaluation report.

5.4.3 Intended and actual beneficiaries

Intended beneficiaries included in the aquatic exercise study were adults, who had not recently had surgery and had been diagnosed with at least one musculoskeletal condition[25]. Included studies focused on osteoarthritis and/or rheumatoid arthritis, fibromyalgia, low back pain and osteoporosis.

The intended beneficiaries included in the systematic review and economic evaluation were adults aged 18 years and over with or without a medical diagnosis and deemed appropriate for exercise referral[26]. In four of the included studies referrals were those considered to have a health risk that could be attenuated by increased levels of physical activity, commonly risk of coronary heart disease (CHD). In the other four studies referral was on the basis of being sedentary[26].

The intended beneficiaries included in the review of community-based exercise programmes were people with chronic disease[27]. Specifically COPD, cardiovascular disease (CVD), stroke, osteoarthritis and diabetes were included. The actual beneficiaries were those with diabetes, osteoarthritis, COPD and stroke.

Intended beneficiaries of the StROLERS review were adults with sedentary lifestyles and cardiac risk factors. Actual beneficiaries were these groups but one scheme targeting older frail adults was also included[28].

The review on exercise in clinically depressed adults included studies where participants had been diagnosed with mild-to-moderate depression, although one study was in those with moderate-to-severe depression[29].

In the review looking at uptake of exercise referral schemes intended beneficiaries were those considered sedentary with or without a medical diagnosis[30, 32]. Included studies specified intended beneficiaries as those with cardiovascular risk factors[41]; those who were sedentary and had one or more of cardiovascular risk factors, mental health problems, a musculoskeletal condition, respiratory/pulmonary problems or a neurological condition[43]; and older people considered to be borderline

frail[46]. Those referred in the included studies were generally those targeted[41, 43].

In the review and meta-analysis looking at health outcomes, intended beneficiaries were those considered to be sedentary, with or without a medical diagnosis. Those referred were generally white, sedentary, middle-aged adults with evidence of at least one cardiovascular risk factor[31, 32].

Intended beneficiaries in the review looking at primary care clinician referrals to exercise schemes were not specified[33]. Information on those referred was not included.

The review on attendance at UK exercise referral schemes reported that those targeted included people with one or more modifiable CHD risk factors but that most schemes lacked specific targeting[34]. Most of the included studies did not include detail on who was referred, but included those who were overweight and those with hypertension.

Intended beneficiaries for studies included in the literature review were adults who were sedentary and who were healthy or had a medical condition[35]. Those referred included those who smoked, were hypertensive, overweight or sedentary, however, a number of the included studies appeared to have offered participation to healthy individuals with no identified risk factors[35].

The RCT targeted those who had two or more risk factors for CHD; people with chronic medical conditions such as asthma, bronchitis, diabetes, mild anxiety or depression; people for whom regular activity might delay the onset of osteoporosis; people with borderline hypertension and those perceived by the GP or practice nurse to have motivation to change[36]. The majority of those who participated were from non-White UK ethnic groups, reported doing less than 150 minutes of physical activity each week, and the majority were overweight or obese. Twenty percent were considered to probably have clinical depression and 35% probably had anxiety[36].

The national exercise referral scheme in Wales targeted those considered sedentary with at least one medical condition. This included CHD risk factors; smokers; a mental health condition; musculoskeletal problems; respiratory or pulmonary problems; a neurological condition; chronic fatigue and diabetes[43, 44, 53]. There were comprehensive inclusion and exclusion criteria for the scheme[44]. Those who were referred were most likely to have CHD risk factors alone or in combination with mental health issues[44].

The green prescription scheme in New Zealand was for women aged 40 to 74 who were not achieving 30 minutes of at least moderate-intensity exercise on 5 days or more each week. This appears to have been the group that was recruited[38].

The Spanish physical activity programme was targeted at those aged 18 to 85 with at least one chronic disease (diabetes mellitus; COPD; asthma; hypercholesterolemia; hypertension; chronic heart failure; obesity; osteo-articular chronic problem and chronic musculoskeletal pain) who engaged in less than half an hour of moderate or vigorous physical activity on five days a week[39]. Those who received the intervention were those targeted.

The intended beneficiaries of the Bolton exercise referral scheme were those adults who were sedentary, doing less than 90 minutes of moderate or vigorous activity each week[40]. Those referred had CHD risk factors, including individuals post-myocardial infarction (MI). The most common reason for referral was obesity (58%); others were sedentary with no additional risk factors (25%); had diabetes (21%) or were on the CHD/MI register (9%) [40]. About 10% of referrals were considered inappropriate because they were not sedentary.

The Gloucestershire multi-component scheme targeted adults with a body mass index (BMI) of 28 or above, co-morbidities and a ready to change attitude[48]. Of those referred 95% were considered to be sedentary and had a BMI of 30 or above.

The intended beneficiaries of the New York State Diabetes Prevention Programme were those 18 years and over who had a BMI of 25 or over and whose blood-based diagnostic tests indicated pre-diabetes[49]. Of those who participated in the programme 79% met these criteria.

In the Netherlands the intended beneficiaries were women aged 18 to 65 from deprived neighbourhoods who were not exercising for 30 minutes a day on at least five days a week and who had visited their GP at least twice in the previous three months[51]. Of those receiving the intervention, 90% were overweight or obese and 59% had a low level of education or none at all. It is implied, but not stated, that all met the physical activity criterion[51].

The survey in Wales identified schemes that were open to all; schemes responding included those that targeted people from a particular geographical area including areas with high social deprivation, while six schemes focused on those with CHD risk factors[52].

The intended beneficiaries of the Heartlinks programme were sedentary adults identified as at risk of CHD. Those referred were sedentary and in addition were overweight; hypertensive; had family history of CHD; had

raised cholesterol; were smokers or had Type 2 diabetes[54]. Participants also had a range of co-morbidities.

The South Gloucestershire exercise-on-prescription scheme intended to manage a range of medical conditions by increasing participant's physical activity[55]. No referral criteria were specified. The most frequent reasons for referral to the programme were a BMI greater than 30 and depression. Long-standing illness was reported among 12.5% of those referred; these included CHD, diabetes and pulmonary disease[55].

The intended and actual beneficiaries were not included in the report on the Belfast Healthwise scheme[56].

Those expected to benefit from the Lincolnshire exercise referral scheme were not described in the evaluation report. Approximately 50% of referrals were for obesity. Other reasons were musculoskeletal, mental health and respiratory problems[57].

5.4.4 Anticipated and demonstrated outcomes and benefits

Anticipated outcomes for the aquatic exercise study were improvements in pain, physical function and quality of life[25]. Most studies reported on pain and physical function and some reported on quality of life. The review authors concluded that aquatic exercise programmes had moderate benefits for pain, function and quality of life, comparable with those achieved through land based exercise[25].

Outcomes of interest for the systematic review and economic evaluation were physical activity, physical fitness, health outcomes, adverse events, uptake and adherence[26]. The most commonly reported outcomes were proportion achieving 90 to 150 minutes of at least moderate intensity activity each week. The review authors concluded that exercise referral schemes can lead to improvements in self reported levels of activity when compared to receiving advice alone[26]. The included health walks study measured self-reported physical activity, attitudes to exercise, body mass index, cholesterol, aerobic capacity and blood pressure[42]. Those receiving the walk intervention increased their level of physical activity above the levels reported in the advice-only group, but there was no reported change in other cardiovascular risk factors[42]. Anticipated outcomes in the second primary study were changes on the Physical Self-Perception Profile, fitness, physical activity, BMI, body fat, hip and waist circumference and adherence[45]. Of all those randomised, 47% in the exercise group and 78% in the control group completed all assessments. No significant differences were reported between intervention and control group physiological outcomes, but the exercise group were significantly more positive about their physical self-worth, physical condition and physical health[45].

Anticipated outcomes for the review of community-based exercise programmes were improvements in health-related quality of life and functional capacity[27]. Included studies assessed functional capacity using the six-minute walk test and used a range of measures to assess health-related quality of life. The review authors conducted a meta-analysis that suggested the interventions had a small impact on functional capacity and a small-to-moderate impact on health-related quality of life[27].

Outcomes anticipated for studies included in the StROLERS review were not specified[28, 50]. Outcomes measured were physiological (skin fold thickness; BMI; hip-to-waist ratio; blood pressure; serum cholesterol; balance and timed walking and health status measured using the SF-36) as well as psychological (self-perception using the Physical Self Perception Profile and mental state using the mini mental state examination and stage of change). Participant satisfaction and health service activity and costs were also reported. Authors of the review conducted a meta-analysis and concluded that there had been a statistically significant increase in the numbers of sedentary people becoming moderately active at eight to 12 months, but that the absolute risk reduction was small (probably because of poor compliance rates). No impact was shown on GP visits[28].

Anticipated benefits in the review of exercise for adults with depression were improvements in their condition[29]. Outcomes were assessed using the Beck Depression Inventory, the Clinical Interview Schedule, the Hamilton Depression Rating Scale and the Symptom Check List – depression subscale. Review authors concluded that exercise interventions may have a small, short-term antidepressant effect, with no effect seen for interventions of more than 10 weeks and no long-term effect seen beyond the end of the exercise intervention[29].

The review of uptake focused on measures of uptake and adherence[30]. Included studies anticipated changes in physical activity[41, 43, 46], anthropometry, physiology and biochemistry[41] as well as psychological benefits[41]. Outcomes demonstrated in the included studies were increases in physical activity[41, 43, 46] decreases in blood pressure[41], improvement in cardio-respiratory fitness and leg extensor power[41], with small reductions in total and low-density lipoprotein cholesterol[41]. These differences were not found to be consistent over time[41]. One study found no effect on physical activity for those referred wholly or partially for mental health reasons, but a significant impact on depression and anxiety outcomes in this group[43].

Anticipated benefits in the review focusing on health outcomes were physical activity, physical fitness, clinical outcomes and health-related quality of life[31, 32]. Demonstrated outcomes were a small increase in

participants who achieved 90 to 150 minutes of physical activity of moderate intensity each week and a reduction in depression. Evidence of benefit between groups was inconsistent at follow up. No difference was found between groups for other outcomes[31, 32].

Anticipated benefits specified in the review on primary care clinician referrals to exercise schemes were increases in physical activity[33]. Demonstrated outcomes were a small, significant increase in participants who were moderately active, taking at least 90 to 150 minutes of moderate intensity exercise per week. There was no significant effect on anthropometric, physiological and biochemical outcomes[33].

Anticipated outcomes were not specified in the review of attendance at UK schemes[34]. Short-term changes in physical activity were reported but the focus of the review was attendance and uptake.

The anticipated benefits for studies included in the literature review were increases in physical activity[35]. The author of the literature review reported that this outcome was achieved in certain populations: those who were already slightly active, older adults and those who were overweight but not obese. These increases were not sustained over time[35].

Anticipated benefits of the RCT were increases in self-reported physical activity[36]. Secondary outcomes were BMI and blood pressure; health status as assessed by the General Health, Change in Health and Physical Fitness Scales of the Dartmouth COOP charts; mental and emotional well-being as measured using the 14-item HADS and feelings of personal energy and vitality assessed using an abbreviated version of the Subjective Vitality Scale. Perceptions of the degree of autonomy support provided by their advisor were assessed using the Health Care Climate Questionnaire; the Psychological Needs Satisfaction in Exercise Scale was used to assess participants reported satisfaction with respect to their physical activity engagement. Motivation was assessed using the Behavioral Regulations in Exercise Questionnaire, but no difference was reported in the perceptions of the group who were supported by the health and fitness advisor and control. There were gains in physical activity and improvements in quality of life and well-being outcomes in both conditions, although between-group changes over the six months were only significant for anxiety. [36].

The anticipated outcome for the Wales exercise referral scheme was for participants to achieve 30 minutes of moderate physical activity on at least five days each week[43]. Depression and anxiety were assessed using the HADS. All those who received the intervention had higher levels of self-reported physical activity than the control group, but the difference was of borderline statistical significance. Those referred for CHD risk

factors reported significantly higher levels of activity, but there was no difference for those referred partly or wholly for mental health reasons. There was a significant difference in health-related of quality of life, measured using the Euroquol-5D[43, 44]. There were no significant differences in NHS resource use between the two groups, except that the control group was referred for significantly more health-related tests[44]. BMI, resting heart rate, blood pressure and waist circumference were assessed at baseline, 16 weeks and 12 months but no data on these seem to have been reported in the sources included in the map[33, 43, 44].

The primary outcome for the green prescription scheme in New Zealand was completion of at least 150 minutes physical activity each week. Secondary outcomes were: blood pressure; weight; waist circumference; physical fitness (step test); cholesterol; blood glucose measures; injuries and falls; quality of life (SF-36) and health service use[38]. Outcomes reported were significant improvements in self-reported physical activity at 12 and 24 months. There was no significant difference in indirect health service cost between intervention and control groups across the period of the trial, and no significant difference in health resource consumption was reported. There were no significant improvements in any clinical or biochemical measures. There were more falls and injuries reported in the intervention group. Physical fitness was not assessed. Physical functioning and mental health scores, measured using the SF-36, were significantly better in the intervention group at 12 and 24 months, but role limitations due to physical health limitations score was significantly lower than in the control group[38].

The anticipated outcomes for the RCT conducted in Spain were a reduction in the use of primary care[39]. Self-reported health status was also assessed using the SF-12. A significant reduction in the mean number of all primary care visits in the intervention group was reported at 15-month follow-up, with no significant change in the control group. The intervention group reported better health status than the control group on all measures[39]. Physical activity outcomes were not reported.

The primary outcome for the Bolton exercise referral scheme was self-reported physical activity assessed using the Blair 7-day physical activity questionnaire[40]. Attitudes to physical activity and satisfaction with the information given about exercise were also assessed. At 12 months, of those referred to the exercise scheme, 5.4% were doing at least 90 minutes of moderate or vigorous physical activity at least once a week. This was not a statistically significant change compared to baseline and the comparison group reported increases in physical activity greater than those in the intervention group. However, the intervention group were more likely to be satisfied with the information they had been given[40].

The anticipated benefit of the multi-component programme in Gloucestershire was weight loss. Mean weight loss for all those who engaged with the programme was 3.7kg and for completers was 5.9kg. Fifty-eight percent of completers and 19% of non-completers achieved a 5% weight loss. All measurements were made at 12 weeks (programme completion). For some participants these data was not available, so the last measurement made was used[48].

Anticipated benefits of the diabetes prevention programme were a 5% to 7% weight loss. Mean weight loss at the end of 16 weeks was 9lb, 4.2% of body weight (85% of participants) [49]. At 10 months after baseline self-reported weight loss was available for 77% of participants. Of these 61% reported 5% or more weight loss and 48% reported 7% or more weight loss. Improvements in self-reported health and fewer problems with mobility, pain and performing usual activities were also reported, but it is not clear how many participants reported these outcomes[49].

In the Dutch study the primary outcome was self-reported physical activity[51]. Other outcomes were the impact of the programme on intention and motivational factors with regard to physical activity; perceived health and well-being; measures of fitness; body size and the impact on use of primary healthcare. Total self-reported physical activity did not change and no significant effect was seen on any of the other outcome variables[51].

Of the schemes identified by the Wales survey, 19 used client data for evaluation but the specific benefits the schemes intended to achieve are not discussed[52].

The Heartlinks programme anticipated reductions in CHD risk, improvements in perceptions of general health and increases in levels of physical activity[54]. After the intervention a significant reduction in modifiable CHD risk was reported (using the CALM Heart CHD risk Assessment tool[f]). In a cohort not using blood pressure medication a statistically significant reduction in systolic and diastolic blood pressure was reported. Improvements in both the physical and mental component scores of the SF36 were reported[54].

The anticipated benefit of the South Gloucestershire exercise of prescription scheme was to increase physical activity[55]. For those who

[f] Swan JW. *Validation for the CALM Heart system.* V4.5 1997-2003. Cited by Ultrasis UK Ltd.; 2003. As cited in Ward M et al. Heartlinks: a real world approach to effective exercise referral: reducing coronary heart disease risk and improving health through a negotiated exercise programme. *International Journal of Health Promotion and Education* 2010; 48 (1): 20-27

completed the programme there was a significant increase in the self-reported number of 30 minute exercise sessions per week; a significant decrease in systolic blood pressure and waist measurement; no reported impact on weight, BMI, hip measurement or diastolic blood pressure and a significant increase wellbeing measured using the WEMWBS[55].

The anticipated benefits for Belfast Healthwise were not specified[56]. Outcome data seems to have been collected using a survey, although the response rate to this is unclear. Respondents (71%) reported improvements in confidence. Improvements in weight, BMI and blood pressure were also reported. Mental health measured using the *Feel Good Index* was also reported to have improved and improvements in social interaction were reported by 58%[56].

Anticipated benefits of the Lincolnshire scheme are not discussed in the evaluation report[57]. Changes in self-reported physical activity were assessed using the New Zealand Physical Activity Questionnaire and health-related quality of life using the three level version of the EuroQol five dimensions questionnaire (EQ-5D-3L). Results suggested that the number of days and amount of time spent active increased. Scores for days active but not activity duration were reported to be significantly improved at 12 weeks, six months and 12 months in comparison with week one. Health-related quality of life showed improved scores for most questions at 12 weeks but this was not shown at six and 12 months[57].

5.4.5 Intervention design and implementation lessons

The review of aquatic exercise interventions did not report on uptake of interventions or include design lessons[25].

The systematic review and economic evaluation reported levels of uptake ranging from 28% to 100% and completion rates from 12% to 70%[26]. Review authors reported that since the impact of exercise referral schemes on physical activity was not significant relative to control in most studies, it was difficult to identify characteristics of successful interventions. However, they suggest that a scheme using counselling based on motivational interviewing was slightly more effective than brief advice alone. This scheme was also slightly longer and offered subsidised access to classes[26].

The authors of the systematic review on community-based exercise interventions do not discuss uptake, adherence or design lessons[27].

The StROLERS review reported that adherence to schemes varied from 12% to 40%[28]. Two included studies reported uptake of referral, these were 27% and 40%. Some studies reported reasons for non-adherence. These were apprehensions about physical ability and body image; lack of

social support; illness; pressure of time; transport problems; inconvenient opening hours; a lack of supervision; an intimidating environment and congested facilities[28].

Adherence but not uptake was reported in the review of exercise referral for clinically depressed adults. Adherence rates varied from 42% to 100%. Design lessons were not discussed[29].

The review of uptake and adherence reported a pooled uptake of 66% across observational studies and 81% across RCTs. Pooled adherence was 49% in observational studies and 43% across RCTs[30, 32]. Few significant predictors of uptake and adherence were identified. Being female and increasing age were higher predictors of uptake. Being male and increasing age were predictors of adherence[30, 32]. The review did not report design lessons. The review focussing on health outcomes did not report adherence, uptake or design lessons[31, 32].

The review on primary care clinician referrals to exercise schemes reported that only 12% to 42% completed the programmes to which they were referred[33]. Uptake was also low with around one third not participating at all. Design lessons were not discussed[33].

The review of attendance at UK exercise referral schemes focused on uptake and adherence[34]. Attendance at initial consultations was reported to be between 23% and 82%. One study reported that where participants were given vouchers to attend, only 41% used them. Completion rates as low as 12% were also reported. Characteristics of successful schemes were considered by the review authors to be difficult to identify because of the lack of detail on tailoring, supervision and contact with staff. Five of the nine included studies offered interventions at reduced rate or free-of-charge, but reported that the extent to which this influenced uptake was unclear. The authors also suggested that improvements in reporting attendance were needed. Reasons for not attending were illness and injury, lack of transport and sessions stopping for holidays/school holidays. Changes suggested were provision of classes specifically for exercise referral scheme participants and for specific groups (for example people who are obese); provision of transport; additional sessions for those in employment and a better appreciation of client needs by leisure centre staff[34].

The literature review reported that uptake ranged from 35% to 87%[35]. Adherence was reported to be between 28% and 33%. Adherence appeared to be a little higher in people who were slightly active at baseline, overweight or older. The author noted that schemes mainly used existing infrastructure and that studies from the USA suggest that home-based activities may achieve better adherence than those based in leisure centres[35].

The RCT reported 1683 referrals to health and fitness advisors, 347 (20.6%) of whom were recruited to the trial and completed baseline assessment[36]. Of those recruited, 75.2% were followed up at three months and 55.6% at six months. Six-month follow-up rate was lower in the intervention arm. Design lessons were not discussed but authors noted that the use of outcome questionnaires that were only available in English limited their ability to recruit those who did not have an adequate grasp of the language[36].

During the trial period 1080 people were referred to the Wales national exercise referral scheme intervention[43, 53]. Of these 473 (44%) completed the 16 weeks of the programme, while a further 446 (41%) started but did not complete, and 161 (15%) attended no sessions. The evaluation authors reported some initial resistance to the rollout of the scheme because of the introduction of national protocols but felt that the early appointment of dedicated local coordinators helped to implement the national policy. Considerable variation in health professional referral to the scheme was reported. Anecdotal evidence is reported from participants and health professionals suggesting that those who sought referral rather than those who entered on the advice of a health professional were more likely to adhere to the programme. The authors interpretation was that health care advice might not be an active ingredient. Use of a standardised monitoring programme was considered beneficial because those required to implement it became familiar with it[43].

The evaluation authors suggested that the motivational interviewing element needed significant levels of ongoing training and reflection for successful implementation[43]. Older patients and women were considered to have additional anxieties about entering the scheme, but were also seen as benefiting from social aspects of group classes[53]. Those referred with mental health issues were considered to face additional barriers. Adherence was poorer amongst those who were in receipt of mental health care, those who were younger and those who reported lower levels of activity before referral[53]. However, those from the most deprived areas were more likely to enter the programme and no more likely to drop out. Uptake was lower among those not owning a car[53]. There was some suggestion that those who had stopped attending might re-enter the scheme when invited to do so. Those working cited limited availability of classes as a barrier[43].

The green prescription scheme reported that of 544 participants in the intervention group, 514 (94%) received the six-month face-to-face follow-up visit. At 12 months 233 (43%) were meeting the physical activity target, as were 214 (39%) at 24 months[38]. Only 11 of 480 women in the intervention arm of trial recalled having received a green

prescription from their nurse or doctor. The estimated time taken to issue the green prescription was 10 minutes. The mean time for the six month follow-up visit was 29 minutes. The authors noted that participation in the scheme was by special invitation and delivery of the scheme was not part of routine care[38].

In the RCT looking at the impact of an exercise scheme on primary care visits 83% of participants completed the expected 24 exercise sessions over 3 months[39]. No design lessons were reported.

Of the 275 people referred to the Bolton exercise scheme in the trial period 232 (84%) attended the first consultation. The number completing the scheme was not given but 56% completed questionnaires at 12 months. No design lessons are discussed in the evaluation report[40].

The number of people referred to the multi-component weight control programme in Gloucestershire was not given; 559 people attended the initial assessment, 67 (12%) of whom did not engage with the intervention[48]. Of those initially engaging, 193 (35%) attended only one element, but it is not clear how many of these completed this. Two hundred and ninety nine (53%) attended at least one session of both elements, of these 163 (29%) completed both elements and 118 (21%) completed only one element[48]. No design lessons were discussed by the evaluation authors but they noted the lack of information on longer term impact.

In the diabetes prevention programme participants attended a mean of 10.6 out of 16 sessions and 72% attended nine or more sessions[49]. Design lessons were not included in the evaluation.

In the Dutch study 192 women were referred to the intervention, 190 of whom started the programme; 163 (85%) completed most of the sessions and 122 (64%) were included in the analysis[51]. No design lessons were discussed in the report.

In the Wales survey two schemes reported 100% completion rates in the last year[52]; the most commonly reported completion rate was 50% to 74% (10 schemes); two schemes reported rates below 25%. Initial uptake was not reported. The report authors noted considerable variation in how busy schemes were and the difficulty schemes experienced in recruiting highly-trained staff to deliver programmes. They also noted the need for the national scheme in Wales to ensure standardised collection of evaluation data[52].

The Heartlinks programme contacted 857 people (550 by invitation and 307 referred) and 317 (37%) were recruited[54]. Of these 38 (12%) did not attend or did not meet the referral criteria. Of the remaining 279, 55%

(152) dropped out before the end of the programme. Forty five percent (127) completed the 12-month programme, representing 15% of those originally contacted. Design lessons were not discussed[54].

Of those referred to the South Gloucestershire exercise on prescription scheme 2,505 were considered to meet the inclusion criteria and 1379 (55%) attended at least 8 out of 12 sessions[55]. Design lessons included the need for standardised and complete data collection; staff training on data collection; the need for a clear and consistent referral process; engaging with health professionals and giving them a simple referral criteria checklist; providing service users with alternative exercise options at the end of the intervention; signposting users to continuation opportunities and providing health professionals with regular feedback on patients who have completed the scheme[55].

For Belfast Healthwise data on uptake and adherence were only reported for 36 people[56]. Twenty six (72%) completed the full 12 week programme and 31 (86%) had been engaged until week six. Design lessons included the need to improve collection and collation of data; the need to engage more with those referring to encourage referrals; greater flexibility for trainers to be able to provide assessment at intervals tailored to participant need and more emphasis on group activities to encourage social interaction. It was suggested that this could target groups of beneficiaries by common issues, for example, mental health or obesity[56].

Uptake and adherence were not reported for the Lincolnshire exercise referral programme and design lessons not discussed[57].

5.5 Commercial weight loss programmes

Four sources evaluating commercial weight loss programmes were included. These included one RCT with economic evaluation[58], one RCT[59], and two evaluations with no comparison group[60, 61].

5.5.1 Intervention and model characteristics

A randomised controlled trial conducted in Australia, Germany and the UK compared two weight loss programmes: standard care as defined by the relevant national guidelines and a commercial programme delivered by Weight Watchers®[58-60]. Those referred to the Weight Watchers® programme by their GP received vouchers giving free access to a weekly community meeting. They also had access to online tools. The Weight Watchers® programme promotes a hypoenergetic, balanced diet, increased physical activity and group support. Weight loss goals were self-selected with group leader input. Participants were encouraged to attend weekly meetings to be weighed, for group discussion, behavioural counselling and motivation. Online access to internet tools allowed

participants to monitor their food intake, activity and weight change, to participate in community discussion boards and access information on recipes and meal ideas[59].

A feasibility study was conducted for a slimming-on-referral service in two general practices; this also used a commercial provider[61]. GPs and practice nurses identified patients visiting practices for reasons other than weight management who might be eligible for the programme. Those who were interested were referred to a nurse who gave them a voucher pack valid for 12 months. Vouchers covered membership and group fees for 12 consecutive weeks. Those referred could attend any Slimming World® group in the Southern Derbyshire area. Following the free period patients could self-fund at the cost of £3.75 per week (2005). Review at three and six months was by the GP practice.

5.5.2 Intended and actual beneficiaries

The Weight Watchers® programme was targeted at those aged 18 years and over with a BMI of 27 to 35 who had at least one additional risk factor for obesity-related disease[58, 59]. The mean entry BMI of all participants was 31.4, 87.5% were females and 6.5% had Type 2 diabetes.

Those targeted for referral to the slimming-on-referrals service were adults with a BMI of 30 or over who were willing to attempt weight loss. Those referred had a mean age of 49.5 years and mean BMI of 36; 50% had a BMI in excess of 35[61].

5.5.3 Anticipated and demonstrated outcomes and benefits

The anticipated outcome of the Weight Watchers® programme was weight loss[58, 59.] Other outcomes were changes in waist circumference and fat mass, changes in biomarkers of cardiovascular disease risk, blood pressure and changes in antihypertensive drug prescriptions. Participants in the commercial weight loss programme had significantly greater weight loss at 12 months than the group receiving care as usual. The Weight Watchers® group also had larger reductions in waist circumference and fat mass and greater improvements in insulin and ratio of total HDL cholesterol. There were small reductions in blood pressure in both groups but the difference between the two was not significant. There were no significant changes in prescription of antihypertensive medication[58, 59].

The anticipated outcomes for the slimming-on-referral programme were uptake; adherence; weight loss; factors associated with participation and the cost of the scheme when compared with NHS options[61]. Fifty seven percent of those who completed the programme achieved at least a 5% weight loss; for those who completed 24 weeks the mean weight loss was

11%. Well-being was also assessed (measure not specified). At baseline participants had low ratings compared with the South Derbyshire population; these were reported to have improved significantly by week 12 and were maintained at week 24[61].

5.5.4 Intervention implementation/design lessons

Three hundred and seventy-seven people were allocated to Weight Watchers® and 395 to standard care; 147 (39%) withdrew from Weight Watchers®, 230 (61%) completed 12-month assessment; 181 (46%) withdrew from standard care and 214 (54%) completed 12 month assessment. Authors of the cost-effectiveness analysis concluded that even if travel costs of those using the commercial weight loss programme were included it was cost-effective for GPs to refer patients to commercial providers and this might be better value than GP visits[58]. Authors of the trial reported interpreted their findings as showing that referral from primary care to commercial weight loss programmes could offer a clinically useful early intervention for weight management in overweight and obese people that can be delivered at scale[59].

The slimming-on-referral programme had 107 referrals, of these 91 (85%) enrolled in the Slimming World® group[61]. Sixty two (58%) completed the 12 week free period and 47 (44%) self-funded additional sessions. Of these 34 (32%) were still attending at 24 weeks. Those who chose to enrol after recruitment were more likely to live in a household with an income greater than £10,000 a year and to think that weight loss was important for them. Twelve week completers were more likely to be White and to report no financial worries in the weeks before recruitment; however household income was not related to likelihood of improvement. Nine of those who did not complete the 12 weeks gave the reasons for this, including: too anxious/stressed; location inconvenient; childcare difficulties; work or home commitments; other caring responsibilities; difficulty understanding dietary advice; money worries; had stopped losing weight; lack of family support; difficulty fitting dietary advice with family meals and did not enjoy being part of a group. Those completing 24 weeks were more likely to come from a suburban practice, to have an annual household income above £10,000 and to have experienced at least a 12% weight loss during the free period[61].

5.6 Referral for welfare rights advice

One source was found, an uncontrolled before-and-after evaluation looking at the impact of referral from primary care to a Citizens Advice Bureau (CAB) outreach programme for advice about welfare rights[62]. The intended beneficiaries were not discussed but the evaluation focused on the perceived impact of referrals on the CAB and its staff workload; the frequency of mental health issues amongst those referred; the impact of

referrals to the CAB on appointments (GP, nurse and other appointments); referrals (to mental health services and reasons) and prescribing (antidepressants and hypnotics/anxiolytics).

Changes in health service utilisation were reported. The mean number of GP appointments (six months before referral and six months after) fell from 4.90 per patient to 4.26, corresponding to 93 fewer appointments for the 148 patients referred. This reduction was statistically significant. The mean number of nurse appointments reduced slightly from 1.50 to 1.35 per patient. Appointments related to mental health did not change and referrals to mental health services showed a slight increase[62].

The number of prescriptions for antidepressants fell from 1.20 to 0.96 and hypnotics/anxiolytics from 0.38 to 0.22 per patient; the reduction in hypnotics/anxiolytics prescriptions was statistically significant. Evaluation authors reported that almost half those referred to CAB had mental health issues. Referral to CAB was felt to have no workload implications for primary care staff[62].

6 Discussion

6.1 Overview of evidence characteristics

Evidence mapping describes the quantity, design and characteristics of research in broad topic areas. It has been used because the questions asked are broad. Mapping allows systematic and comprehensive identification, organisation and summary of evidence and is also useful for identifying gaps in evidence. Because it does not involve critical appraisal it is not possible for conclusions to be drawn about the effectiveness of interventions. Mapping does allow an assessment of whether the available evidence base is sufficient to answer questions, however the number of sources alone is not an indicator of the weight of evidence for any topic.

Based on the client needs that the included sources sought to address, two main types of programmes were identified. The first of these involve schemes targeting psychosocial needs and included link worker programmes (schemes linking people to a facilitator who assessed them and referred them on to community support); community arts programmes; a horticultural programme and referral to welfare rights advice. The second type of scheme involved exercise referral and commercial weight loss programmes intended for those who are sedentary and/or overweight or obese.

Generally, evaluations of programmes targeting psychosocial needs were published as grey (non-commercial) literature, although a small number of evaluations in peer-reviewed publications were found. These

evaluations predominantly use a before-and-after design, with no comparison group, so the extent to which they can be used to assess the effectiveness of interventions is limited. However, they do include a considerable amount of evidence on the experience gained through implementing programmes.

Evaluations of exercise referral and commercial weight loss programmes were exclusively from the peer-reviewed literature and typically used a control group so can be used to assess relative effectiveness. However, these sources do not usually include evidence on the experience of implementing programmes.

Most of the included sources did use validated outcome measures, particularly for measures of physical and mental well-being, but in the absence of a comparison group reported improvements in these measures cannot be attributed to the intervention with any confidence.

6.2 Testing assumptions within the theory of change

A theory of change (Fig. 1) was developed to describe how and why social prescribing might have an impact on the sustainability of primary and community care. The first set of assumptions relate to the intervention itself (see section 4.1).

6.2.1 Uptake

The first assumption is that prescribed interventions or support is taken up by those to whom they are prescribed.

Many evaluations suggest that uptake and adherence may be a problem across both programme types. Some of the evaluations report very low uptake and adherence rates[1, 6, 11, 20, 26, 27, 29, 32-34]. Reasons for low uptake and adherence of programmes targeting psychosocial needs have not been explored quantitatively. Evidence from experience and from interviews with both scheme providers and those referred suggests that reasons for low uptake include: long waiting times for assessment[11]; transport problems; literacy; concerns about confidentiality and disclosure in voluntary groups; and the availability, accessibility and appropriateness of the resources that participants were referred to[1, 6]. Barriers to attendance for those on low incomes were reported to be child care and travel costs[22].

Barriers to uptake of exercise referral schemes included: apprehensions about physical ability and body image; lack of social support; illness; pressure of time; transport problems; inconvenient opening hours; lack of supervision; an intimidating environment and congested facilities[27, 34]. Being female and increasing age were reported to be predictors of higher

uptake[30, 32]; being male and increasing age were reported to be predictors of adherence[30, 32].

The research on exercise referral schemes in Wales suggests that older patients and women were considered to have additional anxieties about entering the scheme[53]. Those referred with mental health issues also seemed to face additional barriers[53]. Adherence was poorer amongst those in receipt of mental health care, who were younger, or who reported lower levels of activity before referral[53]. People from more deprived areas were more likely to enter the programme and no more likely to drop out. Uptake was lower among non-car owners[53]. A greater emphasis on group activities targeting beneficiaries with common issues, for example mental ill health or obesity, was suggested as a way of improving adherence[56].

6.2.2 Improvement mechanism

The second assumption in the theory of change is that non-clinical interventions/support leads to improvements in health and well-being.

The evaluations carried out for programmes targeting psychosocial problems suggest that these lead to self-reported improvements in health and well-being, but this does not necessarily translate into a reduction in the use of healthcare. Reported benefits from link worker schemes included reductions in social isolation and feelings of loneliness[1, 2, 13]; improvements in mental well-being[3, 4, 9, 13, 15]; increases in healthy behaviours[3]; and improvements in quality of life[12]. No impact was found for clinical outcomes, e.g. improvements in blood pressure or HbA1C[g, 12]. The reported benefits of community arts programmes were improvements in mental well-being[16, 17, 19-21, 23].

Research evidence from exercise referral schemes suggests that these schemes lead to improvements in self-reported well-being and quality of life[25, 27, 36, 39, 43-45, 49, 54, 56, 57] and may have some benefits for pain and function[25, 38, 49]. Research evidence from weight loss programmes found that participants reported improvements in well-being, some of which were statistically significant well-being[58, 59, 61].

6.2.3 Prescriber identity

The next assumption in the theory of change is that the identity of the prescriber has no impact on uptake or outcome**.** None of the sources explored this; it seems to be an evidence gap.

6.2.4 Referral mechanism

[g] Glycated haemoglobin a measure of mean plasma glucose concentration

The final assumption with regard to the intervention is that the mechanism of referral has no impact on uptake or outcome. Uptake and adherence are an issue and there is some relevant material. Further exploration of the RCTs on exercise referral schemes might allow some conclusions to be drawn on whether the mechanism of referral has an impact on uptake or outcome. Some schemes report referral after a face-to-face discussion with a GP, others are identified from the GP database and sent a letter, while some schemes used both methods[26-54]. It might also be possible to explore the relative effectiveness of differing exercise facilitator roles, for example, whether the use of motivational interviewing improves adherence and has an impact on outcome.

Link workers had a range of roles (see 5.1.2). The extent to which the interface and relationship between link worker and participant is an active ingredient in the intervention, or an intervention in itself could be considered further. Aspects of the link worker role that could be explored include; the length and nature of the contact between participant and link worker; whether the assessment undertaken by the link worker involves motivational interviewing and goal setting and whether the link worker provides the participant with active support to access services, by making appointments and accompanying them to meetings. Any of these might influence the uptake of services and support and outcome but the sources included here do not explore this. This appears to be an evidence gap.

The second set of assumptions relate to intermediate outcomes (see section 4.1).

6.2.5 Prevention or self-management impacts

Assumptions were made that social prescribing leads to prevention of ill health, prevents deterioration in existing conditions, or increases self-management capacity. One evaluation of a link worker programme anticipated an improvement in self-management of long-term conditions but no outcomes were reported[15]. Another link work programme assessed confidence to self management but no behavioural or health outcomes were reported[12]. One of the community arts programmes was a prevention programme intended to increase resilience by improving confidence and self esteem but no outcome data was reported[23]. For social prescribing interventions targeting mainly psychosocial problems this is an evidence gap.

The evaluations of exercise referral and weight loss programmes do not report outcomes beyond the end of the programme (maximum 12 months). Evidence that these prevent ill health or deterioration in existing conditions beyond the end of the intervention does not seem to have been collected. Impact on self- management was not considered as an outcome.

Evidence that exercise referral programmes have a short-term impact in preventing ill health and deterioration of existing conditions seems to be mixed and inconsistent. Included systematic reviews reported that at the end of the intervention: there was a small impact on functional capacity[27]; a small, short-term antidepressant effect, with no effect seen for interventions of more than 10 weeks and no long-term effect seen beyond the end of the exercise intervention[29] and no significant effect on anthropometric, physiological or biochemical outcomes[33]. One non-systematic review reported between group changes over the six months that were only significant for anxiety[35].

Primary studies on exercise referral programmes reported mixed results. These included: decreases in blood pressure, improvement in cardio-respiratory fitness and leg extensor power, with small reductions in total and in low-density lipoprotein cholesterol (although these differences were not found to be consistent over time)[41]; a significant impact on depression and anxiety outcomes[43]; no significant differences between intervention and control groups for physiological outcomes[45]; a significant reduction in modifiable CHD risk (using the CALM Heart CHD risk Assessment tool); a non-significant reduction in avoidance of blood pressure medication and a statistically significant reduction in systolic and diastolic blood pressure[54] and no impact on diastolic blood pressure[55].

Evaluations of weight loss programmes reported that the Weight Watchers® group had greater improvements in insulin and ratio of total high-density lipoprotein cholesterol than controls, although there was no significant reduction in blood pressure or prescription of antihypertensive medication[58, 59].

6.2.6 Healthcare demand impacts

The impact of link work schemes on health service use was reported to be variable or inconsistent[1, 12]. There are reported reductions in the number of primary care appointments[1, 4, 13]; number of appointments with a psychosocial aspect[1]; proportion of patients' prescribed psychotropic medication[1] and use of secondary healthcare services[7, 8]. However, other studies report no impact on primary care attendance[1]. Paradoxically, increases in service use are also reported, for example, higher referrals to mental health services[1] and increases in primary care attendance[6].

6.2.7 Design and implementation issues and lessons

Many of the evaluations reported evidence from experience that could usefully inform the development of social prescribing initiatives. The issues and lessons identified during intervention design and implementation are captured in the full evidence map (see technical

document) and summarised above according to type of initiative. Uncovering this learning underlines the value in reviewing grey literature sources in addition to commercial or academically published sources.

7 Conclusion

Two main types of social prescribing initiative were identified. The first of these were those predominantly targeting psychosocial needs. Such initiatives included link worker programmes (schemes linking people to a facilitator who assessed them and referred them on to sources of support in the community), community arts programmes, a horticultural programme and referral to welfare rights advice. The research evidence base for these programmes is largely characterised by before-and-after evaluations without comparison groups. This means that it is not possible to draw conclusions about effectiveness using the current evidence base. Evidence derived from experience designing and implementing these initiatives suggests these programmes may be useful in reducing the impact of loneliness and social isolation, and in improving participant mental well-being. However, caveats around interpreting this kind evidence do not allow identification of groups or individuals who would benefit most, nor elucidate which interventions would yield the greatest benefit.

The second type of intervention includes exercise referral schemes and commercial weight loss programmes. These are primarily intended for those who are sedentary and/or overweight or obese. The evidence base for commercial weight loss programmes and exercise referral schemes is largely characterised by evaluations using a control group, so it is possible to answer questions about their short-term impact on measures such as weight, physical activity, physical health, quality of life and mental well-being. Uptake of referral and adherence to programmes is an issue for both exercise referral and weight loss programmes, but more so for exercise programmes. As the available evidence does not explore the reasons for this, it is not possible to know which groups may benefit the most from which type of exercise. For those considering implementation of a new social prescribing initiative in Wales, exercise referral programmes do offer the greatest quantity of reference material to inform intervention design, although this may not equate to a higher quality of evidence.

Evidence from the experience of those setting up programmes does provide some information that could inform the development of social prescribing programmes. Of particular note is the frequency of discrepancy between anticipated and demonstrated outcomes or benefits. This information could be particularly pertinent to the re-design of existing initiatives to ensure appropriate targeting and levels of resourcing. Sharing of learning can help others avoid potential pitfalls.

Those involved in social prescribing initiatives in Wales should be encouraged, therefore, to maintain a lesson log to help facilitate onward dissemination of learning no matter what success is ultimately achieved.

The outcome postulated in the theory of change developed to inform this mapping exercise is that social prescribing interventions lead to a reduction in demand for primary and community care, which would in turn increase the long-term sustainability of the system. This evidence map suggests that there is insufficient evidence, in terms of both its likely quality and the outcomes reported, to be able to answer this question. Under these circumstances, with the goal of improving population health and well-being, appropriate attention should also be directed towards alternatives to social prescribing initiatives, where the evidence base for intervention may be more robust, and the return on investment proposition more certain.

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60. Hunt P, Poulter J. An evaluation of Weight Watchers referrals. *Practice Nursing* 2007; 18(5): 236-241.

61. Lavin JH et al. Feasibility and benefits of implementing a Slimming on Referral service in primary care using a commercial weight management partner. *Public Health* 2006; 120(9): 872-881.

62. Krska J et al. Evaluation of welfare advice in primary care: effect on practice workload and prescribing for mental health. *Primary Health Care Research & Development* 2013; 14(3): 307-314.

Appendix: EVIDENCE MAP – SUMMARY TABLES

CONTENTS

REFERRAL TO LINK WORKER

Scoping review

	Source	Population	Intervention/model	Outcomes	Comment
1.	Mossabir R et al. A scoping review to understand the effectiveness of linking schemes from healthcare providers to community resources to improve the health and well-being of people with long-term conditions. *Health & Social Care in the Community* 2015; 23(5) 467-484. Link to full text here Source: peer reviewed journal. Scoping review incorporating sources published in peer reviewed journals and grey literature[i]. Research question: **w**hat are the types and benefits of linking mechanisms adopted by social interventions to support people in healthcare settings access wider community-based resources? Included seven studies: three randomised controlled trials (RCTs); one cohort study; two reports and one paper discussing findings from an action research project aiming to develop a business case for further funding.	Interventions targeting a range of populations and conditions including mental health, social isolation in the elderly and those who were frequent users of primary care services.	Participants were referred from a health and social care setting to an intervention that aimed to support them in accessing a range of community-based resources. Majority of studies included participants referred from general practitioner (GP) practices and social care services; self referral option in some studies and one study recruited participants to the intervention using the findings from a survey sent to GP practices, without the involvement of a health professional. Interventions facilitator led (one exception).	Proportion of participants referred to other organisations and services (two of seven included studies) [overall mean: 70%] Continuation rates (1/7) [approx two thirds of 58% of participants who accessed at least one service were still attending at three month follow up] Satisfaction (3/7) Psychological (2/7) (Hospital Anxiety and Depression Scale (HADS);General Health Questionnaire-12 (GHQ-12)) Changes in number of medications taken (3/7) Physical health status (3/7) (Activities of daily living index; COOP/WONCA[j]) Reduction in social isolation / feelings of loneliness (4/7) (frequency of social contacts measured; no. of leisure activities measured; Wenger Loneliness Scale; DUKE-UNC functional support scale[k]) Health service use (5/7) Cost-effectiveness (1/7) [Mean cost intervention arm = £153 compared to £133 usual care]	All papers discussed the role of the facilitator and the relationships they established with participants as key. Barriers to implementation of social interventions included: • Ambiguity of facilitator role when based in GP surgeries • Inappropriate referrals to the service • Clinicians' apprehensions about referring to voluntary organisations • Sustainability of services. • Pressure of integrating with practice team and keeping up to date with community groups and activities. Engagement/retention of participants was noted as a challenge in some studies.

[i] That (usually reports) which is produced on all levels of government, by academics, business and industry, in print or electronic formats, but which is not controlled by commercial publishers and is not published in peer reviewed journals

[j] The Dartmouth COOP Functional Health Assessment charts/WONCA (COOP/WONCA charts) are the adaptation of the Dartmouth COOP Functional Health Assessment Charts for use in General Practices. They cover the domains of Physical Fitness, Feelings, Daily Activities, Social Activities, Change in Health and Overall Health, providing a generic, patient oriented instrument.

[k] DUKE-UNC Functional Social Support Scale measures a person's satisfaction with the functional aspects of social support. Intended for clinical use in general practice settings to identify people at risk of isolation and in research to examine the interactions between social support and other determinants of health.

	Source	Population	Intervention/model	Outcomes	Comment
2.	Grant C et al. A randomised controlled trial and economic evaluation of a referrals facilitator between primary care and the voluntary sector. *BMJ* 2000; 320: 419-423. Link to full here Source: peer reviewed journal, RCT. Compares outcome and resource utilisation among patients referred to project, with patients receiving routine general practitioner care. Recruitment from 26 GP practices in Avon.	Identified by GP as having social problems.	Amalthea project: liaison organisation that facilitates contact between voluntary organisations and patients in primary care. Referred by GPs to referrals facilitator then onward referral to existing services (for example British Legion, Crisis, Multiple Sclerosis Society). Intervention group offered initial assessment with trained project facilitator within seven days and followed up on one or more occasions.	Participation rates: 161 included in trial, 90 in intervention arm and 71 in control arm. Differences between mean outcome measure scores of patients in two arms of trial from repeated measures analysis of covariance after adjustment for baseline score: HADS: Anxiety [-1.9 (95% confidence interval -3.0 to -0.7) p=0.002] Depression [-0.9 (-1.9 to 0.2) p=0.116] DUKE-UNC: Confidant support [-0.9 (-2.4 to 0.6) p=0.221] Affective support [-0.3 (-1.2 to 0.7) p=0.594] COOP/WONCA: Pain [-0.5 (-0.8 to –0.1) p=0.005] Physical fitness [-0.3 (-0.6 to 0.05) p=0.098] Feelings [-0.5 (-0.8 to -0.2) p=0.003] Daily activities [-0.5 (-0.8 to -0.2) p=0.001] Social activities [-0.3 (-0.6 to 0.1) p=0.195] Change in health [-0.3 (-0.6 to -0.03) p=0.030] Overall health [-0.4 (-0.7 to -0.1) p=0.003] Delighted-terrible faces: [-0.5 (-0.9 to -0.1) p=0.006] Patients in both groups had equal numbers of contacts with primary care. Mean and range resource utilisation for patients in two arms of the trial: Amalthea group (n=89), GP group (n=68). No. contacts with primary HC team: Amalthea = 4.4 (1-13). GP = 4.4 (1-13). Cost of contacts with primary HC team (£): Amalthea = 61 (14-188). GP = 69 (9-202). No. of prescriptions: Amalthea = 3.2 (0-30). GP = 2.9 (0-16). No. of mental health prescriptions: Amalthea = 1.9 (1-30). GP = 0.9 (0-8). Cost of prescriptions (£): Amalthea = 25 (0-169). GP = 22 (0-209). No. of referrals: Amalthea = 0.3 (0-2). GP = 0.5 (0-4). No. of mental health referrals: Amalthea = 0.2 (0-2). GP = 0.3 (0-2). Cost of referrals (£): Amalthea = 21 (0-146). GP = 42 (0-322). Total cost of primary healthcare team contacts, prescribing and referrals (£): Amalthea = 107 (14-340). GP = 133 (10-452). Cost of time of Amalthea project facilitator (£): Amalthea = 47 (0-173). GP = 0. Total cost (£): Amalthea = 153 (33-413). GP =133 (10-452).	Total cost of care was greater in the intervention group. Study authors conclusions: Our study provides evidence to support referral of patients with psychosocial problems to a referrals facilitator, who arranges contact with voluntary organisations. Patients were less anxious but their care was more costly and contact with primary care was not reduced. Voluntary sector costs need to be assessed further, but our trial suggests a role for referrals facilitators in the management of psychosocial problems in primary care.
3.	Phillips G et al. Well London Phase-1: results among adults of a cluster randomised trial of a community engagement approach to improving health behaviours and mental well-being in deprived inner-city neighbourhoods. *Journal of*	Twenty deprived neighbourhoods.	Well London: multi component community engagement programme for improving mental well-being, healthy eating and healthy physical activity in multiply deprived communities. Fourteen interlinked projects in 20 deprived neighbourhoods in London using a co-production approach. A core group of	Measured by a household survey among adults before and after intervention delivery. Primary health outcomes: No significant differences between intervention neighbourhoods and control neighbourhoods. Abnormal GHQ12 (adjusted risk ratio: 1.15 95% CI 0.84 to 1.61); Warwick Edinburgh Mental Well-being Scale (WEMWBS) (Mean difference: -1.52, 95% CI -	Study sought evidence of the neighbourhood-wide impact on residents, irrespective of their levels of engagement/exposure with the programme. Study authors conclusions: The trial findings do not provide evidence

REFERRAL TO LINK WORKER

	Source	Population	Intervention/model	Outcomes	Comment
3a	*Epidemiology & Community Health* 2014; 68 (7): 606-614. Source: peer reviewed journal, cluster-randomised trial. RCT sought to determine effectiveness of the Well London programme in improving healthy eating, physical activity and mental well-being in adults and adolescents, and enhancing the social characteristics, structure and function of the target communities, which are hypothesised to underpin changes in well-being and health behaviour outcomes. University of East London. *Well London Phase 1 2007-2011. A multi-level evaluation.* London: University of London: undated. Link to full text available here Source: grey, evaluation (uncontrolled before and after)		volunteers (modelled on the UK National Health Service Health Trainers Well-London Delivery-Teams) in each neighbourhood, supported residents to participate in Well London, access services and improve health behaviours. All projects were locally adapted to community preferences	3.93 to 0.88). Secondary health outcomes: Two statistically significant differences between intervention and control neighbourhoods: Unhealthy eating score was lower in intervention neighbourhood (Mean difference: -0.14, 95% CI -0.27 to -0.02). Proportion of residents thinking that people living in their neighbourhood pulled together to improve it higher in intervention neighbourhoods (Rate ratio: 1.92; 95% CI 1.12 TO 3.29).	supporting the conclusion of non-experimental components of the evaluation which were that the intervention improved health behaviours, well-being and social outcomes.
4.	Grayer J et al. Facilitating access to voluntary and community services for patients with psychosocial problems: a before-after evaluation. *BMC Family Practice* 2008; 9:27. Link to full text here Source: peer reviewed journal, uncontrolled before and after design.	Patients identified as having a psychosocial problem (definition of psychosocial was broad).	Referral to graduate primary care mental health worker (GPCMHW) for advice and referral to voluntary and community resources. GPCMHW based at four practices and accepted referrals from a further two practices. Nearly all patients referred by GPs. Patients 18+ with psychosocial problems. Initial appointment with GPCMHW with semi-structured assessment carried out. Advice given about community resources which might meet participants needs. GPCMHW supported attendance at community resources if/when required. Follow up assessment at three months.	Referrals to GPCMHW = 255 Contacting GPCMHW = 234 Attended assessment = 151 Consented to research = 108 75/108 patients completed three month follow up questionnaire (69%). 58% of patients reported making contact with a community service identified as suitable to their needs GHQ-12: n=69 Mean score (SD) pre intervention: 6.19 (4.04). Post intervention: 3.81 (4.40). Difference (95% CI): 2.38 (1.25 - 3.51). Clinical Outcomes in Routine Evaluation-Outcomes Measure[l] (CORE-OM): n=74 Mean score (SD) pre intervention: 17.7 (6.9). Post intervention: 15.0 (8.1). Difference (95% CI): 2.7 (1.2 – 4.2). Work and Social Adjustment Scale (WSAS)[m]: n=69 Mean score (SD) pre intervention:	GPCMHWs were two recent psychology graduates who had some previous clinical experience in a voluntary capacity, but had no formal mental health training. Study authors conclusions: Graduates with limited training in mental health and no prior knowledge of local community resources can help patients with psychosocial problems access voluntary and community services and patients value such a scheme. There was some evidence of effectiveness in reducing psychosocial and mental health problems.

[l] Measures global distress on a 34-item Likert scale ranging from 0 to 4
[m] Measures the impact of the patient's problem on work, home management, social and private leisure activities, and relationships, utilising a 6-item Likert scale ranging from 0 to 8.

REFERRAL TO LINK WORKER

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td>25.63 (11.86). Post intervention: 21.94 (12.95). Difference (95% CI): 3.69 (1.54 – 5.84).

Primary healthcare consultations:
Median (range) pre intervention: 3 (1 - 14). Post intervention: 2 (0 – 13). Difference (95% CI): 1 (1 – 2).

Primary healthcare consultations with a psychosocial aspect:
Median (range) pre intervention: 1 (0 - 8). Post intervention: 0 (0 – 12). Difference (95% CI): 1 (1 – 1).

Onward mental health related referrals:
Pre intervention: 8 (7.9%). Post intervention: 20 (19.8%)
Difference (95% CI): 11.9% (1.9 – 21.9)

Psychotropic medication:
Pre intervention: 35 (34.7%). Post intervention: 19 (18.8%).
Difference (95% CI): 15.8% (6.0 – 25.6).</td><td></td></tr>
<tr><td>5.</td><td>Age Concern Yorkshire & Humber. Social prescribing. A model for partnership between primary care and the voluntary sector. London: Age Concern; 2012.

Link to full text here

Source: grey, service evaluation, uncontrolled before and after.

The aims of the project were to assess the effectiveness of social prescribing for older people with mild to moderate depression, were lonely or socially isolated.</td><td>Older people (no age range specified) with mild to moderate depression, loneliness or social isolation.</td><td>Age UK social prescribing service. Pilot project working with 12 GP practices and six local Age UK organisations across Yorkshire and Humber.

Local Age UK teams supported older people to access Age UK services (including befriending, social groups, benefit checks and exercise classes) and other voluntary and community organisations (e.g. community transport, handyman services and community groups).

Four practices piloted a social prescribing clinic in the surgery once every fortnight. Six practices made referrals to age UK via telephone call/fax.

Five local Age UK teams undertook an in-depth assessment with patients at their home or in GP surgery. One Age UK team used telephone assessment.</td><td>Fifty five patients referred to service.
Sixty two referrals made to Age UK services.
Thirty four referrals made to other statutory or voluntary/community organisations.

WEMWBS scores: 24.5/70 at initial assessment. 36/70 on intervention completion (but not stated how many completed the WEMWBS)</td><td>Study author’s conclusion:
The social prescribing pilot project was too short in timescale to be able to provide robust evidence of an impact on prescribing or attendances in GP practices.</td></tr>
<tr><td>6.</td><td>City and Hackney Clinical Commissioning Group, University of East London. Shine 2014 final report: Social prescribing: integrating GP and community assets for health. London: The Health Foundation; 2015.

Link to full text here

Source: grey, service evaluation (controlled before and after for participant reported outcomes).</td><td>Pool of patients from 23 practices in City and Hackney.

Patients reported suffering from a range of physical and psychological challenges, the most common being social isolation.</td><td>GP practices in City and Hackney referred 737 patients to three social prescribing coordinators (SPCs) employed by Family Action (FA). SPCs assessed individuals’ needs and aspirations before connecting them to appropriate, mainly non-clinical, community services delivered by 85 statutory and voluntary groups.

Referrals were to services including:
Lunch clubs
Psychological counselling
Volunteering
Physical activity (e.g. yoga, walking)
Specialist support with health,</td><td>Did not attend (DNA) rate at first appointment with the SPC was 11%.

A control group (C) of six GP practices in City and Hackney were matched to intervention group (I) of SP respondents. Data was collected at baseline and eight months from both groups.

Change in health profile from baseline to follow up (measured using the Well-being outcomes star[n]):

<table><tr><td></td><td>Scale</td><td colspan="2">Baseline</td><td colspan="2">Follow-up</td></tr><tr><td>Measure</td><td></td><td>I</td><td>C</td><td>I</td><td>C (n=</td></tr></table></td><td>Outcomes data (participant reported) collected for only 184 of the 624 people who attended a consultation with the SP coordinator at baseline and only 65 (10%) at eight month follow up. For controls data was only available for 127 of 30 at eight month follow up.</td></tr>
</table>

[n] http://www.outcomesstar.org.uk/using-the-star/see-the-stars/well-being-star/

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td>employment and legal issues.</td><td>
<table>
<tr><td></td><td></td><td>(n= 184)</td><td>(n= 302)</td><td>(n= 65)</td><td>127)</td></tr>
<tr><td>Wellbeing in past week</td><td>Good 6 to bad 0 (mean)</td><td>2.8</td><td>3.6</td><td>2.8</td><td>3.9</td></tr>
<tr><td>Anxiety</td><td>21 extremely anxious to 0 not anxious (mean)</td><td>11.3</td><td>8.1</td><td>11.2</td><td>7.6</td></tr>
<tr><td>Depression</td><td>21 extremely anxious to 0 not anxious (mean)</td><td>9.9</td><td>6.7</td><td>10.1</td><td>5.9</td></tr>
<tr><td>Positive & active engagement in life</td><td>5 poorly integrated to 20 highly integrated (mean)</td><td>13.5</td><td>13.7</td><td>13.5</td><td>14.1</td></tr>
<tr><td colspan="2">A&E visits in past 3 months (mean)</td><td>0.4</td><td>0.3</td><td>0.3</td><td>0.5</td></tr>
</table>

Logistic regression analysis showed no statistically significant change in health, well-being, anxiety, depression, or A+E visits for SP intervention after controlling for age, gender, ethnicity, living arrangement and work status. The sample was small; there was considerable loss to follow up.

General Practice consultation rates in both intervention and control areas over a two year period (July 2013-June 2015) were also analysed. Consultations per patient over the two-year period were higher in the intervention than control group, consistent with their lower health status.

Pre and post referral consultation rates were calculated for 420 patients for whom referral date had been recorded. There was a significant difference between the consultation rates before and after the date of first referral, with higher consultation rates recorded after.</td><td></td></tr>
<tr><td>7.</td><td>Dayson C et al. From dependence to independence: emerging lessons from the Rotherham Social Prescribing Pilot. Final report and summary. Sheffield: Sheffield Hallam University; 2013.

Link to full text here

Source: grey, pilot service evaluation, uncontrolled before and after.</td><td>Patients with long term conditions (referrals mainly from older population).</td><td>Pilot programme with link worker referral. Link worker facilitated access to existing voluntary and community services.

Project manager oversees day to day running of pilot. Five voluntary and community sector advisors (VCSAs) provided the link between the pilot and primary care. VCSAs received referrals from GP practices, made an assessment of the persons support needs and referred them on to appropriate voluntary and community sector led services.

Referrals September 2012 - October 2013:
Other (n = 42)
Advocacy (25)
Community activity – education (34)</td><td>
<table>
<tr><td colspan="4">Change in hospital episodes (Cohort of 161 patients):</td></tr>
<tr><td></td><td>A&E</td><td>Admissions</td><td>Outpatients</td></tr>
<tr><td>Pre-intervention (n)</td><td>173</td><td>126</td><td>148</td></tr>
<tr><td>Post-intervention (n)</td><td>136</td><td>115</td><td>105</td></tr>
<tr><td>Change in episodes (n)</td><td>-37</td><td>-11</td><td>-43</td></tr>
<tr><td>Change in episodes (%)</td><td>-21%</td><td>-9%</td><td>-29%</td></tr>
</table>
</td><td>Evaluation at midpoint of project.

Stakeholders interviewed suggested it would be difficult to sustain this model past pilot stage without some core funding, but that withdrawing the services would have negative effects for patients.</td></tr>
</table>

REFERRAL TO LINK WORKER

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dementia support (39)
Gardening, cleaning, handy person, home safety (40)
Respite care in the home (48)
Condition specific support (excluding dementia) (51)
Activities (70)
Complimentary therapy sessions (71)
Information and advice – other (87)
Enabling (92)
Community activity exercise/home exercise (93)
Information and advice – benefits (100)
Community transport (106)
Befriending (133)
Community activity leisure/social (175).</td>
<td>
<table>
<tr><td>% patients with fewer episodes</td><td>50%</td><td>43%</td><td>51%</td></tr>
</table>

Social outcomes:
Measured by an outcome star tool developed specifically for service. Measurements taken at baseline referral and six months.
<table>
<tr><th>Outcome</th><th>% reporting positive progress</th></tr>
<tr><td>Feeling positive</td><td>43%</td></tr>
<tr><td>Lifestyle</td><td>45%</td></tr>
<tr><td>Looking after yourself</td><td>38%</td></tr>
<tr><td>Managing symptoms</td><td>40%</td></tr>
<tr><td>Work, volunteering and other activities</td><td>50%</td></tr>
<tr><td>Money</td><td>66%</td></tr>
<tr><td>Where you live</td><td>62%</td></tr>
<tr><td>Family & Friends</td><td>47%</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Dayson C, Bashir N. The social and economic impact of the Rotherham Social Prescribing Pilot. Main evaluation report. Sheffield: Sheffield Hallam University; 2014.

Link to full text here

Source: grey, pilot service evaluation, uncontrolled before and after.</td>
<td>Patients with long term conditions who were the most intensive users of primary care.</td>
<td>Intervention as above.

Twenty four voluntary and community organisations (VCOs) received grants with a total value of just over £600,000 to deliver a menu of 31 separate social prescribing services.</td>
<td>One thousand six hundred and seven patients were referred to the service; 1,118 were referred on to funded voluntary and community services (VCS). In parallel, more than 200 referrals were made to non-funded VCS provision and more than 300 referrals were made to statutory services.

Social outcomes:
Measured using an outcome star developed specifically for the service. Measurements taken at referral and three to four month follow up.
<table>
<tr><th>Outcome</th><th>% reporting positive progress</th></tr>
<tr><td>Feeling positive</td><td>35%</td></tr>
<tr><td>Lifestyle</td><td>25%</td></tr>
<tr><td>Looking after yourself</td><td>24%</td></tr>
<tr><td>Managing symptoms</td><td>21%</td></tr>
<tr><td>Work, volunteering and other activities</td><td>49%</td></tr>
<tr><td>Money</td><td>21%</td></tr>
<tr><td>Where you live</td><td>20%</td></tr>
<tr><td>Family & Friends</td><td>27%</td></tr>
</table>
Impact on demand for hospital care:
<table>
<tr><td colspan="4">All patients referred to social prescribing for whom 12 month data was available (n=108)
Change in per patient utilisation</td></tr>
<tr><td></td><td>12m before</td><td>12m after</td><td>Change</td></tr>
<tr><td>Inpatient admissions</td><td>1.46</td><td>1.17</td><td>-0.3</td></tr>
<tr><td>A&E attendances</td><td>1.94</td><td>1.57</td><td>-0.39</td></tr>
</table>
</td>
<td>Final report on pilot.

Data are estimates based on partial data from a sub-set of social prescribing beneficiaries:
• Estimated total NHS cost reductions by the end of the pilot of £552,000: a return on investment of 50 pence for each pound (£1) invested.
• Potential NHS cost reductions of £415,000 in the first year post-referral when the service is running at full capacity.
• If these benefits identified are fully sustained over a longer period:
- costs of delivering the service for a year would be recouped after between 18 and 24 months
- the five year cost reductions for commissioners for each full year of service delivery could be as high as £1.9 million: a return on investment of £3.38 for each pound (£1) invested
- even if the benefits are sustained but drop-off at a rate of 33 per cent each year they could lead to total cost reductions of £807,000: a return on investment of £1.41 for each pound (£1) invested.

The value of a range of social benefits associated with social prescribing were also estimated using financial proxies and techniques associated with social return on investment (SROI) analysis:</td>
</tr>
</table>

REFERRAL TO LINK WORKER

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>Outpatient attendances</td><td>1.70</td><td>1.30</td><td>-0.36</td></tr>
<tr><td colspan="4">All patients referred to grant funded provider for whom 12 month data was available (n=42)</td></tr>
<tr><td></td><td>12m before</td><td>12m after</td><td>Change</td></tr>
<tr><td>Inpatient admissions</td><td>1.45</td><td>1.10</td><td>-0.36</td></tr>
<tr><td>A&E attendances</td><td>2.19</td><td>1.67</td><td>-0.52</td></tr>
<tr><td>Outpatient attendances</td><td>1.90</td><td>1.36</td><td>-0.55</td></tr>
<tr><td colspan="4">All patients referred to social prescribing for whom 6 month data was available (n=451)</td></tr>
<tr><td></td><td>6m before</td><td>6m after</td><td>Change</td></tr>
<tr><td>Inpatient admissions</td><td>0.59</td><td>0.51</td><td>-0.8</td></tr>
<tr><td>A&E attendances</td><td>0.76</td><td>0.67</td><td>-0.9</td></tr>
<tr><td>Outpatient attendances</td><td>0.74</td><td>0.63</td><td>-0.11</td></tr>
<tr><td colspan="4">All patients referred to grant funded provider for whom 6 month data was available (n=248)</td></tr>
<tr><td></td><td>6m before</td><td>6m after</td><td>Change</td></tr>
<tr><td>Inpatient admissions</td><td>0.58</td><td>0.44</td><td>-0.13</td></tr>
<tr><td>A&E attendances</td><td>0.75</td><td>0.63</td><td>-0.12</td></tr>
<tr><td>Outpatient attendances</td><td>0.72</td><td>0.69</td><td>-0.03</td></tr>
</table>
</td><td>

Estimated value of patients' well-being benefits was between £819,000 and £920,000 by end of the pilot.
Potential value of well-being benefits is between £660,000 and £742,000 in the first year post-referral when the service is running at full capacity.
Estimated annual value of volunteering to the pilot was between £81,000 and £148,000: an additional £0.16 - £0.26 (16 - 26 pence) for each pound (£1) invested in the pilot by the clinical commissioning group (CCG).
The estimated value of additional welfare benefits claimed was £350,000 over the course of the pilot.
The estimated value of additional funding accessed by funded VCS services providers was at least £200,000 over the course of the pilot.

</td></tr>
<tr><td>9.</td><td>ERS Research & Consultancy, Beacon North Ltd. Newcastle Social Prescribing Project final report. Newcastle: ERS; 2013.

Link to full text here

Source: grey, service evaluation, uncontrolled before and after.</td><td>Patients with long term conditions and mental health problems who were considered to be vulnerable.</td><td>Linkwork service set up to enable health professionals to refer vulnerable people with long term conditions to existing non-clinical community services and networks.

Referral from healthcare professionals to a link worker at one of five participating community organisations. Referrals to a health trainer service (36%) and exercise referral (35%) were the most common, followed by Age UK (17%) and a carers centre (9%).</td><td>There were 124 referrals.

Eight seven (70%) engaged in first contact with link worker. Of those engaged, 79 went on to set goals. 26% (32 of 124) of those referred as part of the project achieved their set goal.

Sixty nine percent of patients (based on completed records) experienced an increase in the short WEMWBS and 64% reported an increase in confidence in managing their long term condition.</td><td></td></tr>
<tr><td>10.</td><td>Farenden C et al. Community navigation in Brighton and Hove: evaluation of a social</td><td>Patients with long term conditions and other vulnerabilities</td><td>Community navigators (volunteers) working in GP surgeries assessed patients' non medical and support needs and helped them access</td><td>Three hundred and ninety three referrals made were by GPs, 322 seen by navigator (71 (18%) did not attend appointment with a navigator or did not want a referral; 30 began working</td><td>This was the only scheme reporting that link workers were volunteers and not paid staff. The community navigator role was</td></tr>
</table>

REFERRAL TO LINK WORKER

	Source	Population	Intervention/model	Outcomes	Comment
	prescribing pilot. Brighton: Brighton and Hove Impetus; 2015. Link to full text here Source: grey, pilot service evaluation. The service aimed to: • Link patients with groups, services and activities that could help improve their health and wellbeing, including sources of social, practical and emotional support. • Promote self-management through the use of patient-centred methods and an empowering approach. • Provide a bridge between primary care and the voluntary and community sector, linking GP surgeries with a broader range of non-medical interventions. • Collect evidence about the use of and need for groups, services and activities in Brighton & Hove that support patients' health and wellbeing.	(e.g. mild to moderate depression, bereavement, social isolation, financial difficulties).	groups, services and activities. Navigators delivered sessions in surgery (42%); by telephone (34%); home visit (10%); outreach (1%) and unknown (13%) Navigators offered up to six appointments of 45 minutes each, taking place in GP surgery or patients home (if housebound). Navigators encouraged and enabled people to take up groups, services or activities and aimed not to create dependence on the navigation service itself. The most frequent referrals reasons were: social isolation; low mood; stress; housing and finance issues.	with the navigator but did not complete the process – successful uptake of navigation 292/393 = 74%). One hundred patients completed follow-up telephone interviews: 84% reported improvements in their sense of wellbeing.	considered to be intensive, required the navigator to already have an existing level of skill and experience and to have sufficient emotional and mental resilience. Using volunteers in the navigator role was considered to require a greater level of flexibility and negotiation than would be required with paid staff and turnover of volunteers was reported to be high.
11.	Friedli L et al. *Evaluation of Dundee Equally Well Sources of Support: social prescribing in Maryfield*. Dundee: Dundee Partnership; 2012. Link to full text here Source: grey, pilot service evaluation. The pilot aimed to develop, co-ordinate and evaluate a scheme in order to build local evidence of the benefits of social prescribing, identify the operational issues in running a practice based scheme and gain local support for sustaining and rolling out social prescribing.	Vulnerable patients with psycho-social needs.	A single primary care practice made referrals. Key services were identified across Dundee that help address: • Structural/environmental issues (e.g. money/debt, employment/training, housing support, anti-social behaviour). • Lifestyle issues (e.g. drug/alcohol management, physical activity, condition management) • Social isolation and other psychosocial needs (e.g. counselling, volunteering, adult learning, social activities). • Family and relationship problems (e.g. mediation, children's services). Scheme involved GP referral followed by contact from link worker and up to four sessions to identify the patient's needs and appropriate community based information and /or support and activities.	There were 123 referrals: 61 (50%) attended at least one meeting with a link worker. 18 (15%) partially engaged (made telephone contact but did not meet with link worker). 44 (35%) were not engaged (no contact with link worker). Only 12 participants completed pre and post intervention measures (WEMWBS and WSAS) but no data were provided.	Key lessons reported included: • Social prescribing is new and unfamiliar- for patients and for primary care- communication support is needed. • GPs are more likely to refer patients when the primary care culture supports holistic, psycho-social approaches and may require a shift in consultation style. • The link worker role is essential if the scheme is to support disadvantaged patients. • High levels of persistence, support and flexibility are needed to engage patients with complex needs and enable them to overcome barriers to accessing support: this requires highly skilled link workers.
12.	Johnson S. *NHS Leeds West Clinical Commissioning Group*	Patients in NHS Leeds West member	Referral route between GP practices and local voluntary sector organisations, activities,	In the first year: • 703 referrals	

REFERRAL TO LINK WORKER

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td>Patient Empowerment Project (PEP) final year one report. Bradford: NHS Yorkshire and Humber Commissioning Support; 2015.

Link to full text here

Source: grey, service evaluation, uncontrolled before and after.</td><td>practices.</td><td>groups and service.

Patient empowerment project.
Outcomes of interest to clinical commissioning group were improvements in management of diabetes; cardiovascular disease (CVD); chronic obstructive pulmonary disease (COPD) and depression- including participant reported improvement in ability to self management.

A total of 987 groups and services have been signposted or referrals made to by the PEP coordinators to 482 enrolled patients (n=484) between October 2014 and end September 2015.

Services that patients are referred/signposted to include:
• Mental health services
• Social services
• Benefits/debt management/financial inclusion
• Healthy living
• Community based (e.g. activity groups/social support networks)
• Structured support (e.g. advocacy).</td><td>• 484 (70%) enrolments (those having completed baseline assessment or who have made an appointment to do so by time of writing)
• 115 had a follow-up review.

The conversion rate of referral to enrolment total of 69% means that within the first 12 months of PEP 31% of referred patients have not engaged with the PEP service.

Short WEMWBS: (n=103)
Mean mental wellbeing score at baseline: 18.46
Mean mental wellbeing score at follow-up: 20.62.

Of the 103, 70.8% (n=73) have reported a positive change, 21.4% (n=22) a negative change and 7.8% (n=8) remain the same. The mean difference in SWEMWBS score for these PEP participants at assessment and at follow up review is 2.22 with the minimum change being -7.6 and the maximum change of 15.75.

EQ-5D5L°: (n=113)
• 58.4% (n=66) have reported a positive change, 27.4% (n=31) a negative change and 14.2% (n=16) remain the same.
• 54% reported problems with mobility (walking about) at baseline reducing to 52% at follow up review.
• 46% reported problems with self-care (washing and dressing self) at baseline reducing to 39% at follow up review.
• 67% reported problems with performing their usual activities at baseline reducing to 65% at follow up review
• 68% reported pain and discomfort at both baseline and follow up review.
• 88% reported anxiety and depression at baseline reducing to 81% at follow up review.

Healthcare appointments: overall number of appointments at surgery increased by those enrolled in PEP; however appointments with GP decreased with appointments with other staff increasing. PEP cohort average 2 less GP appointments per month since PEP service started.

Confidence to self manage was assessed using six questions and Likert type scale developed by project (not validated). Results for change in not at all confident:
<table><tr><th></th><th>Baseline (n=86) %</th><th>Follow up (n=68) %</th></tr><tr><td>Q1. How confident are you that you can manage our own health</td><td>10.4</td><td>8.7</td></tr><tr><td>Q2.How confident that you can do all things necessary</td><td>31</td><td>14.7</td></tr></table></td><td></td></tr>
</table>

° https://euroqol.org/eq-5d-instruments/eq-5d-5l-about/

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<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td><table>
<tr><td>to manage illness on day to day basis</td><td></td><td></td></tr>
<tr><td>Q3.How confident you can judge changes in your illness mean you should visit Dr</td><td>10.5</td><td>4.4</td></tr>
<tr><td>Q4.How confident cope with illness so does not affect everyday life</td><td>44.2</td><td>21.2</td></tr>
<tr><td>Q5.How confident you can take your medicines so your illness does not affect everyday life</td><td>10</td><td>6</td></tr>
<tr><td>Q6. How confident that you can do other than taking medicines so illness does not affect everyday life</td><td>51.2</td><td>18.2</td></tr>
</table></td><td></td></tr>
<tr><td>13.</td><td>Kimberlee R et al. Measuring the economic impact of Wellspring Healthy Living Centre's Social Prescribing Well-being Programme for low level mental health issues encountered by GP services. Bristol: University of the West of England; 2014.

Link to full text here

Source: grey, service evaluation, uncontrolled before and after and social return on investment (SROI) approach.</td><td>Adults who live in the Barton Hill area of the Lawrence Hill ward (one of most deprived in Bristol).</td><td>The Wellspring Healthy Living Centre adopted a holistic social prescribing approach. It offered GP referred patients 12 weeks of one to one support followed by 12 months of group support around a particular activity.

The service consists of two elements: Branching Out and Time Out.

Branching Out used a one to one key worker model. Clients set health and wellbeing goals over an average of nine weeks with help of the key worker. Clients were supported to achieve these goals and access support in the community (e.g. ‘time out’ peer-support groups, or therapeutic activities such as arts, cooking, physical activity), or were referred to specialised mental health or substance misuse support. If they had issues related to housing, employment or debt that impacted on their well-being present as hindrances to the wellbeing the Branching Out worker supported them to address these. They also had the option of having a befriender to support them.

Time Out were weekly peer support groups facilitated by a support worker that provided opportunity for social contact to reduce social isolation.</td><td>One hundred and twenty eight referrals at baseline but outcome at three months was reported for 70 .

Patient Health Questionnaire 9 item (PHQ-9)[p]: Statistically significant decrease in depression scores from baseline (M=18.38, SD=6.42) to three months after (M=8.43, SD=6.33), t (69) = 11.39, p= < 0.001. Mean decrease in depressions score was 9.95 (95% CI 8.208 – 11.692).

Generalised anxiety disorder assessment 7 item (GAD-7): Statistically significant decrease in anxiety scores from baseline (M=15.39, SD=4.67) to three months after (M=7.21, SD=5.34), t (69) = 12.83, p= < 0.001. Mean decrease in anxiety score was 8.81 (95% CI 6.901 - 9.442).

Friendship scale[q] (measure of social isolation): Statistically significant increase in connectedness from baseline (M=8.63, SD=6.01) to three months after (M=13.17, SD=4.28), t (69) = 5.62, p= < 0.001. Mean increase in Friendship Scale scores was 4.54 (95% CI 6.155 - 2.908).

Data on GP contact times was available for 37 programme beneficiaries. 22 of these (60%) reduced their GP attendance rates in the 12 months post intervention compared to the 12 months prior to referral: for 10 people GP attendance was the same and for 5 attendance had increased.

Social return on investment ratio for the Wellspring programme was calculated to be £2.90:£1</td><td>A key outcome highlighted by key workers was that they perceive their intervention is not simply about achieving positive outcomes such as improved well-being, a return to work or training etc. Instead it is about addressing embedded and unaddressed/ undiagnosed issues such as agoraphobia brought on by abusive neighbours, relationship breakdown, addiction etc. It can also help to prevent beneficiaries spiralling down to worse scenarios.

Study authors noted that data monitoring processes were underdeveloped across the third sector and that this and evaluation processes were needed to assess the impact of social prescribing.</td></tr>
</table>

[p] The PHQ-9 is a multipurpose instrument for screening, diagnosing, monitoring and measuring the severity of depression.
[q] https://core.ac.uk/download/pdf/36962344.pdf

REFERRAL TO LINK WORKER

	Source	Population	Intervention/model	Outcomes	Comment
14.	Scottish Government. *Links project report. Developing connections between general practices and their communities*. Edinburgh: Scottish Government; 2012. Link to full text here Source: grey, pilot programme evaluation. The aim was to develop and test a sustainable local model to improve links between general practice and community support by signposting patients to local services.	Patients with long term conditions.	Pilot in two sites - Glasgow and Fife. GP practices compiled directories of community resources. GPs signposted patients.	Glasgow (no data for Fife) December 2010 to End Feb 2011: 507 patients recommended a resource 287/507 expressed intention to use resource. During five days of recording in January and three days in February 2011, 81 and 50 individuals respectively were signposted to community resources. A total of 83 (62%) of these patients were followed up by staff in February and March. Of those, 50 (60%) had made contact with the service. Of the 50 who made contact, 35 (70%) were still using the resource 4–6 weeks later.	This project did not involve link workers but a recommendation was that to be sustainable there was a need to consider a model that maintained connections to the community, e.g. a link worker, with librarianship and connecting role, to develop and facilitate links.
15.	Thirlwall C. *Healthy Connections Stewartry: final evaluation. 'Test of Change' project report.* Dumfries: NHS Dumfries & Galloway; 2015. Source: grey, pilot service evaluation. A 'test for change' project geared towards testing the impact on anti-depressant prescribing rates, measuring the impact on individual wellbeing, and testing the benefits and impacts of partnership working.	Patients with mental health problems from two GP practices in Stewartry, Dumfries and Galloway. The focus was on targeting those age 50+ (though referrals not exclusively restricted to this age group).	Referral from GP to range of community resources including: • Exercise Referral Scheme • Listening Project • Access to art opportunities • Self-Management • Learning Opportunities • Financial advice • Employability support and advice • Volunteering • Healthy Reading Literature. The project developed a signposting/referral pathway utilising the Scottish Care Information gateway system (supported referral system familiar to GPs).	May 2013 – February 2015: (117 referrals but p10 has 73 referrals) Sixty one referred to self management programme worker of whom 20 (33%) did not wish to engage/not interested in activities/did not attend several appointments offered. Data collected from before and after as part of self management programme using the WEMWBS questionnaires shows a significant shift in wellbeing (from 38 to 45.5) (p4 and p9 n=?)., but p11 (n=6) WEMWBS questionnaires as part of the self-management programme, shows a shift from 31.5 before to 40.2 showing an increase of 8.7. Anti-depressant prescribing (p11) reports that 36 individuals prescribed these prior to signposting and 9 at point of signposting – 14 no longer on antidepressants after signposting but do not know if any of these individuals accessed social prescribing.	There are inconsistencies in the report in the number of referrals and WEMWBS data. Lessons learned were that the number of individuals who disengaged demonstrated a need for consideration to be given to the level of support those referred received once their GP had referred them and their readiness to change. A link worker was seen as a key part of the pathway to maximise outcomes for individuals. GP involvement at the very early design stage was seen as critical to ensure ownership of the process. Evaluation needed to be integrated at the planning stage. Funding is necessary for development of opportunities and activities e.g. commissioning of local resources to support individual and community wellbeing. Undertaking an assets based approach and utilising existing local opportunities was considered to be a more sustainable approach.

COMMUNITY ARTS PROGRAMMES

Primary studies

	Source	Population	Intervention / model	Outcomes	Comment
16.	Vogelpoel N, Jarrold K. Social prescription and the role of participatory arts programmes for older people with sensory impairments. *Journal of Integrated Care* 2014; 22 (2): 39-50. Source: peer reviewed journal, mixed-methods (For quantitative element uncontrolled before and after).	Older people with sensory impairment experiencing social isolation**.** Twelve participants referred to the programme: four with hearing impairments, seven with vision impairments and one with multi-sensory impairment.	Referrals from GP to a practical arts workshop programme run by Voluntary Action Rotherham and Sense. GP referral notes passed to project coordinator at Sense who formally contacted participants. Transport and communications needs for patients negotiated and arranged. Participants were provided travel support to attend the workshops, and support staff and communicator guides from Sense assisted a visual and tactile arts facilitator, throughout the sessions.	WEMWBS Scores (collected at beginning and end of 12 week intervention period for eight participants): Overall mean score of the group increased from 41 to 47. Individual scores, when ranked into 'low', 'moderate' and 'high' wellbeing, showed that the number of participants who reported low wellbeing decreased from five to three whilst those scoring high wellbeing increased from one person to three.	
17.	Hacking S et al. Evaluating the impact of participatory art projects for people with mental health needs. *Health & Social Care in the Community* 2008; 16(6): 638-648. Source: peer reviewed journal, survey of people participating in arts projects based on questionnaire.	Those experiencing mental health difficulties. 88 people who were participating in 22 arts projects completed the survey	Included projects were those that used participation in the arts with the intention of improving mental health. The 22 projects that recruited participants offered a wide variety of visual, tactile, music and writing options, but the most common activities were drawing and painting. Referral to the projects included self referral, GP referral or secondary care referral. Project workers were asked to offer the questionnaire to every new participant with mental health needs (most of the arts projects were also open to participants without mental health difficulties).	Outcome measure scores (n=62; 71% of 88 who consented at first entry): Individual Empowerment Assessment (IEA) (range of scores: 0-10): Self worth: Mean at entry (SD): 6.87 (2.53) Mean at six months (SD): 7.40 (2.52) Paired t: 1.83 df: 56 p value: 0.07 % change: 7.6. Self efficacy: Mean at entry (SD): 3.50 (2.32) Mean at six months (SD): 4.77 (2.52) Paired t: 4.57 df: 56 p value: <0.001 % change: 36.6. Positive outlook: Mean at entry (SD): 6.52 (2.24) Mean at six months (SD): 7.15 (2.10) Paired t: 2.25 df: 55 p value: 0.03 % change: 9.6. Mutual aid: Mean at entry (SD): 7.79 (1.65) Mean at six months (SD): 7.94 (1.79) Paired t: 0.59 df: 56 p value: 0.56 % change: 1.8. Whole measure empowerment: Mean at entry (SD): 6.24 (1.81) Mean at six months (SD): 6.81 (1.76) Paired t: 2.58 df: 60 p value: 0.01 % change: 9.2. Empowerment scores overall showed a statistically significant increase, but change was quite small: scores increased by only	Study authors conclusions: • Our outcome study indicates that arts and mental health projects do improve participants' levels of empowerment. • Where mental health and social inclusion are concerned, we have to conclude that the evidence is promising but less secure. In each case, there was an element of significant support for an arts participation effect from our analyses, suggesting that this merits further research, taking into account the methodological issues we have raised. • To the extent to which improvements in empowerment and mental health can be attributed to arts participation, our results indicate that arts and mental health projects can benefit people with greater mental health needs as well as those with lower levels of need.

ARTS PROGRAMMES

	Source	Population	Intervention / model	Outcomes	Comment
				9%. Clinical Outcomes in Routine Evaluation[r] (CORE) (range of scores 0-4): Life functioning: Mean at entry (SD): 1.64 (0.74) Mean at six months (SD): 1.45 (0.82) Paired t: -1.90 df: 61 p value: 0.06 % change: -11.9. Problems/symptoms: Mean at entry (SD): 1.92 (0.94) Mean at six months (SD): 1.68 (0.99) Paired t: -2.06 df: 61 p value: 0.04 % change: -12.4. Risk: Mean at entry (SD): 0.52 (0.70) Mean at six months (SD): 0.37 (0.54) Paired t: -1.95 df: 61 p value: 0.05 % change: -29.0 Wellbeing: Mean at entry (SD): 2.03 (0.97) Mean at six months (SD): 1.72 (1.06) Paired t: -2.22 df: 61 p value: 0.03 % change: -15.2. Whole measure CORE: Mean at entry (SD): 1.59 (0.74) Mean at six months (SD): 1.37 (0.79) Paired t: -2.25 df: 61 p value: 0.03 % change: -13.7. Overall CORE scores significantly decreased over the six months, indicating improvement and subscale scores for problems/symptoms; risk and well-being also improved significantly, although life functioning just missed significance. Social inclusion (range of scores 0-4): Social isolation: Mean at entry (SD): 2.68 (0.78) Mean at six months (SD): 2.87 (0.72) Paired t: 2.13 df: 61 p value: 0.04 % change: 7.1. Social relations: Mean at entry (SD): 2.46 (0.65) Mean at six months (SD): 2.61 (0.64) Paired t: 2.10 df: 61 p value: 0.04 % change: 6.0. Social acceptance: Mean at entry (SD): 2.85 (0.70) Mean at six months (SD): 3.01 (0.60) Paired t: 2.23 df: 61 p value: 0.03 % change: 5.6. Whole measure Social Inclusion: Mean at entry (SD): 2.62 (0.61) Mean at six months (SD): 2.74 (0.55) Paired t: 2.72 df: 61 p value: 0.01	

[r] A client-completed 34-item measure grouped into four mental health dimensions assessing subjective well-being, life functioning, risk/ harm and problems/symptoms. CORE is rated on a 5-point scale from 'not at all' to 'most/all the time' (a range of possible scores 0–4).

ARTS PROGRAMMES

	Source	Population	Intervention / model	Outcomes	Comment
				% change: 4.8. Scores increased significantly on all three social inclusion scales and highly significantly on the overall measure, although the overall magnitude of change was only 5%.	
18.	Allan J. *Arts on prescription: arts-based social prescribing for better mental well-being*. London: National Council for Voluntary Organisations; 2015. Link to full text here Source: grey, service evaluation/description. (supplemented with info from) 18a. Bockler, J. *Creative alternatives: A social return on investment analysis of Sefton's 'arts on prescription' service.* NHS Sefton, creative alternatives & Sefton arts; 2012. 18b. Bockler, J. *Creative alternatives: A psycho-social approach towards recovery.* Sefton council & creative alternatives.) Creative Alternatives also evaluated in source 22	Individuals experiencing mental health issues.	Three arts on prescription services (sometimes as part of wider social prescribing initiatives): Colour Your Life **-** social prescribing service across County Durham, delivered by a consortium of seven third sector organisations. Referrals were received from a variety of services including GPs, probation, domestic violence advisors, VCS groups and Job Centre Plus. Self-referral also an option. Those referred receive 10 fully-funded weeks on a programme. Start in Salford – arts and wellbeing charity who launched an art on prescription service in 2006. The scheme offered training in woodwork, creative writing, music, drawing, painting, photography, and also included horticulture. Referrals come from a variety of professionals including GPs, mental health teams and employment officers. Participants had their needs assessed and were then offered a six month intervention. Creative Alternatives – arts on prescription programme in Sefton. Twenty week programme (set up as four blocks of five weeks) involved a range of workshops including textiles, painting, creative writing, ceramics and photography. Referrals were received from GPs, Mersey Care, Citizens Advice Bureau (CAB), Job Centre Plus and mental health services. Participants could also self refer and roughly 50% of participants come via this route. Once referred participants were telephoned to check their suitability for the scheme.	Creative Alternatives: Data gathered through a lifestyle questionnaire (modelled on Dartmouth COOP charts) (n=105) showed that: • 73% of clients reported an improvement to their mental health. • 18% of clients reported a reduction in medication • 26% of clients visit their GP less frequently. (From source 18a) SROI - For every £1 invested it was estimated: • There was an overall social return of £6.95. • There was a return to the State of £6.23. No quantitative outcome data for Colour Your Life or Start in Salford (report mentions that Start in Salford uses WEMWBS as an evaluation tool but no data included).	
19.	Brown K, Pidgeon L. *Arts on Prescription North West Leicestershire evaluation report*. Leicester: North West Leicestershire District Council; 2016. Link to full text here Source: grey, pilot service	Patients experiencing low level mental health issues including stress, anxiety and depression.	An arts on prescription pilot project delivered in the GP surgery between April – June 2016. Participants were referred by practice GPs, self referred, or came through an NHS programme (Improving Access to Psychological Therapies). The intervention was delivered in two blocks of six workshops, with a three	Fifteen referrals, 12 completed the project (80% completion rate). WEMWBS mean scores: Pre-intervention: 32.5 Post-intervention: 42.5 GAD-7 mean scores: Pre-intervention: 15.0	

	Source	Population	Intervention / model	Outcomes	Comment
	evaluation, (uncontrolled before and after).		week midpoint break for review.	Post-intervention: 7.0 PHQ-9 mean scores: Pre-intervention: 16.0 Post-intervention: 8.5 (Figures above are estimates based on data displayed on graphs on p.14-15 of report). Improvement in wellbeing, anxiety and depression scores following the art intervention period across all validated measures. However not enough participants for this to be statistically significant.	
20.	Crone D et al. *Art Lift, Gloucestershire. Evaluation report: executive summary.* Gloucester*:* University of Gloucester; 2011. Link to full text here Source: grey, service evaluation. Mixed methods design. For quantitative element, uncontrolled before and after. Research questions: 1. What is the impact of the art intervention on the mental well-being of patients? 2. What are the associations between patient characteristics and their progress through the art intervention? 3. What are the experiences, opinions and perceptions of the art intervention for the patients, health professionals and artists involved?	Not specified	Patients were referred by health professionals for a 10 week art programme delivered by eight artists within GP surgeries. Activities include working with words, ceramics, drawing, mosaic and painting. Reasons for referral include: • To reduce stress, anxiety or depression • To improve self esteem or confidence • To increase social networks • To alleviate symptoms of chronic pain/illness • To distract from behaviour related health issues • To improve overall wellbeing.	Data was collected for this evaluation from February 2009 until September 2010. Of those referred (n=202) 77.7% (n=157) attended the first session and 49.5% (n=100) completed the 10 week programme. WEMWBS: (N=84) Baseline and follow up data was available for 84 of the 100 people who completed the intervention. For these 84 a significant improvement in wellbeing was found pre- and post-the intervention (7 item: 19 ± 5 vs. 22 ± 5; 14 item: 38 ± 10 vs. 44 ± 9; t = -6.961, df = 83, p<0.001, two tailed).	Executive summary of study only, full report could not be retrieved. The report authors made a series of recommendations - these included the need to provide support and training for artists to help them to develop skills and competencies when dealing with patients with mental health issues, especially when sessions are held outside of the GP surgery. Future arts for health interventions should ensure this training and support is an integral part of the intervention process. The consideration of 'on site' professional support should be also considered for artists who are not based in a surgery setting.
21.	Morton L et al. Improving well-being and self-efficacy by social prescription. *Public Health* 2015; 129 (3): 286-289. Source: peer reviewed journal, service evaluation, uncontrolled before and after.	People with mild/moderate mental health problems.	Free courses delivered to patients with mild/moderate mental health difficulties such as anxiety/stress, depression and low self-esteem. Six courses available: • Wellbeing through meditation • Painting • Photography • Jewellery • Arts and Crafts • Pottery. Courses were advertised on self-help	Mean participant scores pre and post course (262 people attended courses data available on 136 (52%): HADS – Anxiety: Mean pre: 13.2 (SD = 4.2); Mean post: 10.0 (SD = 4.0) HADS – Depression: Mean pre: 10.0 (SD = 4.9); Mean post: 7.4 (SD = 4.2) General self-efficacy scale (GSE)[s]: Mean pre: 23.8 (SD = 6.6); Mean post: 27.7 (SD = 6.1) WEMWBS: Mean pre: 36.4 (SD = 10.5); Mean post: 43.0 (SD =10.0)	

[s] The General Self-Efficacy Scale is a 10-item psychometric scale that is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. http://userpage.fu-berlin.de/health/selfscal.htm

ARTS PROGRAMMES

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For the GSE scale, the increase in Self Efficacy was statistically significant (t (135)¼_9.9, P < 0.001), 95% CI (-4.6, -3.0).

WEMWS the increase in Well-being was statistically significant (t (135) ¼ _8.8, P < 0.001), 95% CI (-8.1, -5.1).</td><td></td></tr>
<tr><td>22.</td><td>Sefton MBC and NHS Sefton. Arts on Prescription in Sefton. Netherton: Creative Alternatives; 2009.

Link to full text here

Source: grey, service evaluation (uncontrolled before and after).</td><td>People living in Sefton, aged 18 years and over and currently experiencing mild to moderate depression, anxiety or stress.</td><td>Creative Alternatives (CA), operating within NHS Sefton's Social prescribing network, offered a programme of free, creative activities to patients for up to six months. This included weekly workshops in visual arts, creative writing and storytelling. Additional workshops exploring arts that required specialist equipment and a schedule of outings to galleries, festivals, concerts and cultural events were also offered.

CA was delivered by experienced arts facilitators and was heavily influenced by the principles of Expressive Arts Therapy.

Referrals were via professional (e.g. GP, Psychologist, counsellors, mental health workers, community workers, job centre advisors) or self-referral where clients had to provide details of a professional who could be contacted as a reference.

Once referred, patients were posted information. They were then placed on a waiting list to be offered a face to face assessment before starting a programme. A 'moving forward' meeting took place on completion of the programme. Post programme, clients were invited to social outings and specialist workshops. A follow-up questionnaire was sent to them six months after their 'moving forward' meeting.</td><td>355 referrals to the programme between Jan 2007 and July 2009. 187 of these assessed and accepted onto programme. 168 (47%) did not meet with the referral officer.

HADS: (based on complete data from 64 clients between 23/11/06 and 09/04/2009)
42 out of 64 clients reported a decrease in symptoms of depression
42 out of 64 clients reported a decrease in symptoms of anxiety
31 clients out of 64 reported a decrease in the symptoms of both anxiety and depression.
Results classed as highly statistically significant.

The Dartmouth COOP Chart: (based on complete data from 72 clients between 23/11/06 and 09/04/2009)

<table><tr><td>Category</td><td>% clients reporting improvement</td><td>Results according to statistical analysis.</td></tr><tr><td>Physical Fitness</td><td>40%</td><td>P = 0.016
Significant</td></tr><tr><td>Feelings</td><td>56%</td><td>P = 0.00000001
Highly Significant</td></tr><tr><td>Daily Activities</td><td>53%</td><td>P = 0.00008
Highly Significant</td></tr><tr><td>Social Activities</td><td>63%</td><td>P = 0.00000001
Highly Significant</td></tr><tr><td>Pain</td><td>31%</td><td>P = 0.375
Not Significant</td></tr><tr><td>Changes in health</td><td>38%</td><td>P = 0.014
Significant</td></tr><tr><td>Overall health</td><td>33%</td><td>P = 0.005
Significant</td></tr><tr><td>Social Support</td><td>33%</td><td>P = 0.117
Not Significant</td></tr><tr><td>Quality of life</td><td>44%</td><td>P = 0.00004
Highly Significant</td></tr></table>
27% of clients report a reduction in medication and 11% of clients reported that they stopped taking medication completely (n=48).

42% (53) of clients reported a reduction in the number of occasions on which they had used GP services; 4% reported increased use.</td><td></td></tr>
</table>

ARTS PROGRAMMES

	Source	Population	Intervention / model	Outcomes	Comment
23.	White M, Salamon E. *An interim evaluation of the 'Arts For Well-being' social prescribing scheme in County Durham.* Durham: Durham University; 2011. Source: grey, pilot service evaluation, mixed methods.	Not specified.	The scheme was a primary prevention service and not intended to be a therapy service. The overall aim was to increase resilience and the principal evidence of benefit sought was increased confidence and self-esteem of service users. The scheme was managed under a 'willing provider' model by a co-ordinating body, Pioneering Care Partnership (PCP), and commissioned services from an approved list of around 20 artists and arts agency providers who delivered activities in a block of six sessions. Referral sources include: • PCP • Sure Start • Counselling • Self-referral • Carers support • Job Centre • Artists • Charities • Disability Services • Community health services • Durham County Council.	This was an interim evaluation, no final evaluation was identified. Used short WEMWBS but did not report any data because of the very low response rate and being unable to tell which scores were baseline and which were follow up assessment From July 2010 (programme commenced September 2009) 604 people referred, of whom: • 198 people were waiting • 108 were active • 291 had completed a course • 7 withdrawn.	Study authors recommendations included: • Establish a clear referral pathway before intervention and a feedback pathway afterwards. • Correctly administer the evaluation instrument (WEMWBS) and consistently use other methods to gather data that may assist the assessment of outcomes.

HORTICULTURAL PROGRAMME

Primary study

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr>
<td>24.</td>
<td>Clift S, Cunningham L, Winczewska N. PoLLeN people, life, landscape and nature: an evaluation 2012-2013. Folkstone: Canterbury Christ Church University; 2013.

Link to full text here

Source: grey, service evaluation, mixed methods approach.

Aim: to assess the extent to which PoLLeN at the Bromley by Bow Centre during 2012-2013 is achieving beneficial health and wellbeing outcomes for participants.</td>
<td>Adults with direct experience of mental distress.</td>
<td>PoLLeN is a social and therapeutic horticulture project which began at the Bromley by Bow Centre in early 2010.

Horticultural activities include:
Vegetable growing
Flower cultivation
Garden Maintenance
City & Guilds qualification in Practical Horticulture Skills (Level 1)
Creative activities using elements of landscape and nature (pottery)
Food growing workshops.
The mental distress referral criteria include:
Stress
Anxiety
Panic attacks
Agitation
Low mood
Low self-esteem and confidence
Inability to cope with day-to-day life
Poor motivation
Low expectations.</td>
<td>CORE10 and WEMWBS (short form) were completed by participants on three occasions – October 2012 (baseline), February 2013 (1st f/up) and June 2013 (2nd f/up).

Changes on CORE10 total scores from baseline to follow-up (n=17):<table><tr><th>Item</th><th>Mean (SD)</th><th>Mean (SD)</th><th>Difference (95% CI)</th></tr><tr><td>Baseline vs. 1st follow up</td><td>14.00 (7.18)</td><td>12.20 (7.16)</td><td>1.80 (-1.09, 4.69)</td></tr><tr><td>First vs. 2nd follow up</td><td>12.41 (6.65)</td><td>15.59 (9.90)</td><td>-3.18 (-6.84, 0.49)</td></tr><tr><td>Baseline vs. 2nd follow up</td><td>15.47 (7.63)</td><td>17.76 (10.95)</td><td>-2.29 (-6.43, 1.84)</td></tr></table>Changes on WEMWBS total score from baseline to follow-up:<table><tr><th>Item</th><th>n</th><th>Mean (SD)</th><th>Mean (SD)</th><th>Difference (95% CI)</th></tr><tr><td>Baseline vs. 1st follow up</td><td>14</td><td>22.86 (5.22)</td><td>25.71 (4.38)</td><td>-2.86 (-5.06, -0.65)</td></tr><tr><td>First vs. 2nd follow up</td><td>17</td><td>24.76 (4.60)</td><td>21.35 (6.24)</td><td>3.41 (0.56, 6.27)</td></tr><tr><td>Baseline vs. 2nd follow up</td><td>15</td><td>23.33 (4.97)</td><td>20.73 (6.55)</td><td>2.60 (-0.01, 5.21)</td></tr></table></td>
<td>No information on uptake or completion, cannot tell the proportion of participants for which outcome data is available.

The recommendations made for future evaluations included the need for:
Collaboration involving all health and social service professionals involved in referring into and delivering programmes.
The adoption of an appropriate common set of validated assessment tools.
Greater clarity on the place of social and activity programmes within the clinical care pathway of participants with diagnosed health conditions, and linkage of evaluation data with medical records and biometric data.
Consideration of pursuing not only project funding, which includes a small budget for evaluation, but also specialist research funding to explore in a more sophisticated and robust way the value of programmes.</td>
</tr>
</table>

EXERCISE REFERRAL

Systematic reviews and meta-analyses

	Source	Population	Intervention / model	Outcomes	Comment
25.	Barker AL et al. Effectiveness of aquatic exercise for musculoskeletal conditions: a meta-analysis. *Archives of Physical Medicine & Rehabilitation* 2014; 95(9):1776-1786. Source: peer reviewed journal, systematic review and meta-analysis Twenty six studies included in the review had to either RCT design or quasi-RCT design. Searches to May 2013 Aims of review: 1. To systematically examine the effect of aquatic exercise on pain, physical function, and quality of life in people with musculoskeletal conditions when compared with both no exercise and land-based exercise. 2. To investigate the relative effectiveness of aquatic exercise for individual musculoskeletal conditions, including osteoarthritis, rheumatoid arthritis, fibromyalgia, low back pain, and osteoporosis. This systematic review does not include any of the sources in this map.	Participants in included studies had to be diagnosed with at least one musculoskeletal condition. Studies with participants who were less than 18 or had recently had surgery were excluded.	Aquatic interventions defined as any type of endurance, flexibility, strength resistance or aerobic exercise conducted in a pool. Intervention length varied across studies (range three to 52 weeks. Frequency range one to seven times per week. Class duration 30-60 minutes)	Reduction in pain: Aquatic exercise vs. no exercise (12 studies): significant heterogeneity detected for the studies (I^2=53%). When a random-effects analysis was applied, aquatic exercise compared with no exercise achieved a moderate reduction in pain (SMD= -.37; 95% CI, .56 to -.18). When the meta-analysis was repeated excluding low-methodological-quality studies, there was no appreciable difference in the effect on pain (SMD= -.33; 95% CI, -.53 to -.13) Aquatic exercise vs. Land-based exercise (n=10): no significant heterogeneity detected for the studies (I^2=50%). When a fixed-effects analysis was applied, aquatic exercise compared with land-based exercise achieved a small non-significant reduction in pain (SMD= -.11; 95% CI, -.27 to .04). When the meta-analysis was repeated excluding low-methodological-quality studies, no appreciable difference was found (SMD= -.08; 95% CI, -.27 to .09) Physical Function: Aquatic exercise vs. No exercise (14 studies): significant heterogeneity was detected for these studies (I^2=53%). When a random-effects analysis was applied, aquatic exercise compared with no exercise controls achieved a moderate improvement in physical function (SMD= .32; 95% CI, .13 - .51). When the meta-analysis was repeated excluding low-methodological quality studies, there was no appreciable difference in the effect on physical function (SMD= .28; 95% CI, .09 - .42). Aquatic exercise vs. Land-based exercise (10 studies): no significant heterogeneity detected for the studies (I^2=38%). Applying a fixed-effects analysis, aquatic exercise compared with land-based exercise achieved comparable effects on physical function (SMD= -.03; 95% CI, -.19 to .12). When the meta-analysis was repeated excluding low-methodological-quality studies, there was no appreciable difference in the effect on physical function (SMD= -.04; 95% CI, -.20 to .12). Quality of Life: Aquatic exercise vs. No exercise (11 studies): significant heterogeneity was detected for the studies (I^2=78%). When a random-effects analysis was applied, aquatic exercise achieved moderate improvements in quality of life compared with no exercise controls (SMD= .39; 95% CI, .06 -.73). When the meta-analysis was repeated excluding low methodological-quality studies, there was no appreciable difference in the effect. Aquatic exercise vs. Land-based exercise (7 studies): no significant heterogeneity was detected for the studies (I^2=12%). When a fixed-effects model analysis was applied, aquatic exercise compared with land-based exercise achieved comparable improvements in quality of life (SMD= -.10; 95% CI, -.29 to .09). All studies reporting on quality of life were of high methodological quality.	Study authors conclusions: Overall, the studies included in this review were of high quality and demonstrate that aquatic exercise can have positive effects on pain, physical function, and quality of life for adults with musculoskeletal conditions. However, there is further need for large-scale trials of sufficient duration and adequate follow-up period to validate the long-term effects of aquatic exercise. In addition, future trials need to examine different modes, frequency, intensity, and participation in aquatic exercise programs so the characteristics of programs that achieve maximum benefits are well understood.

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
26.	Campbell F et al. *A systematic review and economic evaluation of exercise referral schemes in primary care: a short report*. Sheffield: School of Health and Related Research; 2014. Link to full text here Source: peer reviewed journal, systematic review. Review included any new RCT evidence, identified in searches of electronic databases published from October 2009 to the present, and any qualitative studies (sibling studies) that were done alongside the RCT as part of a mixed methods study. Objective: To undertake a systematic review to re-assess the evidence for ERS in order to determine clinical effectiveness and estimate cost effectiveness using a previously developed Markov model. Includes sources 42 and 45.	Any adult (aged 18 years or over) with or without a medical diagnosis and deemed appropriate for exercise referral schemes (ERS).	ERS/Physical activity programmes included in the review were required to be more intensive than simple advice and needed to include one or a combination of, counselling, written materials and/or supervised exercise training. Referral in the majority of studies made by GP. Interventions included ran for between 10 weeks and six months and included instructor-led exercise classes or walks, some form of consultation aimed at increasing activity, or a combination of the two.	Eight Studies included in main review of physical activity (RCTs). Twenty two studies included for uptake/adherence (six RCTs and 16 observational studies): • Initial uptake in the RCT studies ranged from 35% to 100% • Levels of uptake across the observational studies ranged from 28% to 81% • Adherence across the observational studies ranged from 12% to 70%. Exercise referral gained 0.003 quality adjusted life years (QALYs) at an additional cost of £225 per person. The estimate for the mean incremental cost effectiveness ratio (ICER) in the probabilistic sensitivity analysis was £76,276.	Some suggested barriers to adherence were discussed: • Lack of a specific appointment at invitation • Lack of private transport • Deprivation. Older participants and those referred for non-weight related coronary heart disease risk factors and those already moderately active at baseline were most likely to complete the programme. Study authors conclusions: Our analysis indicates that the ICER for ERS compared to usual care is around £76,000 per QALY, although the cost-effectiveness of ERS is subject to considerable uncertainty and is particularly sensitive to the assumptions made regarding the effectiveness ERS in increasing physical activity and the size and duration of process utility gains.
27.	Desveaux L et al. Community-based exercise programs as a strategy to optimize function in chronic disease: a systematic review. *Medical Car*e 2014; 52(3): 216-226. Source: peer reviewed journal, systematic review of RCTs. Review objectives: 1. Describe the structure and delivery of community based exercise (CBE) programmes designed for populations with chronic conditions. 2. Compare the reported effectiveness of these programs on increasing functional capacity (FC) and improving healthcare related quality of life (HRQL) versus standard care. Inclusion criteria for studies were: 1. RCT delivered in the community 2. Inclusion of a component of regular exercise in the program 3. At least 1 outcome that evaluated FC or HRQL.	Studies involved participants diagnosed with COPD (two studies), HD, Stroke (three studies), Osteoarthritis (OA) (10 studies) or diabetes mellitus (one study).	Community based exercise defined as exercise interventions delivered in an environment outside the institutional setting. Seventeen programmes (across 16 studies). 13 delivered in community facility. Programs ranged from eight weeks to 18 months. Majority of sessions lasted 40-60 minutes with a frequency of 2-3 per week. Programmes took place in: • Public pools (7/17) • Community centres (4/17) • Individuals home (4/17) • Fitness centres (2/17). Programmes included: • Aerobic exercise endurance (15/17) • Resistive exercise or strengthening (16/17) • Targeted component of stretching/flexibility (10/17) • Balance training (3/17).	Sixteen studies were included (2204 individuals with chronic disease). Six out of 12 studies evaluating HRQL demonstrated significant between-group differences in favour of the exercise intervention. Five of 13 studies examining functional capacity (FC) representing six different interventions demonstrated significant between-group differences in favouring the exercise intervention. Meta-analysis: Functional capacity: • Three Studies comprising of 300 participants and involving four interventions using the six minute walk test (6MWT) to measure FC. The weighted mean difference (WMD) for the intervention group versus standard care was 41.7m (95% CI , 20.5-62.8 m) • Seven other studies comprising of 899 participants and involving eight interventions evaluated measures of FC; timed up-and-go, 6MWT, 100-foot walk-turn-walk and timed 8-foot walk. SMD for intervention group compared with standard care for FC measures was 0.18 (95% CI, 0.05-0.3) Health Related Quality of Life (HRQL): • Four studies comprising 1009 participants' utilized HRQL measure that included a physical function component. The WMD was 0.21 (95% CI, 0.05-0.4). • Two studies comprising 139 participants and involving three interventions for OA included the total score for a measure of HRQL. The SMD was 0.38 (95% CI , 0.04-0.7)	Study authors conclusion: The results of this systematic review support that CBE programs have similar components irrespective of the chronic disease. Evidence from the meta-analysis suggests that CBE programs appear superior to standard care with respect to improving FC and HRQL, although this trend is based primarily on studies involving osteoarthritis. Caution must be exercised in interpreting these results as they cannot be extrapolated beyond the OA population.

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
	Inclusion criteria for meta-analysis had the additional requirement of a control group comparison receiving standard care or an attention control. Does not include any of the sources in this map.		Across all studies >85% included aerobic exercise and resistance training as their primary components. Four exercise programmes were unsupervised and all of these were delivered in the home setting. Of the remaining 12 studies, nine were supervised by a trained instructor and three by a physiotherapist.	The results of the meta-analysis suggest that, compared with standard care, there is a significant difference in favour of the impact of CBE interventions on FC (p=0.007) and HRQL (p=0.03) among the chronic disease populations, although the majority of the studies were in OA.	
28.	Hendry M et al. *A systematic review of exercise referral (StROLERS).* Cardiff: All Wales Alliance for Research and Development in Health and Social Care; 2006. Source type: grey, systematic review (RCTs, observational and qualitative studies). Did not address a specific question. Included 16 studies; six RCTs, six process evaluations, one qualitative study. Includes sources 50, 42 and 45.	Interventions targeting a range of populations / conditions. Most schemes were for adults with sedentary lifestyles and cardiac risk factors. One scheme was for frail older people.	Exercise referral schemes, usually existing services. Referral from primary care clinician or invited from primary care medical record database to programme encouraging increased physical activity or exercise. Included schemes involved initial assessment, a programme tailored to individuals needs plus monitoring and supervision. Usually delivered in leisure centre, swimming pool, private gym but walking schemes also included.	Participation rates (6 of 16 included studies reported this) [Mean 70%] Physical activity levels (4/16) Physiological (3/16) Health status SF-36 (2/16) Psychological (Self perception profile; MMSE; Stage of change) Satisfaction (1/16) Health service activity and costs (3/16)[GP visits = no impact][ICER sedentary to recommended level of exercise] [hospital referral but at practice level = higher in referring practice than control but NS]	One RCT reported 100% adherence. In this study participants were collected from home and taken to weekly sessions in taxi. Reasons for non adherence identified included • Interruptions – holidays, illness, lack of time, lack of social support, lack of transport • Organisational problems • Level of supervision • Apprehension, concerns about body image, attitude of programme leader, gym environment.
29.	Krogh J et al. The effect of exercise in clinically depressed adults: systematic review and meta-analysis of randomized controlled trials. *Journal of Clinical Psychiatry* 2011; 72(4) 529-538. Source: peer reviewed journal, systematic review of RCTs. Aim of review: systematic review and meta-analysis of the effectiveness of exercise in adults diagnosed with depression in a clinical setting undertaken in order to determine whether health services should provide exercise as a treatment for patients who are diagnosed with depression. This systematic review does not include any sources listed in this map.	Studies had to include participants who were aged 18 years or above and had diagnosed depression or depressive symptoms (assessed by any means) as an outcome measure. Patients recruited from community setting in all except one study. 12 of 13 studies included patients diagnosed with mild to moderate depression. The one exception was a study of patients examined in hospital with moderate to severe depression.	Exercise referral schemes (13 studies) with following intervention types: Aerobic – nine trials Non aerobic – three trials Mixed aerobic/non aerobic – one trial. The median number of exercise sessions per week was three (range, 2–5), and the median duration of the intervention was 10 weeks (range, 8–16). In nine trials, the exercise intervention was a group exercise, and in four cases the exercise was on individual basis. Comparison with a non exercise control group.	Two separate meta-analyses conducted: 1. Trials with patients diagnosed in a clinical setting: four trials included in meta-analysis. Pooled SMD of −0.47 (95% CI, −1.13 to 0.18), I^2 = 79.0%, *P* value for heterogeneity = .003). The pooled estimate for these 4 trials is very similar to that for all 13 trials included in broader inclusion criteria meta-analysis 2. Broader inclusion criteria meta-analysis (trials that recruited volunteers who were diagnosed with depression using diagnostic criteria and trials from clinical settings): 13 trials included in meta-analysis providing data for 687 patients randomly assigned to either an exercise intervention or a non-exercise control group. Pooled SMD, calculated using the random-effects model with Hedges' correction for small trials, was −0.40 (95% CI, −0.66 to −0.14). On average, depression scores are 0.4 of a standard deviation lower in depressed patients randomly assigned to an exercise intervention at the end of that intervention compared to those randomly assigned to a none exercise group. There was evidence of heterogeneity between the studies (*P* = .005). Long term effect of exercise on depression: • Only five of 13 studies had long-term follow up of participant to examine effect of exercise intervention after completion. Pooled SMD was −0.01 (95% CI, −0.28 to 0.26), I^2 = 23.4%, *P* value for	Study authors conclusion: Our results suggest a short-term effect of exercise on depression: on average, depression scores 0.4 of a standard deviation lower in clinically depressed patients randomly assigned to an exercise intervention at the end of that intervention compared to those randomly assigned to a none exercise group. There is little evidence of a long-term beneficial effect of exercise in patients with clinical depression.

	Source	Population	Intervention / model	Outcomes	Comment
				heterogeneity = .27, suggesting that exercise had little effect on depression scores in patients with depression in the longer term beyond cessation of the exercise programme.	
30.	Pavey T et al. Levels and predictors of exercise referral scheme uptake and adherence: a systematic review. Journal of *Epidemiology & Community Health* 2012; 66: 737-744. Source: peer reviewed journal, systematic review. Aim of review: to quantify, for the first time, the levels of ERS uptake and adherence and to identify factors predictive of uptake and adherence. Secondary aim to identify differences in uptake and adherence between those recruited into observational studies and RCTs. Includes sources: 41, 43, 46 and 47.	Any individual with or without a medical diagnosis.	Exercise referral schemes comprising of three core components: • Referral by a primary healthcare professional to a third-party service provider with the aim of increasing PA or exercise • PA/exercise programme tailored to individual needs • Initial assessment and monitoring throughout programme. Programme required to be more intensive than simple advice and needed to include a combination of counselling (face to face or via telephone), written materials and supervised exercise training.	Twenty studies included in review: six RCTs and 14 observational studies. Uptake: Defined as proportion of individuals offered entry into ERS and who participate in the initial consultation with a qualified exercise professional or participate in the first exercise session. - Pooled level of uptake in ERS was 66% (95% CI 57% to 75%) across observational studies and 81% (95% CI 68% to 94%) across RCTs. - There was evidence of a high level of statistical heterogeneity for observational studies (I^2=99.4%, p<0.0001) and for RCTs (I^2=99.2%, p<0.0001). Adherence: Defined as proportion of individuals who take up ERS invitation and participate in at least 75% of programme sessions available. - Pooled level of ERS adherence was 49% (95% CI 40% to 59%) across observational studies and 43% (95% CI 32% to 54%) across RCTs. - There was a high level of statistical heterogeneity for both observational studies (I^2=99.1%, p<0.0001) and for RCTs (I^2=91.9%, p<0.003).	Implications for research and policy identified by study authors: While the variable uptake and adherence rates may simply be a reflection of differences in definition, they may also reflect a less than optimal ERS referral process (e.g., the GP did not explain fully to patients what to expect at the gym), a lack of individual tailoring of exercise options (i.e., lack of patient autonomy and choice and convenient facility access) and inappropriate referrals (i.e. , some patients were not ready to begin an exercise programme). Evidence from the physical activity promotion literature demonstrates the importance of behaviour change techniques for the adoption and maintenance of a physically active lifestyle. ERS need to incorporate such behaviour change techniques and evaluate whether these have a positive impact on uptake and adherence. Furthermore, it would be helpful to develop a consensus definition for uptake and adherence for application in future physical activity promotion intervention studies.
31.	Pavey TG et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: systematic review and meta-analysis. *BMJ* 2011; 343: d6462. Link to full text here Source: peer reviewed journal, systematic review. Includes RCTs and non RCT (cluster or individual) studies, published in peer reviewed journals. Aim of review: to assess the impact of exercise referral schemes on physical activity and health outcomes. Includes sources: 41 and 45.	Any individual with or without a medical diagnosis.	Exercise referral schemes comprising of three core components: • Referral by a primary healthcare professional to a third-party service provider with the aim of increasing PA or exercise • PA/exercise programme tailored to individual needs • Initial assessment and monitoring throughout programme. Programme required to be more intensive than simple advice and needed to include a combination of counselling (face to face or via telephone), written materials and supervised exercise training. Duration of study follow up ranged from two to 12 months. GP was main referrer. All exercise schemes, except one,	Eight RCTs (across 13 publications) included in the review. 5190 participants across studies. Outcomes assessed: Physical activity levels (7/8) Psychological wellbeing (5/8) Clinical outcomes (5/8) Health related QOL (4/8) Meta-analysis showed reduced level of depression, pooled standardised mean difference -0.82, 95% CI -1.28 to - 0.35 Did not find consistent evidence in favour of exercise referral for outcomes based on physical fitness, psychological wellbeing, overall health related quality of life, blood pressure, serum lipid levels, indices of obesity, glycaemic control or respiratory function.	Study authors conclusions**:** We found weak evidence of a short term increase in physical activity and reduction in the levels of depression of sedentary individuals after participation in an exercise referral scheme (typically a 10-12 week, leisure centre based programme) when compared with usual care. We did not find consistent evidence to support the benefit of exercise referral schemes for other outcomes (for example, health related quality of life).

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
			included an initial consultation with a third party exercise provider such as a qualified exercise professional. Scheme duration typically 10-12 weeks. Sessions usually twice per week, between 30-60 minutes duration. Exercise took place in: • Leisure centre (6/8) • Clinic (1/8) • Public parks/forest track (1/8)		
32.	Pavey T et al. *The clinical effectiveness and cost effectiveness of exercise referral schemes: a systematic review and economic evaluation*. HTA 15(44). Southampton: University of Southampton; 2011. Link to full text here Source: grey, systematic review. Studies eligible for inclusion included SRs and meta-analyses, RCTs (cluster or individual) and non-randomised controlled studies published in peer-reviewed journals. Aim of review: to assess the clinical effectiveness of ERS, to assess the cost-effectiveness of ERS, to identify predictors of uptake and adherence to ERS, to explore the factors that might influence the clinical effectiveness and cost-effectiveness of ERS in people with a diagnosed medical condition known to benefit from PA. However, given the limited evidence base for ERS in people with a diagnosed medical condition, scope of review was extended to include those without diagnosed condition but who were sedentary. Includes source 41. Sources 30 & 31 are based on this review.	Any individual with or without a medical diagnosis and deemed appropriate for ERS.	Exercise referral schemes required to be more intensive than simple advice and needed to include one or a combination of counselling (face to face or via telephone); written materials or supervised exercise training. Five studies compared ERS with usual care, two studies compared ERS with an alternative PA intervention (walking or motivational counselling programme) and one study compared ERS with ERS plus a self-determination theory (SDT) intervention. Initial consultation with a third party provider (e.g., exercise professional) in all but one included study. Scheme length typically 10-12 weeks. Sessions usually twice per week, lasting between 30-60 minutes.	Seven RCTs met the inclusion criteria resulting in total of 3030 participants (1391 randomised to ERS). There was no consistent evidence to support a difference between ERS and usual care in the duration of moderate/vigorous-intensity and total PA, physical fitness, blood pressure, serum lipids, glycaemic control, obesity indices (body weight, body mass index and per cent body fat), respiratory function, psychological well-being (perception of self-worth, symptoms of depression or anxiety) or HRQOL. Outcomes reported: Self reported PA (6/7) Physical fitness outcomes (3/7) Clinical outcomes (5/7) Psychological wellbeing (4/7) Health related QOL (4/7) Patient satisfaction (3/7) Uptake (proportion of individuals randomised to ERS who attended the first exercise session) varied widely across studies (35–85%), as did adherence (programme completion rates of 25–86%). Fourteen observational studies and five RCTs reported their level of ERS uptake (the proportion of those individuals offered entry to ERS who attend an initial consultation with an exercise professional or attend a first exercise session) and/or adherence (of those that uptake ERS, what proportion undertake 75–100% of the programme) (UK, n=16; non-UK, n=3). The pooled estimate for ERS uptake across the observational studies (66%) appeared to be lower than the pooled estimate for RCTs (80%). The pooled estimate for ERS adherence in the observational studies (50%) appeared to be higher than the pooled estimate for RCTs (37%). However, the review authors note that there was a high degree of statistical heterogeneity in the levels of uptake and adherence across studies.	Study authors conclusions for service provision: In 2006 the National Institute for Health and Care Excellence (NICE) commented that there was insufficient evidence for ERS and recommended that the NHS should only make ERS available as part of a controlled trial. Although we have identified four additional trials since the NICE review, there remains very limited support for the potential role of ERS for impacting on PA and, consequently, public health. Arguably, such an uncertain impact provides a case for the disinvestment in ERS. However, little evidence was found of how the ERS intervention sought to develop a sustainable active lifestyle in participants, as recommended in the NHS National Quality Assurance Framework. Although ERS programmes in our review aimed to increase medium- to long-term PA, they were typically based on only a 10- to 12-week leisure centre-based period intervention. With the exception of one trial there was minimal reference to health behaviour change techniques and theories that typically underpin interventions to promote an increase in daily PA.
33.	Williams NH et al. Effectiveness of exercise-referral schemes to promote physical activity in adults: systematic review. *British Journal of General Practice* 2007; 57 (545): 979-986.	Adults referred to ERS from primary care.	Exercise referral schemes were defined as referral by a primary care clinician to a programme that encouraged increased physical activity or exercise, involving an initial assessment and a programme tailored to individual	Eighteen studies included in review (22 publications). Outcomes such as BMI, waist–hip ratio, percentage body fat, resting heart rate, blood pressure (BP), lung function, exercise performance, muscle strength, and cholesterol level were measured in three RCTs and one non-randomised controlled study. There was no statistically significant difference between exercise groups and controls.	Study authors conclusions: Exercise referral schemes have a small effect on increasing physical activity in sedentary people. The key challenge, if future exercise-referral schemes are to be commissioned by the NHS, is to increase uptake and improve adherence by

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
	Source: peer reviewed journal, systematic review. Includes RCTs, non-RCTs, observational studies, process evaluations and qualitative studies. Aim of the review: to assess whether primary care-initiated exercise-referral schemes were effective in improving exercise participation in sedentary adults, particularly in the long term, and to find reasons for non-adherence. Includes sources: 42, 46 and 50.		needs, as well as monitoring and supervision throughout the programme. Eligible participants could be recruited during routine consultations, or after searching the primary care medical record database. The programme usually took place in a leisure centre, swimming pool or private gym, but could also involve gardening or walking. Interventions where the main purpose was not to increase physical activity, but had some other objective such as falls prevention, were excluded.	Six process evaluations all found that uptake was low, with around one-third of patients referred not participating in the schemes at all. Adherence to the schemes was also poor, with between 12% and 42% completing a 10–12 week programme.	addressing the barriers described in these studies.
34.	Gidlow C et al. Attendance of exercise referral schemes in the UK: a systematic review. *Health Education Journal* 2005; 64(2): 168-186. Source: peer reviewed journal, systematic review. Included studies had to be based in UK and published in peer-reviewed journals. Aim of review: to assess how well exercise referral schemes are attended, look at who attends, reasons for attrition and how participants perceive the schemes. Does not include any sources listed in this map.	Not specified.	All interventions facility based but two studies also included home based activities. Interventions generally began with assessment from an exercise professional. Where frequency was specified, participants were encouraged to attend two or three exercise sessions per week. The duration of intervention was 10, 12 or 14 weeks, although one RCT lasted two years. Referral to programme tended to be by GP in the evaluations of existing studies and by direct researcher recruitment with little healthcare professional involvement in the RCTs.	Nine studies met the inclusion criteria - five evaluations of existing schemes and four RCTs. Uptake: • Rates of uptake varied widely in both RCTs and evaluations, with no consistent differences between them. • Two evaluations and one RCT reported attendance of initial consultations, and rates varied (35% to 60%) Attendance: • Was generally poor approximately 80% who took up referral dropped out before the end of programmes.	Study authors conclusions: The present review highlighted a high level of attrition in ERS. However, poor measurement and reporting of attendance, and inadequate participant profiling, prevented us from identifying which sections of the population were most likely to attend or drop out. Adequate data collection regimens, beginning at the point of referral would enable us to learn whom exactly ERS are proving successful for.

Non systematic reviews

	Source	Population	Intervention/model	Outcomes	Comment
35.	Morgan O. Approaches to increase physical activity: reviewing the evidence for exercise-referral schemes. *Public Health* 2005; 119: 361-370. Source: peer reviewed journal, literature review of experimental or quasi-experimental studies with a	Sedentary adults, healthy or with a medical condition	Interventions had to provide access to exercise activities and/or facilities, be based in a primary care setting and include an exercise component with measures of physical activity levels or adherence.	Nine studies met inclusion criteria – four from the UK, four from the USA and one from New Zealand. No evidence synthesis. The UK studies reported generally low uptake this varied between 87% and 33%, adherence/completion was not reported.	Study authors conclusions: Exercise-referral schemes appear to increase physical activity levels in certain populations, namely individuals who are not sedentary but already slightly active, older adults and those who are overweight (but not obese). However, increases in the level of physical activity may not be sustained over time. Further studies are required to assess

	control group. Aim of review: review of current evidence for the effectiveness of exercise-referral schemes. Includes source 42.				effectiveness in a range of populations and for different activities, and to find strategies to increase long-term adherence.

Primary studies

	Source	Population	Intervention / model	Outcomes	Comment
36.	Duda J et al. Effects of a standard provision versus an autonomy supportive exercise referral programme on physical activity, quality of life and well-being indicators: a cluster randomised controlled trial. *International Journal of Behavioral Nutrition and Physical Activity* 2014; 11:10. Link to full text here Source: peer reviewed journal. Cluster RCT compared standard provision exercise referral with and exercise referral scheme grounded in Self Determination Theory (SDT).	People with two or more risk factors for coronary heart disease; chronic medical conditions, such as asthma, bronchitis, diabetes, mild anxiety or depression; people for whom regular activity might delay the onset of osteoporosis, people with borderline hypertension and those perceived by the GP or practice nurse to possess motivation to change.	Participants referred to the ERS scheme by their GP or practice nurse Thirteen leisure centres providing ERS in UK city were randomised, six to SDT and seven to standard ERS. Intervention SDT arm: initial consultation with a health fitness advisor (HFA) involving discussion of participants exercise history and the benefits and risks of increased PA and concluding with specific goal setting for PA participation. Participants were then offered a fitness assessment (consistent with the standard exercise referral scheme). They were also given a self-management exercise promotion booklet designed to encourage a more autonomous perspective on physical activity initiation. Further brief interactions between the participants and HFA (telephone or in person) at one and two months with a focus on sustaining any positive changes made, re-framing and problem solving where attempts to be physically active were not successful, addressing barriers to activity, and setting new personal PA goals. Final consultation at three months focused on recognising and facilitating the internalisation of the participant's physical activity involvement, feelings about engaging in physical activity, and	One thousand six hundred and eighty three referred to HFAs during recruitment period of which 347 (20.6%) were recruited to trial and completed baseline assessment. 184 (53%) of these were recruited to the SDT-based intervention arm leisure centres and 163 (47%) to the standard provision leisure centres. Overall follow-up at three months was 75.2% and at six months follow-up was 55.6%. At six months there was a differential follow-up rate between the study arms, with a lower rate of follow up in the SDT-based arm (p = 0.02). Between group comparisons: • No significant difference between groups for either moderate/vigorous PA or PA excluding walking. • STD-based arm had significantly lower anxiety scores over the follow-up period (difference between STD and standard provision -1.00, p = .003).	Study authors conclusion: The present trial is one of the first to examine the effectiveness of a SDT-grounded physical activity consultation and entails the first to test this intervention approach within an exercise referral scheme. Between arm comparisons indicated the intervention arm to result in greater reductions in reported anxiety at six months. The findings suggest that both standard provision and an SDT-based exercise referral programme impacted self-reported physical activity levels and most of the targeted indicators of mental health to six month follow-up. Via the testing of a process model, evidence was accrued for the relevance of need supportive consultations to corresponding changes in participants' basic need satisfaction and motivation for engagement. These motivational processes were predictive of participants' emotional well-being and levels of moderate-vigorous physical activity post-programme.

	Source	Population	Intervention / model	Outcomes	Comment
			planning for future maintenance of activity. A self-management booklet given at the conclusion of the exercise on referral programme centred on the monitoring and maintenance of physical activity. Standard provision (control group): referral to leisure centre by GP. A one hour consultation with HFA and the agreement of an appropriate programme of individual/group activities. Participants also had the offer of a fitness assessment. Participants undertook their agreed program over 10-12 weeks with support from HFA as required. Participants also invited to have an exit consultation at the end of the program.		
37.	Edwards RT et al. Cost-effectiveness of a national exercise referral programme for primary care patients in Wales: results of a randomised controlled trial. *BMC Public Health* 2013; 13: 1021. Link to full text here Source: peer reviewed journal, economic evaluation of a RCT. See also sources 43 and 44.	Participants aged >16 years, sedentary with risk factors for coronary heart disease (CHD) or minor mental health problems.	Welsh National Exercise Referral Scheme (NERS). Participants recruited by health professionals in primary care and randomised to intervention or control group. Intervention group participants were offered a 16 week exercise programme delivered by qualified exercise professionals (EP) based in local authority leisure centres. Participants allocated to the control group received an information leaflet and preferential access to the scheme after 12 months.	For the 12 month study period there was no significant difference in NHS resource use between the intervention and control groups, apart from the costs of healthcare tests, higher for the control group ($p = <0.05$). Adherence in intervention group: Did not attend: 30 (8%) Attended <16 weeks: 123 (32%) Attended 16 weeks: 247 (62%). EQ5D score (0-1) at 12 month follow up: Intervention group mean (SD): 0.64 (0.32) n=395 Control group mean (SD): 0.61 (0.32) n=391. For participants adhering to NERS, the analysis resulted in a net saving of £18 per patient per year. The probability that NERS is cost-effective in adherent participants was 100% at £20,000.	Study authors conclusion: Though full adherence to NERS (62%) was higher for the economics sample than the main sample (44%), our base case analysis over a 12 month follow up period, is robust to a range of sensitivity analyses. ICERs were well below the NICE threshold of £20-30,000, though upper 95% confidence limits cross this boundary, indicating the need for caution in the interpretation of results. There is evidence for confidence that NERS is likely to be cost saving in fully adherent participants, leading to the overall conclusion that NERS can be cost-effective.
38.	Elley CR et al. Cost-effectiveness of exercise on prescription with telephone support among women in general practice over 2 years. *British Journal of Sports Medicine* 2011; 45 (15): 1223-1229. Source: peer reviewed journal, cost-effectiveness study based on RCT. Assesses the cost-effectiveness over 24 months of the enhanced Green Prescription intervention. Additional information on intervention retrieved from:	Women between 40-70 years old from 17 general practices in the Wellington area of New Zealand and considered to be less active.	Enhanced Green prescription intervention consisting of 10 minutes brief advice and a written exercise prescription given by a primary healthcare nurse, with telephone support for nine months (average five calls lasting 15 minutes each) from an exercise facilitator from a regional sports trust (RST) and a half-hour face-to-face session with the nurse at six months. The recommended goal was at least 30 minutes of moderate-intensity physical activity five times per week. Control participants received usual care from their GP.	Of the 1089 participants enrolled on the trial, 1008 (92.6%) attended the 12 month follow-up visit, and 974 (89.4%) attended the 24 month follow-up visit. Of intervention participants (n=544): • 94% (n=514) received the six month face-to-face follow-up advice from the primary care nurse. • 535 (98%) were referred to the RST exercise specialists for telephone support over the following nine months. Health resource consumption during the 12 months prior to baseline and 12 months prior to two year follow up: Resource consumption: | Intervention Group | Control Group	Study authors conclusion: This nurse-delivered programme with ongoing support is very cost-effective and compares favourably with other primary care and community based physical activity interventions internationally.

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr>
<td></td>
<td>38a. Rose SB, et al. The ‘Women’s Lifestyle Study,’ 2-year randomized controlled trial of physical activity counselling in primary health care: rationale and study design. BMC Public Health 2007; 7: 166 .</td>
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<td></td>
<td>
<table>
<tr><td></td><td>Baseline</td><td>2 year follow up</td><td>Baseline</td><td>2 year follow up</td></tr>
<tr><td>GP Visits:</td><td>2264</td><td>1795</td><td>1886</td><td>1635</td></tr>
<tr><td>GP Visits (accident related):</td><td>149</td><td>240</td><td>196</td><td>183</td></tr>
<tr><td>GP Visits (after hours):</td><td>130</td><td>58</td><td>82</td><td>52</td></tr>
<tr><td>Other health provider:*</td><td>1526</td><td>1299</td><td>1360</td><td>920</td></tr>
<tr><td>Hospital admissions:</td><td>54</td><td>60</td><td>53</td><td>68</td></tr>
<tr><td>Hospital Outpatient visits:</td><td>139</td><td>97</td><td>131</td><td>85</td></tr>
<tr><td>Emergency department visits.</td><td>46</td><td>55</td><td>42</td><td>54</td></tr>
</table>
*e.g. physiotherapist, chiropractor, osteopath, occupational therapist, acupuncturist.
</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>Gine-Garriga M et al. The effect of a physical activity program on the total number of primary care visits in inactive patients: a 15-month randomized controlled trial. PLOS one 2013; 8(6).

Link to full text here

Source: peer reviewed journal, RCT.

RCT conducted to assess the effectiveness of a primary care based physical activity program linked to community resources on reducing the total number of consultations to the healthcare centre and quality of life.</td>
<td>Participants were recruited from eight primary health care centres (PHC) in the Barcelona area.
Included patients aged 18 to 85, with at least one chronic disease (diabetes mellitus, COPD and asthma, hypercholesterolemia, hypertension, chronic heart failure, obesity, osteo articular chronic problems, and chronic muscular-skeletal pain), independent in rising from a chair and walking with or without a technical aid, and who did less than half an hour of moderate or vigorous exercise (such as walking, cycling or a sport) on five or more days of the week.</td>
<td>Twelve week PA intervention linked to municipal resources compared with usual care combined with social education meetings.

Patients offered the opportunity to participate in the study by two trained healthcare professionals in each surgery, randomly allocated to Intervention Group (IG) or Control Group (CG).

Intervention conducted in primary care facility. Participants required to complete 24 sessions over three months (two per week). Sessions lasted 60 minutes. Participants also encouraged to perform moderate-intensity PA during the days with no session.

All sessions included 20 to 30 minutes of an aerobic activity, such as walking at a fast pace. Also included upper and lower body strength-based exercises such as rising from a chair, stair climbing, knee bends, floor transfers, lunges, leg squat, leg</td>
<td>Three hundred and sixty two individuals randomised; 183 to IG and 179 to CG.

Eighty three percent of participants in IG completed 24 sessions over three months.
Dropout rate of 14.8% at month 3 (27 participants did not complete intervention and 32 did not attend last session assessment).

At month nine, 161/181 subjects from the IG and 143/179 from the CG were assessed.

At month 15, 156 subjects from the IG and 158 subjects from the CG were assessed. The total dropout rate at month 15 was 23 subjects (12.6%) in the IG, and 21 subjects in the CG (11.7%).

Primary care use:
The IG and the CG participants had a baseline mean (SD) number of visits/year of 18.2 (7.4) and 17.6 (9.7), respectively. At month 15, the IG had a significantly reduced the number of visits to 14.8 (8.5), and the CG remained with similar data 18.2 (11.1) (P =.002). The IG had a greater reduction in the total number of consultations/year to the PHC, when comparing the twelve months prior to (month zero) and after the program (month 15).

Quality of life SF-12 Version 2 Survey: self-reported physical function, physical composite score and mental composite score for IG participants showed significant greater improvements than those in the CG from baseline to month three (end of training) (P<.001), that were sustained in the month nine follow-up, with significant group-by-time interactions by the end of the study The physical composite</td>
<td>Study authors conclusion:
In summary, our findings indicate that a three month physical activity program linked to community resources is a short duration, effective and sustainable intervention in inactive patients to decrease rates of primary health care use and improve self-reported quality of life. It is therefore a potentially suitable program for clinical settings and primary care centres.</td>
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</table>

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
			extension, leg flexion, calf raise, abdominal curl, carrying objects, throwing and catching a ball, and push-ups against the wall.	score and the mental composite score measures were also sustained in the month 15 follow-up in the IG (P = .001, P = .026, respectively from month three to month 15); however, detraining induced decreases in physical function measures in the IG participants (P = .062, from month three to month 15).	
40.	Harrison R. *Evaluation of the Bolton exercise referral scheme.* Bolton: Bolton Primary Care Trust; 2004 Source: grey, RCT.	Sedentary adults doing less than 90 minutes moderate or vigorous activity per week. BP less than 200/100.	Exercise referral scheme. Referral from primary care to exercise referral team – ranged from structured programmes at local gym to guided walks.	Participation rates 84% (232/275) (in the trial) attended the first consultation.	No other data on participation/retention, no comparison of different types of intervention.
41.	Isaacs A. *Exercise evaluation randomised trial (EXERT): a randomised trial comparing GP referral for leisure centre-based exercise, community-based walking and advice only*. HTA 11(10). Southampton: University of Southampton; 2007. Link to full text here Source: grey, RCT. Study objectives: to evaluate and compare the effectiveness and cost-effectiveness of a leisure centre-based exercise programme, an instructor led walking programme and advice only in patients referred for exercise by their GPs.	Aged between 40-74 years. Not currently physically active and with at least one of the following cardiovascular risk factors: raised cholesterol; controlled moderate to mild hypertension; obesity; current smoking; diabetes and/or a family history of myocardial infarction (MI) at an early age.	Participants randomised to one of the following three arms: a 10 week programme of supervised exercise classes, two to three times a week in a local leisure centre; a 10 week instructor-led walking programme, two to three times a week; an advice-only control group who received tailored advice and information on physical activity including information on local exercise facilities. After six months the control group were re-randomised to one of the other trial arms. Referrals could be made by the GP or practice nurse for any patient meeting the inclusion criteria. Referrals were also accepted in some instances (with approval from the patient's GP) from other primary and secondary care professionals such as dieticians and diabetes nurses.	Of 1105 referrals received at the leisure centre over a 3-year period, 943 patients agreed to participate in the trial. Participants were randomised to: Leisure centre: n=317; Walking: n=311 and Advice only n=315. Two hundred participants originally randomised to the leisure centre and walking groups completed at least 75% of their allocated sessions. Adherence was significantly higher in the leisure centre group than in the walking group (X^2 = 63.9, 4 df, p <0.001). Adherence was lower in both trial arms for subjects without access to private transport, 28.6% of whom were high adherers to the leisure centre programme, compared with 45.6% of those with access to private transport. For the walking programme the differences were even more striking, with 2.3% and 25.2% high adherers, respectively Weight and BMI were reduced slightly in all three groups immediately after the exercise programme but these reductions were significant only in the leisure centre group (paired t-test; p = 0.017). There were significant reductions in systolic and diastolic blood pressure (BP) in all groups at each assessment point compared with baseline. Reductions were largest at one year in the leisure centre and walking groups. Small reductions were observed in total cholesterol and LDL-cholesterol in all groups, which were sustained over time. No improvement was seen in HDL-cholesterol. Hypertension: Leisure centre group - Baseline 45.1%, 6 months 38.5% Walking group – Baseline 45.3%, 6 months 29.1% Advice only – Baseline 44.6%, 6 months 36.4%. Anxiety and depression**:** No significant overall effect of treatment group on HADS scores and no significant interactions between any of the independent variables. There was, however, a significant overall effect of time whereby HADS scores improved for all groups between baseline and six month follow up ($F_{2,511}$ = 3.74, p < 0.05). GP visits: Time of visit in relation to start of study: | Group	Study authors conclusions: The results of this trial suggest that referral for tailored advice, supported by written materials, including details of locally available facilities, supplemented by detailed assessments may be effective in increasing physical activity. The inclusion of supervised exercise classes or walks as a formal component of the scheme may not be more effective than the provision of information about their availability. On cost-effectiveness grounds, assessment and advice alone from an exercise specialist may be appropriate to initiate action in the first instance. Subsidised schemes may be best concentrated on patients at higher absolute risk, or with specific conditions for which particular programmes may be beneficial. Walking appears to be as effective as leisure centre classes and is cheaper. Efforts should be directed towards maintenance of increased activity, with proven measures such as telephone support. Further research should include an updated meta-analysis of published exercise interventions using the standardised mean difference approach.

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<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th></th><th>Leisure Centre</th><th>Walking</th><th>Advice</th></tr>
<tr><td>1yr to 6mths before start</td><td>590</td><td>579</td><td>577</td></tr>
<tr><td>6mths before to start</td><td>785</td><td>653</td><td>611</td></tr>
<tr><td>Start to 6mths</td><td>632</td><td>539</td><td>480</td></tr>
<tr><td>6mths to 1yr</td><td>524</td><td>532</td><td>--</td></tr>
</table>
</td><td></td></tr>
<tr><td>42.</td><td>Lamb SE et al. Can lay-led walking programmes increase physical activity in middle aged adults? A randomised controlled trial. Journal of Epidemiology and Community Health 2002; 56 (4): 246-252.

Link to full text here
Source: peer reviewed journal, RCT.

Aim of study: to investigate if a lay-led health walks scheme was more effective in encouraging middle aged people to increase their physical activity levels, than advice from a primary health care professional only, and to compare the physiological and behavioural consequences of the two approaches.</td><td>Aged between 40-70 years and taking less than 120 minutes (approximating to 4x30 minutes) of moderate intensity exercise per week.</td><td>Intervention group:
participants attended a standardised advice session in a primary care setting led by a physiotherapist. They were then referred to a local walk coordinator who telephoned them to invite them to join a local walk (maximum of three telephone attempts through year, first attempts made in first two weeks after advice session).

Accompanied walks were provided at several different times in the day and evening, during the week and at weekends, and were led by lay volunteers. Walk packs were available for those who might find it more convenient or preferable to walk independently. Attendance on the walks was free of charge. Walks were designed with crèche facilities, car parking and access to public transport networks. Participants were encouraged to bring along other members of their family or friends.

Advice only group: participants attended a standardised advice session in a primary care setting led by a physiotherapist.</td><td>Two hundred and sixty participants randomised - 131 to intervention arm and 129 to advice arm. (A further 178 were eligible for the trial but refused)

Ninety five participants (72.5%) in intervention arm completed trial and 93 (72.1%) in advice arm. Loss to follow up approx 27% in each group.

All participants attended the seminars. In the health walks group, the number of people who attended the accompanied walks was relatively low (33%, n=43). In those who did attend, the median number of accompanied walks attended was six (range 1–136) and total number attended was 672.

Intention to treat analysis:

Cholesterol (Mean (SD) m mol): Between group comparison: -0.09 (95% CI −0.257 to 0.071)

BMI (Mean (SD) kg/m2): Between group comparison: -0.009 (95% CI −0.39 to 0.194)

Systolic BP (Mean (SD) mm Hg): Between group comparison: 2.23 (95% CI −0.86 to 5.33)

Diastolic BP (Mean (SD) mm Hg): Between group comparison: -1.26 (95% CI −3.49 to 0.97)</td><td>Study authors conclusions:
There were no significant between group differences in self reported physical activity at 12 month follow up when the analysis was by intention to treat. In people who completed the trial, health walks was more effective than giving advice only in increasing moderate intensity activity above 120 minutes per week.</td></tr>
<tr><td>43.</td><td>Murphy S et al. The evaluation of the National Exercise Referral Scheme in Wales. Cardiff: Welsh Assembly Government; 2010.

Link to full text here

Source: grey, RCT – national evaluation commissioned by Welsh Government.

See also sources 37 and 47.</td><td>Participants were sedentary and had at least one medical condition: CHD risk factors, mental health, musculoskeletal, respiratory/ pulmonary and neurological conditions.</td><td>Wales National Exercise Referral Scheme (NERS).

In each local authority area, a dedicated exercise co-ordinator (EC) and a number of exercise professionals (EP) supported a tailored subsidised 16 week activity programme typically based in a local leisure centre.

NERS included initial consultation with exercise professional on entry - lifestyle questionnaire, baseline assessment health check,</td><td>Uptake and adherence:
Allocated to NERS (n= 1080)
• FULL: Completed 16 weeks (n= 473, 43.8%)
• PARTIAL: Started but did not complete (n= 446, 41.3%)
• NONE: No sessions attended (n=161, 14.9%).
Non-car owners were almost twice as likely not to enter NERS, and 6% less likely to complete. Patients referred for mental health and CHD risk factors were less likely to complete NERS than were patients referred for CHD risk factors alone.

For all participants, those in the intervention group had higher levels of physical activity than those in the control, odds-ratio 1.19 (95% CI: 0.99, 1.43), but differences in activity were only statistically significant among those referred for CHD risk factors only (OR 1.29, 95% CI: 1.04, 1.60).</td><td>Study authors conclusions:
For participants referred with CHD risk factors only, there was a significantly increased likelihood of increases in physical activity and a statistically significant decrease in level of anxiety and depression for those in the scheme. Estimates for those referred with mental health and CHD were statistically significant for a decrease in both depression and anxiety, although there was not a statistically significant impact on physical activity for this group. The impact of the intervention on participants adhering for the full intervention was</td></tr>
</table>

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
			introduction to leisure centre facilities, motivational interviewing (MI) and goal setting. Access to one to one exercise instruction and /or group exercise classes. Discounted rate for exercise activities, £1 per session. Four week telephone contact with EP – review of goals and MI. Sixteen week consultation with EP - review of goals, MI, health check, lifestyle questionnaire, service evaluation questionnaire and signposted to exit routes. Post 16 weeks: eight months telephone contact by EP to check progress; 12 months review including repeat of entry health check and Chester fitness step test. The primary goal was for participants to achieve 30 minutes of moderate physical activity on at least five days per week. Control group received an information booklet on physical activity and normal GP care.	For depression and anxiety outcomes (HADS), there were statistically significant differences among those referred wholly or partially for mental health reasons, but the effects among all participants were of lesser magnitude and marginal statistical significance (Depression: -0.71, 95% CI: -1.25, -0.17; Anxiety: -0.54, 95% CI: -1.12, 0.35) due to weaker effects among those referred for CHD reasons only.	clear. Those who completed the 16 weeks were far more likely to increase their activity compared to non completers. The impact of adhering to the full intervention also led to statistically significant improvements in mental health, with a decrease in depression and in anxiety.
44.	Murphy SM et al. An evaluation of the effectiveness and cost effectiveness of the National Exercise Referral Scheme in Wales, UK: a randomised controlled trial of a public health policy initiative. *Journal of Epidemiology and Community Health* 2012; 66(8): 745-53. Link to full text here Source: peer reviewed journal, RCT. This paper reports an independent evaluation of the Welsh Government's National Exercise Referral Scheme (NERS) operating in 12 local health board (LHB) areas in Wales, UK, assessing its effectiveness and cost effectiveness in increasing physical activity and reducing anxiety and depression among patients referred for CHD risk and/or anxiety, depression and stress. See also sources 37 and 43.	Those eligible for the scheme were sedentary and had at least one medical condition: CHD risk factors; mental health condition; musculoskeletal; respiratory/pulmonary; neurological condition; smoker or chronic fatigue.	Wales National Exercise Referral Scheme (NERS): 16-week programme including motivational interviewing, goal setting and relapse prevention (as above ref 43). Patients were identified opportunistically by clinicians in normal practice.	Twelve month follow up means and 95% confidence intervals for HADS by trial arm: Anxiety score: Intervention: 7.82 (7.39 to 8.25) n=472 Control: 8.35 (7.92 to 8.77) n=502. Depression score: Intervention: 6.14 (5.73 to 6.54) n=471 Control: 6.93 (6.53 to 7.32) n=506. Those in the intervention group had higher levels of physical activity than those in the control group, but this was of borderline statistical significance. Among those referred for CHD risk factors, the intervention group reported significantly higher levels of activity, but there was no difference among those referred wholly or partially for mental health reasons. Among this group of referrals, those randomised to NERS had significantly lower levels of both depression and anxiety. A significant difference in health related quality of life between the intervention and control groups was found using EQ-5D-VAS. For participants <44 years of age, the difference between both EQ-5D and VAS scores was significant. Sixty two percent (n=247) of the sample upon which economic analysis was undertaken completed the 16-week programme, 32% (n=123) attended fewer than 16 weeks and 8% (n=30) did not attend at all. There were no significant differences in NHS resource use between the intervention and control groups, except that the control groups were referred for significantly more health-related	Study authors conclusions: NERS was effective in increasing physical activity among those referred with CHD risk factors. Although there was no increase in physical activity among those referred for mental health reasons, anxiety and depression were reduced. These effects were highly dependent on adherence to the programme. NERS is likely to be cost effective under prevailing payer thresholds.

	Source	Population	Intervention / model	Outcomes	Comment
				tests (p<0.05) (data not provided).	
45.	Taylor AH, Fox KR. Effectiveness of a primary care exercise referral intervention for changing physical self-perceptions over 9 months. *Health Psychology.* 2005; 24 (1): 11-21. Source: peer reviewed journal, RCT. Aimed to investigate the effect of a program to promote physical activity, based in a primary care–leisure service partnership, on aspects of mental well-being in a middle aged and elderly population. A secondary purpose was to investigate the extent to which changes in fitness and anthropometry, and also program adherence, were implicated in change in physical self perceptions.	Initially, 345 men and women, ages 40–70 years, with one or more of three coronary heart disease (CHD) risk factors (being a smoker, hypertensive, or overweight) were identified from primary care medical records and invited to participate. 240 (70%) of the 345 patients invited to enter the study responded to the mailed invitations, 142 (41%) patients were actually randomised.	Initial assessment in clinic and then randomisation to either intervention group or control group. Intervention participants given signed prescription card with their information on and instructed to arrange appointment for 10 week programme at local leisure centre, two sessions per week costing approx £1.30 each (half of normal price). Supervision within the referral scheme was available upon request, but participants attended informally (i.e., they were not tied to a specific appointment) between 9 am and 5 pm on weekdays, usually for up to one hour. At the end of the 10 weeks, a progress report was returned to the participant's GP, and participants were encouraged to maintain a physically active lifestyle. Participants were subsequently contacted by phone to arrange assessments in the health centres, at 16 and at 37 weeks (post-exercise intervention), on all outcome measures.	Of the 142 participants randomized, 46 (47%) in the exercise group and 35 (78%) in the control group completed all assessments. The exercise group became significantly (p < .05) more positive about their physical self-worth, physical condition, and physical health (but not their physical appearance) than did the control group between baseline and subsequent assessments. The greatest improvements were in perceived physical condition. High adherers (15-20 sessions) n=23 (50%) Low adherers (0-14 sessions) n=23 (50%)	Study authors conclusion: In summary, the primary care exercise referral program was effective in increasing physical self-perceptions (but not perceptions of physical appearance) at 16 and 37 weeks after an initial assessment. Middle-aged and older people who increase their physical activity at an exercise facility can feel more positive about their physical selves, including their appearance, physical functioning, and physical health. The changes were associated with anthropometric changes (reduced body fat) but not with improvements in fitness parameters.
46.	Dinan S et al. Is the promotion of physical activity in vulnerable older people feasible and effective in general practice? *British Journal of General Practice* 2006; 56 (531): 791-793. Source: peer reviewed journal, uncontrolled before and after (pilot study).	Frail older people.	Patients referred to scheme by GP or practice nurse. Eight weeks of exercise sessions taking place in the practice, occurring once weekly and consisting of chair-based strengthening exercises, followed by a transition to chair-based exercise classes in local community settings. Participants encouraged to perform the exercises three times per week (once during the session and then twice further at home). Patients supported by telephone contact during practice-based sessions and in the transition phase to community setting.	Two hundred and forty two patients referred to service over 18 month period of which 216 took up referral (87%). 74% of those referred completed the cycle of exercise classes. At the end of the practice based exercise classes 112 older people (46% of the referred group) transferred to community classes, and 21 (9%) who were either not ready or not willing to transfer returned to practice-based classes; 45 (19%) declined further involvement in further exercise programmes. The timed get up and go (TUG) scores of those who made the transition to community classes at the end of the practice-based programme showed a statistically significant change over baseline. The mean TUG score before exercise was 14.8 seconds (range = 6–40) and at the end of the programme was 11.3 (range = 5–35), a mean difference of 3.5 seconds (paired two sample t -test, t = 8.2, degrees of freedom = 75, P<0.001). In 23 of the 76 participants for whom we had TUG values, the value was reduced from above to below the cut-off for falls risk (30.3%, 95% CI = 19.9 to 40.7).	Study authors conclusions: An individually tailored progressive exercise programme following GP referral, delivered in weekly group sessions by specialist exercise instructors within general practices, was effective in achieving participation in exercise sessions and in improving TUG values in a significant number of frailer older citizens.

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
47.	James DVB et al. Factors associated with physical activity referral uptake and participation. *Journal of Sports Sciences* 2008; 26(2): 217-224. Source: peer reviewed journal, population based longitudinal study (cross sectional). Aimed to examine the scheme and individual participant characteristics in relation to access (i.e. from the point of initial referral), uptake, and participation in physical activity referral schemes using a population based longitudinal design.	Used data routinely collected on all participants referred to a county-wide physical activity referral scheme between May 2000 and May 2003.	Physical activity referral scheme (PARS): participants referred to this particular physical activity referral scheme are offered 8–12 weeks of bi-weekly, supervised exercise sessions at local leisure facilities. Exercise programmes are typically gym-based but can include swimming, circuits, and exercise-to-music classes, depending on participant preference and available facilities. Most referrals were made by GPs (72.4%), followed by practice nurses (13.1%) and physiotherapists (10.6%).	Three thousand seven hundred and sixty two referrals over a three year period. The most common primary referral reason was overweight or obesity (30.3%), followed by musculoskeletal reasons (26.3%) and cardiovascular disease (16.0%). Uptake rate of 51% (1934), completion 24% (936). Logistic regression analyses (n= 2958) identified the factors associated with the outcomes of referral uptake, participation, and completion (80% attendance). Participant's age, sex, referral reason, referring health professional, and type of leisure provider were the independent variables. Based on binary logistic regression analysis (n=2631), only primary referral reason was associated with the PARS coordinator making contact with the participants. In addition to the influence of referral reason, females were also more likely (odds ratio 1.250, 95% confidence interval 1.003 – 1.559, P=0.047) to agree to be assigned to a leisure provider. Referral reason and referring health professional were associated with taking up a referral opportunity. Older participants (1.016, 1.010 – 1.023, P50.001) and males were more likely to complete the referral.	Study authors conclusion: The PARS format may be less appropriate for those more constrained by time (women, young adults) and those with certain referral reasons (overweight/obesity, mental health conditions). More appropriate targeting at the point of referral could improve participation rates by revealing or addressing barriers that might later result in dropout.
48.	Birnie K et al. An evaluation of a multi-component adult weight management on referral intervention in a community setting. *BMC Research Notes* 2016; 9: 104. Link to full text here Source: peer reviewed journal, before and after evaluation. Aimed to assess the implementation and potential health benefits of a novel multi-component weight management on referral (WMOR) intervention that integrated dietary, physical activity and behavioural change (including motivational interviewing) components in a in a community setting.	Participants referred to scheme from 18 of 22 South Gloucestershire GP practices. Aged 18+ with BMI of 30 or above, or a BMI ≥ 28 with co-morbidities and ready to change attitude.	WMOR service offered through NHS South Gloucestershire, October 2008 - November 2010. Opportunistic referral by GPs and other health professionals. The programme started with a 40 minute individual session with baseline assessment, delivered by the exercise on prescription (EOP) practitioner. Participants were helped to identify and set personalised realistic short term (12 week) and longer term goals for their weight and physical activity. The participants then attended 12 weekly sessions of separate dietary (Weight Watchers®) and physical activity (leisure centre) components.	Uptake/Adherence: • 559 participants attended initial assessment. • 67 (12%) did not engage again after initial assessment. • Of the remaining 492 participants, 193 (39%) did not follow the intended multi-component intervention and only attended one element (i.e., either Weight Watchers® or EOP, but not both; 'one scheme only attenders'). • 299 participants who started the intended intervention (i.e., attended both Weight Watchers® and EOP concurrently); of these, 163 (55%) completed the intervention ('two scheme completers' and 136 (45%) were non-completers of both the WW and EOP components ('two scheme non-completers'). • Of the non-completers, 118 (87%) completed one component (either Weight Watchers® or EOP). • Mean weight loss for all engagers was 3.7 kg (95 % CI 3.4, 4.1). Participants completing the intervention achieved the largest weight reduction (mean loss 5.9 kg; 5.3, 6.6). Achievement of 5 % weight loss was higher in completers (58 %; 50, 65) compared to non-completers (19 %; 12, 26) and people who only participated in one commercial component of the intervention (either Weight Watchers® or EOP; 19 %; 13, 24).	Study authors conclusions: We have demonstrated that it is possible to implement a multi-component adult weight management intervention in a community setting. The results from this study suggest the multi-component weight management programme may be beneficial for weight loss for obese individuals, but an RCT is needed to establish effectiveness and to evaluate cost.
49.	Bozack A et al. Implementation and outcomes of the New York State YMCA diabetes prevention program: a multisite community-based translation, 2010-2012. *Preventing Chronic Disease* 2014; 11: E115. Source: peer reviewed journal, qualitative and quantitative process evaluation.	Eligible individuals 18+ with physician referral form indicating diabetes risk.	Y-DPP program focuses on improved nutrition and increased PA, and consists of 16 weekly core sessions and six monthly maintenance sessions led by trained coaches. Participants referred from healthcare providers with links to YMCA as well as learning about program through YMCA outreach,	Two hundred and fifty four participants evaluated representing 26 courses implemented between October 2010 – May 2011. Follow up rates for 16 week and 10 month surveys were 85.4% and 76.8% respectively. Attendance: • Participants attended an average of 10.6 out of 16 sessions. • 72.3% attended more than half of sessions (nine or more). Improvements in health:	Study authors conclusion: The Y-DPP demonstrated the feasibility and advantages of translating the group-based DPP model to a community based setting by using existing resources: clinicians with existing linkages with YMCAs, YMCA fitness facilities and YMCA staff members, who had prior experience implementing wellness programs. Furthermore, this study expands on previous research demonstrating the

EXERCISE REFERRAL SCHEMES

	Source	Population	Intervention / model	Outcomes	Comment
	Study describes results from the implementation and evaluation of the DEPLOY (Diabetes education and prevention with a lifestyle intervention) model in YMCAs in New York State from 2010 – 2012. Known as YMCA diabetes prevention program (Y-DPP).		media and word of mouth. Each YMCA had program coordinator and one or more coaches. Program coordination required from 2-20 hours of staff time per week (median 7.0 hours) and coach time per class varied between coaches from 2 to 10 hours per week (median 4.0 hours). Baseline survey completed during first exercise class. Sixteen week follow up survey completed at last exercise class. If participant DNA last class, follow up survey administered via telephone. Second telephone follow up completed approximately six months after program completion (10 months from baseline).	• Proportion of participants reporting very good or excellent health increased significantly from 31% (n=254) at baseline, to 44% (n=217) at 16 weeks and 56% (n=195) at 10 months ($p<.001$). • At 10 months, participants reported fewer problems with mobility ($p=.011$), pain ($p=.001$) and performing usual activities ($p=.011$) compared with baseline.	effects on general health, quality of life, and knowledge and behaviour, and providing findings important for program replication, including staff time commitments and participant and coach perspectives.
50.	Dugdill L et al. Exercise referral: the public health panacea for physical activity promotion? A critical perspective of exercise referral schemes; their development and evaluation. *Ergonomics* 2005; 48(11-14): 1390-1410. Source: peer reviewed journal, mixed methods. Data collection for outcomes included here, uncontrolled before and after.	Not specified, except that it included areas of socio-economic deprivation, unemployment and a more elderly population.	Two large exercise referral schemes taking place in the northwest of England. Scheme A (n=600 participants/year) was based to the north of a large city, and included within its catchment areas of extreme socio-economic deprivation, unemployment and also a more elderly population. Scheme B (n=1000 participants/year) covered an entire industrial town borough, again with areas of extreme deprivation.	Scheme A: • 980 participants attended an initial assessment between March 2001 and March 2003. • Overall adherence (over the 14 week ERS intervention period) during 2001 – 2003 was 34% (n=336). • When assessing the adherence rates of participants by referral condition, those referred for a myocardial infarction (61% adherence) were nearly twice as likely to adhere as someone who has been referred for a mental illness (33% adherence). • Small but statistically significant change to systolic and diastolic blood pressure ($p<0.05$). Median score decreased by 4 and 3 mmHg respectively. Scheme B: • 1825 participants attended an initial assessment between January 2000 and December 2001. • Overall adherence (over 12 week ERS intervention period) during 2000 – 2001 was 46% (n=849), and considerably higher than that for scheme A. The study authors also reported the following emergent themes: • Of all participants referred by a health professional, 27% never made contact with the ERS (and this was much more likely for younger participants). • Of those participants who did make contact, approximately 34 – 46% adhered for the full ERS intervention (12 – 14 weeks). • Males had a higher adherence rate to the ERS than women, although they were referred less frequently. • Adherence increased with age category. • The most likely group of non-attendees (did not attend or contact an ERO) was the 18 – 30 year old category. • Participants presenting with certain referral conditions (e.g. myocardial infarction) showed double the adherence rate of other referral conditions (e.g. mental illness). • Participants referred from cardiac rehabilitation and practice	Study authors conclusions: These results show that, currently, ERSs are much more effective for certain segments of the population – it is more likely that older participants who have had a key life-changing health episode such as a myocardial infarction will adhere to the ERS intervention.

EXERCISE REFERRAL SCHEMES

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td></td><td></td><td></td><td>nurses adhered more often than participants referred by their GP.</td><td></td></tr>
<tr><td>51.</td><td>Gademan MG et al. The effect of exercise on prescription on physical activity and well-being in a multi-ethnic female population: A controlled trial. BMC Public Health 2012; 12: 758.
Link to full text here

Source: peer reviewed journal, non randomised controlled trial.

Aimed to evaluate the effect of exercise on prescription (EOP) in physical inactive women living in multiethnic deprived neighbourhoods in the Netherlands.

Information on intervention retrieved from protocol
51a. Hosper K et al. The effectiveness of "Exercise on Prescription" in stimulating physical activity among women in ethnic minority groups in the Netherlands: protocol for a randomized controlled trial. BMC Publ Health 2008, 8:406.</td><td>Women aged 18-65 from ethnic minority groups who regularly visited GP and were physically inactive, living in The Hague.</td><td>Eighteen sessions of supervised physical activity (PA) and a final evaluation. Sessions included:
• Fitness
• Aqua-aerobics
• Dancing
• Aerobics.

Also included personalised coaching in two parts: to motivate participants through increased awareness of the positive effects of exercise and to empower participants with respect to continuation of healthy behaviour.

Women in the control group received care as usual.</td><td>Five hundred and fourteen women were included, 192 in the EOP group and 322 in the control group. Of 192 in EOP group, two did not start the programme, and 27 women (14%) dropped out during its course. Of those who completed the program (n=163), 86% attended almost all sessions.

No significant changes were found within the EOP group or between the EOP group and the control group for the use of care.
<table>
<tr><td></td><td colspan="2">N</td><td colspan="2">Baseline</td><td colspan="2">6m</td><td colspan="2">12m</td></tr>
<tr><td>Contact</td><td>EoP</td><td>Cont</td><td>EoP</td><td>Cont</td><td>Eop</td><td>Cont</td><td>Eop</td><td>Cont</td></tr>
<tr><td>GP</td><td>91</td><td>165</td><td>82%</td><td>72%</td><td>70%</td><td>71%</td><td>75%</td><td>73%</td></tr>
<tr><td>Specialist</td><td>90</td><td>162</td><td>43%</td><td>40%</td><td>52%</td><td>36%</td><td>49%</td><td>38%</td></tr>
<tr><td>Physio</td><td>89</td><td>164</td><td>60%</td><td>44%</td><td>54%</td><td>40%</td><td>51%</td><td>34%</td></tr>
</table>
Mental well-being and subjective health did not change in either of the groups.</td><td>Study authors conclusion:
EOP was successful in including its target population and compliance was high. The effect of EOP on PA, health and mental well-being was limited. It seems that the combination of a socially disadvantaged target group with a high prevalence of obesity and the low intensity of the training program were responsible for not finding positive effects of EOP on total PA, health status and healthcare use. Whether EOP will be effective after the implementation of a dietary component and a more intensive exercise program remains to be investigated. In sum, in this format EOP was not able to increase the PA levels and health status of non- Western migrant women living in deprived areas in the Netherlands.</td></tr>
<tr><td>52.</td><td>Hendry M et al. Survey focussing on exercise referral schemes (SurFERS). Cardiff: All Wales Alliance for Research and Development in Health and Social Care; 2006.

Source: grey, cross sectional survey (as an audit of current provision of exercise schemes in Wales). Respondents: manager or coordinator of ERS.</td><td>ERS in 22 unitary authorities in Wales.</td><td>ERS provided, or planned, in Wales.

Twenty seven schemes identified including gym based swimming, dancing, walking, golf. Group and one to one. Referrals from primary and secondary care.</td><td>% completing programme:
<table>
<tr><th>No of schemes reporting</th><th>% completing in last year</th></tr>
<tr><td>2</td><td>100</td></tr>
<tr><td>1</td><td>75-99</td></tr>
<tr><td>10</td><td>50-74</td></tr>
<tr><td>3</td><td>25-49</td></tr>
<tr><td>2</td><td><25</td></tr>
</table></td><td></td></tr>
<tr><td>53.</td><td>Moore GF et al. Mixed-method process evaluation of the Welsh National Exercise Referral Scheme. Health Education 2013; 113(6): 476-501.

Source: peer reviewed journal, mixed methods. Routine monitoring data reported.

Aimed to quantify the fidelity and dose of core components of NERS; quantify patterning in uptake and adherence of NERS by patient demographics and qualitatively</td><td>Sedentary adults with at least one health condition. (e.g. mild to moderate depression/anxiety, diabetes, high blood pressure)</td><td>Welsh National Exercise Referral Scheme (NERS).

Patients offered 16 weeks of discounted group-based exercise program, supervised by level 3 qualified exercise professionals. Overall, the scheme was offered in 51 local authority run leisure centres, four community centres and one countryside service by the 38 professionals interviewed. Gym sessions and circuit classes offered, with a minority of leisure centres offering pool based</td><td>Uptake/adherence:
- Patients referred to scheme and randomised to intervention = 1080
- No record of first consultation held = 167 (15.5%)
- First consultation recorded = 913 (84.5%)
- Left the scheme before 4 weeks = (27.5%)
- Those with no record of first consultation held who adhered to 4 weeks = 5 (0.5%)
- Adhered to 4 weeks = 621 (57.5%)
- Left scheme after 4 weeks = 174 (16.1%)
- Returned to scheme having left before 4 weeks = 25 (2.3%)
- 16 week consultation only recorded = 1 (0.2%)
- 16 week consultation attended = 473 (43.8%)

One in seven patients received no intervention beyond health</td><td>Study authors conclusions:
In practice, although the NERS RCT demonstrated positive impacts on physical activity and mental health, process evaluation data indicate that the intervention was not entirely delivered as intended. Mixed-method process evaluation served crucial functions in understanding implementation and functioning, offering insights into the roles of professional support and exercise classes in promoting activity and mental health, and the emergence of social patterning in responses to an ERS.</td></tr>
</table>

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td>explore how NERS facilitates adherence to physical activity and the emergence of social patterning in response to NERS.</td><td></td><td>sessions and outdoor activities.

Eight-month telephone contact was included to discuss progress since leaving the scheme and relapse prevention, with a final health check and consultation at 12 months.</td><td>professional referral, with the biggest drop-off in the first four weeks, by which time 57.5 per cent of referred patients were still attending. NERS was completed by 43.8 per cent of referred patients.

NERS offered patients a programme of supervised, group-based discounted exercise. However, motivational interviewing, goal-setting and patient follow-up protocols were delivered poorly. The high degree of professional support was perceived as helping patients to build confidence and assimilate into exercise environments. Patient-only classes provided social contacts, a supportive context and realistic models. Patterning in uptake emerged from access issues, with uptake lower among non-car owners. Adherence was poorer among mental health patients, younger patients and those who were least active prior to referral to NERS.</td><td></td></tr>
<tr><td>54.</td><td>Ward M et al. Heartlinks: a real world approach to effective exercise referral: reducing coronary heart disease risk and improving health through a negotiated exercise programme. International Journal of Health Promotion and Education 2010; 48 (1): 20-27

Source: peer reviewed journal, uncontrolled before and after study.

The aim of the project was to assess the effectiveness and costs of the Heartlinks exercise referral model in reducing coronary heart disease(CHD) risk, improving perceptions of general health and increasing levels of physical activity.

Heartlinks was a six year project funded by the Welsh Assembly Government Inequalities in Health Fund that aimed to reduce CHD and improve health through a targeted exercise referral programme in Merthyr Tydfil, South Wales.</td><td>Adults who were 'at risk' of CHD with no evidence of existing disease. Referrals had to be taking less than 5 x 30 minutes of moderate activity weekly and demonstrating at least one other CHD risk factor.</td><td>Patients referred by healthcare professionals and a local ‘back to work project’. Patients identified by health care professionals and then directly referred, or identified from disease registers and then ‘invited’ to participate.

Patient assessed by project officer and given options to participate in of a range of activities including:
• Home activity kits containing wrist and ankle weights, stretch bands, dumbbells and exercise ball, with a tailored exercise programme
• Guided walks programme
• Gentle exercise classes
• Aqua classes
• Tai Chi classes (limited to a pilot programme)
• Subsidised access to local authority leisure centre facilities
• Subsidised access to local private health club.

Patients were invited back for personal consultations at one, three, six and 12 months when their programme was reviewed and any changes negotiated to try and enhance levels of activity.</td><td>Uptake and adherence
• 857 patients contacted by project
• 317 recruited to project
• 38 (12%) out of 317 ‘did not attend’ or were deemed not to fulfil referral criteria, leaving 279
• 152 (55%) out of 279 ‘dropped out’ before end of programme
• 127 (45%) completed full 12 month programme.

Before and after results: mean + 95% CI

<table><tr><td></td><td>CHD Risk scores</td><td>SF36 Scores (Physical)</td><td>SF36 Scores (Mental)</td></tr><tr><td>Baseline</td><td>39.6 (37.4-41.8)</td><td>37.5 (35-40)</td><td>46.0 (44-48)</td></tr><tr><td>12 months</td><td>31.2 (28.8-33.6)</td><td>42.0 (39-44)</td><td>49 (47-51)</td></tr></table>
- Significant decrease in modifiable CHD risk, as measured using CALM. In excess of 8% absolute (20% relative) risk reduction ($p<0.001$).
- There was a statistically significant improvement in mean systolic BP of 4.23mmHg, (95% CIs: 1.412, 7.043; $t = 2.816$, $p < 0.01$). However, this cannot be attributed directly to the Heartlinks intervention as many of these patients were receiving active pharmaceutical intervention for hypertension.
- Sub-group analysis undertaken on cohort not taking BP medication (n=44). Paired sample t-test showed statistically significant improvements in this cohort on both their systolic ($t = 2.35$, $p < 0.05$) and diastolic ($t = 2.68$, $p < 0.02$) readings.
- The SF36 scores at the end of the programme showed an improvement, with the mean physical health component having increased to 42 (sd 10; 95% CIs: 39, 44). The mean mental health component also increased to 49 (sd 9.8; 95% CIs: 47, 51).</td><td>Study authors conclusions:
The Heartlinks exercise referral model significantly increased physical activity levels, reduced modifiable heart disease risk and improved perceptions of both physical and mental health over a 12 month period.</td></tr>
<tr><td>55.</td><td>Flannery O et al. Exercise on Prescription evaluation report for South Gloucestershire. Gloucester: University of Gloucestershire; 2014

Source: grey, service evaluation, mixed methods, uncontrolled before</td><td>Adults</td><td>Twelve week EOP program.

Referrals were from a range of services including GPs, physiotherapy clinics and drug and alcohol treatment centers.</td><td>There appeared to have been 2,516 referrals, with 2,505 meeting the inclusion criteria (aged 18 or older).

Programme completers (defined as someone who attended at least eight out of 12 sessions) = 1379 (55%)

There was a statistically significant increase in reported well-being</td><td>The evaluation author made recommendations which included:
• A need to clarify the number and type of health measures taken in the EOP
• A need to collect data on health measures at baseline and on</td></tr>
</table>

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td></td><td>and after.

Aimed to evaluate the effectiveness of the South Gloucestershire Exercise on Prescription (EOP) Scheme.</td><td></td><td></td><td>WEMWBS scores from baseline (M = 48.36, SD = 11.02) to 12 weeks (M = 54.46, SD = 9.39), t (652) = -19.67, p < .000 (two-tailed). The mean increase in well-being scores was 6.10 (95% CI 5.49 to 6.71). Only 652 of the 2,505 participants provided matched pre and post responses.

There was a statistically significant decrease in reported systolic BP from baseline (M = 138.30, SD = 17.79) to 12 weeks (M = 135.07, SD = 40.44), t (1053) = 2.57, p = <.010 (two tailed). The mean decrease in systolic BP scores was 3.22 (95% CI .76 to 5.70).</td><td>completion
• Staff involved in the EOP scheme needs training with regards to data collection and evaluation
• There is a need to establish a clearer referral process
• Health professionals should be provided with regular feedback on whether participants have completed the EOP scheme.</td></tr>
<tr><td>56.</td><td>Gauge NI. Healthwise Physical Activity Referral Scheme. SROI pilot exercise. Belfast: Gauge NI; 2014.

Link to full text here

Source: grey, service evaluation, uncontrolled before and after (pilot study).</td><td>Not specified.</td><td>Healthwise Physical Activity Referral Scheme within Active Belfast.</td><td>The exercise drew on client data which had been collected from the 36 participants who started the project with 26 completing the full 12 weeks of the Healthwise programme; 31 had been engaged until week six. Additional surveys were completed by 19 users indicating the change experienced by clients in a range of issues on a scale of 1 to 10.

No outcomes using validated outcome measures were reported.

Social return on investment (SROI):
It was estimated that the physical activity services provided through the referral programme generates a social value of approximately £1:£7 over a five year period. This is based on a Total Present Value (overall social value identified) of £484,697 created against an input of £69,0001over the extrapolated five year period, due to the impact being experienced by stakeholders beyond the period the service is delivered.</td><td></td></tr>
<tr><td>57.</td><td>Henderson H, Mullineaux D. Lincolnshire Exercise Referral Evaluation Research. Lincoln: University of Lincoln; 2013.

Source: grey, service evaluation, uncontrolled before and after.

Purpose of report: to examine data for patients attending Lincolnshire’s Exercise Referral (ER) Programme over a 12 month period.</td><td>Not specified, however approximately 50% were referred for obesity.</td><td>Lincolnshire’s ER Programme: patients referred by health professionals for supervised exercise.</td><td>EQ-5D-3L mean scores*:

<table>
<tr><th>Question</th><th>Week 1</th><th>Week 12</th><th>6 Months</th><th>12 Months</th></tr>
<tr><td>1 (mobility)</td><td>1.31</td><td>1.26</td><td>1.32</td><td>1.27</td></tr>
<tr><td>2 (self care)</td><td>1.06</td><td>1.07</td><td>1.07</td><td>1.08</td></tr>
<tr><td>3 (activity)</td><td>1.37</td><td>1.28</td><td>1.27</td><td>1.25</td></tr>
<tr><td>4 (pain/ discomfort)</td><td>1.59</td><td>1.49</td><td>1.48</td><td>1.51</td></tr>
<tr><td>5 (anxiety/ depression)</td><td>1.35</td><td>1.29</td><td>1.26</td><td>1.20</td></tr>
<tr><td>6 (health status)</td><td>53.62</td><td>65.23</td><td>67.93</td><td>71.85</td></tr>
</table>

*Questions 1-5 lower scores better; Q6 higher score better)</td><td></td></tr>
</table>

COMMERCIAL WEIGHTLOSS PROGRAMMES

Primary studies

<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention / model</th><th>Outcomes</th><th>Comment</th></tr>
<tr><td>58.</td><td>Fuller NR et al. A within-trial cost-effectiveness analysis of primary care referral to a commercial provider for weight loss treatment, relative to standard care – an international randomised controlled trial. International Journal of Obesity 2013; 37(6): 828-834.

Source: peer reviewed journal, RCT, cost-effectiveness evaluation of source 58.

The study aimed to evaluate the cost effectiveness of a commercial provider (CP) compared with conventional standard care (SC) for both weight loss and quality of life (QOL).</td><td>Overweight/obese adults in Australia, UK and Germany.</td><td>Participants randomised to receive 12 month access to either a commercial partner weight loss programme or standard care. Participants randomised to the CP group received vouchers to attend a weekly community CP meeting. Those randomised to SC received weight-loss advice delivered by a GP/primary care professional at their local medical practice.

Participants recruited by GP.</td><td>Six hundred and fifty nine participants who completed IWQOL-Lite[©t] were included in the intention to treat analysis.

Change in utility scores (quality of life) between baseline and month 12 for CP compared with SC (using last-observation carried forward, and completers only):

<table>
<tr><th>Analysis by country</th><th>Coefficient (to 3 decimal places)*</th><th>95% Confidence Interval</th><th>P</th><th>N</th></tr>
<tr><td colspan="5">LOCF</td></tr>
<tr><td>Australia</td><td>0.021</td><td>0.006, 0.037</td><td>0.006</td><td>243</td></tr>
<tr><td>United Kingdom</td><td>0.015</td><td>0.001, 0.028</td><td>0.033</td><td>178</td></tr>
<tr><td>Germany</td><td>0.009</td><td>-0.006, 0.024</td><td>0.222</td><td>238</td></tr>
<tr><td colspan="5">Completers only</td></tr>
<tr><td>Australia</td><td>0.023</td><td>0.003, 0.044</td><td>0.027</td><td>141</td></tr>
<tr><td>United Kingdom</td><td>0.020</td><td>-0.025, 0.064</td><td>0.382</td><td>44</td></tr>
<tr><td>Germany</td><td>0.021</td><td>0.001, 0.040</td><td>0.039</td><td>159</td></tr>
</table>
*Coefficient is the change in utility score for CP compared with SC.</td><td>Study authors conclusion:
This study provides data from three different countries and consistent results. The cost per kilogram of weight loss was lower for the CP versus SC in Australia and the United Kingdom. When adjusting for the CP financial costs based on commercial pricing decisions, and costing according to economic prices, the cost per kilogram of weight loss was lower for the CP compared with SC in all three countries. The CP is cost effective when assessed by the commonly accepted threshold of a cost < $50,000 per QALY. Importantly, despite participants in the CP group attending on average three meetings per month in the United Kingdom and Australia, and two meetings per month in Germany, compared with only one appointment per month for the SC group, the CP remained cost effective when including these added patient travel costs.

Note: one author advisory board member for Weight Watchers® also UK trial funded by Weight Watchers® via grant to UK MRC –not stated in this paper.</td></tr>
<tr><td>59.</td><td>Jebb SA et al. Primary care referral to a commercial provider for weight loss treatment versus standard care: a randomised controlled trial. Lancet (North American edition) 2011; 378 (9801): 1485-1492.

Source: peer reviewed journal, RCT.

Study compared the clinical efficacy of primary care referral to a commercial programme with standard care by examination of the change in weight and associated risk factors at 12 months in overweight and obese adults.</td><td>Participants were recruited from 39 primary care practices in Germany, 70 practices in Australia, and six practices in the UK between Sept 10, 2007, and Nov 28, 2008. Eligible participants were adults (aged ≥18 years) with a BMI of 27–35 kg/m2 who had at least one additional risk factor for obesity-related disease.</td><td>Participants in the commercial programme group received free access to weekly community-based Weight Watchers meetings for 12 months.

Participants in the standard care group received weight loss advice from a primary care professional at their local GP practice.</td><td>Three hundred and seventy seven allocated to commercial programme: 147 withdrew before end of programme; 230 completed 12-month assessment; 395 allocated to standard care; 181 withdrew before end of programme and 214 (54%) completed 12-month assessment.

Participants attending assessment visits for standard care reported a mean of one appointment per month with their health-care provider, whereas those in the commercial programme attended a mean of three meetings per month in the UK and Australia and two meetings per month in Germany.

Mean weight change at 12 months was −5·06 kg (SE 0·31) for those in the commercial programme versus −2·25 kg (0·21) for those receiving standard care (adjusted difference −2·77 kg, 95% CI −3·50 to −2·03) intention to treat analysis but changes in systolic and diastolic BP were not significant.</td><td>Weight Watchers® (the programme provider) funded this research through a grant to the UK MRC</td></tr>
<tr><td>60.</td><td>Hunt P, Poulter J. An evaluation of Weight Watchers referrals. Practice</td><td>Not specified.</td><td>Weight watchers® referral scheme enabling PCTs to buy subsidised</td><td>Average number of weeks attended was 8.8, and over half the group (53%) completed the 12 week course (data based on 198 enrolled</td><td>Authors employed by Weight Watchers®</td></tr>
</table>

[t] This is a validated 31 item questionnaire self-report measure on obesity-specific quality of life. http://www.qualityoflifeconsulting.com/iwqol-lite.html

	Source	Population	Intervention / model	Outcomes	Comment
	Nursing 2007; 18(5): 236-241. Source: peer reviewed journal, mixed methods, uncontrolled, data from Weight Watchers® database. Study is an evaluation of the first year of a Weight Watchers® referral scheme enabling PCTs to buy subsidized courses of weight watchers meetings for their patients. Aims of evaluation: • Assess' patients attendance and weight loss outcomes following the first year of the referral schemes operation • Examine views of the scheme among patients and referring healthcare professionals • Inform further development of the weight watchers referral scheme.		courses of weight watchers meetings for their patients. The Weight Watchers® intervention is based on group support and contains elements of behavioural change primarily targeted at physical activity and eating habits.	patients).	
61.	Lavin JH et al. Feasibility and benefits of implementing a Slimming on Referral service in primary care using a commercial weight management partner. *Public Health* 2006; 120(9): 872-881. Source: peer reviewed, uncontrolled before and after. The aim of the study was to assess the feasibility of referring obese patients from primary care to a commercial weight management group. Outcomes were: • Enrolment, attendance and weight loss • Factors associated with participation • Cost of the referral scheme in comparison with in-house options.	Obese patients from two general practices. Patients were eligible if their BMI was ≥30 kg/m2, they were between 18 and 75 years of age, they were not pregnant and they had not attended a commercial slimming group within the previous three months.	Participants referred to local Slimming World® group by primary care health professionals using a voucher system. The vouchers covered membership and weekly group fee costs for 12 consecutive week's attendance, after which time patients could continue attending the group at their own expense. Attendance, weight and attrition were monitored for up to 24 weeks.	Between September 2001 and January 2002, 107 patients were recruited into the study. Of the 107 patients initially recruited, 91 enrolled at a Slimming World® group with 62 of these completing the free 12-week period; 47 went on to self-fund additional sessions and 34 of these were still attending at 24 weeks. At baseline, patients had low ratings of well-being compared with the South Derbyshire population. However, these ratings improved significantly by week 12 (calm P<0.001, energy P<0.001, downhearted P<0.05) and were maintained at week 24 (calm P<0:05, energy P<0.001, downhearted P<0.001). Those aged under 50 were significantly less likely to enrol than those over aged 50 years and over; as were those with the lowest household incomes. Those who perceived weight loss as important were significantly more likely to enrol than those who did not. Reported factors influencing completion. Those under 40 and those reporting financial concerns were significantly less likely to complete the first 12 weeks; those from inner cities, with lower incomes and who had least weight loss in the first 12 weeks were significantly less likely to complete the 24 weeks.	Reasons cited for non-completion: • Time of meeting was not convenient (n=4) • Felt too anxious/ stressed (n=3) • Location of group was not convenient (n=3) • Health problems (n=2) • Lack of transport (n=2) • Childcare difficulties (n=2), • Commitments at work or home (n=2), • Other caring responsibilities (n=2), • Difficulty understanding dietary advice (n=1) • Money worries (n=1), • Had stopped losing weight (n=1) • Lack of support from family (n=1) • Difficulty fitting dietary advice with family meals (n=1), • Did not enjoy being part of group (n=1). Study authors had received funding from Slimming World®

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<table>
<tr><th></th><th>Source</th><th>Population</th><th>Intervention/model</th><th>Outcomes</th><th>Sustainability/other comment</th></tr>
<tr>
<td>62.</td>
<td>Krska J et al. Evaluation of welfare advice in primary care: effect on practice workload and prescribing for mental health. Primary Health Care Research & Development 2013; 14(3): 307-314.

Source: Peer reviewed journal, service evaluation, uncontrolled before and after.

Study is an evaluation led by the mental health improvement team of the PCT, who set out to investigate whether there was any evidence that patients referred to the Citizens Advice Bureau Health Outreach (CABHO) programme service did have mental health issues and that the service reduced workload.

The objectives of the study were:
• To determine Citizens Advice Bureau (CAB) and general practice staff perceptions on the impact of a CABHO service on staff workload
• To quantify the frequency of mental health issues among patients referred to the CABHO service
• To measure any impact of the CABHO service on appointments, referrals and prescribing for mental health.</td>
<td>Nine GP practices receiving CABHO service. Specific population referred not reported but CAB staff perceived that these were patients with mental health problems.</td>
<td>CABHO programme. Welfare rights advice service.</td>
<td>Changes in use of health service among 148 patients using the CABHO service: Data from medical records. There were statistically significant reductions in the number of GP appointments and prescriptions for hypnotics/ anxiolytics during the six months after referral to CABHO compared with six months before.

<table>
<tr><th></th><th colspan="2">Study period</th><th colspan="2">Change in use</th></tr>
<tr><th></th><th>Six months before CABHO</th><th>Six months after CABHO</th><th>Overall change</th><th>Average change/ patient</th></tr>
<tr><td>Total appointments</td><td>938</td><td>819</td><td>-119</td><td>-0.80</td></tr>
<tr><td>GP appointments</td><td>715</td><td>622</td><td>-93</td><td>-0.63*</td></tr>
<tr><td>Nurse / other appointments</td><td>223</td><td>197</td><td>-26</td><td>-0.18</td></tr>
<tr><td>Total acute appointments</td><td>276</td><td>281</td><td>+5</td><td>+0.03</td></tr>
<tr><td>Total mental health appointments</td><td>138</td><td>143</td><td>+5</td><td>+0.03</td></tr>
<tr><td>GP mental health appointments</td><td>119</td><td>133</td><td>+14</td><td>+0.09</td></tr>
<tr><td>Nurse / other mental health appointments</td><td>16</td><td>11</td><td>-5</td><td>-0.03</td></tr>
<tr><td>Mental health referrals</td><td>31</td><td>41</td><td>+10</td><td>+0.07</td></tr>
<tr><td>Antidepressant prescriptions</td><td>167</td><td>131</td><td>-36</td><td>-0.24</td></tr>
<tr><td>Hypnotic / anxiolytic prescriptions</td><td>55</td><td>32</td><td>-23</td><td>-0.16*</td></tr>
</table>
*p<0.05 Wilcoxon signed-ranks test.</td>
<td>Study authors conclusions:
This study has demonstrated that almost half the patients referred to the CABHO service in this PCT may have had a mental health issue, which is in line with the perceptions of the CAB staff providing the service. In terms of practice staff workload, there was a perception that the CABHO service had no detrimental effect on staff time. Conversely, in fact, the study found that overall patients referred to the service used fewer GP appointments after referral than in the equivalent time period before.</td>
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