

Evidence:

Helping people help themselves

A review of the evidence considering whether it is worthwhile to support self-management

May 2011



Identify Innovate Demonstrate Encourage

Author

Dr Debra de Silva

Institution

The Evidence Centre

Contact

Debra@evidencecentre.com

© 2011 Health Foundation

Evidence: Helping people help themselves
is published by the Health Foundation
90 Long Acre, London WC2E 9RA

ISBN 978-1-906461-26-3

Contents

Foreword	iv
Executive summary	v
Chapter 1 What is self-management support?	1
Chapter 2 Impacts of self-management	3
Chapter 3 What works to support self-management	10
Chapter 4 Issues that need more attention	18
References	20
Appendix 1 Review methods	38

Foreword

When it comes to putting self-management support at the heart of routine healthcare, there is a huge gulf between political rhetoric and the reality of UK clinical practice. Many clinicians question the notion that their role should change to support self-management. Why should clinical practice change? What is the evidence that self-management support works?

The Health Foundation has produced this literature review to respond to the questions and challenges of clinicians wanting to appraise the benefits of self-management support. The literature shows that proactive, behaviourally focused self-management support designed to increase self-efficacy can have a positive impact on people's clinical symptoms, attitudes and behaviours, quality of life and patterns of healthcare resource use. This echoes the experience of the hundreds of clinicians and patients across the UK that have been involved in Co-creating Health, our demonstration programme to test the implementation of strategies for embedding self-management into routine care. Our independent evaluation of the programme will report in 2011.

So what is to be done? Two conclusions of this review stand out. First, it provides a new perspective on self-management support. Traditionally, a wide range of methods have been described as supporting self-management – interventions as varied as handing out leaflets, tele-monitoring, intensive telephone coaching and structured education. This review shows that some approaches are significantly more effective than others.

Thus, it is essential that healthcare providers critically appraise this evidence and focus efforts on those methods with the strongest evidence.

Second, it shows that proactively supporting self-management and focusing on behaviour change can have an impact, in some circumstances, on clinical outcomes and emergency service use. Furthermore a focus on behaviour change is a necessary component in facilitating the effectiveness of other methods such as information provision.

The review reminds us that self-management support is still in its infancy. While there is a growing research base, we know much less about how to replicate the positive results produced in research contexts in real-world healthcare. We need many more opportunities, like those provided by Co-creating Health, that allow healthcare professionals and system leaders to explore the best ways to make self-management support a part of routine healthcare.

The UK healthcare system can't afford to ignore this evidence. Already the 30% of the population with long term conditions accounts for 70% of NHS spending. Reducing people's dependence on health professionals and increasing their sense of control and wellbeing is a more intelligent and effective way of working.

Natalie Grazin
Assistant Director
Improvement Programmes
The Health Foundation

Executive summary

Self-management works

This review of more than 550 pieces of high quality research suggests that it is worthwhile to support self-management, in particular through focusing on behaviour change and supporting self-efficacy.

Hundreds of systematic reviews, randomised controlled trials and large observational studies have examined the impact of supporting self-management for people with long term conditions. Whilst the findings of individual studies are mixed, the totality of evidence suggests that supporting self-management can have benefits for people's attitudes and behaviours, quality of life, clinical symptoms and use of healthcare resources.

Some suggest that the evidence for supporting self-management is only moderate but this is because a wide range of activity is described as 'self-management support' and some interventions may be more effective than others. Past reviews have tended to combine initiatives that focus solely on information provision with interventions that more actively target behaviour change and self-efficacy. However, these varying interventions may have different outcomes so combining them could dilute the findings.

Supporting self-management has the potential to alleviate the pressure on health and social services caused by workforce shortages, rising demand for services, population increases and budgetary constraints. However, implementing one off interventions is unlikely to make a significant impact on the overall health of the population or on the sustainability of health and social care systems.

Supporting self-management is not a panacea, and is likely to work best when implemented as part of wider initiatives to improve care through educating practitioners, applying best evidence, and using technology, decision aids and community partnerships effectively.

Proactive strategies work best

There are a wide range of initiatives to support self-management. These can be categorised along a continuum of interventions, with passive information provision about healthy behaviours and other 'technical' topics at one end of the scale and initiatives that more actively seek to support behaviour change and increase self-efficacy at the other end of the continuum.

Different clinical conditions may require varying approaches to support self-management. For instance, people with conditions such as diabetes may benefit from structured education about how to eat, exercise and take medications. For conditions such as depression or chronic pain on the other hand, less 'technical' or clinical education may be needed because the service user has less 'technical work' to do.¹ Therefore, evidence about self-management support for these groups tends to focus on cognitive and behavioural interventions. Such interventions may be equally valuable for people with diabetes and other conditions, even though the focus to date has been mainly 'technical'.²⁻⁴

All of the different types of support are important components of the jigsaw needed to encourage self-management, but information provision alone is unlikely to be sufficient to motivate sustainable behaviour change and improve clinical outcomes. More active goal setting and behavioural change interventions are necessary. There is also emerging evidence that strategies co-created by service users and professionals or co-led by service users have positive outcomes.⁵⁻⁷

*A co-created teaching approach better meets the learning needs of adults with type 2 diabetes mellitus and results in enhanced ability to perform the self-care activities required for successful diabetes control.*⁸

Evidence is developing

Knowledge in this area is developing so evidence about the best strategies to support behaviour change may be limited at this stage,⁹⁻¹⁰ though much work suggests that in order to change behaviour, people need to really want to change.¹¹

General components that have been found to work well to support self-management include:¹²⁻²⁷

- involving people in decision making
- emphasising problem solving
- developing care plans as a partnership between service users and professionals
- setting goals and following up on the extent to which these are achieved over time
- promoting healthy lifestyles and educating people about their conditions and how to self-manage
- motivating people to self-manage using targeted approaches and structured information and support
- helping people to monitor their symptoms and know when to take appropriate action
- helping people to manage the social, emotional and physical impacts of their conditions
- proactive follow up
- providing opportunities to share and learn from other service users.

However, the best strategies for implementing these principles and the related barriers and facilitators remain uncertain.²⁸ There is a need for high-quality research and evaluation that focuses on building relationships between service users and practitioners and exploring the most effective strategies for encouraging behaviour change.²⁹

Another core component of supporting self-management is enabling and encouraging clinicians and lay trainers to work with people to improve their motivation to change.³⁰ It is important to understand the skills that clinicians need to help people make changes and the barriers that may stop them from offering such support.³¹⁻³³

Whilst evidence is emerging, there is still a long way to go before we understand the education and support necessary to optimise clinicians' attitudes, skills and behaviours towards self-management.³⁴ This also calls for a fundamental shift in power dynamics and the way both patients and professionals view their roles.³⁵⁻³⁷

*Self-management support is the assistance caregivers give patients with chronic disease in order to encourage daily decisions that improve health related behaviors and clinical outcomes. Self-management support can be viewed in two ways: as a portfolio of techniques and tools that help patients choose healthy behaviours; and a fundamental transformation of the patient-caregiver relationship into a collaborative partnership.*³⁸

Some suggest that training strategies need to account for practitioners' stage of change as well as that of patients.³⁹

In order to do this we need to understand more about how best to increase self-efficacy and encourage behaviour change, and how we can motivate all members of the team, including clinicians and patients themselves, to be part of this.

Key messages

An increasing number of people are living with long term health conditions which they manage most of the time by themselves. Helping people to better care for themselves can improve their physical and mental wellbeing and change how they use services. There is good evidence that supporting self-management works.

What is self-management?

As the population ages and our lifestyles and habits change, more and more people are living with long term conditions that cannot currently be cured. In the UK more than 17 million adults have a long term condition such as diabetes, asthma, heart failure, arthritis dementia or depression.⁴⁰

Health and social care services support people with long term conditions by providing equipment, specialist staff and medicines to control symptoms. In fact, it is estimated that about two thirds of all healthcare resources are spent supporting people with long term conditions.⁴¹

Even so, 80% to 90% of all care for people with long term conditions is undertaken by patients themselves and their families.⁴² This self-management or self-care includes eating well, exercising, taking medicines, keeping in good mental health, watching for changes, coping if symptoms worsen and knowing when to seek professional help.

Supporting self-management involves educating people about their condition and care and motivating them to care for themselves better.

Self-management support can be viewed in two ways: as a portfolio of techniques and tools that help patients choose healthy behaviours; and a fundamental transformation of the patient–caregiver relationship into a collaborative partnership.⁴³

Does self-management work?

Planners and practitioners increasingly recognise the benefits of supporting people to manage their own conditions. This rapid review compiles research about supporting self-management.

Based on the results of almost 600 studies published in the UK and internationally, there is evidence that supporting self-management can improve people's quality of life, clinical outcomes and health service use. Research suggests that proactively supporting self-management and focusing on self-efficacy (a person's confidence about looking after themselves) and behaviour change can have an impact on clinical outcomes and emergency service use.

Some studies suggest that the evidence for supporting self-management is only moderate but this is because a wide range of initiatives are described as 'self-management support' and some may be more effective than others. It would dilute the findings to combine initiatives that focus solely on information provision with interventions that target behaviour change and self-efficacy.

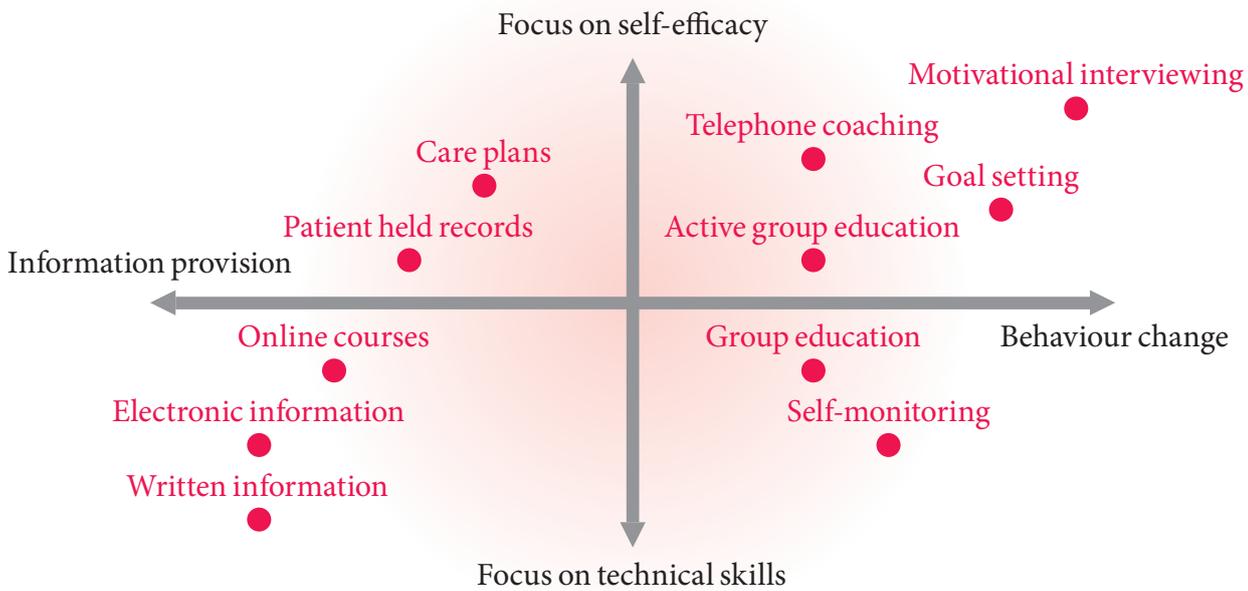
Some studies argue that supporting self-management reduces the use and costs of health services. However this focus may be too simplistic. It is more likely that patterns of service use change rather than reduce overall. For example, people may engage more frequently with a practice nurse, telephone coach or with peers, but less with hospital services. The aim is not to reduce contact overall, but rather to support a different pattern of contact which may lead to fewer crises and inpatient admissions.

What type of support works?

There are a wide range of initiatives to support self-management including information leaflets, online peer support, one to one counselling, group education sessions, telephone coaching, monitoring symptoms with technology, and psychological behaviour change interventions. Initiatives can be categorised along a continuum, with passive information provision about people's condition and 'technical skills' at one end of the scale and initiatives that more actively seek to support behaviour change and increase self-efficacy at the other end of the continuum.

All of the different types of support are important components of the jigsaw needed to encourage self-management, but information provision alone is unlikely to be sufficient to motivate behaviour change and improve outcomes.

Figure 1: continuum strategies to support self management



More active goal setting and behavioural change interventions are needed.

Different clinical conditions may require varying approaches to support self-management. For instance, because of the nature of conditions such as diabetes, there is a role for structured patient education focused on technical or clinical information about diet, exercise and medication. For conditions such as depression on the other hand, there may be fewer ‘technical’ changes that people can make so the focus is instead on cognitive and behavioural interventions. Such interventions may be equally valuable for people with diabetes and other conditions where the focus to date has been mainly on providing ‘technical’ information, but this remains an emerging field of knowledge.

What else do we need to know?

There is evidence that several general principles are important when supporting self-management. These include: involving people in decision making; developing care plans as a partnership between service users and professionals; setting goals and following up on the extent to which these are achieved over time; helping people manage the social, emotional and physical impacts of their conditions; motivating people to self-manage using targeted

approaches and structured support; helping people to monitor their symptoms and know when to take appropriate action; promoting healthy lifestyles and educating people about their conditions and how to self-manage; and proactive follow up, including providing opportunities to share with and learn from other service users.

Knowledge about how to support behaviour change and put these principles into practice is still being developed. Research suggests that in order to change behaviour, people need to want to change. ‘Stage of change’ models have been found to be useful in developing successful programmes.

Another core component is supporting clinicians to work with people to improve their motivation to change. It is important to understand the skills that clinicians need to help people make changes. There may also be a need to fundamentally change the way patients and practitioners see their roles to create more of a partnership approach, but to date evidence about this is limited.

To conclude, research suggests that supporting self-management works, and can have a real impact on how people think, feel and act. The challenge is to explore the best ways to support self-management and to help service users, clinicians and managers make this a reality.

Chapter 1

What is self-management support?

Health services in Britain are facing an enormous challenge. The population is growing in size and age and people are more likely to suffer from long term illnesses that require ongoing care.⁴⁴ There is a need to change the way systems work and this includes helping people to help themselves.

Long term conditions are leading causes of death and disability worldwide.⁴⁵ In Britain, the Department of Health estimates that 17.5 million adults may be living with one or more long term conditions.⁴⁶ At least 60% of adults report having one long term condition and this figure continues to grow due to an aging population and escalating risk factors such as obesity.⁴⁷

Medical advances mean that people with illnesses such as heart disease and stroke now receive treatments that enable them to live longer and to enjoy a higher quality of life than would previously have been possible, but this also brings challenges. Health and social care services provide help when symptoms worsen, but most of the time people and their families are responsible for making decisions and influencing their own wellbeing. In the UK, about 80% of GP consultations, 60% of days spent in hospital and two thirds of emergency admissions are related to long term conditions,⁴⁸ but more than 80% of the care for people with long term illnesses is undertaken by the patient themselves or their carers.⁴⁹ This is known as self-management.

The Department of Health defines self-management as:

*The actions individuals and carers take for themselves, their children, their families and others to stay fit and maintain good physical and mental health; meet social and psychological needs; prevent illness or accidents; care for minor ailments and long term conditions; and maintain health and wellbeing after an acute illness or discharge from hospital.*⁵⁰

Supporting self-management means providing information and encouragement to help people maintain greater control by understanding their condition and being able to monitor and take appropriate action. Interventions to support self-management can be used at different points of the health continuum, from those who do not have a long term condition through to those who are living with severe and multiple long term conditions.

Health and social care services can support people to self-manage their conditions by encouraging engagement in decision making, educating people about their condition and care, motivating people to adopt healthy behaviours and helping them know when and how to seek help from professionals.⁵¹

Over the past decade there has been an increasing focus in the UK and around the world on supporting self-management. Many strategies have been tested, with varying success, including providing accessible information; communication skills training for service users and professionals; self-management skills training facilitated by lay people; nurse led telephone support; self-monitoring of clinical symptoms; and even text messages, computer forums and video games. This rapid review compiles evidence about the effects of supporting self-management on people's quality of life, clinical outcomes and health service use.

The review methods are summarised at the end of this document in appendix 1. In brief, two reviewers searched more than 10 bibliographic databases for research evidence published up until September 2010. More than 100,000 reports were scanned and the findings from over 550 high quality studies are included in the review.

The review does not aim to be exhaustive but instead provides a rapid and easy to use compilation of up to date evidence. First, we explore whether supporting self-management improves outcomes, then we examine the most effective types of support and areas in need of further development.

Chapter 2

Impacts of self-management

Evidence suggests that supporting self-management works. Supporting people to look after themselves can improve their motivation, the extent to which they eat well and exercise, their symptoms and clinical outcomes and can even change how they use health services.

Interventions to encourage and support self-management vary considerably in their aims, approach, content, delivery, duration and target group.⁵² Therefore it would be misleading to refer to 'self-management initiatives' as an integrated whole. This section describes evidence about the impact of supporting self-management on people's attitudes, behaviours and outcomes, but it is important to emphasise from the outset that these results vary according to the type of support provided. The next section explores differences between various approaches.

2.1 Impact on self-efficacy

How people think and feel about their condition can have a big impact on their health behaviours and outcomes.⁵³⁻⁵⁷

Self-efficacy refers to an individual's belief in their capacity to successfully learn and perform a specific behaviour. A strong sense of self-efficacy leads to a feeling of control, and willingness to take on and persist with new and difficult tasks. When applied to health, this theory suggests that patients are empowered and motivated to manage their health problems when they feel confident in their ability to achieve this goal.⁵⁸

There is evidence that improved self-efficacy is correlated with improved health behaviours and clinical outcomes so it is valid to examine the impact of self-management support on self-efficacy as representative of other outcomes.⁵⁹⁻⁷¹

A literature review found that involving people in ongoing health decision making and self-management can increase patient and family responsibility for the delivery of care, and help people adapt care regimens to their own lifestyles.⁷²

However, the best strategies to encourage self-efficacy remain uncertain. A trial in the US examined the impact of empowerment and motivation on self-management behaviours. Those who felt more empowered and active were most likely to self-manage effectively. However specific self-management education programmes did not seem to make people more activated. The authors concluded that more research is needed to examine the best ways to support self-management in order to increase empowerment and motivation.⁷³ Others suggest that it is important to understand why people wish to receive self-management support in order to target assistance to their needs.⁷⁴

A number of self-management interventions focus on confidence building and providing service users with the knowledge and skills to set personal goals and develop effective strategies for achieving them.⁷⁵⁻⁸⁴

For instance, UK studies suggest that people with arthritis taking part in self-management programmes feel more confident in their ability to manage and control their symptoms, feel less anxious about their disease, and may visit the doctor less frequently.^{85–88} Similar studies are available for people with heart disease, lung disease, diabetes, asthma, stroke and many other conditions.^{89–94}

Some suggest that supporting self-management can help people move through stages of change (transtheoretical model), becoming more motivated to alter their behaviours and sustain this long term.^{95–99} Others have found that the effectiveness of self-management support varies depending on people's stage of change.^{100–111}

Examples of targeting self-efficacy

A small randomised trial in Taiwan investigated the effectiveness of an empowerment programme in 50 people with end stage renal disease. The programme included identifying problem areas for self-management, exploring emotions associated with these problems, developing a set of goals and strategies to overcome problems and achieve goals, creating and implementing behavioural change plans and stress management. There were improvements in empowerment, self-care, self-efficacy and depression.¹¹²

Similarly, a trial in China examined layperson led self-management education for 954 people with hypertension, heart disease, chronic lung disease, arthritis, stroke, or diabetes.¹¹³ There were improvements in self-care behaviour, self-efficacy, and health status, and reduced hospitalisations six months after the course. Integrating the delivery model into community organisations and working with service users as lay educators were key success factors.

2.2 Impact on self-care behaviour

There is evidence that self-management support can improve people's knowledge about their condition and care, how they feel about their condition, and their ability to cope day to day. It also develops self-management behaviours.^{114–124}

For instance, a meta analysis of 82 studies found that self-management education improved knowledge, self-care behaviour, and metabolic control in adults with diabetes.¹²⁵

Another review of randomised trials found that self-management education increases participants' self-efficacy, knowledge, symptom management, use of self-management behaviours and aspects of health status. The effects for children, young adults, and carers remain uncertain.¹²⁶

Research has explored the perceived barriers and facilitators for lifestyle modification. For example a qualitative study with people with chronic obstructive pulmonary disease (COPD) found that the most successful self-management support requires a multifaceted approach incorporating strategies to show people how to change their behaviour. This and other studies suggest that self-management support that includes behaviour change strategies and problem solving skills is more likely to lead to improved self-efficacy and lifestyle modification.^{130–133}

Programmes which combine multiple support strategies often work best. A randomised trial in New Zealand used interventions including a diary for recording daily weights and goals, attendance at a specialist clinic, and three self-management education sessions for people with heart failure. After one year, those taking part in the trial were more likely to have better self-management knowledge and behaviours compared to the usual care group. Patients who did not adopt self-management strategies had a greater chance of death or readmission to hospital.¹³⁴

However, other studies have found no difference between self-management support and usual care regarding self-efficacy, behaviours and awareness.¹³⁵ Most of the studies that found no benefits were small scale, sometimes non-randomised, and often focused on less structured forms of self-management support. Thus, while the reported outcomes for self-management support vary, this may be due to research methods rather than inherent to self-management support itself.

Examples of impact on behaviour

Most of the available research focuses on the impact of group education sessions. For example, a five year randomised trial with more than 1,000 people in the UK found that self-management courses were associated with improved healthy behaviours, coping, communication with physicians and self reported health status, and fewer days in hospital.¹²⁷

A comparison of routinely collected data for 15,190 older people with diabetes found that those who had attended self-management education were more likely to self monitor blood glucose levels, take appropriate medications and go for regular eye examinations.¹²⁸

Benefits from other types of support have also been documented. For instance, researchers in the US found that sending weekly educational newsletters improved self-management behaviours among African Americans with diabetes.¹²⁹

2.3 Impact on quality of life

Research suggests that supporting self-management can improve quality of life.¹³⁶⁻¹⁴² A number of studies have found a link between self-management education, self-care behaviours and psychological outcomes, stress, coping or quality of life.¹⁴³⁻¹⁵¹

There is evidence that supporting self-management results in both improved confidence to self-manage and improved quality of life.¹⁵²⁻¹⁵⁵ and that self-efficacy or perceived control is correlated with improved quality of life.¹⁵⁶⁻¹⁵⁸

Examples of interlinkages

There is a close relationship between self-management attitudes, behaviours and quality of life. For instance, trials in China found that self-management education was associated with improved self-care behaviours which in turn were associated with improvements in quality of life, clinical outcomes and healthcare resource use.¹⁵⁹⁻¹⁶⁰

Another randomised trial in the US assessed a self-management programme for older people with deteriorating eyesight.

The programme focused on enhancing problem solving skills and resulted in improved mood and reduced emotional distress, which in turn was associated with increased self-efficacy. Functional status and quality of life also improved, especially for those who were initially depressed. This suggests a link between active self-management education, self-management behaviours and quality of life.¹⁶¹

Similarly, a randomised trial in the UK found that a self-management planning intervention was associated with improved self-care for people with angina, including better diet and more exercise. The programme was also associated with improved anxiety and quality of life.¹⁶²

There are some conflicting findings. A Cochrane review found that self-management education by lay educators may lead to short term improvements in self-efficacy, self rated health status and self-care behaviours but no improvements in quality of life.¹⁶³

Likewise, a randomised trial with 131 people with asthma in Switzerland found that self-management education helped to improve self-management skills, self-efficacy and people's knowledge of their condition and care. However there was no improvement in quality of life or health outcomes.¹⁶⁴

Another small trial in the UK found that supporting self-management improved self-efficacy and self-care in people with stroke but did not improve quality of life.¹⁶⁵

Studies that have not found any effect tend to be small or to use less proactive strategies to support self-management, such as written information or short education sessions focusing on providing technical information.

2.4 Impact on clinical outcomes

Overall, the evidence suggests that there is likely to be a relationship between supporting self-management and clinical outcomes.¹⁶⁶⁻¹⁷⁵

Some studies suggest direct relationships between supporting self-management and improved clinical outcomes.¹⁷⁶⁻¹⁸³ Other studies show a correlation, but not necessarily a causal relationship.¹⁸⁴⁻¹⁸⁹

Various types of self-management support have been found to improve physical symptoms or clinical outcomes in people with arthritis, asthma, diabetes, hypertension, heart disease, heart failure, stroke, cancer and other conditions, at least in the short term.^{190–196}

For instance, a systematic review collated 71 trials of self-management education for people with long term conditions. The reviewers found that people with diabetes participating in self-management education had improved glycaemic control and blood pressure. People with asthma experienced fewer attacks after self-management education. Arthritis self-management education programmes had no significant effects. The authors concluded that self-management education programmes may have small to moderate effects for people with selected long term conditions. They noted, however, that study methods varied widely and were not optimal.¹⁹⁷

Studies have also assessed interventions involving the family members of people with long term conditions.²⁰⁶ For instance a randomised study of children with diabetes found that a family teamwork intervention prevented deterioration in glycaemic control.²⁰⁷

There are exceptions to these positive trends.²⁰⁸ Some studies suggest no improvements in clinical outcomes. For instance, a randomised trial in London evaluated a card and letter encouraging people to prepare questions to ask at a hospital consultation. Half of those sent a card said they got more out of their consultation as a result, but there were no significant differences in outcomes.²⁰⁹ Another randomised trial with 131 people with asthma found that improved self-management skills and self-efficacy did not result in health improvements.²¹⁰

Others suggest that any improvements are short lived. A systematic review of 31 studies found that self-management education for people with diabetes improves clinical outcomes in the short term. The longer the self-management intervention, the longer the effect tends to last. Any benefits tend to decrease 1–3 months after the intervention ceases, suggesting that learned behaviours change over time.²¹¹

As with other outcomes, the level of engagement and activity may be an important success factor for improving clinical outcomes. A randomised trial in Argentina compared self-management education aimed at improving communication skills and empowerment versus a compliance based relationship between patients and professionals. The study found that the self-management approach was associated with improved clinical outcomes; in this case increased blood pressure control.²¹²

The research methods used may be one of the reasons for differences in findings between studies. A systematic review found that while there were small improvements in mortality and healthcare resource use from self-management education, most studies were small and suffered from biases or methodological design flaws.²¹³ Thus, whilst overall findings about supporting self-management generally suggest positive impacts on clinical outcomes, the varied quality of research in this area emphasises that ongoing evaluations of self-management interventions are needed to continue to build the evidence base.

Examples of clinical improvements

A meta analysis assessed the effectiveness of self-management education in children and adolescents with asthma. The reviewers included 32 randomised trials with 3,706 children aged between two and 18 years. Self-management education was associated with improved lung function and self-efficacy and reduced absenteeism from school, days of restricted activity, and visits to A&E. Programmes based on peak flow monitoring, targeted interventions, and interventions with children with severe asthma had the most effect on clinical outcomes.¹⁹⁸

Similarly, a cohort study in the US examined the relationship between self-management education, self-management behaviours and clinical outcomes for 428 people with diabetes. Education was associated with improved self-care and more controlled blood glucose.¹⁹⁹ People in the early stages or with less severe illness were more likely to benefit, and this finding has been replicated for other conditions.^{200–201}

Another study in the US found that active self-management education was associated with improved empowerment and engagement between people with diabetes and clinicians. This resulted in improved glycaemic control.²⁰²

A review of self-management education in arthritis found reductions in pain and fatigue, improved activity levels, aerobic capacity and exercise endurance, reduced levels of disability and functional limitations, and improved self-reported health status.²⁰³ Numerous similar studies are available about measures of pain and quality of life.^{204–205}

2.5 Impact on health service use

There is evidence from the UK and elsewhere that self-management support can alter the pattern of healthcare service use and subsequent healthcare costs, though the evidence is more varied than for clinical outcomes.^{214–223}

It has been suggested that self-management support programmes may reduce visits to health services by up to 80%.^{224–229}

Numerous trials are available suggesting a link between self-management education and reduced or altered patterns of health service use.^{247–252} But we need to be cautious when interpreting the findings because some research suggests correlations rather than direct links. Many studies have found that supporting self-management improves self-care knowledge or behaviours and reduces hospitalisations but they have not proven that self-care causes reduced resource use.^{253–257}

The mechanism by which outcomes change remains uncertain. A randomised trial in the US for people with chronic depression and post-traumatic stress disorder found that self-management support led to reduced healthcare resource use without any significant change in self-management behaviours.²⁵⁸ Similar findings are apparent in research about asthma.²⁵⁹

Other evidence suggests limited impacts on service use or costs.^{260–264} A systematic review of nine trials of self-management education versus usual care for people with chronic obstructive pulmonary disease found that self-management education reduced the need for rescue medication and increased courses of oral steroids and antibiotics for respiratory symptoms, but had no effect on hospital admissions, emergency department visits, days lost from work, or lung function.²⁶⁵

Similarly, an evaluation of self-management courses run in the UK by volunteer tutors at Depression Alliance, Diabetes UK, National Endometriosis Society, Haemophilia Society, British Liver Trust, ME Association, Action for ME, National Osteoporosis Society, British Polio Fellowship, Breakthrough Deaf Integration, and the LINK centre for Deafened People found small improvements in self-efficacy, but no significant impacts on the use of health services. The evaluators suggested that disease specific information may need to be included within the generic course structure.²⁶⁶

A randomised trial found that sending reminders about GP visits improved primary care visits and reduced emergency department visits in 174 children with asthma in Australia.²⁷⁰ However another trial in the US found that teaching nurses about self-management as well as providing patient education did not affect hospitalisations.²⁷¹ This demonstrates that the link between supporting self-management and outcomes is complex and does not necessarily follow a linear pattern.

It also shows that most of the available evidence focuses on self-management education courses rather than the wider range of support initiatives available.

However, assuming that supporting self-management will reduce healthcare resource use is somewhat simplistic. The aim of supporting self-management may be to alter the pattern of behaviour and service use rather than reducing service use itself. Therefore it may be more useful to focus on whether different types of services are being used (such as primary care versus secondary care or telephone and online resources versus in person resources).

Overall however, despite some conflicting findings, the evidence suggests that proactively supporting self-management and focusing on self-efficacy and behaviour change can have an impact on clinical outcomes, crises and unplanned admissions or other costly emergency service use.

Examples of impact on resources

Benefits may remain over the long term^{230–231} and have been found throughout the world.²³²

Evidence about health service use tends to focus on complex mixed method approaches to support self-management, or group education courses.

The following randomised trial in the UK can be used as an example of a mixed method approach. In the trial 203 people with ulcerative colitis who were undergoing hospital follow up were either given patient centred self-management training and follow up on request, or usual care and routine follow up. Self-management training was associated with faster access to treatment when needed, reduced hospital visits (0.9 versus 2.9 per patient per year), and fewer GP visits (0.3 versus 0.9 per patient per year).^{233–234} A success factor was giving service users the control to access care when they felt they needed it.

Another randomised trial in 19 hospitals in northwest England examined whether a whole systems approach to self-management was cost effective among 700 people. Consultants were trained to provide a patient centred approach to care and patient guidebooks were developed in partnership with service users. All patients prepared written self-management plans. After one year, the self-management group had fewer hospital visits and patients felt more able to cope with their condition. Cost effectiveness analyses favoured self-management over usual care.²³⁵

Trials and descriptive studies in the UK suggest that group education sessions such as the Expert Patient Programme have the potential to reduce hospital admissions and days spent in hospital.^{236–237} However evaluations to date have been uncertain about the impact on healthcare resource use.²³⁸

A survey with 1000 people who had attended an Expert Patient Programme in England found that people reported improved self-management, reduced medication use and fewer unscheduled visits to the GP and A&E,²³⁹ but administrative data were not available to confirm this.

Evidence is available about similar types of self-management courses from around the world. A literature review found that structured Self-management education programmes improve self-care behaviours and can reduce healthcare resource use and expenditure. Potential benefits include fewer A&E visits, fewer hospitalisations, and reduced days spent in hospital.²⁴⁰ Even in low income settings, or where resources are poor, supporting self-management has been found to be useful.²⁴¹

A meta analysis found that self-management education programmes improved knowledge of diabetes and clinical outcomes and reduced medication use. The authors concluded that for every five people attending a group based education programme, one person would be expected to reduce diabetes medication and this would impact on overall costs.²⁴²

Another example is a randomised trial in seven hospitals in Canada, which evaluated self-management education among people with moderate to severe chronic obstructive pulmonary disease hospitalised within the past year.

The programme involved weekly visits by health professionals over two months, with monthly telephone follow up. Self-management education was associated with 40% fewer hospital visits for chronic obstructive pulmonary disease and 57% fewer hospital admissions for other problems. Emergency department visits reduced by 41% and unscheduled physician visits by 60%.²⁴³

Similarly, a trial in the US assessed seven weekly sessions of peer facilitated self-management education, each of 2.5 hours duration, provided in community settings with groups of 15 to 20 participants. The programme reduced emergency department and outpatient visits, improved health behaviours, reduced symptoms, and improved health status. Reductions in service use and emotional distress were evident two years after the programme.²⁴⁴

Another randomised controlled trial in Norway assessed self-management education for people with asthma. The intervention included two education sessions plus two follow ups by nurses or physiotherapists.

At one year follow up those taking part in self-management education had reduced visits to GPs, reduced overall costs and improved quality of life.²⁴⁵

A randomised trial with children with asthma examined self-management education using interactive multimedia tools. The initiative was associated with increased asthma knowledge among children and caregivers, decreased asthma symptom days, fewer emergency department visits, and lower average daily doses of inhaled corticosteroids. Increased asthma self-management knowledge and behaviours were associated with fewer urgent physician visits and less frequent use of quick relief medicines.²⁴⁶

Examples of contradictory findings

A number of studies have found that supporting self-management has little or no effect on the use or costs of healthcare resources. For instance, a UK cost effectiveness analysis with more than 800 people with arthritis found that a six session self-management education programme may not save costs overall or be any more effective than usual care or providing written information alone.²⁶⁷

Another randomised trial in the UK found that a self-management cd rom for children with asthma improved self-management, self-efficacy and feelings of control but there were no significant reductions in crisis medication use or days off school.²⁶⁸

A Cochrane review found that education by lay educators may lead to short term improvements in self-management attitudes and behaviours but no improvements in healthcare resource use.²⁶⁹

Chapter 3

What works to support self-management

3.1 Self-management support approaches

A multitude of approaches have been tested to support self-management. These range from more passive information sharing approaches at one end of the spectrum to more active behavioural change interventions at the other. Another way to conceptualise self-management support is to divide interventions into those that focus on building knowledge and technical skills (such as insulin management) versus those that aim to build self-efficacy (confidence in self-care). Figure 1 illustrates these typologies and positions various types of self-management support along the continuum.

It is difficult to categorise interventions in this way because there is wide variation. For instance, one type of group education may focus solely on information provision whereas another group education programme may seek to build confidence and change behaviours.

While the placement of each individual intervention is illustrative only, and a matter for debate, conceptualising support approaches as a continuum is useful. Evidence from hundreds of studies suggests that the proactive interventions located in the top right hand quadrant of figure 1 may be associated with greater change or more sustained levels of behavioural and clinical benefits. This section provides a summary of key evidence about what works to support self-management.

3.2 Providing information

Providing information about people's condition and how to manage it is an important component of supporting self-management. Information can be provided using leaflets, websites, email, text messages, electronic forums, by telephone and in person individually or in groups.

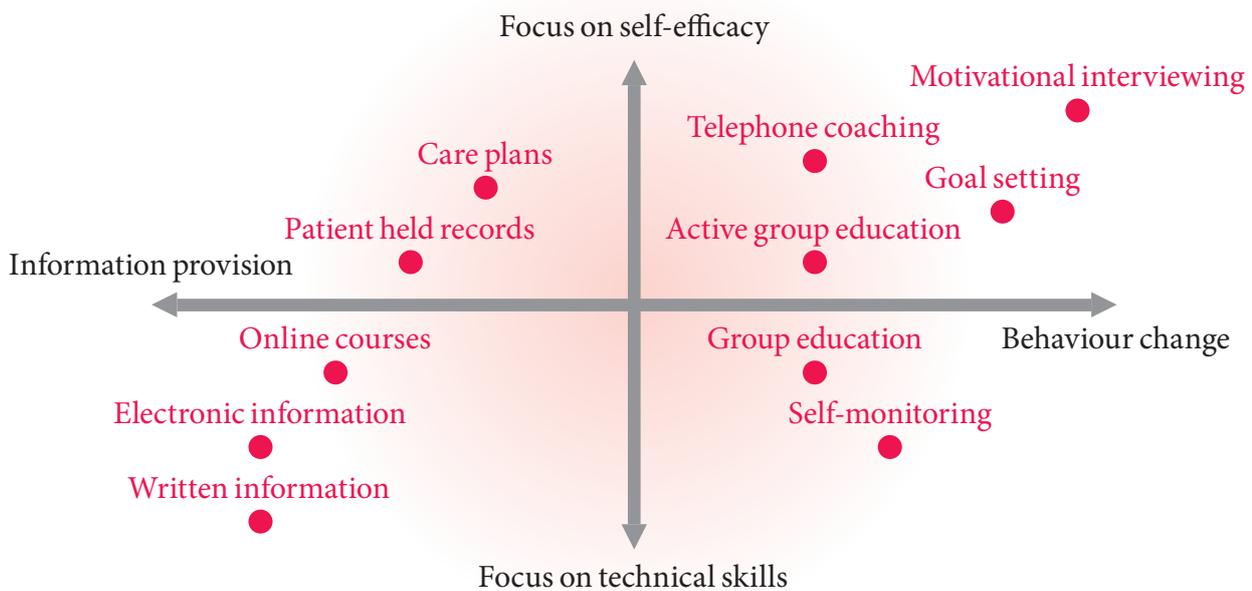
A great deal has been written about different ways to provide information to people with health conditions. We identified more than 60 systematic reviews and randomised trials about providing accessible information through written materials, educational sessions, and technologies such as the internet and video.

Researchers have examined the value of different approaches for supporting people with long term conditions generally as well as subgroups such as children and young people, older people and those from minority ethnic groups and deprived neighbourhoods.

Written information

A number of written information materials to support self-management have been evaluated, including guidebooks and printed educational materials.²⁷² There is some evidence that written motivational leaflets or letters can help people feel more confident to raise their concerns and discuss their symptoms,²⁷³ but there is sparse evidence that such methods improve self-management behaviours or clinical outcomes.^{274–275}

Figure 1: continuum strategies to support self-management



Other reviews suggest that printed materials can improve knowledge,^{276–278} but may not impact behaviour when used alone.^{279–280}

But findings are mixed. Some trials suggest that postal educational materials are as effective for improving symptoms and self-efficacy as group education sessions.²⁸¹ There is also evidence that combining written information with lectures or other educational activities can be more effective than written information alone.^{282–283}

To understand these differences, it is worth considering the characteristics of the most effective written information tools. There is some evidence that targeting and personalising written information is more effective than standardised printed materials.^{284–287} For example, a randomised trial in Scotland compared posting four personalised asthma education booklets versus conventional oral education at outpatient or surgery visits. Personalised booklets improved self-management and reduced hospital admissions.²⁸⁸ Other studies have reinforced these findings.²⁸⁹

Electronic information sources

Self-management support can also be delivered using audiovisual technology, computers and the mass media.^{291–294}

There is evidence that providing structured education programmes by video/dvd, audio or computer may be as effective as in person education groups.^{295–296} For instance, a randomised trial with older people with long term conditions compared group education, a home study intervention using videotapes and booklets, and a control group. Compared with controls, both educational interventions were associated with reduced pain, sleep difficulties, and symptoms of depression and anxiety. The video course was also associated with reduced symptoms. The authors concluded that lower cost, more accessible home study education using video or dvd may be an effective alternative to group instruction for people with long term conditions.²⁹⁷ Other research has similar findings.²⁹⁸

Other novel approaches have been tried. A randomised trial in the US tested an asthma education video game as part of a self-management programme for high risk children with asthma. The video game was associated with improved quality of life and asthma knowledge.²⁹⁹

Researchers in many parts of the world have tested using computers to provide self-management information and education.^{300–310} For instance, a systematic review of 22 randomised trials found that computerised patient education improved health status in people with various conditions.³¹¹ Studies also suggest some benefits for children and young people^{312–313} and less advantaged socio-economic and ethnic groups.³¹⁴

However while there are some positive trends, other studies have found limited or mixed benefits from online information and support programmes.^{315–317}

A number of computer based peer to peer communities and electronic groups have been set up to support self-management but their effects remain uncertain.³¹⁸ Some descriptive studies suggest that computer chat rooms, coaching and other online forums can provide a good motivator for self-care,^{319–321} but the effect on clinical outcomes is uncertain.

Another novel approach is using text messages or pager messages as reminders and support mechanisms.^{322–323} One trial found that, when combined with other strategies, sending text messages to young people with diabetes helped to improve self-management behaviours.³²⁴

One randomised trial assessed sending standardised health promotion email messages to people weekly for 12 weeks. People who received emails had better self-management behaviours and reported favourable changes in healthy eating and physical activity.³²⁵ Other studies suggest that email interventions can be targeted to the person's 'stage of change', thus providing more tailored and meaningful support.³²⁶

To summarise, evidence suggests that providing information in writing or electronically can improve people's knowledge about their condition and care. This may or may not translate into feeling more confident about looking after themselves and improved self-management behaviours.^{327–328}

Systematic reviews, randomised trials and other high quality research has found that when used alone, information provision can improve some health behaviours but this does not tend to have lasting follow on effects on clinical outcomes or health service use. However, when used as part of a broader support initiative, information provision has been found to be useful, especially if it is targeted or personalised to account for people's individual needs.³²⁹

Example of tailored information

A systematic review of 60 randomised control trials examined the effectiveness of self help interventions for smoking cessation. The review found that the personalised written materials were more effective than individualised advice from a clinician, which was in turn more effective than non-personalised written materials. Adding additional face-to-face or other advice to tailored written materials did not improve effectiveness compared to personalised materials alone.²⁹⁰

3.3 Providing support

Another type of self-management support involves helping people to change their attitudes, perhaps through care planning, patient held records, decision support tools or other support mechanisms. This is different from information provision alone because the interventions aim to provide incentives for change or help people learn new skills or practical strategies for coping.

Decision support tools

For example, decision support tools have been used to support self-management.³³⁰ Such tools may encourage service users and their carers to take more responsibility for their care, help people with long term conditions feel more in control, encourage health professionals to follow recommended care protocols, and have some impacts on quality of life.^{331–332} But reviews about written decision aids suggest that such aids generally affect attitudes and knowledge rather than behaviours.^{333–334}

Patient held records

A number of strategies have been trialled to increase people's involvement in healthcare processes and decision making as a way of facilitating self-management. Sometimes people are given their medical records to keep and bring to each consultation, which is known as patient held records.

A number of reviews and trials suggest that patient held records have limited effects on self-management. For instance, a trial of patient held records for people who had suffered stroke in the US found that while participants were pleased to have a copy of their records, took them when they visited doctors, and reported learning more about their stroke, there was no difference in health practices or behaviours compared to usual care.³³⁵ Randomised trials in the UK have drawn similar conclusions about patient held records.^{336–337}

There is also interest in making records available electronically for service users.^{338–340} A randomised trial in the US provided patient records online to people with heart failure. After one year, those who had access to their records online were more likely to adhere to treatment, but there were no differences in self-efficacy or satisfaction with care.³⁴¹ This suggests that patient held records may have some impacts on self-management strategies, but these impacts are not clear cut. The evidence is too mixed to suggest that patient held records are a useful enabler for self-management.

Planning and agenda setting

A care plan is a written document collaboratively designed by service users and professionals covering issues, interventions and review processes.³⁴²

Care plans may include both goal setting and developing plans for how to achieve these goals.³⁴³ Most of the available evidence about self-management treatment plans focuses on people with asthma or COPD, though there is emerging evidence about other conditions.³⁴⁴

There is evidence that action plans or proactive planning support may improve self-management behaviours for people with long term conditions,^{345–354} and this may impact on healthcare resource use.^{355–357}

Numerous examples are available. For instance, systematic reviews support an agenda setting action plan coupled with self adjustment of medications and regular medical review for people with asthma.^{358–359}

A randomised trial of 140 adults with asthma or chronic obstructive pulmonary disease assessed developing a written self-management plan in groups coupled with individual educational sessions. The plans were associated with improved medication compliance among people with asthma, but not chronic obstructive pulmonary disease.³⁶⁰

In New Zealand, a randomised trial found similar benefits from written self-management plans for children with asthma.³⁶¹

However, there are questions about whether agenda setting and care planning are supported by practitioners and service users³⁶² or directly impact on clinical outcomes.³⁶³ A Cochrane review with seven randomised trials examined whether a written asthma self-management plan increased adherence to medications and improved clinical outcomes. There was no strong evidence that written plans improved patient outcomes. One type of agenda setting was not consistently more effective than another.³⁶⁴

Another review found that adding written self treatment guidelines to self-management programmes may improve health outcomes, but the only two controlled studies on this topic found no effect.³⁶⁵

A randomised trial in France found that when agenda setting and plans were used as part of a self-management programme, only those who adhered fully to the self-management plan had improved symptoms.³⁶⁶

Evidence about the impact on healthcare resource use is mixed.³⁶⁷ A Cochrane review of 36 randomised trials of asthma self-management programmes found that combining self-monitoring and written agenda setting reduced hospitalisations, emergency department visits, unscheduled visits to the doctor and days off work or school. The reviewers concluded that programmes that enable people to adjust their medication using a written action plan are more effective than other forms of asthma self-management.³⁶⁸

Stepwise agenda setting and planning has also been found to be beneficial for people with COPD. A randomised trial in Norway found that GP visits reduced by 85% and there was less need for medication and reduced overall health costs during a 12 month follow up period.³⁶⁹ Other forms of agenda setting and care planning have also been found to have an impact on healthcare resource use.³⁷⁰

However other reviews and trials have found limited benefits from agenda setting and care planning,^{371–372} particularly for those who have been hospitalised.^{373–375}

Studies have attempted to explore why action plans and agenda setting seem to work well sometimes and not other times, but few firm conclusions are possible. Plans and agenda setting seem to be better when care plans are provided and supported in primary care compared to secondary care. This approach may be better as a ‘preventive’ measure rather for those with the most severe disease, or for those who are hospitalised for the first time.³⁷⁶

Goal setting and follow up

Self-management education often includes some form of goal setting.^{377–380} A number of studies have outlined the benefits of goal setting as part of self-management support.^{381–391}

For instance, a trial in the US found that personalised goal setting as part of a self-management support intervention for older women with heart conditions was associated with reduced days in hospital and reduced overall healthcare costs.³⁹²

Research has examined the benefits of following up service users to support them in achieving goals and improving self-management behaviours.^{393–398} For example, a review of workplace self-management interventions found that offering opportunities to practise skills and have ongoing follow up were key success factors.³⁹⁹

A small randomised trial found that self-management counselling with goal follow up improved the use of community resources, physical activity and adherence to medication.⁴⁰⁰ Other trials have found improved self-care knowledge and behaviours^{401–402} and reduced hospital admissions and days in hospital when proactive follow up is used as part of self-management support.⁴⁰³

Another trial in the US assessed the cost effectiveness of a brief dietary intervention for people with diabetes. The intervention included touch screen computer assisted assessment, goal setting, follow-up calls, and videotape intervention at regular intervals. The intervention was low cost and improved self-care behaviour significantly.⁴⁰⁴

A trial in the Netherlands examined an electronic diary and follow up device based on the principles of motivational interviewing. When people took part in healthy behaviours, they were positively reinforced by the device. This type of follow up resulted in improved self-management.⁴⁰⁵

Not all findings about goal setting are positive. As part of a skill orientated self-management programme in the Netherlands, people with COPD recorded their symptoms in diaries and graded their health status from 1–10 in a weekly report. They used these documents to help them set and monitor goals. A randomised trial found no effect on quality of life or functional status.⁴⁰⁶

The thing that seems to make a difference is regular and proactive follow up. In the US, a randomised trial found that the more follow ups and support sessions involved, the more likely people were to control their diabetes.⁴⁰⁷ However, another US trial tested whether telephone follow up every month or every three months following self-management education might be most effective. There were no significant differences between these follow up intervals on any clinical or quality of life outcomes.⁴⁰⁸ This demonstrates that there is still a lot to learn about the best strategies for supporting self-management.

Behaviour change approaches

The most promising way of supporting self-management appears to involve approaches which empower and activate people so they feel more confident about managing their conditions and are more likely to alter their behaviours. There is strong evidence suggesting that improved self-efficacy is associated with better clinical outcomes.^{409–411}

These approaches include motivational interviewing by telephone or in person, group or individual education programmes with an active component, coaching with proactive goal setting and follow up, and programmes based on psychological and emotional support that acknowledge people's stage of change.

Individual and group education sessions are the most commonly evaluated interventions of this type, though there is also an increasing focus on telephone coaching by nurses.

Example of stage of change approach

Researchers in the US tested assessing people's capabilities for self-management and then tailoring telephone coaching support based on this assessment. Compared to usual disease management, the group receiving tailored support based on their 'stage of change' felt more empowered, had improved clinical outcomes and reduced their use of health services.⁴¹²

Individual education sessions

A number of studies have assessed the impacts of one to one self-management support sessions for people with long term conditions.^{413–414} For instance, a randomised trial in the UK assessed whether specialist asthma nurses could increase knowledge and improve self-management during one to one sessions in hospital. People receiving individual education had increased knowledge and less emergency GP call outs in the four months after hospital discharge. Hospital readmission rates were similar between groups.⁴¹⁵

Generally, studies suggest that while individual education may increase people's knowledge, it is unlikely to have significant impacts on behaviour and clinical outcomes unless it is targeted, specific, and long term.⁴¹⁶

Individualised coaching may be especially beneficial when combined with personalised written materials or other mechanisms to support self-management.⁴¹⁷ For example, a large meta analysis of interventions for people with high blood pressure assessed individual education, self blood pressure monitoring, and structured courses. Individual education was the most effective single strategy for improving blood pressure control, but combining individual education and group sessions was even more effective.⁴¹⁸ Other reviews have found similarly positive results for people with heart failure,⁴¹⁹ arthritis,⁴²⁰ diabetes,⁴²¹ and asthma.⁴²²

There has also been success when using individual person centred discussions initially, followed by referral to other self-management support strategies (such as educational groups) once needs have been established.⁴²³

Though most individualised counselling has been trialled with nurses or family doctors, pharmacists are increasingly being acknowledged as a valuable resource in supporting self-management.⁴²⁴

Group education courses

A great deal has been written about self-management group education programmes, including those adapted to specific cultures, demographic groups, learning styles or disease types.^{425–440}

Group education and peer support programmes aim to help people learn how to manage their own care more effectively, including when to use different healthcare services and resources.^{441–442} More than 60 systematic reviews and numerous additional randomised trials are available in this area.^{443–444} Most take place in health settings or the community, but workplace and family support programmes and school education have also been trialled.^{445–447,}

Research generally suggests that group education can improve people's self confidence, clinical outcomes and even health service use. However, not all programmes have been successful, especially with regard to improving symptoms or reducing healthcare use.⁴⁴⁸⁻⁴⁵⁶

Reviews and meta analyses are less likely than individual trials to demonstrate a difference but this may be because reviews tend to combine many different interventions and may evaluate interventions using different outcomes than they were set up to achieve.⁴⁵⁷⁻⁴⁵⁸

Education sessions range from those focused on 'technical' information such as how to monitor blood pressure and what foods to eat, to more 'proactive' courses which seek to change people's attitudes towards self-management and motivate behaviour change. There is evidence that courses which focus on enhancing self-efficacy or combine technical education with more proactive motivation have most effect on clinical outcomes.

Telephone coaching

Various types of telephone based support and coaching have been tested to encourage self-management.⁴⁵⁹⁻⁴⁶²

A number of studies suggest that proactive nurse led telephone calls can be used to encourage self-monitoring and self-management.⁴⁶³⁻⁴⁶⁷ For example, a randomised trial with 'high risk' people with diabetes found that automated educational calls with telephone follow up by nurses may improve self-care behaviour, glycaemic control, and symptoms among vulnerable people.⁴⁶⁸ Similar evidence is available from many parts of the world.⁴⁶⁹

A study in the US found that motivational interviewing helped improve self-efficacy, patient activation, lifestyle change and perceived health status.⁴⁷⁰ There are many similar studies about the benefits of motivational interviewing, some of which combine both face to face and telephone approaches.⁴⁷¹

There is also evidence about the benefits of more detailed case management via telephone.⁴⁷² A randomised trial in the US evaluated six months of standardised telephone case management for 358 people with heart failure.

Telephone case management helped to motivate people to self-care, and was associated with about half as many hospitalisations for heart failure, fewer days in hospital, and lower inpatient costs after six months.⁴⁷³

There is evidence to suggest that telephone support is often just as effective as face to face supported self-management.⁴⁷⁴⁻⁴⁷⁵

But not all studies are positive. For instance a trial with more than 300 people with diabetes, predominantly from minority ethnic groups, found that clinic based telephonic disease management support in between primary care visits did not improve clinical or behavioural outcomes at one year compared to people receiving usual care.⁴⁷⁶ Feedback from service providers also suggests there can be practical and technical difficulties.⁴⁷⁷

Work based support

Work based programmes are gaining increasing recognition for supporting self-management, especially in the US where health insurance is often part of employment packages. One of the key differences between workplace programmes and those run by governments or health services is that programmes in the workplace can specifically target a 'captive audience' and may be able to focus on people at higher risk more easily.⁴⁷⁸

A number of group education and individualised counselling approaches have been tried, whereby employees are followed up regularly in the workplace.⁴⁷⁹⁻⁴⁸³ Other workplace initiatives include distributing written materials,⁴⁸⁴ providing health risk assessment,⁴⁸⁵ health fairs, weight loss and nutrition classes, fitness programmes, social networks,⁴⁸⁶ online support⁴⁸⁷ and environmental changes such as introducing walking tracks around the work environment.⁴⁸⁸

While there is little evidence about the most effective workplace strategy, most research suggests that these initiatives can help to support self-management behaviours. One review of 35 different interventions found that offering people the opportunity to practise skills and have ongoing follow up was more effective than education alone.⁴⁸⁹

Another review found that providing individualised risk reduction programmes for high risk employees is a critical element of successful worksite interventions.⁴⁹⁰ This emphasises that regardless of the setting, proactive interventions appear more effective for encouraging self-management behaviours and resulting changes in clinical outcomes.

Self-monitoring and telemonitoring

Self-monitoring involves service users monitoring their symptoms in order to track their progress, modify their behaviours or medications accordingly, or assess when to seek help from health professionals.⁴⁹¹ Self-monitoring is often linked with electronic monitoring devices, but this term can also refer to written management plans and systems to help patients self refer to health services.⁴⁹² We identified more than 50 studies about self-monitoring, most of which had positive outcomes, though not all were of high quality.^{493–499}

Randomised trials suggest that electronic self-monitoring may have some clinical benefits.^{500–502} For instance, a trial in Germany found that a self-monitoring blood glucose device for people with diabetes improved glycaemic control and general wellbeing.⁵⁰³ Other trials support the value of self-monitoring for people with diabetes,^{504–506} asthma,^{507–509} and high blood pressure^{510–511} amongst others.^{512–514}

However, there are some conflicting findings.⁵¹⁵ A trial in Scotland concluded that prescribing peak flow meters and giving self-management guidelines to everyone with asthma is unlikely to improve mortality or morbidity.⁵¹⁶ Another UK trial found that self-monitoring did not improve self-management or symptoms in children with asthma.⁵¹⁷ It appears that those most likely to benefit from self-monitoring have the most severe disease.

Although there is evidence that self-monitoring can have some impact on clinical outcomes, there is limited evidence about the effect on use of resources.⁵¹⁸ Self-monitoring may also be inappropriate or unfeasible for some.

A Cochrane review found that compared to standard monitoring, people who self monitor can improve the quality of their oral anticoagulation therapy and resulting clinical outcomes.

However, self-monitoring or self-management were not feasible for up to half of the people requiring anticoagulant therapy due to patient refusal, exclusion by their GP, or inability to complete training.⁵¹⁹

Schemes which use telecommunications systems such as the internet or telephone lines to transfer or record monitoring information are often referred to as ‘telemonitoring’. This is not always strictly ‘self-monitoring’ as it may involve interaction between service users and health professionals,^{520–521} but it is another way to support self-management.

There is mixed evidence about the value of telemonitoring,⁵²² but it is well received by patients and providers.^{523–524} Most high quality information about the effect of telemonitoring on clinical outcomes focuses on people with diabetes or hypertension, although studies with other patient groups are emerging.⁵²⁵ Most available evidence suggests that transmitting data about diabetic symptoms or blood pressure via telephone lines can improve self-management and have a positive effect on clinical outcomes.^{526–531} This is especially true when the system is linked to nurses or doctors who review the information and provide feedback to patients or take action when needed.

To summarise, the evidence suggests that not all mechanisms to support self-management have equal outcomes. Whilst information provision and building technical skills is important, this is just one aspect of self-management support. Approaches which recognise people’s motivations and needs, take account of their level of desire to change (or stage of change) and support people emotionally and psychologically have been found to have more sustainable impacts on behaviour, clinical outcomes and healthcare resource use.

Furthermore, there is an increasing focus on supporting self-care in a way that involves people’s carers and family members.

Evidence to date tends to focus on children, young people and older people, but there is scope for more detailed examination of engaging families to support self-care for a wider range of people.^{532–533}

Chapter 4

Issues that need more attention

4.1 Changing behaviours

The evidence is clear that supporting self-management can have real benefits for people using services and their families, and the wider health economy. However this is a relatively new area of investigation and knowledge continues to develop.

Interventions to support self-management vary considerably in their aims, approach, content, delivery, duration and target group. Even so, there are some general principles that have been found to work well to support self-management, including:

- Involving people in decision making; proactive education.
- Setting goals and following up on the degree to which these are achieved over time.
- Helping people manage the social, emotional and physical impacts of their conditions.⁵³⁴

While general principles are clear, the best strategies for motivating people to change their behaviours remain uncertain. Work has been done around smoking cessation, sports psychology and the stages of change model, all of which examines how to improve self-efficacy and motivation to change. How applicable this is to people with long term conditions in the UK is unknown.

A number of innovative strategies are being tested to support behaviour change in the UK, including the Health Foundation's Co-creating Health initiatives. Rigorous evaluation of these programmes and wide dissemination of learning will enhance knowledge in this area considerably.

4.2 Supporting clinicians

The attitudes and skills of healthcare providers can have a significant effect on the extent to which people feel engaged and supported and this is an area in need of further exploration.⁵³⁵⁻⁵⁴²

If people are to be more involved in decisions about their care and more active in keeping themselves well, clinicians need to be able to communicate information effectively and to consider what level of involvement is appropriate for different people.⁵⁴³⁻⁵⁴⁴ There may still be considerable work to do in this area.⁵⁴⁵⁻⁵⁴⁷ Interviews with GPs in 11 European countries found that most GPs thought that involving people in healthcare decisions had positive outcomes. But GPs defined patient involvement narrowly, thought it took place solely during consultations and felt that they had limited time to engage with people.⁵⁴⁸ Thus there may be work to do to educate clinicians about the value and scope of supporting self-management and the skills they need to achieve this.

Research in the UK suggests that clinicians may take a ‘compliance orientated’ approach to self-management and this is unlikely to be helpful.⁵⁴⁹

A number of strategies have been tested to improve clinician communication strategies and help professionals support self-management.^{550–557} For example, a randomised trial found that training GPs about risk communication tools and shared decision making for people with long term conditions could improve prescribing and was unlikely to have major impacts on the cost of care in the UK.⁵⁵⁸ However, another UK study found that while GPs appear receptive to patient involvement, training in shared decision making and risk communication did not help them achieve this or improve patient outcomes.⁵⁵⁹ This shows that knowledge is limited about the best strategies to help clinicians support self-management.

References

- 1 Cockle-Hearne J, Faithfull S (2010). 'Self-management for men surviving prostate cancer: a review of behavioural and psychosocial interventions to understand what strategies can work, for whom and in what circumstances.' *Psychooncology* 19(9): 909–22.
- 2 Smeulders ES, van Haastregt JC, Ambergen T, Uszko-Lencer NH, Janssen-Boyne JJ, Gorgels AP, Stoffers HE, Lodewijks-van der Bolt CL, van Eijk JT, Kempen GI (2010). 'Nurse-led self-management group programme for patients with congestive heart failure: randomized controlled trial.' *J Adv Nurs* 66(7): 1487–99.
- 3 D'Eramo Melkus G, Chyun D, Vorderstrasse A, Newlin K, Jefferson V, Langerman S (2010). 'The effect of a diabetes education, coping skills training, and care intervention on physiological and psychosocial outcomes in black women with type 2 diabetes.' *Biol Res Nurs* 12(1): 7–19.
- 4 Armitage CJ, Arden MA (2010). 'How useful are the stages of change for targeting interventions? Randomized test of a brief intervention to reduce smoking.' *Health Psychol* 27(6): 789–98.
- 5 Tzeng LF, Chiang LC, Hsueh KC, Ma WF, Fu LS (2010). 'A preliminary study to evaluate a patient-centred asthma education programme on parental control of home environment and asthma signs and symptoms in children with moderate-to-severe asthma.' *J Clin Nurs* 19(9–10): 1424–33.
- 6 Druss BG, Zhao L, von Esenwein SA, Bona JR, Fricks L, Jenkins-Tucker S, Sterling E, Diclemente R, Lorig K (2010). 'The Health and Recovery Peer (HARP) Program: a peer-led intervention to improve medical self-management for persons with serious mental illness.' *Schizophr Res* 118(1–3): 264–70.
- 7 Funnell MM (2010). 'Peer-based behavioural strategies to improve chronic disease self-management and clinical outcomes: evidence, logistics, evaluation considerations and needs for future research.' *Fam Pract* 27(Suppl 1): i 17–22.
- 8 New N (2010). 'Teaching so they hear: using a co-created diabetes self-management education approach.' *J Am Acad Nurse Pract* 22(6): 316–25.
- 9 Dorn SD (2010). 'Systematic review: self-management support interventions for irritable bowel syndrome.' *Aliment Pharmacol Ther* 32(4): 513–21.
- 10 Iversen MD, Hammond A, Betteridge N (2010). 'Self-management of rheumatic diseases: state of the art and future perspectives.' *Ann Rheum Dis* 69(6): 955–63.
- 11 Fors T, Damsgård E, Roe C, Anke A (2010). 'Readiness to adopt a self-management approach to pain: Are profiles of subscale scores on the Pain Stages of Change Questionnaire useful?' *Eur J Pain* (published online May 2010).
- 12 Coffman JM, Cabana MD, Halpin HA, Yelin EH (2008). 'Effects of asthma education on children's use of acute care services: a meta-analysis.' *Pediatrics* 121(3): 575–86.
- 13 Shigaki CL, Smarr KL, Yang Gong, Donovan-Hanson K, Siva C, Johnson RA, Ge B, Musser DR (2008). 'Social interactions in an online self management program for rheumatoid arthritis.' *Chronic Illn* 4(4): 239–46.
- 14 Goudswaard AN, Stolk RP, Zuithoff NP, de Valk HW, Rutten GE (2004). 'Long-term effects of self management education for patients with type 2 diabetes taking maximal oral hypoglycaemic therapy: a randomized trial in primary care.' *Diabet Med* 21(5): 491–6.
- 15 Schneider S, Iannotti RJ, Nansel TR, Haynie DL, Simons-Morton B, Sobel DO, Zeitoff L, Clark L, Plotnick LP (2007). 'Identification of distinct self management styles of adolescents with type 1 diabetes.' *Diabetes Care* 30(5): 1107–12.
- 16 Osborne RH, Buchbinder R, Ackerman IN (2006). 'Can a disease-specific education program augment self management skills and improve health-related quality of life in people with hip or knee osteoarthritis?' *BMC Musculoskelet Disord* 7: 90.
- 17 Damush TM, Wu J, Bair MJ, Sutherland JM, Kroenke K (2008). 'Self-management practices among primary care patients with musculoskeletal pain and depression.' *J Behav Med* 31(4): 301–7.
- 18 Jerant A, Kravitz R, Moore-Hill M, Franks P (2008). 'Depressive symptoms moderated the effect of chronic illness self management training on self-efficacy.' *Med Care* 46(5): 523–31.
- 19 Hoffmann T, McKenna K, Worrall L, Read SJ (2007). 'Randomised trial of a computer-generated tailored written education package for patients following stroke.' *Age Ageing* 36(3): 280–6.

- 20 Thoolen B, de Ridder D, Bensing J, Gorter K, Rutten G (2008). 'Beyond Good Intentions: the development and evaluation of a proactive self management course for patients recently diagnosed with type 2 diabetes.' *Health Educ Res* 23(1): 53–61.
- 21 King DK, Estabrooks PA, Strycker LA, Toobert DJ, Bull SS, Glasgow RE (2006). 'Outcomes of a multifaceted physical activity regimen as part of a diabetes self management intervention.' *Ann Behav Med* 31(2): 128–37.
- 22 DeWalt DA, Malone RM, Bryant ME, Kosnar MC, Corr KE, Rothman RL, Sueta CA, Pignone MP (2006). 'A heart failure self management program for patients of all literacy levels: a randomized, controlled trial.' *BMC Health Serv Res* 6: 30.
- 23 Nguyen HQ, Carrieri-Kohlman V (2005). 'Dyspnea self management in patients with chronic obstructive pulmonary disease: moderating effects of depressed mood.' *Psychosomatics* 46(5): 402–10.
- 24 North Simcoe Muskoka Chronic Disease Prevention and Management Regional Action Group (2009). *Directions from a local scan: self management and empowering the person living with diabetes in the North Simcoe Muskoka LHIN*. North Simcoe Muskoka Chronic Disease Prevention and Management Regional Action Group.
- 25 Preventing and managing chronic disease: Ontario's framework.
- 26 Weng LC, Dai YT, Huang HL, Chiang YJ (2010). 'Self-efficacy, self-care behaviours and quality of life of kidney transplant recipients.' *J Adv Nurs* 66(4): 828–38.
- 27 Brewer-Lowry AN, Arcury TA, Bell RA, Quandt SA (2010). 'Differentiating approaches to diabetes self-management of multi-ethnic rural older adults at the extremes of glycemic control.' *Gerontologist* 50(5): 657–67.
- 28 Auslander WF, Sterzing PR, Zayas LE, White NH (2010). 'Psychosocial resources and barriers to self-management in African American adolescents with type 2 diabetes: a qualitative analysis.' *Diabetes Educ* 36(4): 613–22.
- 29 Crowe M, Whitehead L, Jo Gagan M, Baxter D, Panckhurst A (2010). 'Self-management and chronic low back pain: a qualitative study.' *J Adv Nurs* 66(7): 1478–86.
- 30 Merelle SY, Sorbi MJ, Duivenvoorden HJ, Passchier J (2010). 'Qualities and health of lay trainers with migraine for behavioral attack prevention.' *Headache* 50(4): 613–25.
- 31 Given CW, Given BA, Sikorskii A, You M, Jeon S, Champion V, McCorkle R (2010). 'Deconstruction of nurse-delivered patient self-management interventions for symptom management: factors related to delivery enactment and response.' *Ann Behav Med* 40(1): 99–113.
- 32 Buccheri RK, Trygstad LN, Buffum MD, Lyttle K, Dowling G (2010). 'Comprehensive evidence-based program teaching self-management of auditory hallucinations on inpatient psychiatric units.' *Issues Ment Health Nurs* 31(3): 223–31.
- 33 Pitt VJ, O'connor D, Green S (2010). 'Referral of people with osteoarthritis to self-management programmes: barriers and enablers identified by general practitioners.' *Disabil Rehabil* 30(25): 1938–46.
- 34 Kosmala-Anderson JP, Wallace LM, Turner A (2010). 'Confidence matters: a self-determination theory study of factors determining engagement in self-management support practices of UK clinicians.' *Psychol Health Med* 15(4): 478–91.
- 35 Auduly A, Asplund K, Norbergh KG (2010). 'Who's in charge? The role of responsibility attribution in self-management among people with chronic illness.' *Patient Educ Couns* 81(1): 94–100.
- 36 Hibbard JH, Collins PA, Mahoney E, Baker LH (2010). 'The development and testing of a measure assessing clinician beliefs about patient self-management.' *Health Expect* 13(1): 65–72.
- 37 Blakeman T, Bower P, Reeves D, Chew-Graham C (2010). 'Bringing self-management into clinical view: a qualitative study of long-term condition management in primary care consultations.' *Chronic Illn* 6(2): 136–50.
- 38 Bodenheimer T, MacGregor K, Shafiri C (2005). *Helping patients manage their chronic conditions*. California: California Healthcare Foundation.
- 39 Shirazi M, Parikh SV, Alaeddini F, Lonka K, Zeinaloo AA, Sadeghi M, Arbabi M, Nejatiasafa AA, Shahrivar Z, Wahlstrom R (2010). 'Effects on knowledge and attitudes of using stages of change to train general practitioners on management of depression: a randomized controlled study.' *Can J Psychiatry* 54(10): 693–700.
- 40 Department of Health (2004). *Improving chronic disease management*. London: Department of Health.
- 41 Department of Health (2004). *Improving chronic disease management*. London: Department of Health.
- 42 Vickery DM et al (1983). 'Effect of a self care education program on medical visits.' *JAMA* 250 (21): 2952–2956.
- 43 Bodenheimer T, MacGregor K, Shafiri C (2005). *Helping patients manage their chronic conditions*. California: California Healthcare Foundation.
- 44 World Health Organisation (2002). *Innovative care for chronic conditions: Building blocks for action*. Geneva: WHO.
- 45 World Health Organisation (2000). 'Prevention and control of noncommunicable diseases.' *Proceedings of the World Health Assembly*, 15–20 May 2000. Geneva: WHO.
- 46 Department of Health (2004). *Improving chronic disease management*. London: Department of Health.
- 47 Department of Health (2004). *Chronic disease management: A compendium of information*. London: Department of Health.
- 48 Department of Health (2004). *Improving chronic disease management*. London: Department of Health.
- 49 Vickery DM et al (1983). 'Effect of a self care education program on medical visits.' *JAMA* 250 (21): 2952–2956.
- 50 Department of Health (2005). *Self care – a real choice*. London: Department of Health.
- 51 Heisler M (2010). 'Different models to mobilize peer support to improve diabetes self-management and clinical outcomes: evidence, logistics, evaluation considerations and needs for future research.' *Fam Pract* 27 (Suppl 1): i23–32.
- 52 Dennis SM, Zwar N, Griffiths R, et al (2008). 'Chronic disease management in primary care: from evidence to policy.' *Med J Aust* 188 (Suppl 8): S53–S56.
- 53 Padilha JM (2010). 'Influence of perception of chronic obstructive pulmonary disease in promotion of self-management of disease.' *Rev Port Pneumol* 16(4): 641–8.
- 54 Lubetkin EI, Lu WH, Gold MR (2010). 'Levels and correlates of patient activation in health center settings: building strategies for improving health outcomes.' *J Health Care Poor Underserved* 21(3): 796–808.
- 55 Shigaki C, Kruse RL, Mehr D, Sheldon KM, Bin Ge, Moore C, Lemaster J (2010). 'Motivation and diabetes self-management.' *Chronic Illn* 6(3): 202–14.
- 56 Kaptein AA, Klok T, Moss-Morris R, Brand PL (2010). 'Illness perceptions: impact on self-management and control in asthma.' *Curr Opin Allergy Clin Immunol* 10(3): 194–9.

- 57 Gallagher R (2010). 'Self-management, symptom monitoring and associated factors in people with heart failure living in the community.' *Eur J Cardiovasc Nurs* 9(3): 153–60.
- 58 Coulter A and Ellins J (2006). *Patient-focused interventions: A review of the evidence*. London: The Health Foundation.
- 59 Remmers C, Hibbard J, Mosen DM, Wagenfield M, Hoyer RE, Jones C (2009). 'Is patient activation associated with future health outcomes and healthcare utilization among patients with diabetes?' *J Ambul Care Manage* 32(4): 320–7.
- 60 Shon KH, Park SS (2002). 'Medication and symptom management education program for the rehabilitation of psychiatric patients in Korea: the effects of promoting schedule on self-efficacy theory.' *Yonsei Med J* 43(5): 579–89.
- 61 Greenfield S, Kaplan S, Ware JE Jr (1985). 'Expanding patient involvement in care: Effects on patient outcomes.' *Ann Intern Med* 102(4): 520–528.
- 62 Blissmer B, Prochaska JO, Velicer WF, Redding CA, Rossi JS, Greene GW, Paiva A, Robbins M (2010). 'Common factors predicting long-term changes in multiple health behaviors.' *J Health Psychol* 15(2): 205–14.
- 63 Song M (2010). 'Diabetes mellitus and the importance of self-care.' *J Cardiovasc Nurs* 25(2): 93–8.
- 64 Fishman L, Barendse RM, Hait E, Burdick C, Arnold J (2010). 'Self-management of older adolescents with inflammatory bowel disease: A pilot study of behavior and knowledge as prelude to transition.' *Clin Pediatr* (published online September 2010).
- 65 Mancuso CA, Sayles W, Allegrante JP (2010). 'Knowledge, attitude, and self-efficacy in asthma self-management and quality of life.' *J Asthma* (published online September 2010).
- 66 Sol BG, van der Graaf Y, van Petersen R, Visseren FL (2010). 'The effect of self-efficacy on cardiovascular lifestyle.' *Eur J Cardiovasc Nurs* (published online July 2010).
- 67 Chih AH, Jan CF, Shu SG, Lue BH (2010). 'Self-efficacy affects blood sugar control among adolescents with type I diabetes mellitus.' *J Formos Med Assoc* 109(7): 503–10.
- 68 Du S, Yuan C (2010). 'Evaluation of patient self-management outcomes in health care: a systematic review.' *Int Nurs Rev* 57(2): 159–67.
- 69 Weng LC, Dai YT, Huang HL, Chiang YJ (2010). 'Self-efficacy, self-care behaviours and quality of life of kidney transplant recipients.' *J Adv Nurs* 66(4): 828–38.
- 70 King DK, Glasgow RE, Toobert DJ, Strycker LA, Estabrooks PA, Osuna D, Faber AJ (2010). 'Self-efficacy, problem solving, and social-environmental support are associated with diabetes self-management behaviors.' *Diabetes Care* 33(4): 751–3.
- 71 Cheung C, Wyman J, Gross C, Peters J, Findorff M, Stock H (2010). 'Exercise behavior in older adults: a test of the transtheoretical model.' *J Aging Phys Act* 15(1): 103–18.
- 72 Giloth BE (1990). 'Promoting patient involvement: educational, organizational, and environmental strategies.' *Patient Educ Couns* 15(1): 29–38.
- 73 Hibbard JH, Mahoney ER, Stock R, Tusler M (2007). 'Do increases in patient activation result in improved self management behaviors?' *Health Serv Res* 42(4): 1443–63.
- 74 Rygg LO, Rise MB, Lomundal B, Solberg HS, Steinsbekk A (2010). 'Reasons for participation in group-based type 2 diabetes self-management education. A qualitative study.' *Scand J Public Health* (published online September 2010).
- 75 Department of Health and Diabetes UK (2006). *Care planning in diabetes*. Report from the joint Department of Health and Diabetes UK Care Planning Working Group.
- 76 Department of Health (2006). *Supporting people with long-term conditions to self care: A guide to developing local strategies and good practice*. London: Department of Health.
- 77 Yip YB, Sit JW, Fung KK, Wong DY, Chong SY, Chung LH, Ng TP (2007). 'Effects of a self management arthritis programme with an added exercise component for osteoarthritic knee: randomized controlled trial.' *J Adv Nurs* 59(1): 20–8.
- 78 Sturt J, Taylor H, Docherty A, Dale J, Louise T (2006). 'A psychological approach to providing self management education for people with type 2 diabetes: the diabetes manual.' *BMC Fam Pract* 7: 70.
- 79 Samoocha D, Bruinvels DJ, Elbers NA, Anema JR, van der Beek AJ (2010). 'Effectiveness of web-based interventions on patient empowerment: a systematic review and meta-analysis.' *J Med Internet Res* 12(2): e23.
- 80 Crawford Shearer NB, Fleury JD, Belyea M (2010). 'Randomized control trial of the Health Empowerment Intervention: feasibility and impact.' *Nurs Res* 59(3): 203–11.
- 81 Klainin P, Ounnapirok L (2010). 'A meta-analysis of self-care behavior research on elders in Thailand: an update.' *Nurs Sci Q* 23(2): 156–63.
- 82 Greenhalgh T, Collard A, Campbell-Richards D, Vijayaraghavan S, Malik F, Morris J, Claydon A (2010). 'Storylines of self-management: narratives of people with diabetes from a multiethnic inner city population.' *J Health Serv Res Policy* (published online September 2010).
- 83 Jones F, Riazi A (2010). 'Self-efficacy and self-management after stroke: a systematic review.' *Disabil Rehabil* (published online August 2010).
- 84 Wagner JL, Smith G, Ferguson P, van Bakergem K, Hrisko S (2010). 'Pilot study of an integrated cognitive-behavioral and self-management intervention for youth with epilepsy and caregivers: Coping openly and personally with epilepsy (COPE).' *Epilepsy Behav* 18(3): 280–5.
- 85 Barlow JH, Turner, Wright (1998). 'Sharing, caring and learning to take control: self management training for people with arthritis.' *Psy, Health Med* 3(4): 387–93.
- 86 Barlow JH, Turner, Wright (1998). 'Long-term outcomes of an arthritis self management programme.' *Brit J Rheumatology* 37: 1315–9.
- 87 Barlow JH, Turner, Wright (2000). 'A randomised controlled study of the arthritis self management programme in the UK.' *Health Ed Res* 15(6): 665–80.
- 88 Barlow JH, Turner, Wright (2001). 'Patient education for people with arthritis in rural communities: the UK experience.' *Patient Ed Couns* 44: 205–14.
- 89 Lorig KR, Sobel DS, Stewart AL, et al (1999). 'Evidence suggesting that a chronic disease self management program can improve health status while reducing utilization and costs: A randomized trial.' *Med Care* 37(1): 5–14.
- 90 Chiang LC, Huang JL, Yeh KW, Lu CM (2004). 'Effects of a self management asthma educational program in Taiwan based on PRECEDE-PROCEED model for parents with asthmatic children.' *J Asthma* 41(2): 205–15.
- 91 Yu PL, Ye W, Liu XR, et al (2003). 'Evaluation on the effectiveness for self management of hypertensive patients in a community.' *Zhonghua Liu Xing Bing Xue Za Zhi* 24(9): 790–3.
- 92 Bodenheimer T, Lorig K, Holman H, Grumbach K (2002). 'Patient self management of chronic disease in primary care.' *JAMA* 288(19): 2469–75.

- 93 Gadisseur AP, Breukink-Engbers WG, van der Meer FJ, van den Besselaar AM, Sturk A, Rosendaal FR (2003). 'Comparison of the quality of oral anticoagulant therapy through patient self management and management by specialized anticoagulation clinics in the Netherlands: a randomized clinical trial.' *Arch Intern Med* 163(21): 2639–46.
- 94 Gustavsson C, Denison E, Koch L (2010). 'Self-management of persistent neck pain: a randomized controlled trial of a multi-component group intervention in primary health care.' *Eur J Pain* 14(6): 630–e1, e11.
- 95 Parchman ML, Arambula-Solomon TG, Noel PH, Larne AC, Pugh JA (2010). 'Stage of change advancement for diabetes self-management behaviors and glucose control.' *Diabetes Educ* 29(1): 128–34.
- 96 Gorczynski P, Faulkner G, Greening S, Cohn T (2010). 'Exploring the construct validity of the transtheoretical model to structure physical activity interventions for individuals with serious mental illness.' *Psychiatr Rehabil J* 34(1): 61–4.
- 97 Daley LK, Fish AF, Frid DJ, Mitchell GL (2010). 'Stage-specific education/counseling intervention in women with elevated blood pressure.' *Prog Cardiovasc Nurs* 24(2): 45–52.
- 98 Chung SJ, Hoerr SL (2010). 'Evaluation of a theory-based community intervention to increase fruit and vegetable intakes of women with limited incomes.' *Nutr Res Pract* 1(1): 46–51.
- 99 Jackson R, Asimakopoulou K, Scammell A (2010). 'Assessment of the transtheoretical model as used by dietitians in promoting physical activity in people with type 2 diabetes.' *J Hum Nutr Diet* 20(1): 27–36.
- 100 Mochari-Greenberger H, Terry MB, Mosca L (2010). 'Does stage of change modify the effectiveness of an educational intervention to improve diet among family members of hospitalized cardiovascular disease patients?' *J Am Diet Assoc* 110(7): 1027–35.
- 101 Milan JE, White AA (2010). 'Impact of a stage-tailored, web-based intervention on folic acid-containing multivitamin use by college women.' *Am J Health Promot* 24(6): 388–95.
- 102 Glasson C, Chapman K, James E (2010). 'Fruit and vegetables should be targeted separately in health promotion programmes: differences in consumption levels, barriers, knowledge and stages of readiness for change.' *Public Health Nutr* 25: 1–8.
- 103 Blissmer B, Prochaska JO, Velicer WF, Redding CA, Rossi JS, Greene GW, Paiva A, Robbins M (2010). 'Common factors predicting long-term changes in multiple health behaviors.' *J Health Psychol* 15(2): 205–14.
- 104 Callaghan P, Khalil E, Morres I (2010). 'A prospective evaluation of the transtheoretical model of change applied to exercise in young people.' *Int J Nurs Stud* 47(1): 3–12.
- 105 Hildebrand DA, Betts NM (2010). 'Assessment of stage of change, decisional balance, self-efficacy, and use of processes of change of low-income parents for increasing servings of fruits and vegetables to preschool-aged children.' *J Nutr Educ Behav* 41(2): 110–9.
- 106 Wolf RL, Lepore SJ, Vandergrift JL, Wetmore-Arkader L, McGinty E, Pietrzak G, Yaroch AL (2010). 'Knowledge, barriers, and stage of change as correlates of fruit and vegetable consumption among urban and mostly immigrant black men.' *J Am Diet Assoc* 108(8): 1315–22.
- 107 Greaney ML, Riebe D, Ewing Garber C, Rossi JS, Lees FD, Burbank PA, Nigg CR, Ferrone CL, Clark PG (2010). 'Long-term effects of a stage-based intervention for changing exercise intentions and behavior in older adults.' *Gerontologist* 48(3): 358–67.
- 108 Rau J, Teichmann J, Petermann F (2010). 'Motivation for exercise of cancer patients: a longitudinal study of the transtheoretical model (TTM).' *Psychother Psychosom Med Psychol* 58(2): 58–62.
- 109 Helitzer DL, Peterson AB, Sanders M, Thompson J (2010). 'Relationship of stages of change to attendance in a diabetes prevention program.' *Am J Health Promot* 21(6): 517–20.
- 110 Levesque DA, Cummins CO, Prochaska JM, Prochaska JO (2010). 'Randomized trial of stage-based interventions for informed Medicare choices.' *Health Care Financ Rev* 27(4): 25–40.
- 111 Hadjistavropoulos H, Shymkiw J (2010). 'Predicting readiness to self-manage pain.' *Clin J Pain* 23(3): 259–66.
- 112 Tsay SL, Hung LO (2004). 'Empowerment of patients with end-stage renal disease: a randomized controlled trial.' *Int J Nurs Stud* 41(1): 59–65.
- 113 Fu D, Fu H, McGowan P, Shen YE, Zhu L, Yang H, Mao J, Zhu S, Ding Y, Wei Z (2003). 'Implementation and quantitative evaluation of chronic disease self management programme in Shanghai, China: randomized controlled trial.' *Bull World Health Organ* 81(3): 174–82.
- 114 Department of Health (2001). *The expert patient: A new approach to chronic disease management for the 21st century*. London: Department of Health.
- 115 Schiel R, Braun A, Muller R, et al (2004). 'A structured treatment and educational program for patients with type 2 diabetes mellitus, insulin therapy and impaired cognitive function (DikoL).' *Med Klin* 99(6): 285–92.
- 116 LeFort SM (2000). 'A test of Braden's self-help model in adults with chronic pain.' *J Nursing Scholarship* 32(2): 153–60.
- 117 Damush TM, Weinberger M, Perkins SM, Rao JK, Tierney WM, Qi R, Clark DO (2003). 'The long-term effects of a self management program for inner-city primary care patients with acute low back pain.' *Arch Intern Med* 163(21): 2632–8.
- 118 Polonsky WH, Earles J, Smith S, Pease DJ, Macmillan M, Christensen R, Taylor T, Dickert J, Jackson RA (2003). 'Integrating medical management with diabetes self management training: a randomized control trial of the Diabetes Outpatient Intensive Treatment program.' *Diabetes Care* 26(11): 3048–53.
- 119 Guevara JP, Wolf FM, Grum CM, Clark NM (2003). 'Effects of educational interventions for self management of asthma in children and adolescents: systematic review and meta-analysis.' *BMJ* 326(7402): 1308–9.
- 120 Damush TM, Weinberger M, Perkins SM, Rao JK, Tierney WM, Qi R, Clark DO (2003). 'Randomized trial of a self management program for primary care patients with acute low back pain: short-term effects.' *Arthritis Rheum* 49(2): 179–86.
- 121 Scain SF, Friedman R, Gross JL (2009). 'A structured educational program improves metabolic control in patients with type 2 diabetes: a randomized controlled trial.' *Diabetes Educ* 35(4): 603–11.
- 122 Butz AM, Syron L, Johnson B, Spaulding J, Walker M, Bollinger ME (2005). 'Home-based asthma self management education for inner city children.' *Public Health Nurs* 22(3): 189–99.
- 123 Alp A, Kanat E, Yurtkuran M (2007). 'Efficacy of a self management program for osteoporotic subjects.' *Am J Phys Med Rehabil* 86(8): 633–40.
- 124 Nitzke S, Kritsch K, Boeckner L, Greene G, Hoerr S, Horacek T, Kattelmann K, Lohse B, Oakland MJ, Beatrice P, White A (2010). 'A stage-tailored multi-modal intervention increases fruit and vegetable intakes of low-income young adults.' *Am J Health Promot* 22(1): 6–14.
- 125 Brown SA (1990). 'Studies of educational interventions and outcomes in diabetic adults: a meta-analysis revisited.' *Patient Educ Couns* 16(3): 189–215.

- 126 Barlow JH, Wright CC, Sheasby, et al (2002). 'Self-management approaches for people with chronic conditions: a review.' *Patient Educ Couns* 48; 177–87.
- 127 The British Liver Trust (1999). *Living a healthy life with long-term illness*. Leland Stanford Junior University.
- 128 Millar A, Cauch-Dudek K, Shah BR (2010). 'The impact of diabetes education on blood glucose self-monitoring among older adults.' *J Eval Clin Pract* 16(4): 790–3.
- 129 Tang TS, Funnell MM, Brown MB, Kurlander JE (2010). 'Self-management support in 'real-world' settings: an empowerment-based intervention.' *Patient Educ Couns* 79(2): 178–84.
- 130 Bourbeau J, Nault D, Dang-Tan T (2004). 'Self-management and behaviour modification in COPD.' *Patient Educ Couns* 52(3): 271–7.
- 131 Yap TL, Brown C, Cromwell DA, van der Meulen J, Emberton M (2009). 'The impact of self management of lower urinary tract symptoms on frequency-volume chart measures.' *BJU Int* 104(8): 1104–8.
- 132 Brody BL, Roch-Levecq AC, Kaplan RM, Moutier CY, Brown SI (2006). 'Age-related macular degeneration: self management and reduction of depressive symptoms in a randomized, controlled study.' *J Am Geriatr Soc* 54(10): 1557–62.
- 133 Glasgow RE, Toobert DJ, Barrera M Jr, Strycker LA (2004). 'Assessment of problem-solving: a key to successful diabetes self management.' *J Behav Med* 27(5): 477–90.
- 134 Wright SP, Walsh H, Ingley KM, et al (2003). 'Uptake of self management strategies in a heart failure management programme.' *Eur J Heart Fail* 5(3): 371–80.
- 135 Kremers IP, Steverink N, Albersnagel FA, Slaets JP (2006). 'Improved self management ability and well-being in older women after a short group intervention.' *Aging Ment Health* 10(5): 476–84.
- 136 Kroenke K, Bair MJ, Damush TM, Wu J, Hoke S, Sutherland J, Tu W (2009). 'Optimized antidepressant therapy and pain self management in primary care patients with depression and musculoskeletal pain: a randomized controlled trial.' *JAMA* 301(20): 2099–2110.
- 137 Krieger J, Takaro TK, Song L, Beaudet N, Edwards K (2009). 'A randomized controlled trial of asthma self management support comparing clinic-based nurses and in-home community health workers: the Seattle-King County Healthy Homes II Project.' *Arch Pediatr Adolesc Med* 163(2): 141–9.
- 138 Barlow JH, et al (2000). *Self-management literature review*. Psychosocial Research Centre, Coventry University.
- 139 Cedraschi C, Desmeules J, Rapiti E, Baumgartner E, Cohen P, Finckh A, Allaz AF, Vischer TL (2004). 'Fibromyalgia: a randomised, controlled trial of a treatment programme based on self management.' *Ann Rheum Dis* 63(3): 290–6.
- 140 Wattana C, Srisuphan W, Pothiban L, Upchurch SL (2007). 'Effects of a diabetes self management program on glycemic control, coronary heart disease risk, and quality of life among Thai patients with type 2 diabetes.' *Nurs Health Sci* 9(2): 135–41.
- 141 Smith TR, Nicholson RA, Banks JW (2010). 'Migraine education improves quality of life in a primary care setting.' *Headache* 50(4): 600–12.
- 142 Mancuso CA, Sayles W, Allegrante JP (2010). 'Randomized trial of self-management education in asthmatic patients and effects of depressive symptoms.' *Ann Allergy Asthma Immunol* 105(1): 12–9.
- 143 Didjurgeit U, Kruse J, Schmitz N, Stückenschneider P, Sawicki PT (2002). 'A time-limited, problem-orientated psychotherapeutic intervention in type 1 diabetic patients with complications: a randomized controlled trial.' *Diabet Med* 19(10): 814–21.
- 144 Furmark T, Carlbring P, Hedman E, Sonnenstein A, Clevberger P, Bohman B, Eriksson A, Hallen A, Frykman M, Holmstrom A, Sparthan E, Tillfors M, Ihrfelt EN, Spak M, Eriksson A, Ekselius L, Andersson G (2009). 'Guided and unguided self-help for social anxiety disorder: randomised controlled trial.' *Br J Psychiatry* 195(5): 440–7.
- 145 Cochran J, Conn VS (2008). 'Meta-analysis of quality of life outcomes following diabetes self management training.' *Diabetes Educ* 34(5): 815–23.
- 146 Korstjens I, May AM, van Weert E, Mesters I, Tan F, Ros WJ, Hoekstra-Weebers JE, van der Schans CP, van den Borne B (2008). 'Quality of life after self management cancer rehabilitation: a randomized controlled trial comparing physical and cognitive-behavioral training versus physical training.' *Psychosom Med* 70(4): 422–9.
- 147 Coleman S, Briffa NK, Carroll G, Inderjeeth C, Cook N, McQuade J (2008). 'Effects of self management, education and specific exercises, delivered by health professionals, in patients with osteoarthritis of the knee.' *BMC Musculoskelet Disord* 9: 133.
- 148 Pramuka M, Hendrickson R, Zinski A, Van Cott AC (2007). 'A psychosocial self management program for epilepsy: a randomized pilot study in adults.' *Epilepsy Behav* 11(4): 533–45.
- 149 Hughes RB, Robinson-Whelen S, Taylor HB, Hall JW (2006). 'Stress self management: an intervention for women with physical disabilities.' *Women's Health Issues* 16(6): 389–99.
- 150 Frieswijk N, Steverink N, Buunk BP, Slaets JP (2006). 'The effectiveness of a bibliotherapy in increasing the self management ability of slightly to moderately frail older people.' *Patient Educ Couns* 61(2): 219–27.
- 151 van Hooff ML, van der Merwe JD, O'Dowd J, Pavlov PW, Spruit M, de Kleuver M, van Limbeek J (2010). 'Daily functioning and self-management in patients with chronic low back pain after an intensive cognitive behavioral programme for pain management.' *Eur Spine J* 19(9): 1517–26.
- 152 Mérelle SY, Sorbi MJ, van Doornen LJ, Passchier J (2008). 'Lay trainers with migraine for a home-based behavioral training: a 6-month follow up study.' *Headache* 48(9): 1311–25.
- 153 McGillion MH, Watt-Watson J, Stevens B, Lefort SM, Coyte P, Graham A (2008). 'Randomized controlled trial of a psychoeducation program for the self management of chronic cardiac pain.' *J Pain Symptom Manage* 36(2): 126–40.
- 154 Devos-Comby L, Cronan T, Roesch SC (2006). 'Do exercise and self management interventions benefit patients with osteoarthritis of the knee? A metaanalytic review.' *J Rheumatol* 33(4): 744–56.
- 155 Cimprich B, Janz NK, Northouse L, Wren PA, Given B, Given CW (2005). 'Taking CHARGE: A self management program for women following breast cancer treatment.' *Psychooncology* 14(9): 704–17.
- 156 Heitkemper MM, Jarrett ME, Levy RL, Cain KC, Burr RL, Feld A, Barney P, Weisman P (2004). 'Self-management for women with irritable bowel syndrome.' *Clin Gastroenterol Hepatol* 2(7): 585–96.
- 157 Tang TS, Funnell MM, Brown MB, Kurlander JE (2010). 'Self-management support in 'real-world' settings: an empowerment-based intervention.' *Patient Educ Couns* 79(2): 178–84.
- 158 Clark MM, Novotny PJ, Patten CA, Rausch SM, Garces YI, Jatoi A, Sloan JA, Yang P (2010). 'Motivational readiness for physical activity and quality of life in long-term lung cancer survivors.' *Lung Cancer* 61(1): 117–22.

- 159 Yu PL, Ye W, Liu XR, Liu YJ, Zhang J, Bai XL, Wu ZL (2003). 'Evaluation on the effectiveness for self management of hypertensive patients in a community.' *Zhonghua Liu Xing Bing Xue Za Zhi* 24(9): 790–3.
- 160 Siu AM, Chan CC, Poon PK, Chui DY, Chan SC (2007). 'Evaluation of the chronic disease self management program in a Chinese population.' *Patient Educ Couns* 65(1): 42–50.
- 161 Brody BL, Roch-Levecq AC, Gamst AC, Maclean K, Kaplan RM, Brown SI (2002). 'Self-management of age-related macular degeneration and quality of life: a randomized controlled trial.' *Arch Ophthalmol* 120(11): 1477–83.
- 162 Lewin RJ, Furze G, Robinson J, Griffith K, Wiseman S, Pye M, Boyle R (2002). 'A randomised controlled trial of a self management plan for patients with newly diagnosed angina.' *Br J Gen Pract* 52(476): 194–6, 199–201.
- 163 Foster G, Taylor SJ, Eldridge SE, Ramsay J, Griffiths CJ (2007). 'Self-management education programmes by lay leaders for people with chronic conditions.' *Cochrane Database Syst Rev* (4): CD005108.
- 164 Perneger TV, Sudre P, Muntner P, Uldry C, Courteuse C, Naef AF, Jacquemet S, Nicod L, Rochat T, Assal JP (2002). 'Effect of patient education on self management skills and health status in patients with asthma: a randomized trial.' *Am J Med* 113(1): 7–14.
- 165 Jones F, Mandy A, Partridge C (2009). 'Changing self-efficacy in individuals following a first time stroke: preliminary study of a novel self management intervention.' *Clin Rehabil* 23(6): 522–33.
- 166 Bernard-Bonnin AC, Stachenko S, Bonin D, et al (1995). 'Self-management teaching programs and morbidity of pediatric asthma: a meta-analysis.' *J Allergy Clin Immunol* 95(1 Pt 1): 34–41.
- 167 Wolf FM, Guevara JP, Grum CM, et al (2003). 'Educational interventions for asthma in children.' *Cochrane Database Syst Rev* (1): CD000326.
- 168 Norris SL, Nichols PJ, Caspersen CJ, et al (2002). 'Increasing diabetes self management education in community settings. A systematic review.' *Am J Prev Med* 22(4 Suppl): 39–66.
- 169 Barbanel D, Eldridge S, Griffiths C (2003). 'Can a self management programme delivered by a community pharmacist improve asthma control? A randomised trial.' *Thorax* 58(10): 851–4.
- 170 Foster G, Taylor SJC, Eldridge S, Ramsay J, Griffiths CJ (2007). 'Self-management education programmes by lay leaders for people with chronic conditions.' *Cochrane Database of Systematic Reviews* (4).
- 171 Heuts PH, de Bie R, Drieteaar M, Aretz K, Hopman-Rock M, Bastiaenen CH, Metsemakers JF, van Weel C, van Schayck O (2005). 'Self-management in osteoarthritis of hip or knee: a randomized clinical trial in a primary healthcare setting.' *J Rheumatol* 32(3): 543–9.
- 172 Hurley MV, Walsh NE, Mitchell HL, Pimm TJ, Patel A, Williamson E, Jones RH, Dieppe PA, Reeves BC (2007). 'Clinical effectiveness of a rehabilitation program integrating exercise, self management, and active coping strategies for chronic knee pain: a cluster randomized trial.' *Arthritis Rheum* 57(7): 1211–9.
- 173 Brown CS, Wan J, Bachmann G, Rosen R (2009). 'Self-management, amitriptyline, and amitriptyline plus triamcinolone in the management of vulvodinia.' *J Womens Health* 18(2): 163–9.
- 174 Sol BG, van der Graaf Y, Brouwer B, Hickox SM, Visseren FL (2010). 'The effect of a self-management intervention to reduce vascular risk factors in patients with manifestations of vascular diseases.' *Eur J Cardiovasc Nurs* 9(2): 132–9.
- 175 Anderson RM, Funnell MM, Butler PM, et al (1995). 'Patient empowerment: Results of a randomized controlled trial.' *Diabetes Care* 18: 943–49.
- 176 Wantland DJ, Holzemer WL, Moezzi S, Willard SS, Arudo J, Kirksey KM, Portillo CJ, Corless IB, Rosa ME, Robinson LL, Nicholas PK, Hamilton MJ, Sefcik EF, Human S, Rivero MM, Maryland M, Huang E (2008). 'A randomized controlled trial testing the efficacy of an HIV/AIDS symptom management manual.' *J Pain Symptom Manage* 36(3): 235–46.
- 177 Yardley L, Kirby S (2006). 'Evaluation of booklet-based self management of symptoms in Ménière disease: a randomized controlled trial.' *Psychosom Med* 68(5): 762–9.
- 178 Davies MJ, Heller S, Skinner TC, Campbell MJ, Carey ME, Craddock S, Dallosso HM, Daly H, Doherty Y, Eaton S, Fox C, Oliver L, Rantell K, Rayman G, Khunti K (2008). 'Effectiveness of the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cluster randomised controlled trial.' *BMJ* 336(7642): 491–5.
- 179 Gregg JA, Callaghan GM, Hayes SC, Glenn-Lawson JL (2007). 'Improving diabetes self management through acceptance, mindfulness, and values: a randomized controlled trial.' *J Consult Clin Psychol* 75(2): 336–43.
- 180 Fitzmaurice DA, Murray ET, McCahon D, Holder R, Raftery JP, Hussain S, Sandhar H, Hobbs FD (2005). 'Self-management of oral anticoagulation: randomised trial.' *BMJ* 331(7524): 1057.
- 181 Koertke H, Zittermann A, Wagner O, Koerfer R (2007). 'Self-management of oral anticoagulation therapy improves long-term survival in patients with mechanical heart valve replacement.' *Ann Thorac Surg* 83(1): 24–9.
- 182 Goepfing J, Armstrong B, Schwartz T, Ensley D, Brady TJ (2007). 'Self-management education for persons with arthritis: Managing comorbidity and eliminating health disparities.' *Arthritis Rheum* 57(6): 1081–8.
- 183 Warwick M, Gallagher R, Chenoweth L, Stein-Parbury J (2010). 'Self-management and symptom monitoring among older adults with chronic obstructive pulmonary disease.' *J Adv Nurs* 66(4): 784–93.
- 184 Rooks DS, Gautam S, Romeling M, Cross ML, Stratigakis D, Evans B, Goldenberg DL, Iversen MD, Katz JN (2007). 'Group exercise, education, and combination self management in women with fibromyalgia: a randomized trial.' *Arch Intern Med* 167(20): 2192–200.
- 185 Litz BT, Engel CC, Bryant RA, Papa A (2007). 'A randomized, controlled proof-of-concept trial of an internet-based, therapist-assisted self management treatment for posttraumatic stress disorder.' *Am J Psychiatry* 164(11): 1676–83.
- 186 Yip YB, Sit JW, Wong DY, Chong SY, Chung LH (2008). 'A 1-year follow up of an experimental study of a self management arthritis programme with an added exercise component of clients with osteoarthritis of the knee.' *Psychol Health Med* 13(4): 402–14.
- 187 Lorig KR, Ritter PL, Laurent DD, Plant K (2008). 'The internet-based arthritis self management program: a one-year randomized trial for patients with arthritis or fibromyalgia.' *Arthritis Rheum* 59(7): 1009–17.

- 188 Deakin TA, Cade JE, Williams R, Greenwood DC (2006). 'Structured patient education: the diabetes X-PERT Programme makes a difference.' *Diabet Med* 23(9): 944–54.
- 189 Lorig KR, Ritter PL, Laurent DD, Plant K (2006). 'Internet-based chronic disease self management: a randomized trial.' *Med Care* 44(11): 964–71.
- 190 Warsi A, LaValley MP, Wang PS, et al (2003). 'Arthritis self management education programs: a meta-analysis of the effect on pain and disability.' *Arthritis Rheum* 48(8): 2207–13.
- 191 Lorig KR, Sobel DS, Ritter PL, et al (2001). 'Effect of a self management program on patients with chronic disease.' *Eff Clin Pract* 4(6): 256–62.
- 192 Clark NM, Janz NK, Dodge JA, et al (2000). 'Changes in functional health status of older women with heart disease: evaluation of a program based on self-regulation.' *J Gerontol B Psychol Soc Sci* 55(2): S117–26.
- 193 Powers BJ, Olsen MK, Oddone EZ, Bosworth HB (2009). 'The effect of a hypertension self management intervention on diabetes and cholesterol control.' *Am J Med* 122(7): 639–46.
- 194 Scain SF, Friedman R, Gross JL (2009). 'A structured educational program improves metabolic control in patients with type 2 diabetes: a randomized controlled trial.' *Diabetes Educ* 35(4): 603–11.
- 195 Smeulders ES, van Haastregt JC, Ambergen T, Janssen-Boyne JJ, van Eijk JT, Kempen GI (2009). 'The impact of a self management group programme on health behaviour and healthcare utilization among congestive heart failure patients.' *Eur J Heart Fail* 11(6): 609–16.
- 196 Wattana C, Srisuphan W, Pothiban L, Upchurch SL (2007). 'Effects of a diabetes self management program on glycemic control, coronary heart disease risk, and quality of life among Thai patients with type 2 diabetes.' *Nurs Health Sci* 9(2): 135–41.
- 197 Warsi A, Wang PS, LaValley MP, et al (2004). 'Self-management education programs in chronic disease: a systematic review and methodological critique of the literature.' *Arch Intern Med* 164(15): 1641–9.
- 198 Guevara JP, Wolf FM, Grum CM, Clark NM (2003). 'Effects of educational interventions for self management of asthma in children and adolescents: systematic review and meta-analysis.' *BMJ* 326(7402): 1308–9.
- 199 Parchman ML, Arambula-Solomon TG, Noel PH, Larme AC, Pugh JA (2003). 'Stage of change advancement for diabetes self management behaviors and glucose control.' *Diabetes Educ* 29(1): 128–34.
- 200 Bode C, Taal E, Emons PA, Galetzka M, Rasker JJ, Van de Laar MA (2008). 'Limited results of group self management education for rheumatoid arthritis patients and their partners: explanations from the patient perspective.' *Clin Rheumatol* 27(12): 1523–8.
- 201 Wegener ST, Mackenzie EJ, Ephraim P, Ehde D, Williams R (2009). 'Self-management improves outcomes in persons with limb loss.' *Arch Phys Med Rehabil* 90(3): 373–80.
- 202 Williams GC, McGregor H, Zeldman A, Freedman ZR, Deci EL, Elder D (2005). 'Promoting glycemic control through diabetes self management: evaluating a patient activation intervention.' *Patient Educ Couns* 56(1): 28–34.
- 203 Lorig K. and Holman H (1993). 'Arthritis self management studies: A twelve year review.' *Health Ed Quart* 20: 17–28.
- 204 Warsi A, LaValley MP, Wang PS, Avorn J, Solomon DH (2003). 'Arthritis self management education programs: a meta-analysis of the effect on pain and disability.' *Arthritis Rheum* 48(8): 2207–13.
- 205 Ersek M, Turner JA, McCurry SM, Gibbons L, Kraybill BM (2003). 'Efficacy of a self management group intervention for elderly persons with chronic pain.' *Clin J Pain* 19(3): 156–67.
- 206 Seltzer MM, Litchfield LC, Kapust LR, Mayer JB (1992). 'Professional and family collaboration in case management: a hospital-based replication of a community-based study.' *Social Work in Health Care* 17(1): 1–22.
- 207 Laffel LM, Vangsness L, Connell A, et al (2003). 'Impact of ambulatory, family-focused teamwork intervention on glycemic control in youth with type 1 diabetes.' *J Pediatrics* 142(4): 409–16.
- 208 Elzen H, Slaets JP, Snijders TA, Steverink N (2007). 'Evaluation of the chronic disease self management program (CDSMP) among chronically ill older people in the Netherlands.' *Soc Sci Med* 64(9): 1832–41.
- 209 Fleissig A, Glasser B, Lloyd M (1999). 'Encouraging out-patients to make the most of their first hospital appointment: to what extent can a written prompt help patients get the information they want?' *Patient Educ Couns* 38(1): 69–79.
- 210 Pernerger TV, Sudre P, Muntner P, Uldry C, Courteheuse C, Naef AF, Jacquemet S, Nicod L, Rochat T, Assal JP (2002). 'Effect of patient education on self management skills and health status in patients with asthma: a randomized trial.' *Am J Med* 113(1): 7–14.
- 211 Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM (2002). 'Self-management education for adults with type 2 diabetes: a meta-analysis of the effect on glycemic control.' *Diabetes Care* 25(7): 1159–71.
- 212 Figar S, Galarza C, Petrlik E, Hornstein L, Rodriguez Loria G, Waisman G, Rada M, Soriano ER, de Quiros FG (2006). 'Effect of education on blood pressure control in elderly persons: a randomized controlled trial.' *Am J Hypertens* 19(7): 737–43.
- 213 Ditewig JB, Blok H, Havers J, van Veenendaal H (2010). 'Effectiveness of self-management interventions on mortality, hospital readmissions, chronic heart failure hospitalization rate and quality of life in patients with chronic heart failure: a systematic review.' *Patient Educ Couns* 78(3): 297–315.
- 214 Gallefoss F (2004). 'The effects of patient education in COPD in a 1-year follow up randomised, controlled trial.' *Patient Educ Couns* 52(3): 259–66.
- 215 Osman LM, Calder C, Godden DJ, et al (2002). 'A randomised trial of self management planning for adult patients admitted to hospital with acute asthma.' *Thorax* 57(10): 869–74.
- 216 Groessl EJ, Cronan TA (2000). 'A cost analysis of self management programs for people with chronic illness.' *Am J Comm Psy* 28(4): 455–80.
- 217 Waxman R, Woodburn H, Powell M, Woodburn J, Blackburn S, Helliwell P (2003). 'FOOTSTEP: a randomized controlled trial investigating the clinical and cost effectiveness of a patient self management program for basic foot care in the elderly.' *J Clin Epidemiol* 56(11): 1092–9.
- 218 Schermer TR, Thoonen BP, van den Boom G, Akkermans RP, Grol RP, Folgering HT, van Weel C, van Schayck CP (2002). 'Randomized controlled economic evaluation of asthma self management in primary health care.' *Am J Respir Crit Care Med* 166(8): 1062–72.
- 219 Handley MA, Shumway M, Schillinger D (2008). 'Cost-effectiveness of automated telephone self management support with nurse care management among patients with diabetes.' *Ann Fam Med* 6(6): 512–8.
- 220 Coffman JM, Cabana MD, Halpin HA, Yelin EH (2008). 'Effects of asthma education on children's use of acute care services: a meta-analysis.' *Pediatrics* 121(3): 575–86.
- 221 Hurley MV, Walsh NE, Mitchell HL, Pimm TJ, Williamson E, Jones RH, Reeves BC, Dieppe PA, Patel A (2007). 'Economic evaluation of a rehabilitation program integrating exercise, self management, and active coping strategies for chronic knee pain.' *Arthritis Rheum* 57(7): 1220–9.

- 222 Bourbeau J, Collet JP, Schwartzman K, Ducruet T, Nault D, Bradley C (2006). 'Economic benefits of self management education in COPD.' *Chest* 130(6): 1704–11.
- 223 Gallefoss F (2010). 'The effects of patient education in COPD in a 1-year follow-up randomised, controlled trial.' *Patient Educ Couns* 52(3): 259–66.
- 224 Barlow JH, Williams B, Wright CC (1999). 'Instilling the strength to fight the pain and get on with life: learning to become an arthritis self manager through an adult education programme.' *Health Ed Res* 14(4): 533–44.
- 225 Cole JD (1998). 'Psychotherapy with the chronic pain patient using coping skills development: outcome study.' *J Occ Health Psy* 3(3): 217–26.
- 226 Lorig K, Holman HR (1989). 'Long-term outcomes of an arthritis self management study: effects of reinforcement efforts.' *Soc Sci Med* 29(2): 221–4.
- 227 Charlton I, Charlton G, Broomfield J, Mullee MA (1990). 'Evaluation of peak flow and symptoms only self management plans for control of asthma in general practice.' *BMJ* 301(6765): 1355–9.
- 228 Lorig KR, Mazonson PD, Holman HR (1993). 'Evidence suggesting that health education for self management in patients with chronic arthritis has sustained health benefits while reducing health care costs.' *Arth Rheum* 36(4): 439–46.
- 229 Fries JF, Carey C, McShane DJ (1997). 'Patient education in arthritis: randomized controlled trial of a mail-delivered program.' *J Rheumatology* 24(7): 1378–83.
- 230 Milenkovic BA, Stankovic IJ, Ilic AM, Petrovic VI (2007). 'Peak expiratory flow-guided self management treatment of asthma in Serbia.' *J Asthma* 44(9): 699–704.
- 231 Gadoury M-A, Schwartzman K, Rouleau M, Maltais F, Julien M, Beaupre A, Renzi P, Begin R, Nault D, Bourbeau J (2005). 'Self-management reduces both short- and long-term hospitalisation in COPD.' *Eur Respir J* 26: 853–857.
- 232 Larson A, Ward J, Ross L, Whyatt D, Weatherston M, Landau L (2010). 'Impact of structured education and self management on rural asthma outcomes.' *Aust Fam Physician* 39(3): 141–4.
- 233 Rogers A, Robinson A, Thompson D (year unknown). *Randomised controlled trial of guided self management for patients with ulcerative colitis*. The National Primary Care Research and Development Centre. www.npcrdc.man.ac.uk/research.cfm
- 234 Robinson A, Thompson DG, Wilkin D, Roberts C, et al (2001). 'Guided self management and patient-directed follow up of ulcerative colitis: a randomised trial.' *Lancet* 358(9286): 976–81.
- 235 Kennedy A, Nelson E, Reeves D, et al (2003). 'A randomised controlled trial to assess the impact of a package comprising a patient-orientated, evidence-based self-help guidebook and patient-centred consultations on disease management and satisfaction in inflammatory bowel disease.' *Health Technol Assess* 7(28): 1–113.
- 236 Kennedy A, Reeves D, Bower P, Lee V, Middleton E, Richardson G, Gardner C, Gately C, Rogers A (2007). 'The effectiveness and cost effectiveness of a national lay-led self care support programme for patients with long-term conditions: a pragmatic randomised controlled trial.' *J Epidemiol Community Health* 61(3): 254–61.
- 237 Richardson G, Kennedy A, Reeves D, Bower P, Lee V, Middleton E, Gardner C, Gately C, Rogers A (2008). 'Cost effectiveness of the Expert Patients Programme (EPP) for patients with chronic conditions.' *J Epidemiol Community Health* 62(4): 361–7.
- 238 Wilson PM (2010). 'The UK Expert Patients Programme: lessons learned and implications for cancer survivors' self-care support programs.' *J Cancer Surviv* 2(1): 45–52.
- 239 Expert Patients Programme Community Interest Company (Year unknown). *Self care reduces costs and improves health – the evidence*. London: Expert Patients Programme Community Interest Company.
- 240 http://patienteducation.stanford.edu/research/Review_Findings_CDSMP_Outcomes%208%2008.pdf
- 241 Andrade WC, Camargos P, Lasmar L, Bousquet J (2010). 'A pediatric asthma management program in a low-income setting resulting in reduced use of health service for acute asthma.' *Allergy* (published online June 2010).
- 242 Deakin T, McShane CE, Cade JE, Williams RD (2005). 'Group based training for self management strategies in people with type 2 diabetes mellitus.' *Cochrane Database Syst Rev* (2): CD003417.
- 243 Bourbeau J, Julien M, Maltais F, et al (2003). 'Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self management intervention.' *Arch Intern Med* 163(5): 585–91.
- 244 Lorig KR, Ritter P, Stewart A, et al (2001). 'Chronic disease self management program: 2 year health status and health care utilization outcomes.' *Medical Care* 39: 1217–23.
- 245 Gallefoss F, Bakke PS (2002). 'The effect of patient education in asthma, a randomized controlled trial.' *Tidsskr Nor Laegeforen* 122(28): 2702–6.
- 246 Krishna S, Francisco BD, Balas EA, et al (2003). 'Internet-enabled interactive multimedia asthma education program: a randomized trial.' *Pediatrics* 111(3): 503–10.
- 247 Mayo PH, Richman J, Harris HW (1990). 'Results of a program to reduce admissions for adult asthma.' *Ann Intern Med* 112(11): 864–71.
- 248 Lorig KR, Ritter PL, Gonzalez VM (2003). 'Hispanic chronic disease self management: a randomized community-based outcome trial.' *Nurs Res* 52(6): 361–9.
- 249 Wheeler JR, Janz NK, Dodge JA (2003). 'Can a disease self management program reduce health care costs? The case of older women with heart disease.' *Med Care* 41(6): 706–15.
- 250 Ghosh CS, Ravindran P, Joshi M, Stearns SC (1998). 'Reductions in hospital use from self management training for chronic asthmatics.' *Soc Sci Med* 46(8): 1087–93.
- 251 Choy DK, Tong M, Ko F, et al (1999). 'Evaluation of the efficacy of a hospital-based asthma education programme in patients of low socio-economic status in Hong Kong.' *Clin Exp Allergy* 29(1): 84–90.
- 252 Thoonen BP, Schermer TR, Van Den Boom G, Molema J, Folgering H, Akkermans RP, Grol R, Van Weel C, Van Schayck CP (2003). 'Self-management of asthma in general practice, asthma control and quality of life: a randomised controlled trial.' *Thorax* 58(1): 30–6.
- 253 Gadoury MA, Schwartzman K, Rouleau M, Maltais F, Julien M, Beaupre A, Renzi P, Begin R, Nault D, Bourbeau J (2005). 'Self-management reduces both short- and long-term hospitalisation in COPD.' *Eur Respir J* 26(5): 853–7.
- 254 Chiang LC, Huang JL, Yeh KW, Lu CM (2004). 'Effects of a self management asthma educational program in Taiwan based on PRECEDE-PROCEED model for parents with asthmatic children.' *J Asthma* 41(2): 205–15.
- 255 Indinnimeo L, Bonci E, Capra L, La Grutta S, Monaco F, Paravati F, Passalacqua G, Silvestre G, Duse M (2009). 'Chronic disease self management interventions might have 'spill-over' effects on patients' comorbid chronic conditions.' *Pediatr Allergy Immunol* 20(7): 654–9.

- 256 Clark NM, Gong M, Kaciroti N, Yu J, Wu G, Zeng Z, Wu Z (2005). 'A trial of asthma self management in Beijing schools.' *Chronic Illn* 1(1): 31–8.
- 257 Lorig KR, Ritter P, Stewart AL, Sobel DS, Byron Jr WB, Bandura A, Gonzalez VM, Laurent DD, Holman HR (2001). 'Chronic disease self management program: 2-year health status and health care utilization outcomes.' *Med Care* 39(11): 1217–23.
- 258 Dunn NJ, Rehm LP, Schillaci J, Soucek J, Mehta P, Ashton CM, Yanasak E, Hamilton JD (2007). 'A randomized trial of self management and psychoeducational group therapies for comorbid chronic posttraumatic stress disorder and depressive disorder.' *J Trauma Stress* 20(3): 221–37.
- 259 Downs JA, Roberts CM, Blackmore AM, Le Souëf PN, Jenkins SC (2006). 'Benefits of an education programme on the self management of aerosol and airway clearance treatments for children with cystic fibrosis.' *Chron Respir Dis* 3(1): 19–27.
- 260 Wetzels R, van Weel C, Grol R, Wensing M (2008). 'Family practice nurses supporting self management in older patients with mild osteoarthritis: a randomized trial.' *BMC Fam Pract* 9: 7.
- 261 Buszewicz M, Rait G, Griffin M, Nazareth I, Patel A, Atkinson A, Barlow J, Haines A (2006). 'Self-management of arthritis in primary care: randomised controlled trial.' *BMJ* 333(7574): 879.
- 262 Jowett S, Bryan S, Murray E, McCahon D, Raftery J, Hobbs FD, Fitzmaurice D (2006). 'Patient self management of anticoagulation therapy: a trial-based cost-effectiveness analysis.' *Br J Haematol* 134(6): 632–9.
- 263 Monninkhof E, van der Valk P, Schermer T, van der Palen J, van Herwaarden C, Zielhuis G (2004). 'Economic evaluation of a comprehensive self management programme in patients with moderate to severe chronic obstructive pulmonary disease.' *Chron Respir Dis* 1(1): 7–16.
- 264 Buszewicz M, Rait G, Griffin M, Nazareth I, Patel A, Atkinson A, Barlow J, Haines A (2006). 'Self-management of arthritis in primary care: randomised controlled trial.' *BMJ* 333: 879.
- 265 Monninkhof E, van der Valk P, van der Palen J, et al (2003). 'Self-management education for patients with chronic obstructive pulmonary disease: a systematic review.' *Thorax* 58(5): 394–8.
- 266 Barlow, Wright, Bancroft, Turner (2003). *Evaluation of the Chronic Disease Self Management Course*. UK Department of Health and Long-term Medical Conditions Alliance.
- 267 Patel A, Buszewicz M, Beecham J, Griffin M, Rait G, Nazareth I, Atkinson A, Barlow J, Haines A (2009). 'Economic evaluation of arthritis self management in primary care.' *BMJ* 339: b3532.
- 268 McPherson AC, Glazebrook C, Forster D, James C, Smyth A (2006). 'A randomized, controlled trial of an interactive educational computer package for children with asthma.' *Pediatrics* 117(4): 1046–54.
- 269 Foster G, Taylor SJ, Eldridge SE, Ramsay J, Griffiths CJ (2007). 'Self-management education programmes by lay leaders for people with chronic conditions.' *Cochrane Database Syst Rev* (4): CD005108.
- 270 Glasgow NJ, Ponsonby AL, Yates R, et al (2003). 'Proactive asthma care in childhood: general practice based randomised controlled trial.' *BMJ* 327(7416): 659.
- 271 Feldman PH, Peng TR, Murtaugh CM, Kelleher C, Donelson SM, McCann ME, Putnam ME (2004). 'A randomized intervention to improve heart failure outcomes in community-based home health care.' *Home Health Care Serv Q* 23(1): 1–23.
- 272 Anderson L. et al (2005). 'Self-help books for depression: how can practitioners and patients make the right choice?' *Br J Gen Pract* 55 (514): 387–392.
- 273 Glasgow NJ, Ponsonby AL, Yates R, et al (2003). 'Proactive asthma care in childhood: general practice based randomised controlled trial.' *BMJ* 327(7416): 659.
- 274 Little P, Dorward M, Warner G et al (2004). 'Randomised controlled trial of effect of leaflets to empower patients in consultations in primary care.' *BMJ* 328(7437): 441.
- 275 Fleissig A, Glasser B, Lloyd M (1999). 'Encouraging out-patients to make the most of their first hospital appointment: to what extent can a written prompt help patients get the information they want?' *Patient Educ Couns* 38(1): 69–79.
- 276 Dally DL, Dahar W, Scott A, et al (2002). 'The impact of a health education program targeting patients with high visit rates in a managed care organization.' *Am J Health Promot* 17(2): 101–11.
- 277 van Boeijen CA et al (2005). 'Efficacy of self-help manuals for anxiety disorders in primary care: a systematic review.' *Fam Pract* 22(2): 192–196.
- 278 Roberts L, Little P, Chapman J, Cantrell T, Pickering R, Langridge J (2010). 'The back home trial: general practitioner-supported leaflets may change back pain behavior.' *Spine* 27(17): 1821–8.
- 279 Morrison A (2001). 'Effectiveness of printed patient educational materials in chronic illness: a systematic review of controlled trials.' *J Manag Pharm Care* 1(1): 51–62.
- 280 Gibson PG, Powell H, Coughlan J et al (2004). 'Limited (information only) patient education programs for adults with asthma (Cochrane Review).' *The Cochrane Library*, Issue 2. Chichester: John Wiley & Sons.
- 281 Lorig KR, Ritter PL, Laurent DD, Fries JF (2004). 'Long-term randomized controlled trials of tailored-print and small-group arthritis self management interventions.' *Med Care* 42(4): 346–54.
- 282 Forster A, Smith J, Young J et al (2004). 'Information provision for stroke patients and their caregivers (Cochrane Review).' *The Cochrane Library*, Issue 2. Chichester: John Wiley & Sons.
- 283 Seals TD, Keith MR (1997). 'Influence of patient information leaflets on anticonvulsant drug compliance in prison.' *Am J Health Syst Pharm* 54(22): 2585–7.
- 284 Kennedy A, Robinson A, Hann M et al (2003). 'A cluster-randomised controlled trial of a patient-centred guidebook for patients with ulcerative colitis: effect on knowledge, anxiety and quality of life.' *Health Soc Care Community* 11(1): 64–72.
- 285 Lafata JE, Baker AM, Divine GW et al (2002). 'The use of computerized birthday greeting reminders in the management of diabetes.' *J Gen Intern Med* 17(7): 521–30.
- 286 Sethares KA, Elliott K (2004). 'The effect of a tailored message intervention on heart failure readmission rates, quality of life, and benefit and barrier beliefs in persons with heart failure.' *Heart Lung* 33(4): 249–60.
- 287 Enwald HP, Huotari ML (2010). 'Preventing the obesity epidemic by second generation tailored health communication: an interdisciplinary review.' *J Med Internet Res* 12(2): e24.
- 288 Osman LM, Abdalla MI, Beattie JAG et al (1994). 'Reducing hospital admission through computer supported education for asthma patients.' *BMJ* 308(6928): 568–71.
- 289 Azrin NH, Teichner G (1998). 'Evaluation of an instructional program for improving medication compliance for chronically mentally ill outpatients.' *Behav Res Ther* 36(9): 849–61.
- 290 Lancaster T, Stead LF. Self-help interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2005, Issue 3.

- 291 Oermann MH, Webb SA, Ashare JA (2003). 'Outcomes of videotape instruction in clinic waiting area.' *Orthopaedic Nurs* 22(2): 102–5.
- 292 Grilli R, Ramsay C, Minozzi S (2004). 'Mass media interventions: effects on health services utilisation (Cochrane Review).' *The Cochrane Library* (Issue 2). Chichester: John Wiley & Sons.
- 293 Buchbinder R (2008). 'Self-management education en masse: effectiveness of the Back Pain: Don't Take It Lying Down mass media campaign.' *Med J Aust* 189(10 Suppl): S29–S32.
- 294 Williams A, Hagerty BM, Brasington SJ, Clem JB, Williams DA (2010). 'Stress Gym: Feasibility of deploying a web-enhanced behavioral self-management program for stress in a military setting.' *Mil Med* 175(7): 487–93.
- 295 Cordina M, McElnay JC, Hughes CM (2001). 'Assessment of a community pharmacy-based program for patients with asthma.' *Pharmacotherapy* 21(10): 1196–203.
- 296 Samoocha D, Bruinvels DJ, Elbers NA, Anema JR, van der Beek AJ (2010). 'Effectiveness of web-based interventions on patient empowerment: a systematic review and meta-analysis.' *J Med Internet Res* 12(2): e23.
- 297 Rybarczyk B, DeMarco G, DeLaCruz M, Lapidus S (1999). 'Comparing mind-body wellness interventions for older adults with chronic illness: classroom versus home instruction.' *Beh Med* 24(4): 181–90.
- 298 Schaffer SD, Tian L (2004). 'Promoting adherence: effects of theory-based asthma education.' *Clin Nurs Res* 13(1): 69–89.
- 299 Shames RS, Sharek P, Mayer M, et al (2004). 'Effectiveness of a multicomponent self management program in at-risk, school-aged children with asthma.' *Ann Allergy Asthma Immunol* 92(6): 611–8.
- 300 Krishna S, Francisco BD, Balas EA et al (2003). 'Internet-enabled interactive multimedia asthma education program: a randomized trial.' *Pediatrics* 111(3): 503–10.
- 301 Glasgow RE, Nutting PA, Toobert DJ et al (2006). 'Effects of a brief computer-assisted diabetes self management intervention on dietary, biological and quality-of-life outcomes.' *Chronic Illn* 2(1): 27–38.
- 302 Yeh YT, Chiu YT, Liu CT et al (2006). 'Development and evaluation of an integrated patient-oriented education management system for diabetes.' *Stud Health Technol Inform* 122: 172–5.
- 303 Savage I, Goodyer L (2003). 'Providing information on metered dose inhaler technique: is multimedia as effective as print?' *Fam Pract* 20(5): 552–7.
- 304 Bowen AM, Horvath K, Williams ML (2007). 'A randomized control trial of Internet-delivered HIV prevention targeting rural MSM.' *Health Educ Res* 22(1): 120–7.
- 305 De Bourdeaudhuij I, Stevens V, Vandelanotte C, Brug J (2007). 'Evaluation of an interactive computer-tailored nutrition intervention in a real-life setting.' *Ann Behav Med* 33(1): 39–48.
- 306 Proudfoot J, Parker G, Hyett M, Manicavasagar V, Smith M, Grdovic S, Greenfield L (2007). 'Next generation of self management education: Web-based bipolar disorder program.' *Aust N Z J Psychiatry* 41(11): 903–9.
- 307 Gerber BS, Brodsky IG, Lawless KA, Smolin LI, Arozullah AM, Smith EV, Berbaum ML, Heckerling PS, Eiser AR (2005). 'Implementation and evaluation of a low-literacy diabetes education computer multimedia application.' *Diabetes Care* 28(7): 1574–80.
- 308 van der Meer V, Bakker MJ, van den Hout WB, Rabe KF, Sterk PJ, Kievit J, Assendelft WJ, Sont JK (2009). 'Internet-based self management plus education compared with usual care in asthma: a randomized trial.' *Ann Intern Med* 151(2): 110–20.
- 309 Nguyen HQ, Donesky-Cuenco D, Wolpin S, Reinke LF, Benditt JO, Paul SM, Carrieri-Kohlman V (2008). 'Randomized controlled trial of an internet-based versus face-to-face dyspnea self management program for patients with chronic obstructive pulmonary disease: pilot study.' *J Med Internet Res* 10(2): e9.
- 310 Bingham CR, Barretto AI, Walton MA, Bryant CM, Shope JT, Raghunathan TE (2010). 'Efficacy of a web-based, tailored, alcohol prevention/intervention program for college students: initial findings.' *J Am Coll Health* 58(4): 349–56.
- 311 Krishna S, Balas EA, Spencer DC, et al (1997). 'Clinical trials of interactive computerized patient education: implications for family practice.' *J Fam Pract* 45(1): 25–33.
- 312 Stinson J, Wilson R, Gill N, Yamada J, Holt J (2009). 'A systematic review of internet-based self management interventions for youth with health conditions.' *J Pediatr Psychol* 34(5): 495–510.
- 313 Mulvaney SA, Rothman RL, Wallston KA, Lybarger C, Dietrich MS (2010). 'An internet-based program to improve self-management in adolescents with type 1 diabetes.' *Diabetes Care* 33(3): 602–4.
- 314 Jernigan VB, Lorig K (2010). 'The internet diabetes self-management workshop for American Indians and Alaska natives.' *Health Promot Pract* (published online June 2010).
- 315 Ghahari S, Leigh Packer T, Passmore AE (2010). 'Effectiveness of an online fatigue self-management programme for people with chronic neurological conditions: a randomized controlled trial.' *Clin Rehabil* 24(8): 727–44.
- 316 Lorig K, Ritter PL, Laurent DD, Plant K, Green M, Jernigan VB, Case S (2010). 'Online diabetes self-management program: a randomized study.' *Diabetes Care* 33(6): 1275–81.
- 317 Wanner M, Martin-Diener E, Braun-Fahrlander C, Bauer G, Martin BW (2010). 'Effectiveness of active-online, an individually tailored physical activity intervention, in a real-life setting: randomized controlled trial.' *J Med Internet Res* 11(3): e23.
- 318 Eysenbach G, Powell J, Englesakis M et al (2004). 'Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions.' *BMJ* 328(7449): 1166.
- 319 Hoffman-Goetz L, Donelle L (2007). 'Chat room computer-mediated support on health issues for aboriginal women.' *Health Care Women Int* 28(4): 397–418.
- 320 Barrera M Jr, Glasgow RE, McKay HG, Boles SM, Feil EG (2002). 'Do internet-based support interventions change perceptions of social support?: An experimental trial of approaches for supporting diabetes self management.' *Am J Community Psychol* 30(5): 637–54.
- 321 Stinson JN, McGrath PJ, Hodnett ED, Feldman BM, Duffy CM, Huber AM, Tucker LB, Hetherington CR, Tse SM, Spiegel LR, Campillo S, Gill NK, White ME (2010). 'An internet-based self-management program with telephone support for adolescents with arthritis: a pilot randomized controlled trial.' *J Rheumatol* 37(9): 1944–52.
- 322 Simoni JM, Huh D, Frick PA, Pearson CR, Andrasik MP, Dunbar PJ, Hooton TM (2009). 'Peer support and pager messaging to promote antiretroviral modifying therapy in Seattle: a randomized controlled trial.' *J Acquir Immune Defic Syndr* 52(4): 465–473.
- 323 Faridi Z, Liberti L, Shuval K, Northrup V, Ali A, Katz DL (2008). 'Evaluating the impact of mobile telephone technology on type 2 diabetic patients' self management: the NICHE pilot study.' *J Eval Clin Pract* 14(3): 465–9.

- 324 Franklin VL, Waller A, Pagliari C, Greene SA (2006). 'A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes.' *Diabet Med* 23(12): 1332–8.
- 325 Plotnikoff RC, McCargar LJ, Wilson PM, Loucaides CA (2005). 'Efficacy of an e-mail intervention for the promotion of physical activity and nutrition behavior in the workplace context.' *Am J Health Promot* 19(6): 422–9.
- 326 Yap TL, Hemmings A, Davis LS (2010). 'The systematic development of a tailored e-mail intervention for health behavior change toward increasing intentional physical activity.' *West J Nurs Res* 31(3): 330–46.
- 327 Morrison A (2001). 'Effectiveness of printed patient educational materials in chronic illness: a systematic review of controlled trials.' *J Manag Pharm Care* 1(1): 51–62.
- 328 Gibson PG, Powell H, Coughlan J et al (2004). 'Limited (information only) patient education programs for adults with asthma (Cochrane Review).' *The Cochrane Library*, Issue 2. Chichester: John Wiley & Sons.
- 329 Kennedy A, Robinson A, Hann M et al (2003). 'A cluster-randomised controlled trial of a patient-centred guidebook for patients with ulcerative colitis: effect on knowledge, anxiety and quality of life.' *Health Soc Care Community* 11(1): 64–72.
- 330 Protheroe J, Blakeman T, Bower P, Chew-Graham C, Kennedy A (2010). 'An intervention to promote patient participation and self-management in long term conditions: development and feasibility testing.' *BMC Health Serv Res* 10: 206.
- 331 Maly RC, Abrahamse AF, Hirsch SH et al (1996). 'What influences physician practice behavior? An interview study of physicians who received consultative geriatric assessment recommendations.' *Arch Family Med*; 5: 448–454.
- 332 Laffel LM, Vangness L, Connell A et al (2003). 'Impact of ambulatory, family-focused teamwork intervention on glycemic control in youth with type 1 diabetes.' *J Pediatrics* 142(4): 409–16.
- 333 Estabrooks C, Goel V, Thiel E et al (2001). 'Decision aids: are they worth it? A systematic review.' *J Health Serv Res Policy* 6(3): 170–82.
- 334 Sturt J, Taylor H, Docherty A et al (2006). 'A psychological approach to providing self management education for people with type 2 diabetes: the diabetes manual.' *BMC Fam Pract* 7: 70.
- 335 Banet GA, Felchli MA (1997). 'The potential utility of a shared medical record in a 'first-time' stroke population.' *J Vasc Nurs* 15(1): 29–33.
- 336 Warner JP, King M, Blizard R, et al (2000). 'Patient-held shared care records for individuals with mental illness. Randomised controlled evaluation.' *Br J Psychiatry* 177: 319–24.
- 337 Lester H, Allan T, Wilson S, Jowett S, Roberts L (2003). 'A cluster randomised controlled trial of patient-held medical records for people with schizophrenia receiving shared care.' *Br J Gen Pract* 53(488): 197–203.
- 338 Ball MJ, Smith C, Bakalar RS (2007). 'Personal health records: empowering consumers.' *J Healthc Inf Manag* 21(1): 76–86.
- 339 Winkelman WJ, Leonard KJ, Rossos PG (2005). 'Patient-perceived usefulness of online electronic medical records: employing grounded theory in the development of information and communication technologies for use by patients living with chronic illness.' *J Am Med Inform Assoc* 12(3): 306–14.
- 340 Currell R, Urquhart C (2004). 'Nursing record systems: effects on nursing practice and health care outcomes (Cochrane Review).' *The Cochrane Library* (Issue 2).
- 341 Ross SE, Moore LA, Earnest MA et al (2004). 'Providing a web-based online medical record with electronic communication capabilities to patients with congestive heart failure: randomized trial.' *J Med Internet Res* 6(2): e12.
- 342 Robinson T (2010). 'Developing self management plans to help people with COPD to control their condition.' *Nurs Times* 106(17): 14.
- 343 Schillinger D, Hammer H, Wang F, Palacios J, McLean I, Tang A, Youmans S, Handley M (2008). 'Seeing in 3-D: examining the reach of diabetes self management support strategies in a public health care system.' *Health Educ Behav* 35(5): 664–82.
- 344 Smith SR, Rublein JC, Marcus C, Brock TP, Chesney MA (2003). 'A medication self management program to improve adherence to HIV therapy regimens.' *Patient Educ Couns* 50(2): 187–99.
- 345 McGeoch GR, Willsman KJ, Dowson CA, Town GI, Frampton CM, McCartin FJ, Cook JM, Epton MJ (2006). 'Self-management plans in the primary care of patients with chronic obstructive pulmonary disease.' *Respirology* 11(5): 611–8.
- 346 Garrett N, Hageman CM, Sibley SD, Davern M, Berger M, Brunzell C, Malecha K, Richards SW (2005). 'The effectiveness of an interactive small group diabetes intervention in improving knowledge, feeling of control, and behavior.' *Health Promot Pract* 6(3): 320–8.
- 347 Kaya Z, Erkan F, Ozkan M, Ozkan S, Kocaman N, Ertekin BA, Direk N (2009). 'Self-management plans for asthma control and predictors of patient compliance.' *J Asthma* 46(3): 270–5.
- 348 Janson SL, McGrath KW, Covington JK, Cheng SC, Boushey HA (2009). 'Individualized asthma self management improves medication adherence and markers of asthma control.' *J Allergy Clin Immunol* 123(4): 840–6.
- 349 Magar Y, Vervloet D, Steenhouwer F, Smaga S, Mechin H, Rocca Serra JP, Marchand C, d'Ivernois JF (2005). 'Assessment of a therapeutic education programme for asthma patients: "un souffle nouveau."' *Patient Educ Couns* 58(1): 41–6.
- 350 D'Souza WJ, Te Karu H, Fox C, Harper M, Gemmell T, Ngatuere M, Wickens K, Crane J, Pearce N, Beasley R (1998). 'Long-term reduction in asthma morbidity following an asthma self management programme.' *ERS J*.
- 351 Gallefoss F, Bakke PS (1999). 'How does patient education and self management among asthmatics and patients with chronic obstructive pulmonary disease affect medication?' *Am J Respir Crit Care Med* 160(6): 2000–5.
- 352 Gillies J, Barry D, Crane J, et al (1996). 'A community trial of a written self management plan for children with asthma.' *NZ Med J* 109(1015): 30–3.
- 353 van der Palen J, Klein JJ, Zielhuis GA, van Herwaarden CL (1998). 'The role of self-treatment guidelines in self management education for adult asthmatics.' *Respir Med* 92(4): 668–75.
- 354 Starnino VR, Mariscal S, Holter MC, Davidson LJ, Cook KS, Fukui S, Rapp CA (2010). 'Outcomes of an illness self-management group using wellness recovery action planning.' *Psychiatr Rehabil J* 34(1): 57–60.
- 355 Burkhart PV, Rayens MK, Oakley MG, Abshire DA, Zhang M (2007). 'Testing an intervention to promote children's adherence to asthma self management.' *J Nurs Scholarsh* 39(2): 133–40.
- 356 Kennedy AP, Nelson E, Reeves D, Richardson G, Roberts C, Robinson A, Rogers AE, Sculpher M, Thompson DG (2004). 'A randomised controlled trial to assess the effectiveness and cost of a patient orientated self management approach to chronic inflammatory bowel disease.' *Gut* 53(11): 1639–45.

- 357 Milenkovic B, Bosnjak-Petrovic V (2007). 'Self-management program in treatment of asthma.' *Srp Arh Celok Lek* 135(3-4): 147-52.
- 358 Powell H, Gibson PG (2004). 'Options for self management education for adults with asthma (Cochrane Review).' *The Cochrane Library* (Issue 2). Chichester: John Wiley & Sons.
- 359 Gibson PG, Powell H, Coughlan J, Wilson AJ, Abramson M, Haywood P, Bauman A, Hensley MJ, Walters EH (2003). 'Self-management education and regular practitioner review for adults with asthma.' *Cochrane Database Syst Rev* (1): CD001117.
- 360 Gallefoss F, Bakke PS (1999). 'How does patient education and self management among asthmatics and patients with chronic obstructive pulmonary disease affect medication?' *Am J Respir Crit Care Med* 160(6): 2000-5.
- 361 Gillies J, Barry D, Crane J, et al (1996). 'A community trial of a written self management plan for children with asthma.' *NZ Med J* 109(1015): 30-3.
- 362 Jones A, Pill R, Adams S (2010). 'Qualitative study of views of health professionals and patients on guided self management plans for asthma.' *BMJ* 321(7275): 1507-10.
- 363 Daly JM, Buckwalter K, Maas M. Written and computerized care plans (2002). 'Organizational processes and effect on patient outcomes.' *J Gerontol Nurs* 28(9): 14-23.
- 364 Toelle BG, Ram FSF (2004). 'Written individualised management plans for asthma in children and adults (Cochrane Review).' *The Cochrane Library* (Issue 2). Chichester: John Wiley & Sons.
- 365 van der Palen J, Klein JJ, Zielhuis GA, van Herwaarden CL (1998). 'The role of self-treatment guidelines in self management education for adult asthmatics.' *Respir Med* 92(4): 668-75.
- 366 Couturaud F, Proust A, Frachon I, Dewitte JD, Oger E, Quiot JJ, Leroyer C (2002). 'Education and self management: a one-year randomized trial in stable adult asthmatic patients.' *J Asthma* 39(6): 493-500.
- 367 Walters JA, Turnock AC, Walters EH, Wood-Baker R (2010). 'Action plans with limited patient education only for exacerbations of chronic obstructive pulmonary disease.' *Cochrane Database Syst Rev* 5: CD005074.
- 368 Gibson PG, Powell H, Coughlan J, et al (2004). 'Self-management education and regular practitioner review for adults with asthma (Cochrane Review).' *The Cochrane Library* (Issue 2). Chichester: John Wiley & Sons.
- 369 Gallefoss F (2004). 'The effects of patient education in COPD in a 1-year follow up randomised, controlled trial.' *Patient Educ Couns* 52(3): 259-66.
- 370 Espinoza-Palma T, Zamorano A, Arancibia F, Bustos MF, Silva MJ, Cardenas C, De La Barra P, Puente V, Cerdá J, Castro-Rodriguez JA, Prado F (2009). 'Effectiveness of asthma education with and without a self management plan in hospitalized children.' *J Asthma* 46(9): 906-10.
- 371 Wood-Baker R, McGlone S, Venn A, Walters EH (2006). 'Written action plans in chronic obstructive pulmonary disease increase appropriate treatment for acute exacerbations.' *Respirology* 11(5): 619-26.
- 372 van Eijken M, Wensing M, de Konink M, Vernooij M, Zielhuis G, Lagro T, Rikkert MO, Grol R (2004). 'Health education on self management and seeking health care in older adults: a randomised trial.' *Patient Educ Couns* 55(1): 48-54.
- 373 Shepperd S, Parkes J, McClaren J, Phillips C (2004). 'Discharge planning from hospital to home (Cochrane Review).' *The Cochrane Library* (Issue 2). Chichester: John Wiley & Sons.
- 374 Spillane LL, Lumb EW, Cobaugh DJ, et al (1997). 'Frequent users of the emergency department: can we intervene?' *Acad Emerg Med* 4(6): 574-80.
- 375 Brown MD, Reeves MJ, Meyerson K, Korzeniewski SJ (2006). 'Randomized trial of a comprehensive asthma education program after an emergency department visit.' *Ann Allergy Asthma Immunol* 97(1): 44-51.
- 376 Osman LM, Calder C, Godden DJ, Friend JA, McKenzie L, Legge JS, Douglas JG (2002). 'A randomised trial of self management planning for adult patients admitted to hospital with acute asthma.' *Thorax* 57(10): 869-74.
- 377 Ersek M, Turner JA, Cain KC, Kemp CA (2004). 'Chronic pain self management for older adults: a randomized controlled trial.' *BMC Geriatr* 4: 7.
- 378 Barlow JH, Turner AP, Gilchrist M (2009). 'A randomised controlled trial of lay-led self management for myocardial infarction patients who have completed cardiac rehabilitation.' *Eur J Cardiovasc Nurs* 8(4): 293-301.
- 379 Kline KS, Scott LD, Britton AS (2007). 'The use of supportive-educative and mutual goal-setting strategies to improve self management for patients with heart failure.' *Home Healthc Nurse* 25(8): 502-10.
- 380 Brown CT, Yap T, Cromwell DA, Rixon L, Steed L, Mulligan K, Mundy A, Newman SP, van der Meulen J, Emberton M (2007). 'Self-management for men with lower urinary tract symptoms: randomised controlled trial.' *BMJ* 334(7583): 25.
- 381 Glasgow RE, Toobert DJ, Hampson SE, Strycker LA (2002). 'Implementation, generalization and long-term results of the "choosing well" diabetes self management intervention.' *Patient Educ Couns* 48(2): 115-22.
- 382 Goepfing J, Lorig KR, Ritter PL, Mutatkar S, Villa F, Gizlice Z (2009). 'Mail-delivered arthritis self management tool kit: a randomized trial and longitudinal followup.' *Arthritis Rheum* 61(7): 867-75.
- 383 Braun AK, Kubiak T, Kuntsche J, Meier-Hofig M, Muller UA, Feucht I, Zeyfang A (2009). 'SGS: a structured treatment and teaching programme for older patients with diabetes mellitus: a prospective randomised controlled multi-centre trial.' *Age Ageing* 38(4): 390-6.
- 384 Bastiaenen CH, de Bie RA, Vlaeyen JW, Goossens ME, Leffers P, Wolters PM, Bastiaanssen JM, Brandt PA, Essed GG (2008). 'Long-term effectiveness and costs of a brief self management intervention in women with pregnancy-related low back pain after delivery.' *BMC Pregnancy Childbirth* 8: 19.
- 385 Scholz U, Knoll N, Sniehotta FF, Schwarzer R (2006). 'Physical activity and depressive symptoms in cardiac rehabilitation: long-term effects of a self management intervention.' *Soc Sci Med* 62(12): 3109-20.
- 386 Estabrooks PA, Nelson CC, Xu S, King D, Bayliss EA, Gaglio B, Nutting PA, Glasgow RE (2005). 'The frequency and behavioral outcomes of goal choices in the self management of diabetes.' *Diabetes Educ* 31(3): 391-400.
- 387 Brody BL, Roch-Leveq AC, Thomas RG, Kaplan RM, Brown SI (2005). 'Self-management of age-related macular degeneration at the 6-month follow up: a randomized controlled trial.' *Arch Ophthalmol* 123(1): 46-53.

- 388 Thoolen B, de Ridder D, Bensing J, Gorter K, Rutten G (2008). 'Beyond good intentions: the development and evaluation of a proactive self management course for patients recently diagnosed with type 2 diabetes.' *Health Educ Res* 23(1): 53–61.
- 389 Garrett DG, Bluml BM (2005). 'Patient self management program for diabetes: first-year clinical, humanistic, and economic outcomes.' *J Am Pharm Assoc* 45: 130–7.
- 390 West SP, Laguna C, Trief PM, Izquierdo R, Weinstock RS (2010). 'Goal setting using telemedicine in rural underserved older adults with diabetes: experiences from the informatics for diabetes education and telemedicine project.' *Telemed J E Health* 16(4): 405–16.
- 391 Russell CL (2010). 'A clinical nurse specialist-led intervention to enhance medication adherence using the plan-do-check-act cycle for continuous self-improvement.' *Clin Nurse Spec* 24(2): 69–75.
- 392 Wheeler JR, Janz NK, Dodge JA (2003). 'Can a disease self management program reduce health care costs? The case of older women with heart disease.' *Med Care* 41(6): 706–15.
- 393 Janson SL, Fahy JV, Covington JK, Paul SM, Gold WM, Boushey HA (2003). 'Effects of individual self management education on clinical, biological, and adherence outcomes in asthma.' *Am J Med* 115(8): 620–6.
- 394 Lerman I, Lopez-Ponce A, Villa AR, Escobedo M, Caballero EA, Velasco ML, Gomez-Perez FJ, Rull-Rodrigo JA (2009). 'Pilot study of two different strategies to reinforce self care behaviors and treatment compliance among type 2 diabetes patients from low income strata.' *Gac Med Mex* 145(1): 15–9.
- 395 Anderson RM, Funnell MM, Nwankwo R, Gillard ML, Oh M, Fitzgerald JT (2005). 'Evaluating a problem-based empowerment program for African Americans with diabetes: results of a randomized controlled trial.' *Ethn Dis* 15(4): 671–8.
- 396 Shearer NB, Cisar N, Greenberg EA (2007). 'A telephone-delivered empowerment intervention with patients diagnosed with heart failure.' *Heart Lung* 36(3): 159–69.
- 397 Glasgow RE, Nutting PA, Toobert DJ, King DK, Strycker LA, Jex M, O'Neill C, Whitesides H, Merenich J (2006). 'Effects of a brief computer-assisted diabetes self management intervention on dietary, biological and quality-of-life outcomes.' *Chronic Illn* 2(1): 27–38.
- 398 Blixen CE, Bramstedt KA, Hammel JP, Tilley BC. A pilot study of health education via a nurse-run telephone self management programme for elderly people with osteoarthritis. *J Telemed Telecare* 2004; 10(1): 44–9.
- 399 Heaney CA, Goetzel RZ (1997). 'A review of health-related outcomes of multi-component worksite health promotion programs.' *Am J Health Promot* 11(4): 290–307.
- 400 Riley KM, Glasgow RE, Eakin EG (2001). 'Resources for health: A social-ecological intervention for supporting self management of chronic conditions.' *J Health Psy* 6(6): 693–705.
- 401 Clark M, Hampson SE, Avery L, Simpson R (2004). 'Effects of a tailored lifestyle self management intervention in patients with type 2 diabetes.' *Br J Health Psychol* 9(Pt 3): 365–79.
- 402 Samuel-Hodge CD, Keyserling TC, Park S, Johnston LF, Gizlice Z, Bangdiwala SI (2009). 'A randomized trial of a church-based diabetes self management program for African Americans with type 2 diabetes.' *Diabetes Educ* 35(3): 439–54.
- 403 Bourbeau J, Julien M, Maltais F, Rouleau M, Beaupre A, Begin R, Renzi P, Nault D, Borycki E, Schwartzman K, Singh R, Collet JP (2003). 'Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: a disease-specific self management intervention.' *Arch Intern Med* 163(5): 585–91.
- 404 Glasgow RE, La Chance PA, Toobert DJ, et al (1997). 'Long-term effects and costs of brief behavioural dietary intervention for patients with diabetes delivered from the medical office.' *Patient Educ Couns* 32(3):175–84.
- 405 Blanson Henkemans OA, van der Boog PJ, Lindenberg J, van der Mast CA, Neerincx MA, Zwetsloot-Schonk BJ (2009). 'An online lifestyle diary with a persuasive computer assistant providing feedback on self management.' *Technol Health Care* 17(3): 253–67.
- 406 Monninkhof E, van der Valk P, van der Palen J, van Herwaarden C, Zielhuis G (2003). 'Effects of a comprehensive self management programme in patients with chronic obstructive pulmonary disease.' *Eur Respir J* 22(5): 815–20.
- 407 Brown SA, Blozis SA, Kouzekanani K, Garcia AA, Winchell M, Hanis CL (2005). 'Dosage effects of diabetes self management education for Mexican Americans: the Starr County Border Health Initiative.' *Diabetes Care* 28(3): 527–32.
- 408 Hendricks LE, Hendricks RT (2000). 'The effect of diabetes self management education with frequent follow up on the health outcomes of African American men.' *Diabetes Educ* 26(6): 995–1002.
- 409 Hibbard JH, Mahoney E (2010). 'Toward a theory of patient and consumer activation.' *Patient Educ Couns* 78(3):377–81.
- 410 Remmers C, Hibbard J, Mosen DM, Wagenfield M, Hoyer RE, Jones C (2009). 'Is patient activation associated with future health outcomes and healthcare utilization among patients with diabetes?' *J Ambul Care Manage* 32(4):320–7.
- 411 Cunningham AJ, Lockwood GA, Cunningham JA (1991). 'A relationship between perceived self-efficacy and quality of life in cancer patients.' *Patient Educ Couns* 17(1):71–8.
- 412 Hibbard JH, Greene J, Tusler M (2009). 'Improving the outcomes of disease management by tailoring care to the patient's level of activation.' *Am J Manag Care* 15(6):353–60.
- 413 Ersser SJ, Cowdell FC, Latter SM, Healy E (2010). 'Self-management experiences in adults with mild-moderate psoriasis: an exploratory study and implications for improved support.' *Br J Dermatol* (published online June 2010).
- 414 Seymour CJ, Cannon S (2010). 'Student-facilitated health promotion intervention for chronic disease self-management in at-risk elders reflections from the field.' *J Allied Health* 39(2): 120–8.
- 415 Morice AH, Wrench C (2001). 'The role of the asthma nurse in treatment compliance and self management following hospital admission.' *Respir Med* 95(11): 851–6.
- 416 Duke SA, Colagiuri S, Colagiuri R (2009). 'Individual patient education for people with type 2 diabetes mellitus.' *Cochrane Database Syst Rev* (1): CD005268.
- 417 Bailey WC, Richards JM Jr, Brooks CM (1990). 'A randomized trial to improve self management practices of adults with asthma.' *Arch Intern Med* 150(8): 1664–8.
- 418 Boulware LE, Daumit GL, Frick KD et al (2001). 'An evidence-based review of patient-centered behavioral interventions for hypertension.' *Am J Prev Med* 21(3): 221–32.
- 419 Dracup K, Baker DW, Dunbar SB, et al (1994). 'Management of heart failure. II. Counseling, education, and lifestyle modifications.' *JAMA* 272(18): 1442–6.
- 420 Superio-Cabuslay E, Ward MM, Lorig KR (1996). 'Patient education interventions in osteoarthritis and rheumatoid arthritis: a meta-analytic comparison with nonsteroidal antiinflammatory drug treatment.' *Arthritis Care Res* 9(4): 292–301.

- 421 Goudswaard AN, Stolk RP, Zuithoff NP, et al (2004). 'Long-term effects of self management education for patients with type 2 diabetes taking maximal oral hypoglycaemic therapy: a randomized trial in primary care.' *Diabet Med* 21(5): 491–6.
- 422 Evans R 3rd, Gergen PJ, Mitchell H et al (1999). 'A randomized clinical trial to reduce asthma morbidity among inner-city children: results of the National Cooperative Inner-City Asthma Study.' *J Pediatr* 135(3): 332–8.
- 423 Lawn S, Battersby MW, Pols RG et al (2007). 'The mental health expert patient: findings from a pilot study of a generic chronic condition self management programme for people with mental illness.' *Int J Soc Psychiatry* 53(1): 63–74.
- 424 Lee JK, Grace KA, Taylor AJ (2006). 'Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: a randomized controlled trial.' *JAMA* 296(21): 2563–71.
- 425 Gaston MH, Porter GK, Thomas VG (2007). 'Prime time sister circles: evaluating a gender-specific, culturally relevant health intervention to decrease major risk factors in mid-life African-American women.' *J Natl Med Assoc* 99(4): 428–38.
- 426 Bordeleau L et al (2003). 'Quality of life in a randomized trial of group psychosocial support in metastatic breast cancer: overall effects of the intervention and an exploration of missing data.' *J Clin Oncol* 21(10): 1944–1951.
- 427 Lorig KR, Ritter PL, Gonzalez VM (2003). 'Hispanic chronic disease self management: a randomized community-based outcome trial.' *Nurs Res* 52(6): 361–9.
- 428 Carone M, Bertolotti G, Cerveri I, De Benedetto F, Fogliani V, Nardini S, Portalone L, Rossi A, Sanguinetti CM, Schiavina M, Donner CF (2002). 'EDU-CARE, a randomised, multicentre, parallel group study on education and quality of life in COPD.' *Monaldi Arch Chest Dis* 57(1): 25–9.
- 429 Swerissen H, Belfrage J, Weeks A, Jordan L, Walker C, Furler J, McAvoy B, Carter M, Peterson C (2006). 'A randomised control trial of a self management program for people with a chronic illness from Vietnamese, Chinese, Italian and Greek backgrounds.' *Patient Educ Couns* 64(1–3): 360–8.
- 430 Lorig K, Ritter PL, Plant K (2005). 'A disease-specific self-help program compared with a generalized chronic disease self-help program for arthritis patients.' *Arthritis Rheum* 53(6): 950–7.
- 431 Griffiths C, Motlib J, Azad A, Ramsay J, Eldridge S, Feder G, Khanam R, Munni R, Garrett M, Turner A, Barlow J (2005). 'Randomised controlled trial of a lay-led self management programme for Bangladeshi patients with chronic disease.' *Br J Gen Pract* 55(520): 831–7.
- 432 Schiel R, Braun A, Muller R, Helbich C, Siefke S, Franke I, Osterbrink B, Leppert K, Stein G, Muller UA (2004). 'A structured treatment and educational program for patients with type 2 diabetes mellitus, insulin therapy and impaired cognitive function (DikoL).' *Med Klin* 99(6): 285–92.
- 433 Battersby M, Hoffmann S, Cadilhac D, Osborne R, Lator E, Lindley R (2009). 'Getting your life back on track after stroke': a phase II multi-centered, single-blind, randomized, controlled trial of the Stroke Self Management Program vs. the Stanford Chronic Condition Self Management Program or standard care in stroke survivors.' *Int J Stroke* 4(2): 137–44.
- 434 The EPP Evaluation Team (2005). *Process evaluation of the EPP – Report II: Examination of the implementation of the Expert Patients Programme within the structures and locality contexts of the NHS in England*. University of Manchester, National Primary Care Research and Development Centre.
- 435 Wallace AS, Carlson JR, Malone RM, Joyner J, Dewalt DA (2010). 'The influence of literacy on patient-reported experiences of diabetes self-management support.' *Nurs Res* 59(5): 356–63.
- 436 Greenhalgh T, Campbell-Richards D, Vijayaraghavan S, Collard A, Malik F, Griffin M, Morris J, Claydon A, Macfarlane F (2010). 'New models of self-management education for minority ethnic groups: pilot randomized trial of a story-sharing intervention.' *J Health Serv Res Policy* (published online August 2010).
- 437 Walker EA, Stevens KA, Persaud S (2010). 'Promoting diabetes self-management among African Americans: an educational intervention.' *J Health Care Poor Underserved* 21(3 Suppl): 169–86.
- 438 Press VG, Pincavage AT, Pappalardo AA, Baker DC, Conwell WD, Cohen JC, Hoyte FL, Johnson ME, Prochaska MH, Vela MB, Arora VM (2010). 'The Chicago Breathe Project: a regional approach to improving education on asthma inhalers for resident physicians and minority patients.' *J Natl Med Assoc* 102(7): 548–55.
- 439 Coleman S, McQuade J, Rose J, Inderjeeth C, Carroll G, Briffa NK (2010). 'Self-management for osteoarthritis of the knee: does mode of delivery influence outcome?' *BMC Musculoskelet Disord* 11: 56.
- 440 Schillinger D, Hammer H, Wang F, Palacios J, McLean I, Tang A, Youmans S, Handley M (2010). 'Seeing in 3-D: examining the reach of diabetes self-management support strategies in a public health care system.' *Health Educ Behav* 35(5): 664–82.
- 441 Department of Health (2007). *Self care support: the evidence pack – summary of work in progress 2005–07*. London: Department of Health.
- 442 Campbell HS et al (2004). 'Cancer peer support programs – do they work?' *Patient Ed Counsel* 55: 3–15.
- 443 Corben S, Rosen R (2005). *Self-management for long-term conditions*. London: King's Fund.
- 444 van Hooff ML, van der Merwe JD, O'Dowd J, Pavlov PW, Spruit M, de Kleuver M, van Limbeek J (2010). 'Daily functioning and self-management in patients with chronic low back pain after an intensive cognitive behavioral programme for pain management.' *Eur Spine J* 19(9): 1517–26.
- 445 Clark NM, Gong M, Kaciroti N et al (2005). 'A trial of asthma self management in Beijing schools.' *Chronic Illn* 1(1): 31–8.
- 446 Heisler M (2006). *Building peer support programmes to manage disease: seven models for success*. California Health Care Foundation.
- 447 Chien WT et al (2004). 'A randomized controlled trial of a mutual support group for family caregivers of patients with schizophrenia.' *Int J Nurs Stud* 41(6): 637–649.
- 448 Lorig KR, Sobel DS, Stewart AL, et al (1999). 'Evidence suggesting that a chronic disease self management program can improve health status while reducing utilization and costs: A randomized trial.' *Med Care* 37(1): 5–14.
- 449 Warsi A, Wang PS, LaValley MP, et al (2004). 'Self-management education programs in chronic disease: a systematic review and methodological critique of the literature.' *Arch Intern Med* 164(15): 1641–9.
- 450 Bernard-Bonin AC, Stachenko S, Bonin D, et al (1995). 'Self-management teaching programs and morbidity of pediatric asthma: a meta-analysis.' *J Allergy Clin Immunol* 95(1 Pt 1): 34–41.
- 451 Monninkhof E, van der Valk P, van der Palen J et al (2003). 'Self-management education for patients with chronic obstructive pulmonary disease: a systematic review.' *Thorax* 58(5): 394–8.

- 452 Kennedy A, Reeves D, Bower P et al (2007). 'The effectiveness and cost effectiveness of a national lay-led self care support programme for patients with long-term conditions: a pragmatic randomised controlled trial.' *J Epidemiol Community Health* 61(3): 254–61.
- 453 Monninkhof EM, et al (2003). Self-management education for chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* (1): CD002990.
- 454 Boulware LE et al (2001). 'An evidence-based review of patient-centered behavioural interventions for hypertension.' *Am J Prev Med* 21(3): 221–232.
- 455 Niedermann K et al (2004). 'Gap between short- and long-term effects of patient education in rheumatoid arthritis patients: a systematic review.' *Arthritis Rheum* 51(3): 388–398.
- 456 Ersek M, Turner JA, Cain KC, Kemp CA (2008). 'Results of a randomized controlled trial to examine the efficacy of a chronic pain self management group for older adults.' *Pain* 138(1): 29–40.
- 457 Chodosh J et al (2005). 'Meta-analysis: chronic disease self management programs for older adults.' *Ann Intern Med* 143(6): 427–438.
- 458 Cooper H et al (2001). 'Chronic disease patient education: lessons from meta-analyses.' *Patient Educ Couns* 44 (2): 107–117.
- 459 Young D, Furler J, Vale M, et al (2007). 'Patient Engagement and Coaching for Health: The PEACH study – a cluster randomised controlled trial using the telephone to coach people with type 2 diabetes to engage with their GPs to improve diabetes care.' *BMC Fam Pract* 8: 20.
- 460 LaFramboise LM, Toder CM, Zimmermann L, Agrawal S (2003). 'Comparison of Health Buddy with traditional approaches to heart failure management.' *Fam Community Health* 26(4): 275–88.
- 461 DiIorio C, Reisinger EL, Yeager KA, McCarty F (2009). 'A telephone-based self management program for people with epilepsy.' *Epilepsy Behav* 14(1): 232–6.
- 462 Esters ON, Boeckner LS, Hubert M, Horacek T, Kritsch KR, Oakland MJ, Lohse B, Greene G, Nitzke S (2010). 'Educator and participant perceptions and cost analysis of stage-tailored educational telephone calls.' *J Nutr Educ Behav* 40(4): 258–64.
- 463 Kim HS, Oh JA (2003). 'Adherence to diabetes control recommendations: impact of nurse telephone calls.' *J Adv Nurs* 44(3): 256–61.
- 464 Whitlock WL, Brown A, Moore K, et al (2000). 'Telemedicine improved diabetic management.' *Mil Med* 165(8): 579–84.
- 465 Shearer NB, Cisar N, Greenberg EA (2007). 'A telephone-delivered empowerment intervention with patients diagnosed with heart failure.' *Heart Lung* 36(3): 159–69.
- 466 Piette JD, Weinberger M, Kraemer FB, McPhee SJ (2001). 'Impact of automated calls with nurse follow up on diabetes treatment outcomes in a Department of Veterans Affairs Health Care System: a randomized controlled trial.' *Diabetes Care* 24(2): 202–8.
- 467 West SP, Laguna C, Trief PM, Izquierdo R, Weinstock RS (2010). 'Goal setting using telemedicine in rural underserved older adults with diabetes: experiences from the informatics for diabetes education and telemedicine project.' *Telemed J E Health* 16(4): 405–16.
- 468 Piette JD, Weinberger M, McPhee SJ, et al (2000). 'Do automated calls with nurse follow up improve self care and glycemic control among vulnerable patients with diabetes?' *Am J Med* 108(1): 20–7.
- 469 Oh JA, Kim HS, Yoon KH, Choi ES (2003). 'A telephone-delivered intervention to improve glycemic control in type 2 diabetic patients.' *Yonsei Med J* 44(1): 1–8.
- 470 Linden A, Butterworth SW, Prochaska JO (2010). 'Motivational interviewing-based health coaching as a chronic care intervention.' *J Eval Clin Pract* 16(1): 166–74.
- 471 Paradis V, Cossette S, Frasure-Smith N, Heppell S, Guertin MC (2010). 'The efficacy of a motivational nursing intervention based on the stages of change on self-care in heart failure patients.' *J Cardiovasc Nurs* 25(2): 130–41.
- 472 Oslin DW, Sayers S, Ross J, et al (2003). 'Disease management for depression and at-risk drinking via telephone in an older population of veterans.' *Psychosom Med* 65(6): 931–7.
- 473 Riegel B, Carlson B, Kopp Z, et al (2002). 'Effect of a standardized nurse case-management telephone intervention on resource use in patients with chronic heart failure.' *Arch Intern Med* 162(6): 705–12.
- 474 Jarrett ME, Cain KC, Burr RL, Hertig VL, Rosen SN, Heitkemper MM (2009). 'Comprehensive self management for irritable bowel syndrome: randomized trial of in-person vs. combined in-person and telephone sessions.' *Am J Gastroenterol* 104(12): 3004–14.
- 475 Given CW, Bradley C, You M, Sikorskii A, Given B (2010). 'Costs of novel symptom management interventions and their impact on hospitalizations.' *J Pain Symptom Manage* 39(4): 663–72.
- 476 Anderson DR, Christison-Lagay J, Villagra V, Liu H, Dziura J (2010). 'Managing the space between visits: A randomized trial of disease management for diabetes in a community health center.' *J Gen Intern Med* (published online June 2010).
- 477 Hopp FP, Hogan MM, Woodbridge PA, Lowery JC (2010). 'The use of telehealth for diabetes management: a qualitative study of telehealth provider perceptions.' *Implement Sci* 2: 14.
- 478 Faghri PD, Blozie E, Gustavesen S, Kotejoshyer R (2010). 'The role of tailored consultation following health-risk appraisals in employees' health behavior.' *J Occup Environ Med* 50(12): 1378–85.
- 479 Sorensen G, Barbeau EM, Stoddard AM, et al (2007). 'Tools for health: the efficacy of a tailored intervention targeted for construction laborers.' *Cancer Causes Control* 18(1): 51–9.
- 480 Aldana SG, Greenlaw RL, Diehl HA, et al (2005). 'The effects of a worksite chronic disease prevention program.' *J Occup Environ Med* 47(6): 558–64.
- 481 Proper KI, van der Beek AJ, Hildebrandt VH, et al (2004). 'Worksite health promotion using individual counselling and the effectiveness on sick leave; results of a randomised controlled trial.' *Occup Environ Med* 61(3): 275–9.
- 482 Muto T, Yamauchi K (2001). 'Evaluation of a multicomponent workplace health promotion program conducted in Japan for improving employees' cardiovascular disease risk factors.' *Prev Med* 33(6): 571–7.
- 483 Bloch MJ, Armstrong DS, Dettling L, et al (2006). 'Partners in lowering cholesterol: comparison of a multidisciplinary educational program, monetary incentives, or usual care in the treatment of dyslipidemia identified among employees.' *J Occup Environ Med* 48(7): 675–81.
- 484 Golaszewski T, Yen LT (1992). 'Demographic characteristics of users of worksite health promotion written materials.' *Am J Health Promot* 6(5): 359–63.
- 485 Anderson DR, Stauffer MJ (1996). 'The impact of worksite-based health risk appraisal on health-related outcomes: a review of the literature.' *Am J Health Promot* 10(6): 499–508.
- 486 Tessaro IA, Taylor S, Belton L, et al (2000). 'Adapting a natural (lay) helpers model of change for worksite health promotion for women.' *Health Educ Res* 15(5): 603–14.

- 487 Fujii H, Nakade M, Haruyama Y, Fukuda H, Hashimoto M, Ikuyama T, Kaburagi H, Murai E, Okumura M, Sairenchi T, Muto T (2010). 'Evaluation of a computer-tailored lifestyle modification support tool for employees in Japan.' *Ind Health* 47(3): 333–41.
- 488 Gates D, Brehm B, Hutton S, et al (2006). 'Changing the work environment to promote wellness: a focus group study.' *AAOHN J* 54(12): 515–20.
- 489 Heaney CA, Goetzl RZ (1997). 'A review of health-related outcomes of multi-component worksite health promotion programs.' *Am J Health Promot* 11(4): 290–307.
- 490 Pelletier KR (2001). 'A review and analysis of the clinical and cost-effectiveness studies of comprehensive health promotion and disease management programs at the worksite: 1998–2000 update.' *Am J Health Promot* 16(2): 107–16.
- 491 Bradley C, Blenkinsopp A (1996). 'Over the counter drugs: The future for self medication.' *BMJ* 312 (7034): 835–837.
- 492 Coster S, et al (2000). 'Monitoring blood glucose control in diabetes mellitus: a systematic review.' *Health Technology Assessment* 4 (12).
- 493 Jansen JP (2006). 'Self-monitoring of glucose in type 2 diabetes mellitus: a Bayesian meta-analysis of direct and indirect comparisons.' *Curr Med Res Opin* 22(4): 671–681.
- 494 Fitzmaurice DA, Murray ET, Gee KM, Allan TF, Hobbs FD (2002). 'A randomised controlled trial of patient self management of oral anticoagulation treatment compared with primary care management.' *J Clin Pathol* 55(11): 845–9.
- 495 Bennett H, Laird K, Margolius D, Ngo V, Thom DH, Bodenheimer T (2009). 'The effectiveness of health coaching, home blood pressure monitoring, and home-titration in controlling hypertension among low-income patients: protocol for a randomized controlled trial.' *BMC Public Health* 9: 456.
- 496 Koertke H, Zittermann A, Tenderich G, Wagner O, El-Arousy M, Krian A, Ennker J, Taborski U, Klovekorn WP, Moosdorf R, Saggau W, Koerfer R (2007). 'Low-dose oral anticoagulation in patients with mechanical heart valve prostheses: final report from the early self management anticoagulation trial II.' *Eur Heart J* 28(20): 2479–84.
- 497 Voller H, Glatz J, Taborski U, Bernardo A, Dovifat C, Heidinger K (2005). 'Self-management of oral anticoagulation in nonvalvular atrial fibrillation (SMAAF study).' *Z Kardiol* 94(3): 182–6.
- 498 Christensen TD, Johnsen SP, Hjortdal VE, Hasenkam JM (2007). 'Self-management of oral anticoagulant therapy: a systematic review and meta-analysis.' *Int J Cardiol* 118(1): 54–61.
- 499 Bancej CM, Campbell N, McKay DW, Nichol M, Walker RL, Kaczorowski J (2010). 'Home blood pressure monitoring among Canadian adults with hypertension: results from the 2009 survey on living with chronic diseases in Canada.' *Can J Cardiol* 26(5): e152–7.
- 500 Mailloux LU, Kapikian N, Napolitano B, et al (1996). 'Home hemodialysis: patient outcomes during a 24-year period of time from 1970 through 1993.' *Adv Ren Replace Ther* 3(2): 112–9.
- 501 Siebenhofer A, Rakovac I, Kleespies C, Piso B, Didjurgit U (2008). 'Self-management of oral anticoagulation reduces major outcomes in the elderly. A randomized controlled trial.' *Thromb Haemost* 100(6): 1089–98.
- 502 Menendez-Jandula B, Souto JC, Oliver A, Montserrat I, Quintana M, Gich I, Bonfill X, Fontcuberta J (2005). 'Comparing self management of oral anticoagulant therapy with clinic management: a randomized trial.' *Ann Intern Med* 142(1): 1–10.
- 503 Schwedes U, Siebolds M, Mertes G (2002). 'Meal-related structured self-monitoring of blood glucose: effect on diabetes control in non-insulin-treated type 2 diabetic patients.' *Diabetes Care* 25(11): 1928–32.
- 504 Guerci B, Drouin P, Grange V, et al (2003). 'Self-monitoring of blood glucose significantly improves metabolic control in patients with type 2 diabetes mellitus: the Auto-Surveillance Intervention Active (ASIA) study.' *Diabetes Metab* 29(6): 587–94.
- 505 Chase HP, Roberts MD, Wightman C, et al (2003). 'Use of the GlucoWatch biographer in children with type 1 diabetes.' *Pediatrics* 111(4): 790–4.
- 506 Sarwat S, Ilag LL, Carey MA, Shrom DS, Heine RJ (2010). 'The relationship between self-monitored blood glucose values and glycated haemoglobin in insulin-treated patients with type 2 diabetes.' *Diabet Med* 27(5): 589–92.
- 507 Thoonen BP, Schermer TR, Van Den Boom G, et al (2003). 'Self-management of asthma in general practice, asthma control and quality of life: a randomised controlled trial.' *Thorax* 58(1): 30–6.
- 508 Ignacio-Garcia JM, Gonzalez-Santos P (1995). 'Asthma self management education program by home monitoring of peak expiratory flow.' *Am J Respir Crit Care Med* 151(2 Pt 1): 353–9.
- 509 van der Meer V, van Stel HF, Bakker MJ, Roldaan AC, Assendelft WJ, Sterk PJ, Rabe KF, Sont JK (2010). 'Weekly self-monitoring and treatment adjustment benefit patients with partly controlled and uncontrolled asthma: an analysis of the SMASHING study.' *Respir Res* 11: 74.
- 510 Cappuccio FP, Kerry SM, Forbes L, Donald A (2004). 'Blood pressure control by home monitoring: meta-analysis of randomised trials.' *BMJ* 329(7458): 145.
- 511 Staessen JA, Den Hond E, Celis H, et al (2004). 'Antihypertensive treatment based on blood pressure measurement at home or in the physician's office: a randomized controlled trial.' *JAMA* 291(8): 955–64.
- 512 McCahon D, Fitzmaurice DA, Murray ET, Fuller CJ, Hobbs RF, Allan TF, Raftery JP (2003). 'SMART: self management of anticoagulation, a randomised trial.' *BMC Fam Pract* 4: 11.
- 513 Koertke H, Minami K, Boethig D, Breymann T, Seifert D, Wagner O, Atmacha N, Krian A, Ennker J, Taborski U, Klövekorn WP, Moosdorf R, Saggau W, Koerfer R (2003). 'INR self management permits lower anticoagulation levels after mechanical heart valve replacement.' *Circulation* 108(Suppl 1): II75–8.
- 514 Gardiner C, Williams K, Longair I, Mackie IJ, Machin SJ, Cohen H (2006). 'A randomised control trial of patient self management of oral anticoagulation compared with patient self-testing.' *Br J Haematol* 132(5): 598–603.
- 515 Coster S, Gulliford MC, Seed PT, et al (2000). 'Self-monitoring in type 2 diabetes mellitus: a meta-analysis.' *Diabet Med* 17(11): 755–61.
- 516 Grampian Asthma Study of Integrated Care (1994). 'Effectiveness of routine self-monitoring of peak flow in patients with asthma' *BMJ* 308(6928): 564–7.
- 517 Wensley D, Silverman M (2004). 'Peak flow monitoring for guided self management in childhood asthma: a randomized controlled trial.' *Am J Respir Crit Care Med* 170(6): 606–12.
- 518 Siebenhofer A, Rakovac I, Kleespies C, Piso B, Didjurgit U (2007). 'Self-management of oral anticoagulation in the elderly: rationale, design, baselines and oral anticoagulation control after one year of follow up. A randomized controlled trial.' *Thromb Haemost* 97(3): 408–16.
- 519 Garcia-Alamino JM, Ward AM, Alonso-Coello P, Perera R, Bankhead C, Fitzmaurice D, Heneghan CJ (2010). 'Self-monitoring and self-management of oral anticoagulation.' *Cochrane Database Syst Rev* 4: CD003839.

- 520 Biermann E, Dietrich W, Standl E (2000). 'Telecare of diabetic patients with intensified insulin therapy. A randomized clinical trial.' *Stud Health Technol Inform* 77: 327–32.
- 521 Kruger DF, White K, Galpern A, et al (2003). 'Effect of modem transmission of blood glucose data on telephone consultation time, clinic work flow, and patient satisfaction for patients with gestational diabetes mellitus.' *J Am Acad Nurse Pract* 15(8): 371–5.
- 522 de Lusignan S, Wells S, Johnson P, et al (2001). 'Compliance and effectiveness of 1 year's home telemonitoring. The report of a pilot study of patients with chronic heart failure.' *Eur J Heart Fail* 3(6): 723–30.
- 523 De Clercq PA, Hasman A, Wolffenbuttel BH (2003). 'A consumer health record for supporting the patient-centered management of chronic diseases.' *Med Inform Internet Med* 28(2): 117–27.
- 524 Cho JH, Chang SA, Kwon HS, et al (2006). 'Long-term effect of the internet-based glucose monitoring system on HbA1c reduction and glucose stability: a 30-month follow up study for diabetes management with a ubiquitous medical care system.' *Diabetes Care* 29(12): 2625–31.
- 525 Ritzema J, Troughton R, Melton I, Crozier I, Doughty R, Krum H, Walton A, Adamson P, Kar S, Shah PK, Richards M, Eigler NL, Whiting JS, Haas GJ, Heywood JT, Frampton CM, Abraham WT (2010). 'Physician-directed patient self-management of left atrial pressure in advanced chronic heart failure.' *Circulation* 121(9): 1086–95.
- 526 Balas EA, Boren SA, Griffing G (1998). 'Computerized management of diabetes: a synthesis of controlled trials.' *Proceedings of the AMIA Annual Symposium* 295–99.
- 527 Montori VM, Helgemoe PK, Guyatt GH, et al (2004). 'Telecare for patients with type 1 diabetes and inadequate glycemic control: a randomized controlled trial and meta-analysis.' *Diabetes Care* 27(5): 1088–94.
- 528 Montani S, Bellazzi R, Quaglini S, d'Annunzio G (2001). 'Meta-analysis of the effect of the use of computer-based systems on the metabolic control of patients with diabetes mellitus.' *Diabetes Technol Ther* 3(3): 347–56.
- 529 Kwon HS, Cho JH, Kim HS, et al (2004). 'Establishment of blood glucose monitoring system using the internet.' *Diabetes Care* 27(2): 478–83.
- 530 Barlow J, Singh D, Bayer S, Curry R (2007). 'A systematic review of the benefits of home telecare for frail elderly people and those with long-term conditions.' *J Telemedicine Telecare* 13: 172–9.
- 531 McManus RJ, Mant J, Bray EP, Holder R, Jones MI, Greenfield S, Kaambwa B, Banting M, Bryan S, Little P, Williams B, Hobbs FD (2010). 'Telemonitoring and self-management in the control of hypertension (TASMINH2): a randomised controlled trial.' *Lancet* 376(9736): 163–72.
- 532 Piette JD, Rosland AM, Silveira M, Kabeto M, Langa KM (2010). 'The case for involving adult children outside of the household in the self-management support of older adults with chronic illnesses.' *Chronic Illn* 6(1): 34–45.
- 533 Rosland AM, Heisler M, Choi HJ, Silveira MJ, Piette JD (2010). 'Family influences on self-management among functionally independent adults with diabetes or heart failure: do family members hinder as much as they help?' *Chronic Illn* 6(1): 22–33.
- 534 Powers BJ, Trinh JV, Bosworth HB (2010). 'Can this patient read and understand written health information?' *JAMA* 304(1): 76–84.
- 535 Hibbard JH, Collins PA, Mahoney E, Baker LH (2010). 'The development and testing of a measure assessing clinician beliefs about patient self-management.' *Health Expect* 13(1): 65–72.
- 536 Wensing M, Vingerhoets E, Grol R (2003). 'Feedback based on patient evaluations: a tool for quality improvement?' *Patient Educ Couns* 51(2): 149–53.
- 537 Glasgow RE, Strycker LA, King DK, Toobert DJ, Rahm AK, Jex M, Nutting PA (2006). 'Robustness of a computer-assisted diabetes self management intervention across patient characteristics, healthcare settings, and intervention staff.' *Am J Manag Care* 12(3): 137–45.
- 538 Ruetsch C (2010). 'Practice strategies to improve compliance and patient self-management.' *J Manag Care Pharm* 16(1 Suppl B): S26–7.
- 539 Carryer J, Budge C, Hansen C, Gibbs K (2010). 'Providing and receiving self-management support for chronic illness: patients' and health practitioners' assessments.' *J Prim Health Care* 2(2): 124–9.
- 540 Siminerio LM, Funnell MM, Peyrot M, Rubin RR (2010). 'US nurses' perceptions of their role in diabetes care: results of the cross-national Diabetes Attitudes Wishes and Needs (DAWN) study.' *Diabetes Educ* 33(1): 152–62.
- 541 Williams GC, McGregor HA, King D, Nelson CC, Glasgow RE (2010). 'Variation in perceived competence, glycemic control, and patient satisfaction: relationship to autonomy support from physicians.' *Patient Educ Couns* 57(1): 39–45.
- 542 Lam TP, Lam KF (2010). 'Family doctors' attitudes towards patient self-management of upper respiratory tract infections.' *Hong Kong Med J* 7(2): 146–9.
- 543 Steurer-Stey C, Fletcher M, Vetter W, Steurer J (2010). 'Patient education in asthma: a survey of physicians' knowledge of the principles and implementation of self management in practice.' *Swiss Med Wkly* 136(35–36): 561–5.
- 544 McIntosh A, Shaw CF (2010). 'Barriers to patient information provision in primary care: patients' and general practitioners' experiences and expectations of information for low back pain.' *Health Expect* 6(1): 19–29.
- 545 Koura MR, Khairy AE, Abdel-Aal NM, Mohamed HF, Amin GA, Sabra AY (2010). 'The role of primary health care in patient education for diabetes control.' *J Egypt Public Health Assoc* 76(3–4): 241–64.
- 546 Puder JJ, Keller U (2010). 'Quality of diabetes care: problem of patient or doctor adherence?' *Swiss Med Wkly* 133(39–40): 530–4.
- 547 Washburn SC, Hornberger CA, Klutman A, Skinner L (2010). 'Nurses' knowledge of heart failure education topics as reported in a small midwestern community hospital.' *J Cardiovasc Nurs* 20(3): 215–20.
- 548 Wetzels R, Geest TA, Wensing M et al (2004). 'GPs' views on involvement of older patients: an European qualitative study.' *Patient Educ Couns* 53(2): 183–8.
- 549 Rogers A, Kennedy A, Nelson E, Robinson A (2005). 'Uncovering the limits of patient-centeredness: implementing a self management trial for chronic illness.' *Qual Health Res* 15(2): 224–39.
- 550 Kennedy A, Gask L, Rogers A (2005). 'Training professionals to engage with and promote self management.' *Health Educ Res* 20(5): 567–78.
- 551 Wolters R, Wensing M, Van Weel C, Grol R (2004). 'The effect of a distance-learning programme on patient self management of lower urinary tract symptoms (LUTS) in general practice: a randomised controlled trial.' *Eur Urol* 46(1): 95–101.
- 552 Ding D, Liu HY, Cooper R, Cooper RA, Smailagic A, Siewiorek D (2010). 'Virtual coach technology for supporting self-care.' *Phys Med Rehabil Clin N Am* 21(1): 179–94.
- 553 Britt E, Blampied NM (2010). 'Motivational interviewing training: a pilot study of the effects on practitioner and patient behaviour.' *Behav Cogn Psychother* 38(2): 239–44.

554
de Ridder DT, Theunissen NC, van Dulmen SM (2010). 'Does training general practitioners to elicit patients' illness representations and action plans influence their communication as a whole?' *Patient Educ Couns* 66(3): 327–36.

555
Blackstien-Hirsch P, Anderson G, Cicutto L, McIvor A, Norton P (2010). 'Implementing continuing education strategies for family physicians to enhance asthma patients' quality of life.' *J Asthma* 37(3): 247–57.

556
Lacroix A, Assal JP (2010). 'Is it possible to improve the teaching methods of physicians who instruct patients? Comparative analysis of the same courses given before and after teacher's training.' *Diabete Metab* 18(5): 387–94.

557
Kosmala-Anderson JP, Wallace LM, Turner A (2010). 'Confidence matters: a Self-Determination Theory study of factors determining engagement in self-management support practices of UK clinicians.' *Psychol Health Med* 15(4): 478–91.

558
Cohen D, Longo MF, Hood K, et al (2004). 'Resource effects of training general practitioners in risk communication skills and shared decision making competences.' *J Eval Clin Pract* 10(3): 439–45.

559
Edwards A, Elwyn G, Hood K, et al (2004). 'Patient-based outcome results from a cluster randomized trial of shared decision making skill development and use of risk communication aids in general practice.' *Fam Pract* 21(4): 347–54.

560
Dennis SM, Zwar N, Griffiths R, et al. Chronic disease management in primary care: from evidence to policy. *Med J Aust* 2008; 188 (8 Suppl): S53–S56.

561
Jordan JE, Osborne RH. Chronic disease self management education programs: challenges ahead. *Med J Aust* 2007; 186: 84–87.

562
Newman S, Steed L, Mulligan K. 'Self-management interventions for chronic illness.' *Lancet* 2004; 364: 1523–1537.

Appendix 1

Review methods

To collate evidence, two reviewers searched bibliographic databases, reference lists of identified articles and reviews, and the websites of relevant agencies for information available as at September 2010. The search, analysis and narrative synthesis were completed over a three week period. The databases included:

- Medline
- Embase
- ERIC
- Science Citation Index
- Cochrane Database of Systematic Reviews
- Cochrane Controlled Trials Register
- DARE
- NHS Health Technology Assessment and Economic Assessment databases
- NHS Research Register
- NHS Evidence
- US National Electronic Library for Health
- PsychLit
- the WHO Library
- Agency for Healthcare Research and Quality
- Web of Knowledge
- Ovid.

All databases were searched from inception until present using terms such as self-management, self care, self-efficacy, self help, self treatment, self-monitoring, home monitoring, self medication, support, social support, peer support, mutual support, self-management education, long term conditions, chronic care, coping skills, behaviour change, care plans, patient held records, home care, telemedicine and telecare.

To be eligible for inclusion in the review, studies had to:

- be primary research or reviews
- be published research
- be readily available online, in print or from relevant organisations
- be available in abstract, journal article, or full report form.

Studies in any language were eligible. Randomised controlled trials and systematic reviews were prioritised, though less rigorous designs were also included if few randomised trials or systematic reviews were available.

We scanned more than 100,000 pieces of research, selecting the highest quality and most relevant to summarise here. No formal quality weighting was undertaken.

More than 550 of the highest quality studies and descriptive overviews were synthesised. Data were extracted from all publications using a structured template and studies were grouped according to topic areas and outcomes to provide a narrative summary of key trends. Meta analysis was not appropriate given the diversity of the material.

When interpreting the findings it is important to bear in mind several caveats. Firstly, interventions to support self-management vary considerably in their aims, approach, content, delivery, duration and target group.⁵⁶⁰⁻⁵⁶² Therefore it would be misleading to refer to ‘self-management initiatives’ as an integrated whole. In the main, this review does not differentiate between various types of interventions because the aim is to examine the effects of self-management support in all its facets. However, it should not be assumed that all types of self-management support have the same impacts or findings.

In most cases there is limited detail within research reports about how programmes are implemented. This means that it is difficult to differentiate the most effective components or strategies. Similarly, most available research does not assess the mechanisms by which supporting self-management may work. The focus tends to be on outcomes such as quality of life, functional status, clinical outcomes and healthcare resource use. The relationship between a specific self-management intervention and these outcomes is explored, but the mechanisms by which these outcomes may occur tend to receive less attention.

A lack of evidence or comparisons does not necessarily mean that there is no relationship or benefit, just that there is currently insufficient research to draw conclusions.

Finally, much of the available evidence is sourced from countries with very different healthcare economies and styles of working than the UK so may not be directly comparable.

Stay informed

The Health Foundation works to continuously improve the quality of healthcare in the UK. If you would like to stay up to date with our work and activities, please sign up for our email alerts at:

www.health.org.uk/updates

You can also follow us on Twitter at:

www.twitter.com/HealthFdn

The Health Foundation is an independent charity working to continuously improve the quality of healthcare in the UK.

We want the UK to have a healthcare system of the highest possible quality – safe, effective, person-centred, timely, efficient and equitable.

We believe that in order to achieve this, health services need to continually improve the way they work. We are here to inspire and create the space for people to make lasting improvements to health services.

Working at every level of the system, we aim to develop the technical skills, leadership, capacity and knowledge, and build the will for change, to secure lasting improvements to healthcare.

The Health Foundation
90 Long Acre
London WC2E 9RA
T 020 7257 8000
F 020 7257 8001
E info@health.org.uk

Registered charity number: 286967
Registered company number: 1714937

www.health.org.uk

ISBN 978-1-906461-26-3

© 2011 Health Foundation