THE Evidence Centre

NHS

Health Education East of England

Does health coaching work?

Summary of key themes from a rapid review of empirical evidence

April 2014

Key themes

- If people are confident in managing their health, they may feel better, be more satisfied with their care and have less need of services. This is important due to the significant staffing and financial challenges facing the NHS and the burden of long-term conditions which accounts for about 70% of NHS spending. Health coaching has been proposed as a method to help reduce this burden by supporting people to take more responsibility.
- The term 'health coaching' refers to a diverse set of interventions, but all with a shared aim of helping people set goals and take action to improve their health or lifestyle. Health coaching has been defined as "*a patient-centred process that... entails goal setting determined by the patient, encourages self-discovery in addition to content education, and incorporates mechanisms for developing accountability in health behaviours.*"[1]
- Health coaching has been piloted in the East of England since 2010. From April 2013 to October 2014, Health Education East of England has been building on this further, with a two-day training programme rolled out to almost 800 clinicians from 31 organisations, including nurses, allied health professionals and doctors. To examine the evidence underpinning this programme, a rapid review of ten bibliographic databases identified 275 studies about health coaching available as at March 2014.
- There is some evidence that health coaching can support people's motivation to self-manage or to change their behaviours, and their confidence in their ability to do so.
- There is some evidence that health coaching can support people to adopt healthy behaviours and lifestyle choices. Research has most commonly cited benefits in increasing physical activity, eating more healthily and reducing smoking.
- There is mixed evidence about the impact of health coaching on physical outcomes such as cholesterol, blood pressure, blood sugar control and weight loss.
- There is insufficient evidence to conclude whether health coaching reduces healthcare use or costs. Most studies are from outside the UK, making generalisation difficult.
- There is insufficient evidence to draw conclusions about the best way of training coaches. Patients and professionals of different types can all make good coaches.
- Despite these positive findings, there are a number of things to bear in mind when interpreting the research evidence (as listed in Box 1).

This review was completed over a three-week period by The Evidence Centre for Health Education East of England (HEEoE). It complements the East of England Health Coaching Development Skills programme and evaluation. The review is based on studies principally relating to standalone health coaching services in the US whereas the approach in the East of England supports health coaching as part of a person's usual care. For more information about the Health Coaching Programme see: www.eoeleadership.nhs.uk/healthcoaching

Box 1: Caveats with the evidence

1. Variation in interventions

There are some issues that readers should keep in mind when interpreting studies about health coaching.

There has been no clear definition of what comprises health coaching and studies have used this or similar terms to represent widely varying interventions. Health coaching can take a variety of forms so it is difficult to say that health coaching as a concept works because some interventions may be several months long and some might be one-off, some might be delivered by peers and others by professionals, some might be telephone-based and others delivered face to face, and so on. The role that coaches take and the competencies they have can also vary markedly. In short, it is difficult to compare studies because the interventions included are vastly different, much like comparing apples and pears.

This means that where studies have found that health coaching does not work, it is important to consider the exact health coaching methods, providers, duration and frequency used rather than assuming the concept as a whole may be flawed.

2. Variations in quality of evidence

Furthermore, the quality of the evidence varies widely. The review has weighted the quality of evidence based on study design, whereby randomised trials and systematic reviews are potentially more robust than other studies. Many of the studies that have found positive outcomes from health coaching are not systematic reviews or randomised trials.

3. Lack of comparative evidence

Most studies do not compare health coaching with other alternatives. This means that even where studies suggest that health coaching has improved attitudes or behaviours over time, it is not possible to say whether health coaching has done this more quickly or effectively than usual care or other types of support.

Furthermore, there is little evidence about the cost-effectiveness of health coaching. Thus studies may have found positive benefits, but they do not explore at what cost or the opportunity costs involved.

4. Generalisability issues

Much of the evidence available about health coaching comes from the US, where health systems, attitudes, commissioning and payments and are very different from the UK. Whilst studies from other countries can provide useful insights into potential trends, it is usually not possible to transfer interventions from one health ecosystem to another without adaptation.

Importantly, most of the evidence relates to health coaching set up as a separate intervention rather than used within routine practice, such as GP consultations so it may be difficult to extrapolate the findings to the effects of using health coaching within routine practice. It remains unclear whether health coaching from a clinician with an established relationship has greater benefits.

These caveats emphasise the importance of East of England evaluating its programme robustly and adding to the evidence base.

What is health coaching?

Engaging people in keeping themselves well is an essential component of reducing ill health and the demand for health services.[2] Supporting people to be active participants in their care has important impacts on satisfaction, the extent to which people adhere to treatment, relationships between patients and professionals and long-term health outcomes. [3,4,5,6,7,8,9,10] Health coaching may be one of a suite of methods for enhancing patient self-management.

From 2010, the East of England began piloting health coaching. From April 2013 to October 2014, Health Education East of England has embedded the initiative further, with a two-day training programme rolled out to almost 800 clinicians from 31 organisations, including nurses, allied health professionals and doctors. Twenty-four trainers completed a six-day accredited programme to train people in how to use health coaching skills when delivering usual care.

Health Education East of England is evaluating the impacts of the programme and compiling other evidence. To feed into this, a review of empirical evidence about the impacts of health coaching was undertaken. This document summarises key trends from the rapid review. **A full document containing detailed examples and all the references is available, but this summary seeks to condense key messages.**

Health coaching

There is increased focus on supporting people to be involved in decisions about their care and taking more responsibility for their wellbeing. The health White Paper *Equity and Excellence: Liberating the NHS* and the 2011 Health and Social Care Bill both emphasise strengthening people's voice.[11,12] There is a move away from a paternalistic healthcare model where clinicians 'do things to' and make decisions for people towards helping people take more control of their health and wellbeing, sharing in decision-making and self-management.

Health coaching may be part of the solution to address these challenges. **'Health coaching' is an umbrella term used to describe many different interventions** that 'coach' or actively support people to self-care and a move away from a dependent model to one that is empowering and shared, based around a person's own aspirations and goals.

From the 1990s onwards, health coaching gained popularity in North America, particularly as a way of supporting people with alcohol and substance use issues. Over the past ten years it has also gained momentum in many other parts of the world for supporting people with long-term conditions, lifestyle issues and behaviour change.[13]

There is no one universally accepted definition of health coaching and there are many different models or frameworks that can be thought of as health coaching or used within a health coaching approach. However, most conceptions of health coaching have some common characteristics, including:[14,15]

- empowering people to take ownership of their health
- focusing on people's goals rather than what professionals want to achieve
- developing a collaborative relationship between the participant and coach
- assuming that people are resourceful and have potential
- helping people assess where they are and what they would like to achieve
- helping people plan how to achieve their goals in easy steps and do things they may have struggled to do in the past
- challenging habits and beliefs that inhibit people or are barriers to positive change

Health coaching differs from traditional approaches which tend to direct information 'at' people and ask people to do the things that health professionals instruct them to do. In the traditional model, professionals are seen as having expert knowledge and are tasked with imparting this to people and their families. In contrast, health coaching strives to help people and professionals work in partnership. People themselves are seen as having important knowledge and as being experts in their own wellbeing.[16] Using questioning and supportive techniques, health coaches help people talk about what they want to achieve, what is troubling them, what they want to change, what support they have to help make changes and what difficulties need to be addressed or minimised.[17]

The health coach's main role is not to teach, advise or counsel people but rather to support people to plan and reach their own goals.

A systematic review of 284 theoretical and empirical articles about health and wellbeing health coaching drew out the characteristics of health coaching to develop a definition of:[18]

> *"a patient-centred process that is based upon behaviour change theory and is delivered by health professionals with diverse backgrounds. The actual health coaching process entails goal setting determined by the patient, encourages self-discovery in addition to content education, and incorporates mechanisms for developing accountability in health behaviours."*

Health coaching can be delivered in many formats including face-to-face, by telephone and online.[19,20] It may be offered to individuals or groups.[21] Many different people can facilitate health coaching, including people with long-term conditions themselves, nurses, doctors, medical and nursing students, health educators, psychologists, physical therapists, pharmacists, health assistants, and social workers, amongst others.[22,23]

The 275 studies included in this review were used to develop a basic taxonomy of the characteristics of health coaching to illustrate the widely varying forms that health coaching may take (see Table 1). This is not an exhaustive list of all the possible attributes of health coaching, but aims to show that there is no 'standard' manner of facilitating health coaching.

Table 2: Taxonomy of health coaching characteristics based on research

Focus	Attributes	Examples
Characteristics of the participant	Who: Who is the participant?	• Someone with a long-term physical condition • Someone with a specific short-term condition or need (eg pregnancy) • Someone with mental health issues • Someone who may seek to improve healthy behaviours (diet, exercise, alcohol, smoking) • An employee taking part in a general workplace health promotion programme
Characteristics of the coach	Who: Who is the coach?	• Peer • Nurse • Doctor • Healthcare assistant • Pharmacist • Other
Characteristics of the health coaching	What: Is health coaching delivered alone or as part of a broader intervention?	• Standalone intervention • One component of broader intervention
	How: How is health coaching delivered?	• Face-to-face • Telephone • Online / email / smartphone app
	How many: How many people are coached simultaneously?	• One-to-one support • Group support
	How long: What is the duration of health coaching support?	• One-off • One month or less • Less than six months • Six months or longer
	How many: How many health coaching sessions are included?	• One session • Two to five sessions • Six to ten sessions • 11 to 20 sessions • 21+ sessions
	How often: How often are sessions run?	• Every week • Every fortnight • Every month • Every two months, and so on

Reviewing the evidence

The aims of the rapid review were to compile readily available empirical evidence to:

- assess the **impact of health coaching** on outcomes for patients and the health service;
- examine whether some ways of **delivering health coaching** are more effective than others;
- understand **which patients** health coaching may be most effective for;
- consider how health coaching can be **adapted** for people who are less activated or from lower socio-economic groups;
- understand whether some professionals are more able to adopt and use health coaching skills or whether some **types of coaches** are associated with better outcomes;
- examine any evidence of the impact of **health coaching training** for clinicians.

In other words, the focus was on exploring what, how and who questions: what are the impacts of health coaching, how can health coaching work best in practice, and who does health coaching work best and least for?

Two reviewers independently searched ten bibliographic databases plus websites and reference lists to identify published or grey literature about the impacts of health coaching. Studies specifically labelling themselves as 'health coaching' or 'health coaching' were eligible for inclusion. **The review was completed over a three-week timeframe.**

More than 7,000 studies were screened and 275 studies were included in the review. Seven percent of these were systematic reviews, 40% were randomised controlled trials and 53% were studies of other designs (see Table 2).

In total 6% were from the UK, 18% were from other parts of Europe, 61% were from North America and 15% were from other countries.

Table 2: Studies included in the review

Country	Review	Random trial	Other studies	Total number
UK	5	4	7	16
Europe	3	25	22	50
North America	7	66	94	167
Other countries	3	14	25	42
Total	18	109	148	275

Impact of health coaching

Impact on self-confidence and attitudes towards changing

The review identified one systematic review, 16 randomised trials and 26 other studies focused on the effects of health coaching on attitudes, self-efficacy (confidence to self-manage or change behaviours) or satisfaction.

Patient activation, which combines someone's knowledge, skill, and confidence about managing their health and care, is an important component of current policy. Tools such as the Patient Activation Measure (PAM) are being increasingly promoted to measure empowerment and activation.[24] However this concept has not been well measured within empirical studies about health coaching.

Key trends

- **There is some evidence that health coaching can support people's motivation to self-manage** or to change their behaviours, and their confidence in their ability to do so.

- **0% of the reviews, 75% of randomised trials and 92% of other studies suggested that health coaching may have a positive effect** on people's attitudes towards changing their behaviour, their motivation or their self-confidence to manage their health (see Table 3).

Table 3: Findings about self-efficacy

Findings	% reviews	% trials	% other studies
Largely positive	0	75%	92%
Largely negative	0	19%	4%
Very mixed	100%	6%	4%
Total studies	1	16	26

The feasibility and acceptance of health coaching is generally reported as high.[25,26] Health coaching may affect people's attitudes towards the medicines they are taking, expectations about whether they can live healthy lives or their readiness to change.[27]

Studies from many parts of the world have suggested improvements in people's confidence in making changes following health coaching.[28,29,30,31,32,33] Health coaching has also been found to improve the self-efficacy of people caring for someone with a long-term condition or other health issue.[34,35,36] But not all evidence about self-efficacy is positive.[37] Some trials have found that changes in self-efficacy and feelings of anxiety are mixed and may be short-term.[38]

Whilst it may be tempting to assume that increasing confidence to make change will lead to behavioural changes or improved clinical outcomes, this has not been explored well for health coaching and evidence about this relationship is mixed in the wider literature.[39,40,41,,42,43,44,45,46,47]

Impact on behaviour

The review identified six systematic reviews, 36 randomised trials and 37 other studies focused on the effects of health coaching on people's behaviour.

Key trends

- **There is some evidence that health coaching can support people to adopt healthy behaviours** and lifestyle choices. Research has most commonly cited benefits in increasing physical activity, eating more healthily and reducing smoking.
- **0% of the reviews, 59% of randomised trials and 89% of other studies suggested that health coaching may have a positive effect on people's behaviour**, including reducing the use of alcohol and tobacco, eating more fruit and vegetables and exercising more regularly.
- Whilst some of these studies are single case reports or small samples, randomised trials are also well represented, meaning we may be able to be more confident about the quality of the evidence (see Table 4).

Table 4: Direction of findings about behaviour change

Findings	% reviews	% trials	% other studies
Largely positive	0%	59%	89%
Largely negative	50%	25%	0%
Very mixed	50%	16%	11%
Total studies	6	32	37

Some randomised trials and other studies report that health coaching can support people to change a wide range of behaviours, including increasing physical activity,[48,49,50,51,52] improving diet,[53,54,55,56] improving lifestyle,[57] reducing smoking,[58,59,60] seeing health professionals more regularly or appropriately,[61] communicating with professionals[62] or family members,[63] medication adherence[64,65] and undertaking other self-care behaviours.[66,67,68,69,70,71,72]

The fact that the results of individual studies differ from combined systematic reviews may suggest that health coaching can have an impact on behaviour change, but is not necessarily more effective than other proactive interventions to support behaviour change.

There are also a number of individual studies that have not found benefits from health coaching on behaviour change.[73,74,75] Some studies have found that health coaching impacts on some behaviours but not others or that the changes are not sustained once health coaching ends.[76,77]

Impact on health status

The review identified six systematic reviews, 60 randomised trials and 43 other studies focused on the effects of health coaching on people's health status and clinical outcomes.

Key trends

- **There is mixed evidence about the impact of health coaching on physical outcomes** such as cholesterol, blood pressure, blood sugar control and weight loss. This may be because it takes time to demonstrate changes in clinical indicators and many studies do not include long follow-up periods or large sample sizes.

- **33% of the reviews, 37% of randomised trials and 84% of other studies suggested that health coaching may have a positive effect** on people's health status, including improving blood pressure, blood sugar control in people with diabetes, cholesterol and cardiovascular risk factors (see Table 5). Thus, the evidence about improved health status is very mixed, with similar numbers of trials finding improvements or no improvements.

Table 5: Direction of findings about health status and clinical indicators

Findings	% reviews	% trials	% other studies
Largely positive	33%	37%	84%
Largely negative	0%	38%	5%
Very mixed	67%	25%	11%
Total studies	6	60	43

A number of individual studies have reported improved clinical indicators[78,79,80,81] such as better blood sugar control for people with diabetes,[82,83,84,85,,86,87,88,89] improved blood pressure,[90,91,92,93] reduced cholesterol,[94,95,96,97] reduced cardiovascular or lifestyle risks,[98,99,100] reduced pain[101] and weight loss or reduced body mass index.[102,103,104,105,106,107,108,109,110,111,112,113,114,115] Although some of these studies objectively measure outcomes, others rely on self-report.[116] It is also true that some of the improvements are modest.[117]

Not all findings are positive. Some trials and other studies have either found no evidence of improvements in health status or clinical indicators[118,119,120,121,122,123,124, 125,126,127,128,129] or mixed findings, with improvements in some things but not others.[130,131,132,133,134,135,136]

Impact on service use and costs

The review identified four systematic reviews, 12 randomised trials and 10 other studies focused on the effects of health coaching on health service use and costs.

Key trends

- **There is insufficient evidence to conclude whether health coaching reduces healthcare use or costs.** Most studies are from outside the UK, making generalisation difficult.
- **25% of the reviews, 30% of randomised trials and 70% of other studies suggested that health coaching may help to reduce the use of health services or be cost-effective** (see Table 6).

Table 6: Direction of findings about service use and costs

Findings	% reviews	% trials	% other studies
Largely positive	25%	33%	70%
Largely negative	50%	67%	20%
Very mixed	25%	0%	10%
Total studies	4	12	10

Systematic reviews that included health coaching alongside other behaviour change interventions suggest that there is insufficient evidence to draw conclusions about cost-benefits or that health coaching is not associated with cost savings. However other, more specific, systematic reviews have suggested some potential.[137,138]

The quality of studies exploring the costs or cost-effectiveness of health coaching is widely variable. Many studies about costs focus on worksite wellness programmes or large health promotion programmes run by US health maintenance organisations, so their applicability to a UK context may be questionable.[139,140,141]

A small number of studies have found reductions in healthcare service use. This is not necessarily a good indicator of the effectiveness of health coaching because by empowering people health coaching may actually increase the use of services in the short-term if people attend regular checks or seek help when they notice exacerbations. Nevertheless, some studies have found positive outcomes in this regard.[142,143]

Not all analyses of costs or service use are in favour of health coaching, including studies from the UK.[144,145]

Impact of different types of health coaching

The review identified four reviews, 14 randomised trials and 26 other studies describing or comparing different types of health coaching styles or formats.

Key trends

- Health coaching may take many different forms.[146,147] **It is difficult to suggest that one form is more effective than others because studies do not tend to compare.**
- Face-to-face and telephone approaches may be more interactive than online or virtual health coaching, but it would be premature to conclude that this is associated with better outcomes. Both one-to-one and group sessions have been found to have benefits.
- Health coaching can be provided as part of routine consultations or as a standalone initiative. Most research considers health coaching as a specific initiative rather than exploring incorporating health coaching skills into usual consultations.
- One clear message is that the more health coaching sessions people take part in, the more likely they may be to change.

Delivery style

People may sometimes prefer seeing a coach face-to-face[148] and people from specific demographic groups may prefer some styles of health coaching more than others.[149] However, there is not strong evidence that face-to-face health coaching is more effective than telephone calls. This may be due to a lack of studies directly comparing these approaches.

Group versus individual sessions

Evidence about differences in the effectiveness of individual versus group-based health coaching is lacking. Most studies have not found differences[150] but some studies suggest that group health coaching may have additional benefits.[151]

Content covered

Most empirical studies do not describe in detail the content and topics covered within health coaching sessions. There is insufficient evidence to day that including some content within health coaching sessions leads to better outcomes, but some studies suggest that **health coaching which is integrated into routine care and signposts people to other community resources is well received**.[152,153,154] Using reflective and change-inducing questions has been found to spark conversations about change, though these may not be well-used in routine practice, even by practitioners who have been trained in health coaching or motivational skills.[155,156] Psychological support and building a strong trusting relationship may be an important component.[157,158]

Amount of health coaching

The general trend is that the more health coaching sessions people take part in, the more likely they are to achieve their goals or improve health outcomes.[159,160,161,162]

Who benefits from health coaching?

The review identified one systematic review, nine randomised trials and 23 other studies focused on the participants in health coaching relationships (patients).

Many studies have identified that the people who appear to benefit most from health coaching are those who have the most to improve, such as the greatest amount of weight to lose, the most severe symptoms or the most poorly controlled conditions.[163]

Despite people most in need of change sometimes benefitting the most from health coaching, some research suggests that these people may not always be targeted for health coaching or that clinicians may not use health coaching skills with them in routine consultations.[164]

Studies of the potential barriers to making change within health coaching relationships or the reasons why people do not complete health coaching programmes suggest that health coaching may be most acceptable to those who are motivated to change their behaviour or lifestyle.[165,166] In other words, health coaching may work best when people have already decided that they want to do something differently and health coaching provides a tool to help them achieve this.

Key trends

Studies have found that health coaching can be effective in younger and older people, in men and women and in people from a wide range of ethnic groups.[167] There is no evidence that health coaching is more effective for people with some conditions than others.

Studies tend to undertake post-hoc analyses to explore whether health coaching is more effective for some groups than others. These analyses may be based on small samples with other methodological weaknesses, so the findings should be treated with caution. However, the overall trends are that health coaching has been found to work best for:

- people with low levels of self-efficacy prior to health coaching[168,169]
- people with high readiness / motivation to change[170,171,172,173,174,175]
- people at highest risk[176,177]
- people with the most severe symptoms[178,179]
- people with low levels of self-management or medication adherence[180]
- women[181,182,183]
- young people (for telephone or virtual health coaching)[184] or much older people[185]
- minority ethnic groups[186]
- vulnerable groups[187]
- people with the lowest levels of education[188]

Targeting less advantaged groups

The review identified two randomised trials and six other studies focused on targeting health coaching to less advantaged groups.

Key trends

- People from minority ethnic groups and those from lower socio-economic groups may be more likely to participate in and continue to engage with health coaching if offered an opportunity to do so. Therefore there are questions about whether special targeting is really needed, or whether instead it is important to focus on making health coaching available to a wide range of groups.

- Research has not explored the best ways to increase the uptake of health coaching amongst specific groups. Studies of financial incentives for a broad range of people suggest that incentives can encourage people to take part in standalone health coaching programmes, but this is not specific to vulnerable groups.[189]

Research suggests that health coaching can be as effective for particularly vulnerable groups as for others, but does not provide insights into the best ways to target health coaching to reach such groups.

Health coaches

Types of health coaches

The review identified two systematic reviews, six randomised trials and nine other studies exploring the role of different professionals or peers in facilitating health coaching. Other studies in the review included information about the type of professionals applying health coaching skills, but these studies were particularly focused on assessing how certain professionals could use health coaching or comparing different coaches.

Key trends

- There is research about nurses, doctors, pharmacists and allied health professionals providing health coaching. Health coaching provided by peers and laypeople has also been researched. Studies do not tend to compare one type of coach with another so it is not possible to say that certain professionals are more likely to engage with or be effective at using health coaching skills.

- Although professionals sometimes express doubts about the feasibility of using health coaching skills within routine practice or their ability to motivate people towards behaviour change,[190] there is evidence that a wide range of professionals and peers can successfully apply health coaching skills.

In recent years, there has been an increasing focus on testing whether peers (people with similar conditions) can feasibly provide health coaching.[191] A number of studies have found favourable results.[192]

Many studies of health coaching involve nurses. A systematic review of 50 studies of various behaviour change support strategies in primary care found that nurses and doctors were equally capable of facilitating such initiatives. [193]

There are examples of GPs or hospital doctors providing health coaching,[194] and some studies suggest it is useful when doctors work alongside nurses.[195]

A wide variety of allied professionals have also been trained as health coaches, including pharmacists, physical therapists, dieticians and occupational therapists.[196]

Training coaches

The review identified one randomised trial and 12 other studies focused on training professionals or peers to use health coaching skills. Other studies sometimes also mentioned the training undertaken, but these studies had a special emphasis on training.

Key trends

- There is insufficient evidence to draw conclusions about the most effective ways of training professionals or peers in health coaching skills. Some studies suggest that **active role plays and observation can work well** rather than solely theoretical content. Well evaluated training usually lasts at least two to five days and includes follow-up support.

- Time, commitment and motivation may be key things needed by coaches.[197] Empirical studies were not identified comparing specific health coaching competencies.

- There is some research to suggest that the context in which health coaching is implemented is important. In other words, **professionals need to be supported to provide health coaching practically and emotionally and there needs to be a receptive organisational context**.[198,199]

There are a number of descriptive studies outlining the broad approach to training professionals in health coaching skills, but these are not sufficiently detailed to extract information about the competencies suggested for coaches or the content of training programmes.

A number of studies have suggested that role-playing with observation may be a useful component of the content of health coaching training.[200]

Building in refresher sessions may be useful.[201]

Implications for policy and practice

This review of research about health coaching is one of many tools that commissioners can use when considering whether health coaching is effective, for whom and how it could be offered in the NHS. Used alongside local evaluations and expertise about the local context and priorities, the empirical evidence suggests some implications for policy and practice.

Should health coaching be rolled out?

- **There is evidence to suggest that health coaching has potential, but it cannot be assumed to be a panacea** for all the challenges facing the NHS. Health coaching has been associated with improvements in self-efficacy and behaviour change, suggesting that this approach can help people to feel more motivated and empowered to make healthy lifestyle changes.

- **The impacts on health outcomes are more mixed**, possibly because many studies may be too small to show a difference or too short to capture any changes over time. There is some positive evidence about the potential of health coaching for improving clinical outcomes in people with diabetes, high blood pressure, high cholesterol and high risks of heart attack or stroke.

- There is very little evidence about the impact of health coaching on health service use or resource use. Whilst there are some positive studies, **it would be inappropriate to use these to suggest that health coaching has a definite return on investment**. Most of the positive studies are small or methodologically weak, and draw on data from health systems that are very different from the UK.

- A number of studies have found that health coaching is not cost-effective or does not reduce the use of healthcare resources. These too need to be treated with caution because they may have been of insufficient duration to show an impact. Changes to behaviour made as a result of health coaching may take a while to impact on physical outcomes and health service use.

- **The overall message from the evidence base is that there are many benefits likely associated with health coaching, but in order to be effective health coaching may need to be implemented as part of a wider programme supporting education and behaviour change.**

When does health coaching work best?

- There is less evidence about where, how and for whom health coaching is most effective. The evidence base is not strong enough to conclude that face-to-face health coaching is more effective than telephone health coaching, for example, or that individual health coaching is more effective than group health coaching. This is due to a lack of studies comparing different approaches.

- Similarly, it is difficult to generalise about who health coaching may be most effective for. Studies that find benefits from health coaching often suggest that the benefits are most marked for people who are motivated to change from the outset and those who have the most severe symptoms or exacerbations. Women have been found in some studies to be more amenable to health coaching than men, but other studies have found that men can benefit equally.

- There is no evidence to suggest that health coaching is most effective for people with certain conditions.

- Few studies have explored strategies to ensure that health coaching is well targeted for the most vulnerable groups, though research has found that health coaching can work well for people from minority ethnic groups, lower socio-economic groups and the homeless.

How should coaches be trained?

- Nurses, doctors, pharmacists and physical therapists are the most commonly researched health coaches. There is also evidence emerging about the role of people with long-term conditions themselves acting as coaches for others.

- The evidence base is insufficient to conclude that one type of professional or peer is more effective than others in applying health coaching skills. There are few studies that compare one type of coach with another, but the findings of individual studies suggest that **health coaching skills can be applied by a wide range of professionals, either in routine practice or as part of bespoke health coaching consultations**.

- Almost all of the studies included in the review state that the professionals facilitating health coaching have received specialised training, however the details of this training are sparse. Very few studies explicitly examine the training offered to health coaches. The studies that do exist suggest that the most effective training may be at least two to five days in duration, incorporate observation, practical activities and role plays and allow for follow-up and refresher training.

Adding to the evidence base

- This review suggests that health coaching has potential for the NHS, but there are gaps in knowledge about how best to train coaches and the longer-term impacts of health coaching, particularly on service use and costs. Box 1 on page 2 lists caveats with the evidence available.

- As teams within the NHS consider rolling out health coaching, it may be important to also consider more robust evaluation that compares health coaching with other options and compares different types of health coaching. Analysis of the costs and cost-effectiveness of health coaching should be built into any evaluation.

- There is an opportunity for NHS teams to contribute significantly to knowledge in this area, potentially making an empowering and worthwhile form of support available to a wide range of people.

All of the implications listed in this section are important for both national audiences as well as the East of England when considering how, when and who health coaching may work best for, how to select and train people as health coaches and gaps in current knowledge.

To summarise, Box 2 lists some of the key implications of the empirical evidence for the East of England programme.

Box 2: Implications for East of England

- There is evidence to support the East of England's testing of health coaching, but this initiative should be seen as one component of wider programmes to support self-management rather than a standalone entity.

- The East of England model of having at least two days' worth of training follows good practice. There may be scope to continue to refine the model. For example, refresher or follow-up sessions may be beneficial for participants.

- There may be a need to build in content about how to use health coaching effectively in routine practice. Most of the evidence available is about standalone coaching initiatives.

- More guidance may be needed about how to select professionals to take part in training and how to select patients that health coaching may be most effective with. A more targeted approach may be useful.

- Evaluation needs to focus on clinical and cost outcomes, rather than solely impacts on professionals' skills. Given the extent of investment in the programme, a robust evaluation strategy is needed.

- There is scope to share the lessons learned widely, both in terms of the story so far and the evidence base. Given the paucity of evidence, it may be useful to publish key trends from the evidence review as a journal article.

References

1 Wolever RQ, Simmons LA, Sforzo GA, Dill D, Kaye M, Bechard EM, Southard ME, Kennedy M, Vosloo J, Yang N. A systematic review of the literature on health and wellness health coaching: defining a key behavioral intervention in healthcare. *Glob Adv Health Med* 2013;2(4):38-57.

2 Bennett HD, Coleman EA, Parry C, Bodenheimer T, Chen EH. Health coaching for patients with chronic illness. *Fam Pract Manag* 2010;17(5):24-29.

3 Edwards A, Elwyn G. Inside the black box of shared decision making: distinguishing between the process of involvement and who makes the decision. *Health Expect* 2006;9(4):307-320.

4 Janz NK, Wren PA, Copeland LA, Lowery JC, Goldfarb SL, Wilkins EG. Patient-physician concordance: preferences, perceptions, and factors influencing the breast cancer surgical decision. *J Clin Oncol* 2004;22(15):3091-3098.

5 Moumjid N, Carrère MO, Charavel M, Brémond A. Clinical issues in shared decision-making applied to breast cancer. *Health Expect* 2003;6(3):222-227.

6 Whelan T, Levine M, Willan A, Gafni A, Sanders K, Mirsky D, Chambers S, O'Brien MA, Reid S, Dubois S. Effect of a decision aid on knowledge and treatment decision making for breast cancer surgery: a randomized trial. *JAMA* 2004;292(4):435-441.

7 van Roosmalen MS, Stalmeier PF, Verhoef LC, Hoekstra-Weebers JE, Oosterwijk JC, Hoogerbrugge N, Moog U, van Daal WA. Randomised trial of a decision aid and its timing for women being tested for a BRCA1/2 mutation. *Br J Cancer* 2004;90(2):333-342.

8 Mandelblatt J, Kreling B, Figeuriedo M, Feng S. What is the impact of shared decision making on treatment and outcomes for older women with breast cancer? *J Clin Oncol* 2006;24(30):4908-4913.

9 Merenstein D, Diener-West M, Krist A, Pinneger M, Cooper LA. An assessment of the shared-decision model in parents of children with acute otitis media. *Pediatrics* 2005;116(6):1267-1275.

10 Penticuff JH, Arheart KL. Effectiveness of an intervention to improve parent-professional collaboration in neonatal intensive care. *J Perinat Neonatal Nurs* 2005;19(2):187-202.

11 Department of Health. *Equity and Excellence: Liberating the NHS.* London: Stationery Office, 2010.

12 http://services.parliament.uk/bills/2010-11/healthandsocialcare.html

13 Kreitzer MJ, Sierpina VS, Lawson K. Health coaching: innovative education and clinical programs emerging. *Explore* 2008;4(2):154-155.

14 Wolever RQ, Eisenberg DM. What is health coaching anyway? Standards needed to enable rigorous research. *Arch Intern Med* (Published online October 2011).

15 Palmer S. Health coaching to facilitate the promotion of healthy behaviour and achievement of health-related goals. *Int J Health Prom Educ* 2003;41;91-93.

16 Licht M, Davis JM, Scripps A, Cone J. Whole person health for the whole population: one-year evaluation of health coaching. *Perm J* 2007;11(4):41-44.

17 Wetzel TG. Health coaching. *Hosp Health Netw* 2011;85(5):20-24.

18 Wolever RQ, Simmons LA, Sforzo GA, Dill D, Kaye M, Bechard EM, Southard ME, Kennedy M, Vosloo J, Yang N. A systematic review of the literature on health and wellness health coaching: defining a key behavioral intervention in healthcare. *Glob Adv Health Med* 2013;2(4):38-57.

19 Leveille SG, Huang A, Tsai SB, Allen M, Weingart SN, Iezzoni LI. Health coaching via an internet portal for primary care patients with chronic conditions: a randomized controlled trial. *Med Care* 2009;47(1):41-47.

20 Allen M, Iezzoni LI, Huang A, Huang L, Leveille SG. Improving patient-clinician communication about chronic conditions: description of an internet-based nurse E-coach intervention. *Nurs Res* 2008;57(2):107-112.

21 Armstrong C, Wolever RQ, Manning L, Elam R 3rd, Moore M, Frates EP, Duskey H, Anderson C, Curtis RL, Masemer S, Lawson K. Group health coaching: strengths, challenges, and next steps. *Glob Adv Health Med* 2013;2(3):95-102.

22 Lipscomb R. Health coaching: a new opportunity for dietetics professionals. *J Am Diet Assoc* 2006;106(6):801-803.

23 Wagner PJ, Jester DM, Moseley GC. Medical students as health coaches. *Acad Med* 2002;77(11):1164-1165.

24 www.kingsfund.org.uk/publications/supporting-people-manage-their-health

25 Neuner-Jehle S, Schmid M, Grüninger U. The "health coaching" programme: a new patient-centred and visually supported approach for health behaviour change in primary care. *BMC Fam Pract* 2013;14:100.

26 Karapinar-Carkit F, Borgsteede SD, Zoer J, Siegert C, van Tulder M, Egberts AC, van den Bemt PM. The effect of the COACH program (Continuity Of Appropriate pharmacotherapy, patient Counselling and information transfer in Healthcare) on readmission rates in a multicultural population of internal medicine patients. *BMC Health Serv Res* 2010;10:39.

27 Wolever RQ, Webber DM, Meunier JP, Greeson JM, Lausier ER, Gaudet TW. Modifiable disease risk, readiness to change, and psychosocial functioning improve with integrative medicine immersion model. *Altern Ther Health Med* 2011;17(4):38-47.

28 Jordan M. Health coaching for the underserved. *Glob Adv Health Med* 2013;2(3):75-82.

29 Howard LM, Hagen BF. Experiences of persons with type II diabetes receiving health coaching: an exploratory qualitative study. *Educ Health* 2012;25(1):66-69.

30 Stretton C, Mudge S, Kayes NM, Taylor D, McPherson KM. Activity health coaching to improve walking is liked by rehabilitation patients but physiotherapists have concerns: a qualitative study. *J Physiother* 2013;59(3):199-206.

31 Walters JA, Cameron-Tucker H, Courtney-Pratt H, Nelson M, Robinson A, Scott J, Turner P, Walters EH, Wood-Baker R. Supporting health behaviour change in chronic obstructive pulmonary disease with telephone health-mentoring: insights from a qualitative study. *BMC Fam Pract* 2012;13:55.

32 Linden A, Butterworth SW, Prochaska JO. Motivational interviewing-based health coaching as a chronic care intervention. *J Eval Clin Pract* 2010;16(1):166-174.

33 Newman P, McDowell A. Exploring the benefits of health coaching for clinicians and patients. *HSJ* 2011.

34 Taylor TK, Webster-Stratton C, Feil EG, Broadbent B, Widdop CS, Severson HH. Computer-based intervention with health coaching: an example using the incredible years program. *Cogn Behav Ther* 2008;37(4):233-246.

35 Foster L, Dunn W, Lawson LM. Health coaching mothers of children with autism: a qualitative study for occupational therapy practice. *Phys Occup Ther Pediatr* 2013;33(2):253-263.

36 Graham F, Rodger S, Ziviani J. Effectiveness of occupational performance health coaching in improving children's and mothers' performance and mothers' self-competence. *Am J Occup Ther* 2013;67(1):10-18.

37 Sepulveda AR, Lopez C, Macdonald P, Treasure J. Feasibility and acceptability of DVD and telephone health coaching-based skills training for carers of people with an eating disorder. *Int J Eat Disord* 2008;41(4):318-325.

38 O'Neil A, Hawkes AL, Atherton JJ, Patrao TA, Sanderson K, Wolfe R, Taylor CB, Oldenburg B. Telephone-delivered health coaching improves anxiety outcomes after myocardial infarction: the 'proactive heart' trial. *Eur J Prev Cardiol* 2014;21(1):30-38.

39 Bodenheimer T et al. *Helping Patients Manage Their Chronic Conditions*. California Health Care Foundation, 2005.

40 Brownson CA et al. A quality improvement tool to assess self-management support in primary care. *Jt Comm J Qual Pat Saf* 2007; 33:7.

41 Coulter A, Ellins J. *How engaged are people in their healthcare?* The Health Foundation, 2005.

42 Thoolen B, De Ridder D, Bensing J, Maas C, Griffin S, Gorter K, Rutten G. Effectiveness of a self-management intervention in patients with screen-detected type 2 diabetes. *Diabetes Care* 2007; 30(11): 2832-7.

43 Jordan JE, Briggs AM, Brand CA, Osborne RH. Enhancing patient engagement in chronic disease self-management support initiatives in Australia: the need for an integrated approach. *Med J Aust* 2008; 189 (10 Suppl): S9-S13.

44 Glasgow NJ, Jeon YH, Kraus SG, Pearce-Brown CL. Chronic disease self-management support: the way forward for Australia. *MJA* 2008; 189 (10 Suppl): S14-S16.

45 Wagner EH, Davis C, Schaefer J et al. A survey of leading chronic disease management programs: are they consistent with the literature? *Manag Care Q* 1999; 7: 56-66.

46 Nolte E, McKee M (eds). *Caring for people with chronic conditions: a health system perspective*. Maidenhead, UK: McGraw Hill Open University Press, 2008.

47 Harris MF, Williams AM, Dennis SM, et al. Chronic disease self-management: implementation with and within Australian general practice. *Med J Aust* 2008; 189 (10 Suppl): S17-S20.

48 Holland SK, Greenberg J, Tidwell L, Malone J, Mullan J, Newcomer R. Community-based health coaching, exercise, and health service utilization. *J Aging Health* 2005;17(6):697-716.

49 Van Hoecke AS, Delecluse C, Opdenacker J, Lipkens L, Martien S, Boen F. Long-term effectiveness and mediators of a need-supportive physical activity health coaching among Flemish sedentary employees. *Health Promot Int* 2013;28(3):407-417.

50 Iles RA, Taylor NF, Davidson M, O'Halloran P. An effective health coaching intervention for people with low recovery expectations and low back pain: a content analysis. *J Back Musculoskelet Rehabil* 2014;27(1):93-101

51 Tidwell L, Holland SK, Greenberg J, Malone J, Mullan J, Newcomer R. Community-based nurse health coaching and its effect on fitness participation. *Lippincotts Case Manag* 2004;9(6):267-279.

52 Hawkes AL, Patrao TA, Green A, Aitken JF. CanPrevent: a telephone-delivered intervention to reduce multiple behavioural risk factors for colorectal cancer. *BMC Cancer* 2012;12:560.

53 Heimendinger J, Uyeki T, Andhara A, Marshall JA, Scarbro S, Belansky E, Crane L. Health coaching process outcomes of a family visit nutrition and physical activity intervention. *Health Educ Behav* 2007;34(1):71-89.

54 Yang NY, Wroth S, Parham C, Strait M, Simmons LA. Personalized health planning with integrative health coaching to reduce obesity risk among women gaining excess weight during pregnancy. *Glob Adv Health Med* 2013;2(4):72-77.

55 O'Hara BJ, Phongsavan P, Venugopal K, Eakin EG, Eggins D, Caterson H, King L, Allman-Farinelli M, Haas M, Bauman AE. Effectiveness of Australia's Get Healthy information and health coaching service: translational research with population wide impact. *Prev Med* 2012;55(4):292-298.

56 LeCheminant JD, Merrill RM. Improved health behaviors persist over two years for employees in a worksite wellness program. *Popul Health Manag* 2012;15(5):261-266.

57 van de Glind IM, Heinen MM, Evers AW, Wensing M, van Achterberg T. Factors influencing the implementation of a lifestyle counseling program in patients with venous leg ulcers: a multiple case study. *Implement Sci* 2012;7:104.

58 Rabius V, McAlister AL, Geiger A, Huang P, Todd R. Telephone counseling increases cessation rates among young adult smokers. *Health Psychol* 2004;23(5):539-541.

59 Terry PE, Seaverson EL, Staufacker MJ, Tanaka A. The effectiveness of a telephone-based tobacco cessation program offered as part of a worksite health promotion program. *Popul Health Manag* 2011;14(3):117-125.

60 An LC, Zhu SH, Nelson DB, Arikian NJ, Nugent S, Partin MR, Joseph AM. Benefits of telephone care over primary care for smoking cessation: a randomized trial. *Arch Intern Med* 2006;166(5):536-542.

61 Sieber W, Newsome A, Lillie D. Promoting self-management in diabetes: efficacy of a collaborative care approach. *Fam Syst Health* 2012;30(4):322-329.

62 Kravitz RL, Tancredi DJ, Jerant A, Saito N, Street RL, Grennan T, Franks P. Influence of patient health coaching on analgesic treatment adjustment: secondary analysis of a randomized controlled trial. *J Pain Symptom Manage* 2012;43(5):874-884.

63 Jimison HB, Klein KA, Marcoe JL. A socialization intervention in remote health coaching for older adults in the home. *Conf Proc IEEE Eng Med Biol Soc* 2013;2013:7025-7028.

64 Tanio C, Chen C. Innovations at Miami practice show promise for treating high-risk Medicare patients. *Health Aff* 2013;32(6):1078-1082.

65 Melko CN, Terry PE, Camp K, Xi M, Healey ML. Diabetes health coaching improves medication adherence: a pilot study. *Am J Lifestyle Med* 2010;4(2):187-194.

66 Mohr DC, Duffecy J, Ho J, Kwasny M, Cai X, Burns MN, Begale M. A randomized controlled trial evaluating a manualized TeleHealth coaching protocol for improving adherence to a web-based intervention for the treatment of depression. *PLoS One* 2013;8(8):e70086.

67 Ratanawongsa N, Handley MA, Sarkar U, Quan J, Pfeifer K, Soria C, Schillinger D. Diabetes health information technology innovation to improve quality of life for health plan members in urban safety net. *J Ambul Care Manage* 2014;37(2):127-37.

68 Lin JJ, Mann DM. Application of persuasion and health behavior theories for behavior change counseling: design of the ADAPT (Avoiding Diabetes Thru Action Plan Targeting) program. *Patient Educ Couns* 2012;88(3):460-466.

69 Hanks C, Kitzman H, Milligan R. Implementing the COACH relationship model: health promotion for mothers and children. *ANS Adv Nurs Sci* 1995;18(2):57-66.

70 Wongpiriyayothar A, Piamjariyakul U, Williams PD. Effects of patient teaching, educational materials, and health coaching using telephone on dyspnea and physical functioning among persons with heart failure. *Appl Nurs Res* 2011;24(4):e59-e66.

71 Keenan S, King G, Curran CJ, McPherson A. Effectiveness of experiential life skills health coaching for youth with a disability. *Phys Occup Ther Pediatr* (Published online October 2013).

72 Wolever RQ, Webber DM, Meunier JP, Greeson JM, Lausier ER, Gaudet TW. Modifiable disease risk, readiness to change, and psychosocial functioning improve with integrative medicine immersion model. *Altern Ther Health Med* 2011;17(4):38-47.

73 Brook OH, van Hout H, Stalman W, Nieuwenhuyse H, Bakker B, Heerdink E, de Haan M. A pharmacy-based health coaching program to improve adherence to antidepressant treatment among primary care patients. *Psychiatr Serv* 2005;56(4):487-489.

74 Secker-Walker RH, Solomon LJ, Flynn BS, Skelly JM, Mead PB. Reducing smoking during pregnancy and postpartum: physician's advice supported by individual counseling. *Prev Med* 1998;27(3):422-430.

75 Brodin N, Eurenius E, Jensen I, Nisell R, Opava CH. Health coaching patients with early rheumatoid arthritis to healthy physical activity: a multicenter, randomized, controlled study. *Arthritis Rheum* 2008;59(3):325-331.

76 Hawkes AL, Chambers SK, Pakenham KI, Patrao TA, Baade PD, Lynch BM, Aitken JF, Meng X, Courneya KS. Effects of a telephone-delivered multiple health behavior change intervention (CanChange) on health and behavioral outcomes in survivors of colorectal cancer: a randomized controlled trial. *J Clin Oncol* 2013;31(18):2313-2321.

77 Adelman AM, Graybill M. Integrating a health coach into primary care: reflections from the Penn state ambulatory research network. *Ann Fam Med* 2005;3 Suppl 2:S33-S35.

78 Saleh SS, Alameddine MS, Hill D, Darney-Beuhler J, Morgan A. The effectiveness and cost-effectiveness of a rural employer-based wellness program. *J Rural Health* 2010;26(3):259-265.

79 DeBar LL, Ritenbaugh C, Aickin M, Orwoll E, Elliot D, Dickerson J, Vuckovic N, Stevens VJ, Moe E, Irving LM. Youth: a health plan-based lifestyle intervention increases bone mineral density in adolescent girls. *Arch Pediatr Adolesc Med* 2006;160(12):1269-1276.

80 Lanese BS, Dey A, Srivastava P, Figler R. Introducing the health coach at a primary care practice: a pilot study (part 2). *Hosp Top* 2011;89(2):37-42.

81 Goessens BM, Visseren FL, de Nooijer J, van den Borne HW, Algra A, Wierdsma J, van der Graaf Y. A pilot-study to identify the feasibility of an Internet-based health coaching programme for changing the vascular risk profile of high-risk patients. *Patient Educ Couns* 2008;73(1):67-72.

82 Thom DH, Ghorob A, Hessler D, De Vore D, Chen E, Bodenheimer TA. Impact of peer health coaching on glycemic control in low-income patients with diabetes: a randomized controlled trial. *Ann Fam Med* 2013;11(2):137-144.

83 Sacco WP, Malone JI, Morrison AD, Friedman A, Wells K. Effect of a brief, regular telephone intervention by paraprofessionals for type 2 diabetes. *J Behav Med* 2009;32(4):349-359.

84 Cinar AB, Oktay I, Schou L. "Smile healthy to your diabetes": health coaching-based intervention for oral health and diabetes management. *Clin Oral Investig* (Published online December 2013).

85 Sacco WP, Morrison AD, Malone JI. A brief, regular, proactive telephone "health coaching" intervention for diabetes: rationale, description, and preliminary results. *J Diabetes Complications* 2004;18(2):113-118.

86 Whittemore R, Chase S, Mandle CL, Roy SC. The content, integrity, and efficacy of a nurse health coaching intervention in type 2 diabetes. *Diabetes Educ* 2001;27(6):887-898.

87 Nelson K, Pitaro M, Tzellas A, Lum A. Practice profile. Transforming the role of medical assistants in chronic disease management. *Health Aff* 2010;29(5):963-965.

88 Fera T, Bluml BM, Ellis WM, Schaller CW, Garrett DG. The diabetes ten city challenge: interim clinical and humanistic outcomes of a multisite community pharmacy diabetes care program. *J Am Pharm Assoc* 2008;48(2):181-190.

89 Ammentorp J, Thomsen J, Kofoed PE. Adolescents with poorly controlled type 1 diabetes can benefit from health coaching: a case report and discussion. *J Clin Psychol Med Settings* 2013;20(3):343-350.

90 Patja K, Absetz P, Auvinen A, Tokola K, Kytö J, Oksman E, Kuronen R, Ovaska T, Harno K, Nenonen M, Wiklund T, Kettunen R, Talja M. Health coaching by telephony to support self-care in chronic diseases: clinical outcomes from the TERVA randomized controlled trial. *BMC Health Serv Res* 2012;12:147.

91 Sebo P, Abetel G, Stalder H, Bovier PA. Importance of lifestyle counselling by primary care physicians for diabetic patients. *Swiss Med Wkly* 2006;136(35-36):566-573.

92 Tillman J. Health coaching interventions with a heart-healthy Lenoir project client. *Glob Adv Health Med* 2013;2(3):83-86.

93 Leung LB, Busch AM, Nottage SL, Arellano N, Glieberman E, Busch NJ, Smith SR. Approach to antihypertensive adherence: a feasibility study on the use of student health coaches for uninsured hypertensive adults. *Behav Med* 2012;38(1):19-27.

94 Vale MJ, Jelinek MV, Best JD, Dart AM, Grigg LE, Hare DL, Ho BP, Newman RW, McNeil JJ. Health coaching patients On Achieving Cardiovascular Health (COACH): a multicenter randomized trial in patients with coronary heart disease. *Arch Intern Med* 2003;163(22):2775-2783.

95 Cho JH, Kwon HS, Kim HS, Oh JA, Yoon KH. Effects on diabetes management of a health-care provider mediated, remote health coaching system via a PDA-type glucometer and the Internet. *J Telemed Telecare* 2011;17(7):365-370.

96 Fritsch MA, Montpellier J, Kussman C. Worksite wellness: a cholesterol awareness program. *AAOHN J* 2009;57(2):69-76, quiz 77-78.

97 Al-Sinani M, Min Y, Ghebremeskel K, Qazaq HS. Effectiveness of and adherence to dietary and lifestyle counselling: effect on metabolic control in type 2 diabetic Omani patients. *Sultan Qaboos Univ Med J* 2010;10(3):341-349.

98 Edelman D, Oddone EZ, Liebowitz RS, Yancy WS Jr, Olsen MK, Jeffreys AS, Moon SD, Harris AC, Smith LL, Quillian-Wolever RE, Gaudet TW. A multidimensional integrative medicine intervention to improve cardiovascular risk. *J Gen Intern Med* 2006;21(7):728-734.

99 Nolan RP, Upshur RE, Lynn H, Crichton T, Rukholm E, Stewart DE, Alter DA, Chessex C, Harvey PJ, Grace SL, Picard L, Michel I, Angus J, Corace K, Barry-Bianchi SM, Chen MH. Therapeutic benefit of preventive telehealth counseling in the community outreach heart health and risk reduction trial. *Am J Cardiol* 2011;107(5):690-696.

100 Aoun S, Osseiran-Moisson R, Shahid S, Howat P, O' Connor M. Telephone lifestyle health coaching: is it feasible as a behavioural change intervention for men? *J Health Psychol* 2012;17(2):227-236.

101 White M, Stinson JN, Lingley-Pottie P, McGrath PJ, Gill N, Vijenthira A. Exploring therapeutic alliance with an internet-based self-management program with brief telephone support for youth with arthritis: a pilot study. *Telemed J E Health* 2012;18(4):271-276.

102 Adams SR, Goler NC, Sanna RS, Boccio M, Bellamy DJ, Brown SD, Neugebauer RS, Ferrara A, Wiley DM, Schmittdiel JA. Patient satisfaction and perceived success with a telephonic health coaching program: the Natural Experiments for Translation in Diabetes (NEXT-D) study, Northern California, 2011. *Prev Chronic Dis* 2013;10:E179.

103 Shahnazari M, Ceresa C, Foley S, Fong A, Zidaru E, Moody S. Nutrition-focused wellness health coaching promotes a reduction in body weight in overweight US veterans. *J Acad Nutr Diet* 2013;113(7):928-935.

104 Seghers J, Van Hoecke AS, Schotte A, Opdenacker J, Boen F. The added value of a brief self-efficacy health coaching on the effectiveness of a 12-week physical activity program. *J Phys Act Health* 2014;11(1):18-29.

105 Rimmer JH, Wang E, Pellegrini CA, Lullo C, Gerber BS. Telehealth weight management intervention for adults with physical disabilities: a randomized controlled trial. *Am J Phys Med Rehabil* 2013;92(12):1084-1094.

106 Ball GD, Mackenzie-Rife KA, Newton MS, Alloway CA, Slack JM, Plotnikoff RC, Goran MI. One-on-one lifestyle health coaching for managing adolescent obesity: findings from a pilot, randomized controlled trial in a real-world, clinical setting. *Paediatr Child Health* 2011;16(6):345-350.

107 Moore C. Case report of hemoglobin a1c and weight reduction in integrative health coaching. *Glob Adv Health Med* 2013;2(3):87-89.

108 Temmingh H, Claassen A, van Zyl S, Carrara H, Dayakalashe NM, Myer L, Stein DJ. The evaluation of a telephonic wellness health coaching intervention for weight reduction and wellness improvement in a community-based cohort of persons with serious mental illness. *J Nerv Ment Dis* 2013;201(11):977-986.

109 Rankin P, Morton DP, Diehl H, Gobble J, Morey P, Chang E. Effectiveness of a volunteer-delivered lifestyle modification program for reducing cardiovascular disease risk factors. *Am J Cardiol* 2012;109(1):82-86.

110 O'Hara BJ, Phongsavan P, Eakin EG, Develin E, Smith J, Greenaway M, Bauman AE. Effectiveness of Australia's Get Healthy Information and Health coaching Service: maintenance of self-reported anthropometric and behavioural changes after program completion. *BMC Public Health* 2013;13:175.

111 Mettler EA, Preston HR, Jenkins SM, Lackore KA, Werneburg BL, Larson BG, Bradley KL, Warren BA, Olsen KD, Hagen PT, Vickers KS, Clark MM. Motivational improvements for health behavior change from wellness health coaching. *Am J Health Behav* 2014;38(1):83-91.

112 Bowden DE. Employee weight management through health coaching. *Eat Weight Disord* 2010;15(1-2):e52-e59.

113 Holtrop JS, Dosh SA, Torres T, Thum YM. The community health educator referral liaison (CHERL): a primary care practice role for promoting healthy behaviors. *Am J Prev Med* 2008;35(5 Suppl):S365-S372.

114 Aoun S, Osseiran-Moisson R, Collins F, Newton R, Newton M. A self-management concept for men at the community level: the 'waist' disposal challenge. *J Health Psychol* 2009;14(5):663-674.

115 Appel LJ, Clark JM, Yeh HC, Wang NY, Coughlin JW, Daumit G, Miller ER 3rd, Dalcin A, Jerome GJ, Geller S, Noronha G, Pozefsky T, Charleston J, Reynolds JB, Durkin N, Rubin RR, Louis TA, Brancati FL. Comparative effectiveness of weight-loss interventions in clinical practice. *N Engl J Med* 2011;365(21):1959-1968.

116 Thomas ML, Elliott JE, Rao SM, Fahey KF, Paul SM, Miaskowski C. A randomized, clinical trial of education or motivational-interviewing-based health coaching compared to usual care to improve cancer pain management. *Oncol Nurs Forum* 2012;39(1):39-49.

117 Bray K, Turpin RS, Jungkind K, Heuser G. Defining success in diabetes disease management: digging deeper in the data. *Dis Manag* 2008;11(2):119-128.

118 Sjöquist ES, Brodin N, Lampa J, Jensen I, Opava CH. Physical activity health coaching of patients with rheumatoid arthritis in everyday practice: a long-term follow-up. *Musculoskeletal Care* 2011;9(2):75-85.

119 Robling M, McNamara R, Bennert K, Butler CC, Channon S, Cohen D, Crowne E, Hambly H, Hawthorne K, Hood K, Longo M, Lowes L, Pickles T, Playle R, Rollnick S, Thomas-Jones E, Gregory JW. The effect of the Talking Diabetes consulting skills intervention on glycaemic control and quality of life in children with type 1 diabetes: cluster randomised controlled trial (DEPICTED study). *BMJ* 2012;344:e2359.

120 McDonald DD, Walsh S, Vergara C, Gifford T, Weiner DK. The effect of a Spanish virtual pain coach for older adults: a pilot study. *Pain Med* 2012;13(11):1397-1406.

121 Jaser SS, Whittemore R, Chao A, Jeon S, Faulkner MS, Grey M. Mediators of 12-month outcomes of two internet interventions for youth with type 1 diabetes. *J Pediatr Psychol* 2014;39(3):306-315.

122 Jansink R, Braspenning J, Keizer E, van der Weijden T, Elwyn G, Grol R. No identifiable Hb1Ac or lifestyle change after a comprehensive diabetes programme including motivational interviewing: a cluster randomised trial. *Scand J Prim Health Care* 2013;31(2):119-127.

123 Heinrich E, Candel MJ, Schaper NC, de Vries NK. Effect evaluation of a motivational interviewing based counselling strategy in diabetes care. *Diabetes Res Clin Pract* 2010;90(3):270-278.

124 Frosch DL, Uy V, Ochoa S, Mangione CM. Evaluation of a behavior support intervention for patients with poorly controlled diabetes. *Arch Intern Med* 2011;171(22):2011-2017.

125 Elbers NA, Akkermans AJ, Cuijpers P, Bruinvels DJ. Effectiveness of a web-based intervention for injured claimants: a randomized controlled trial. *Trials* 2013;14(1):227.

126 Dowd T, Kolcaba K, Steiner R. The addition of health coaching to cognitive strategies: interventions for persons with compromised urinary bladder syndrome. *J Wound Ostomy Continence Nurs* 2003;30(2):90-99.

127 Debussche X, Rollot O, Le Pommelet C, Fianu A, Le Moullec N, Régnier C, Boyer MC, Cogne M, Bakiri F, Schwager JC, Favier F. Quarterly individual outpatients lifestyle counseling after initial inpatients education on type 2 diabetes: the REDIA prev-2 randomized controlled trial in Reunion Island. *Diabetes Metab* 2012;38(1):46-53.

128 Butz AM, Matsui EC, Breysse P, Curtin-Brosnan J, Eggleston P, Diette G, Williams D, Yuan J, Bernert JT, Rand C. A randomized trial of air cleaners and a health coach to improve indoor air quality for inner-city children with asthma and secondhand smoke exposure. *Arch Pediatr Adolesc Med* 2011;165(8):741-748.

129 Ivey SL, Tseng W, Kurtovich E, Lui B, Weir RC, Liu J, Song H, Wang M, Hubbard A. Evaluating a culturally competent health coach intervention for Chinese American patients with diabetes. *Diabetes Spectr* 2012;25(2).

130 Vale MJ, Jelinek MV, Best JD, Santamaria JD. Health coaching patients with coronary heart disease to achieve the target cholesterol: a method to bridge the gap between evidence-based medicine and the "real world"- randomized controlled trial. *J Clin Epidemiol* 2002;55(3):245-252.

131 Quinn CC, Shardell MD, Terrin ML, Barr EA, Ballew SH, Gruber-Baldini AL. Cluster-randomized trial of a mobile phone personalized behavioral intervention for blood glucose control. *Diabetes Care* 2011;34(9):1934-1942.

132 Oliver JW, Kravitz RL, Kaplan SH, Meyers FJ. Individualized patient education and health coaching to improve pain control among cancer outpatients. *J Clin Oncol* 2001;19(8):2206-2212.

133 Margolius D, Bodenheimer T, Bennett H, Wong J, Ngo V, Padilla G, Thom DH. Health coaching to improve hypertension treatment in a low-income, minority population. *Ann Fam Med* 2012;10(3):199-205.

134 Grey M, Jaser SS, Holl MG, Jefferson V, Dziura J, Northrup V. A multifaceted school-based intervention to reduce risk for type 2 diabetes in at-risk youth. *Prev Med* 2009;49(2-3):122-128.

135 Allen JK, Stephens J, Dennison Himmelfarb CR, Stewart KJ, Hauck S. Randomized controlled pilot study testing use of smartphone technology for obesity treatment. *J Obes* (Published online December 2013).

136 Navicharern R, Aungsuroch Y, Thanasilp S. Effects of multifaceted nurse-health coaching intervention on diabetic complications and satisfaction of persons with type 2 diabetes. *J Med Assoc Thai* 2009;92(8):1102-1112.

137 Stacey D, Kryworuchko J, Belkora J, Davison B, Durand MA, Eden KB, Hoffman AS, Koerner M, Légaré F, Loiselle MC, Street RL. Health coaching and guidance with patient decision aids: a review of theoretical and empirical evidence. *BMC Med Inform Decis Mak* 2013;13 Suppl 2:S11.

138 Pennington M, Visram S, Donaldson C, White M, Lhussier M, Deane K, Forster N, Carr SM. Cost-effectiveness of health-related lifestyle advice delivered by peer or lay advisors: synthesis of evidence from a systematic review. *Cost Eff Resour Alloc* 2013;11(1):30.

139 Naydeck BL, Pearson JA, Ozminkowski RJ, Day BT, Goetzel RZ. The impact of the highmark employee wellness programs on 4-year healthcare costs. *J Occup Environ Med* 2008;50(2):146-156.

140 Long DA, Sheehan P. A case study of population health improvement at a Midwest regional hospital employer. *Popul Health Manag* 2010;13(3):163-173.
141 Davis L, Loyo K, Glowka A, Schwertfeger R, Danielson L, Brea C, Easton A, Griffin-Blake S. A comprehensive worksite wellness program in Austin, Texas: partnership between steps to a healthier Austin and capital metropolitan transportation authority. *Prev Chronic Dis* 2009;6(2):A60.
142 Parry C, Min SJ, Chugh A, Chalmers S, Coleman EA. Further application of the care transitions intervention: results of a randomized controlled trial conducted in a fee-for-service setting. *Home Health Care Serv Q* 2009;28(2-3):84-99.
143 Coleman EA, Parry C, Chalmers S, Min SJ. The care transitions intervention: results of a randomized controlled trial. *Arch Intern Med* 2006;166(17):1822-1828.
144 Steventon A, Tunkel S, Blunt I, Bardsley M. Effect of telephone health coaching (Birmingham OwnHealth) on hospital use and associated costs: cohort study with matched controls. *BMJ* 2013;347:f4585.
145 Cate H, Bhattacharya D, Clark A, Fordham R, Holland R, Broadway DC. Improving adherence to glaucoma medication: a randomised controlled trial of a patient-centred intervention (The Norwich Adherence Glaucoma Study). *BMC Ophthalmol* 2014;14(1):32.
146 Abildsnes E, Walseth LT, Flottorp SA, Stensland PS. Power and powerlessness: GPs' narratives about lifestyle counselling. *Br J Gen Pract* 2012;62(596):e160-e166.
147 Manderson B, McMurray J, Piraino E, Stolee P. Navigation roles support chronically ill older adults through healthcare transitions: a systematic review of the literature. *Health Soc Care Community* 2012;20(2):113-127.
148 Adelman AM, Graybill M. Integrating a health coach into primary care: reflections from the Penn state ambulatory research network. *Ann Fam Med* 2005;3 Suppl 2:S33-S35.
149 Terry PE, Seaverson EL, Staufacker MJ, Gingerich SB. A comparison of the effectiveness of a telephone health coaching program and a mail-based program. *Health Educ Behav* 2010;37(6):895-912.
150 Keenan S, King G, Curran CJ, McPherson A. Effectiveness of experiential life skills health coaching for youth with a disability. *Phys Occup Ther Pediatr* (Published online October 2013).
151 Befort CA, Donnelly JE, Sullivan DK, Ellerbeck EF, Perri MG. Group versus individual phone-based obesity treatment for rural women. *Eat Behav* 2010;11(1):11-17.
152 Holland SK, Greenberg J, Tidwell L, Newcomer R. Preventing disability through community-based health coaching. *J Am Geriatr Soc* 2003;51(2):265-269.
153 Pryor J. Health coaching patients to self-care: a primary responsibility of nursing. *Int J Older People Nurs* 2009;4(2):79-88.
154 Snyder EH, Lawrence CN, Weatherholt TN, Nagy P. The benefits of motivational interviewing and health coaching for improving the practice of comprehensive family assessments in child welfare. *Child Welfare* 2012;91(5):9-36.
155 Kettunen T, Poskiparta M, Kiuru P, Kasila K. Lifestyle counseling in type 2 diabetes prevention: a case study of a nurse's communication activity to produce change talk. *Commun Med* 2006;3(1):3-14.
156 Noordman J, Koopmans B, Korevaar JC, van der Weijden T, van Dulmen S. Exploring lifestyle counselling in routine primary care consultations: the professionals' role. *Fam Pract* 2013;30(3):332-340.
157 Domian EW, Baggett KM, Carta JJ, Mitchell S, Larson E. Factors influencing mothers' abilities to engage in a comprehensive parenting intervention program. *Public Health Nurs* 2010;27(5):399-407.
158 Lok KY, Chan RS, Sea MM, Woo J. Nutritionist's variation in counseling style and the effect on weight change of patients attending a community based lifestyle modification program. *Int J Environ Res Public Health* 2010;7(2):413-426.
159 Adams SR, Goler NC, Sanna RS, Boccio M, Bellamy DJ, Brown SD, Neugebauer RS, Ferrara A, Wiley DM, Schmittdiel JA. Patient satisfaction and perceived success with a telephonic health coaching program: the Natural Experiments for Translation in Diabetes (NEXT-D) study, Northern California, 2011. *Prev Chronic Dis* 2013;10:E179.
160 Nishita C, Cardazone G, Uehara DL, Tom T. Empowered diabetes management: life health coaching and pharmacist counseling for employed adults with diabetes. *Health Educ Behav* 2013;40(5):581-591.
161 Margolius D, Bodenheimer T, Bennett H, Wong J, Ngo V, Padilla G, Thom DH. Health coaching to improve hypertension treatment in a low-income, minority population. *Ann Fam Med* 2012;10(3):199-205.
162 Coberley CR, McGinnis M, Orr PM, Coberley SS, Hobgood A, Hamar B, Gandy B, Pope J, Hudson L, Hara P, Shurney D, Clarke JL, Crawford A, Goldfarb NI. Association between frequency of telephonic contact and clinical testing for a large, geographically diverse diabetes disease management population. *Dis Manag* 2007;10(2):101-109.
163 Rohrer JE, Naessens JM, Liesinger J, Tulledge-Scheitel S, Vanhouten H. A telephonic health coaching program has more impact when body mass index is over 35. *Obes Res Clin Pract* 2010;4(1):e1-e82.
164 Powell-Wiley TM, Ayers CR, Banks-Richard K, Berry JD, Khera A, Lakoski SG, McGuire DK, de Lemos JA, Das SR. Disparities in counseling for lifestyle modification among obese adults: insights from the Dallas heart study. *Obesity* 2012;20(4):849-855.
165 Venditti EM, Wylie-Rosett J, Delahanty LM, Mele L, Hoskin MA, Edelstein SL. Short and long-term lifestyle health coaching approaches used to address diverse participant barriers to weight loss and physical activity adherence. *Int J Behav Nutr Phys Act* 2014;11:16.
166 Shaw R, Gillies M, Barber J, MacIntyre K, Harkins C, Findlay IN, McCloy K, Gillie A, Scoular A, MacIntyre PD. Pre-exercise screening and health coaching in CHD secondary prevention: a qualitative study of the patient experience. *Health Educ Res* 2012;27(3):424-436.
167 Jefferson V, Jaser SS, Lindemann E, Galasso P, Beale A, Holl MG, Grey M. Coping skills training in a telephone health coaching program for youth at risk for type 2 diabetes. *J Pediatr Health Care* 2011;25(3):153-161.
168 Basak Cinar A, Schou L. The role of self-efficacy in health coaching and health education for patients with type 2 diabetes. *Int Dent J* (Published online February 2014).
169 van der Wulp I, de Leeuw JR, Gorter KJ, Rutten GE. Effectiveness of peer-led self-management health coaching for patients recently diagnosed with type 2 diabetes mellitus in primary care: a randomized controlled trial. *Diabet Med* 2012;29(10):e390-e397.
170 Iles RA, Taylor NF, Davidson M, O'Halloran P. An effective health coaching intervention for people with low recovery expectations and low back pain: a content analysis. *J Back Musculoskelet Rehabil* 2014;27(1):93-101
171 Terry PE, Seaverson EL, Staufacker MJ, Tanaka A. The effectiveness of a telephone-based tobacco cessation program offered as part of a worksite health promotion program. *Popul Health Manag* 2011;14(3):117-125.
172 Bowden DE. Employee weight management through health coaching. *Eat Weight Disord* 2010;15(1-2):e52-e59.
173 Berna JS. Wellness health coaching outcomes in a case report of a diabetic native american male. *Glob Adv Health Med* 2013;2(4):62-67.
174 Dewing S, Mathews C, Schaay N, Cloete A, Louw J, Simbayi L. Behaviour change counselling for ARV adherence support within primary health care facilities in the Western Cape, South Africa. *AIDS Behav* 2012;16(5):1286-1294.
175 Terry PE, Fowles JB, Harvey L. Employee engagement factors that affect enrollment compared with retention in two health coaching programs - the ACTIVATE study. *Popul Health Manag* 2010;13(3):115-122.

176 Basak Cinar A, Schou L. Health promotion for patients with diabetes: health coaching or formal health education? *Int Dent J* 2014;64(1):20-28.
177 Rankin P, Morton DP, Diehl H, Gobble J, Morey P, Chang E. Effectiveness of a volunteer-delivered lifestyle modification program for reducing cardiovascular disease risk factors. *Am J Cardiol* 2012;109(1):82-86.
178 Holland SK, Greenberg J, Tidwell L, Malone J, Mullan J, Newcomer R. Community-based health coaching, exercise, and health service utilization. *J Aging Health* 2005;17(6):697-716.
179 Lawson KL, Jonk Y, O'Connor H, Riise KS, Eisenberg DM, Kreitzer MJ. The impact of telephonic health coaching on health outcomes in a high-risk population. *Glob Adv Health Med* 2013;2(3):40-47.
180 Moskowitz D, Thom DH, Hessler D, Ghorob A, Bodenheimer T. Peer health coaching to improve diabetes self-management: which patients benefit most? *J Gen Intern Med* 2013;28(7):938-942.
181 Bowden DE. Employee weight management through health coaching. *Eat Weight Disord* 2010;15(1-2):e52-e59.
182 Al-Sinani M, Min Y, Ghebremeskel K, Qazaq HS. Effectiveness of and adherence to dietary and lifestyle counselling: effect on metabolic control in type 2 diabetic Omani patients. *Sultan Qaboos Univ Med J* 2010;10(3):341-349.
183 Coberley CR, McGinnis M, Orr PM, Coberley SS, Hobgood A, Hamar B, Gandy B, Pope J, Hudson L, Hara P, Shurney D, Clarke JL, Crawford A, Goldfarb NI. Association between frequency of telephonic contact and clinical testing for a large, geographically diverse diabetes disease management population. *Dis Manag* 2007;10(2):101-109.
184 Rabius V, McAlister AL, Geiger A, Huang P, Todd R. Telephone counseling increases cessation rates among young adult smokers. *Health Psychol* 2004;23(5):539-541.
185 Long DA. Wellness program satisfaction, sustained health coaching participation, and achievement of health goals. *J Occup Environ Med* 2012;54(5):592-597.
186 Toth-Capelli KM, Brawer R, Plumb J, Daskalakis C. Stage of change and other predictors of participant retention in a behavioural weight management program in primary care. *Health Promot Pract* 2013;14(3):441-450.
187 Dennis SM, Harris M, Lloyd J, Powell Davies G, Faruqi N, Zwar N. Do people with existing chronic conditions benefit from telephone health coaching? A rapid review. *Aust Health Rev* 2013;37(3):381-388.
188 Brook OH, Van Hout HP, Nieuwenhuysea H, De Haan M. Effects of health coaching by community pharmacists on psychological symptoms of antidepressant users; a randomised controlled trial. *Eur Neuropsychopharmacol* 2003;13(5):347-354.
189 Gingerich SB, Anderson DR, Koland H. Impact of financial incentives on behavior change program participation and risk reduction in worksite health promotion. *Am J Health Promot* 2012;27(2):119-122.
190 Lambe B, Collins C. A qualitative study of lifestyle counselling in general practice in Ireland. *Fam Pract* 2010;27(2):219-223.
191 Tang TS, Nwankwo R, Whiten Y, Oney C. Training peers to deliver a church-based diabetes prevention program. *Diabetes Educ* 2012;38(4):519-525.
192 Petersen I, Fairall L, Egbe CO, Bhana A. Optimizing lay counsellor services for chronic care in South Africa: a qualitative systematic review. *Patient Educ Couns* (Published online February 2014).
193 Noordman J, van der Weijden T, van Dulmen S. Communication-related behavior change techniques used in face-to-face lifestyle interventions in primary care: a systematic review of the literature. *Patient Educ Couns* 2012;89(2):227-244.
194 Lanese BS, Dey A, Srivastava P, Figler R. Introducing the health coach at a primary care practice: impact on quality and cost (part 1). *Hosp Top* 2011;89(1):16-22.
195 Selvaraj FJ, Mohamed M, Omar K, Nanthan S, Kusiar Z, Subramaniam SY, Ali N, Karanakaran K, Ahmad F, Low WH. The impact of a disease management program (COACH) on the attainment of better cardiovascular risk control in dyslipidaemic patients at primary care centres (the DISSEMINATE study): a randomised controlled trial. *BMC Fam Pract* 2012;13:97.
196 Nessen T, Opava CH, Martin C, Demmelmaier I. From clinical expert to guide: experiences from health coaching people with rheumatoid arthritis to increased physical activity. *Phys Ther* (Published online March 2014).
197 Wolever RQ, Caldwell KL, Wakefield JP, Little KJ, Gresko J, Shaw A, Duda LV, Kosey JM, Gaudet T. Integrative health coaching: an organizational case study. *Explore* 2011;7(1):30-36.
198 Millenson ML, DiGioia AM 3rd, Greenhouse PK, Swieskowski D. Turning patient-centeredness from ideal to real: lessons from 2 success stories. *J Ambul Care Manage* 2013;36(4):319-334.
199 Dickey LL, Gemson DH, Carney P. Office system interventions supporting primary care-based health behavior change counseling. *Am J Prev Med* 1999;17(4):299-308.
200 Burton AM, Agne AA, Lehr SM, Davis NJ, Willett LL, Cherrington AL. Training residents in obesity counseling: incorporating principles of motivational interviewing to enhance patient centeredness. *J Grad Med Educ* 2011;3(3):408-411.
201 Tang TS, Nwankwo R, Whiten Y, Oney C. Training peers to deliver a church-based diabetes prevention program. *Diabetes Educ* 2012;38(4):519-525.