



**Health
Information
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An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Health technology assessment of chronic disease self- management support interventions

Advice to the HSE (*extracted from main report*)

16 December 2015

Safer Better Care

Advice to the Health Service Executive (HSE)

This health technology assessment (HTA) examined the clinical and cost-effectiveness of non disease specific (or generic) self-management support interventions for chronic diseases and disease-specific interventions for asthma, chronic obstructive pulmonary disease (COPD), diabetes (Type 1 and Type 2) and cardiovascular disease (stroke, hypertension, coronary artery disease and heart failure).

Broadly, self-management support interventions are any interventions that help patients to manage portions of their chronic disease, or diseases, through education, training and support.

The review of clinical effectiveness was restricted to self-management support interventions evaluated through randomised controlled trials in adult populations. Given the volume of literature available, the clinical effectiveness of self-management support interventions was evaluated using an 'overview of reviews' approach where systematic reviews were reviewed rather than the primary evidence. Systematic reviews were undertaken for each disease area. In the case of asthma, COPD, Type 1 and Type 2 diabetes, stroke and hypertension, these were undertaken as updates to a recent high quality review (PRISMS report) commissioned by the UK National Institute for Health Research that was published in 2014.

The cost-effectiveness of generic and disease-specific self-management support interventions was evaluated by undertaking systematic reviews of the available literature for each area.

General findings common across all the sections of this report are presented below. Specific advice in relation to the various generic and disease-specific interventions is outlined in the dedicated advice sections.

The general findings of this HTA, which precede and inform HIQA's advice, are as follows:

- A broad range of self-management and self-management support interventions exist which impacts on the clarity of what constitutes effective self-management support. The interventions described by the included studies were heterogeneous and frequently complex, comprising numerous components.
- This HTA considered evidence from over 2,000 randomised controlled trials as presented across 160 systematic reviews of clinical effectiveness. Evidence on

the likely cost implications and cost-effectiveness of self-management support interventions was considered from 181 costing and cost-effectiveness studies.

- Evidence of the clinical-effectiveness of chronic disease self-management support interventions provides a complex picture. An overview of reviews makes use of pooled clinical effectiveness data, sometimes across a large number of primary studies, and in many cases of heterogeneous data. While the pooled estimate may show limited effect, individual studies may show more or less effect. As with any intervention, there may be subgroups of patients that experienced greater treatment effect than others.
- Randomised controlled trials typically had small sample sizes and a short duration of follow-up, limiting the applicability and validity of the findings, and potentially failing to capture long-term benefits or to demonstrate if observed benefits could be sustained.
- Most economic analyses were conducted alongside these randomised controlled trials, limiting their ability to determine if observed savings could be sustained. The costing methodology and perspective adopted differed greatly between studies making it difficult to summarise and aggregate findings. Evidence of cost-effectiveness for a wide range of self-management support interventions in patients with chronic disease was generally of limited applicability to the Irish healthcare setting.
- International evidence suggests that most self-management support interventions are relatively inexpensive to implement. Reported costs vary according to the intensity of the intervention, but are typically low relative to the overall cost of care for the chronic disease in question. In some instances, the interventions resulted in modest cost savings through reduced healthcare utilisation. However, it is unclear if costs would be similar if programmes are rolled out to a larger population or if economies of scale might apply. Longer-term evidence is required to determine if benefits are sustained and if costs change over time. Although generally inexpensive on a per patient basis, the budget impact of these interventions could be substantial due to the large number of eligible patients.
- The individuals eligible for self-management support interventions are likely to experience high levels of multimorbidity whereby they have multiple chronic conditions, a number of which may be amenable to self-management. For people with multimorbidity, a coherent evidence-based approach that acknowledges their various conditions and how they interact is essential.
- Where chronic disease self-management support interventions are provided, it is critical that the implementation and delivery of the interventions are subject to

routine and ongoing evaluation. This would help to ensure that they are delivering benefits to patients, and allow the content and format of the interventions to be refined.

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

Good evidence of effectiveness was found for certain chronic disease self-management support interventions, while limited or no evidence of effectiveness was found for others. The evidence for generic and the disease-specific interventions is presented in the following advice sections.

The HSE should prioritise investment in those interventions for which there is good evidence of clinical effectiveness. Where chronic disease self-management support interventions are provided, it is critical that an agreed definition of self-management support interventions is developed and the implementation and delivery of the interventions are standardised at a national level and subject to routine and ongoing evaluation.

Most interventions are relatively inexpensive to implement relative to the costs of treating chronic disease and, in some instances, can result in modest cost savings through reductions or shifts in healthcare utilisation. However, due to the numbers of eligible patients, the budget impact of these interventions may be substantial.

Advice – Generic self-management support interventions

Generic self-management support interventions are those that can be used by any individual with one or more chronic diseases and are not tailored to support management of a specific chronic disease.

The key findings of this HTA in relation to generic self-management support interventions, which precede and inform HIQA's advice, are as follows:

- Based on 25 systematic reviews (362 randomised controlled trials), a wide variety of generic self-management support interventions was identified. These were broadly grouped as chronic disease self-management programmes (mainly the Stanford model), telemedicine, web-based interventions, complex interventions focussed on a single health outcome, and 'other' self-management support interventions.
- The majority of the literature retrieved for the chronic disease self-management programmes assessed the Stanford model. The evidence was of low to very low quality and was without long-term follow-up. No evidence was found of improvements in health care utilisation. Some evidence of short-term improvements in the patient-reported outcomes of self-efficacy, health behaviour (exercise) and health outcomes (pain, disability, fatigue and depression) were found for the chronic disease self-management programmes, primarily for the Stanford programme.
- Some evidence of improvements in healthcare utilisation, diet adherence, patient engagement, and self-reported health status was found in literature that assessed the impact of a range of self-management support interventions on a single health outcome; however, it is not possible to determine which types of intervention or components contributed to the positive results.
- Some evidence of improvements in outcomes was also found for other generic interventions, specifically for telephone-delivered cognitive behavioural therapy (health status), personalised care planning (depression), motivational interviewing (physical activity), and nurse-led interventions using the information-motivation-behavioural skills model (medication adherence).
- Limited evidence was found that web-based cognitive behaviour therapy can have a positive impact on psychosocial outcomes.
- Insufficient evidence was found to determine if:

- computer-based chronic disease self-management programmes are superior to usual care or standard 'face to face' versions of the Stanford chronic disease self-management programme.
- short-term improvements in activities of daily living and mobility observed with in-home care are sustained in the longer term.
- The optimal format of generic self-management support, the diseases in which it is likely to provide benefit, and the duration of effectiveness, if any, is still unclear.
- Based on 25 costing and cost-effectiveness studies, the economic literature was grouped into four main intervention types: chronic disease self-management programmes, telemedicine, web-based interventions and 'other' interventions. Evidence of cost-effectiveness was generally of limited applicability to the Irish healthcare setting.
- There is limited evidence of cost-effectiveness for generic chronic disease self-management support interventions. The most consistent evidence is for chronic disease self-management programmes, but potential benefits are dependent on how efficiently the programme is run, and there is no evidence regarding longer term cost savings.
- Chronic disease self-management and telephone-based telemedicine programmes are relatively cheap to implement, but the magnitude of any cost saving in terms of reduced healthcare utilisation is unclear. The short follow-up periods used in the included studies means that it is not possible to determine if any savings are sustained.
- Where reported, the cost of the generic self-management support interventions was low. Although generally inexpensive on a per patient basis, the budget impact will be sizeable if implemented for all eligible patients with chronic disease(s).

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

Based on the available evidence, it is still unclear what the optimal format of generic self-management support interventions is, the diseases in which they are likely to provide benefit, and their duration of effectiveness, if any.

The reported cost of generic self-management support interventions is generally low on a per-patient basis. However, given the high prevalence of chronic diseases in Ireland, the budget impact could be very substantial if implemented for all eligible patients.

Advice – Asthma

The key findings of this HTA in relation to asthma-specific self-management support interventions, which precede and inform HIQA's advice, are as follows:

- Based on 12 systematic reviews (90 randomised controlled trials), a range of self-management support interventions for asthma were identified. These focused primarily on patient education and use of written action plans with evidence also for behavioural interventions, complex interventions comprising a range of mainly education-based supports, and use of text messaging and the Chronic Care Model to improve treatment and medication adherence.
- Good evidence was found that self-management support interventions can improve quality of life, reduce hospital admissions and use of urgent and unscheduled healthcare.
- The optimal intervention format of self-management support is not clear, but should include education supported by a written asthma action plan as well as improved skills training including the use of inhalers and peak flow meters.
- Behavioural change techniques are associated with improved medication adherence and a reduction in symptoms.
- Based on 12 costing and cost-effectiveness studies, the economic literature was grouped into four main intervention types: education programmes, internet-based self-management support, telemedicine, and 'other' self-management support interventions.
- Limited evidence was found to suggest that:
 - self-management support education programmes, using a combination of individual and group sessions, may be at least cost-neutral in patients with mild to moderate disease.
 - nurse-led telephone review for patients with high-risk asthma is a relatively low cost intervention that may reduce costs by reducing healthcare utilisation, although evidence of effect in the included studies was mixed.

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

Self-management support interventions for patients with asthma can improve quality of life, reduce hospital admissions and use of urgent and unscheduled healthcare. The optimal intervention format is not clear, but should include education supported by a written asthma action plan as well as improved skills training including the use of inhalers and peak flow meters.

Behavioural change techniques are associated with improved medication adherence and a reduction in symptoms.

Economic studies suggest that that education programmes, using a combination of individual and group sessions, may be at least cost-neutral in patients with mild to moderate disease. Limited evidence was found to suggest that nurse-led telephone review for patients with high-risk asthma is a relatively low cost intervention that may reduce costs by reducing healthcare utilisation, although evidence of effect in the included studies was mixed. Evidence to support the cost-effectiveness of other self-management support interventions is more limited or conflicting.

Advice – Chronic obstructive pulmonary disease

The key findings of this HTA in relation to self-management support interventions for patients with chronic obstructive pulmonary disease (COPD), which precede and inform HIQA's advice, are as follows:

- Based on 16 systematic reviews (185 randomised controlled trials), a range of self-management support interventions for patients with COPD were identified. These included patient education and use of written action plans, pulmonary rehabilitation, telemedicine, complex self-management support interventions and outreach nursing programmes. Standard pulmonary rehabilitation comprises many aspects of chronic disease self-management support and hence is included here; however, interventions such as education, exercise and behavioural changes are also core components of pulmonary rehabilitation, so the boundary between the intervention types is ill-defined.
- Very good evidence was found that education is associated with a reduction in COPD-related hospital admissions with limited evidence found that it is associated with improvements in health-related quality of life. There is no evidence that action plans when used alone and in absence of other self-management supports reduce healthcare utilisation or lead to improvements in quality of life.
- Very good evidence was found that pulmonary rehabilitation, which includes exercise training, is associated with moderately large, clinically significant improvements in health-related quality of life and functional exercise capacity in people with COPD. Large variation in the design of pulmonary rehabilitation programmes makes it difficult to identify their optimal format.
- Good evidence was found that complex self-management support interventions (involving multiple components and, or multiple professionals with the intervention delivered by a variety of means) are associated with improvements in health-related quality of life. No evidence was found of a statistically significant benefit regarding mortality while there was limited evidence of reductions in health care utilisation. Although it is not clear which components of self-management support relate to these improvements, education and exercise seem to be effective.
- Some evidence was found that:
 - telemedicine as part of a complex intervention decreases healthcare utilisation, with no evidence found of an impact on mortality.
 - outreach nursing programmes improve health-related quality of life.

- Based on 27 costing and cost-effectiveness studies, the economic literature was grouped into five main intervention types: self-management support programmes, pulmonary rehabilitation, telemedicine, case management, and 'other' self-management support interventions.
- Evidence was found that:
 - self-management support education programmes could result in potential cost savings due to reduced healthcare utilisation in patients with moderate to severe disease, depending on the efficiency with which the programmes are run.
 - case management may be cost saving for selected groups of patients with severe disease.
- Limited evidence was found that pulmonary rehabilitation is cost-effective in patients with moderate to severe COPD disease.
- Evidence for the cost-effectiveness of telemedicine interventions is mixed, with more applicable evidence suggesting that telehealth monitoring is not cost-effective.
- The reported per-patient cost of self-management interventions varied according to the intensity of the intervention, but was typically low relative to the overall cost of care of these patients. Ireland has a high prevalence of COPD so the budget impact of implementing self-management support interventions for these patients is likely to be sizeable.

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

Education is associated with a reduction in COPD-related hospital admissions with limited evidence of improvements in health-related quality of life.

Pulmonary rehabilitation, which includes exercise training, is associated with moderately large, clinically significant improvements in health-related quality of life and functional exercise capacity in people with COPD. Large variation in the design of pulmonary rehabilitation programmes makes it difficult to identify their optimal format.

Complex self-management support interventions (involving multiple components and, or multiple professionals with the intervention delivered by a variety of means) are associated with improvements in health-related quality of life with limited evidence of reductions in health care utilisation. It is unclear which components lead to these improvements, but education and exercise seem to be effective.

There is some evidence that telemedicine may result in reductions in healthcare utilisation and that outreach nursing programmes can lead to improvements in health-related quality of life.

Economic studies suggest that education programmes and case management may be cost saving for selected patients, depending on the efficiency with which the programmes are run. There is limited evidence that pulmonary rehabilitation may be cost-effective in patients with moderate to severe COPD disease.

The reported per-patient cost of self-management interventions varied according to the intensity of the intervention, but was typically low relative to the overall cost of care of these patients. The overall budget impact of self-management support interventions may be considerable due to the high prevalence of COPD in Ireland.

Advice – Diabetes

The key findings of this HTA on self-management support interventions for adults with Type 1 and Type 2 diabetes, which precede and inform HIQA's advice, are as follows:

- For Type 1 diabetes, two systematic reviews were identified. These related to psychological self-management support interventions (11 randomised controlled trials) and structured diabetes education (15 randomised controlled trials).
- For adults with Type 1 diabetes:
 - Based on a single systematic review, there is no evidence of effectiveness of psychological treatments in improving glycaemic control and reducing psychological distress.
 - Based on a single systematic review of structured education programmes, there is very limited evidence that these interventions lead to improved outcomes of quality of life and episodes of severe hypoglycaemia.
- For Type 2 diabetes, based on 27 systematic reviews (347 randomised controlled trials), identified self-management support interventions were broadly grouped into education interventions, chronic disease self-management programmes, telemedicine and 'other' self-management support interventions.
- For adults with Type 2 diabetes, there is:
 - Very good evidence that education, including culturally-appropriate education, improves blood glucose control in the short term (less than 12 months).
 - Good evidence that behavioural interventions (specifically patient activation interventions which actively engage patients by promoting increased knowledge, confidence and, or skills for disease self-management) are associated with modest improvements in blood glucose control (HbA1C).
 - Good evidence that various forms of telemedicine are associated with improvements in blood glucose control in the short term. Some evidence that chronic disease self-management programmes are associated with small improvements in blood glucose control in the short term.
 - Evidence of improvements in blood glucose control for a diverse range of self-management support interventions and in particular educational

interventions which differ also in their frequency, intensity and mode of delivery.

- Based on the available evidence, it is not possible to provide clear recommendations on the optimal content and format of self management support for adults with Type 2 diabetes. Evidence suggests that various models of delivery may be equally effective. Impact on resource utilisation was not assessed in any of the reviews. Quality of life remained unaltered.
- Based on 38 costing and cost-effectiveness studies, the economic literature for Type 1 and Type 2 diabetes was grouped into three main intervention types: education programmes, telemedicine, and pharmacist-led programmes. The better quality studies used data from randomised controlled trials and then extrapolated lifetime benefits using one of a number of simulation models that predict outcomes based on risk-factors.
- The best economic evidence was found in support of self-management support education programmes with modelled results suggesting that the interventions are cost-effective relative to usual care.
- Based on limited evidence it is not possible to say if telemedicine interventions are cost-effective relative to usual care while there was insufficient evidence of adequate quality to consider the cost-effectiveness of pharmacist-led interventions.

Based on these findings, HIQA's advice to the Health Service Executive (HSE) is as follows:

There is very limited evidence that structured education programmes lead to improvements in quality of life and episodes of severe hypoglycaemia for adults with Type 1 diabetes.

There is very good evidence that education, including culturally-appropriate education improves blood glucose control in patients with Type 2 diabetes in the short term (less than 12 months).

There is good evidence that behavioural interventions are associated with modest improvements in blood glucose control (HbA1C).

There is good evidence that various forms of telemedicine are associated with improvements in blood glucose control in the short term.

There is some evidence of short term improvements in blood glucose control with chronic disease self-management programmes and for a diverse range of self-

management support interventions and in particular educational interventions which differ also in their frequency, intensity and mode of delivery.

Based on the available evidence, it is not possible to provide clear recommendations on the optimal content and format of self management support for adults with Type 2 diabetes. Evidence suggests that various models of delivery may be equally effective.

Economic studies suggest that education programmes may be cost-effective relative to usual care.

Advice – Stroke

The key findings of this HTA in relation to self-management support interventions in post-stroke patients, which precede and inform HIQA's advice, are as follows:

- Based on 27 systematic reviews (228 randomised controlled trials), four broad types of self-management support intervention were identified. These focused on rehabilitation therapy (including general rehabilitation, virtual reality-based rehabilitation and telerehabilitation), self-management programmes, information provision and 'other' self-management support interventions.
- Good evidence was found that general rehabilitation therapy delivered in early stroke recovery has a positive impact on activities of daily living and extended activities of daily living. Virtual reality-based rehabilitation was found to improve upper limb function and activities of daily living when used as an add-on to usual care.
- Some evidence was found that:
 - information provision improves patient and carer knowledge of stroke, aspects of patient satisfaction, with small reductions (which may not be clinically significant) in patient depression scores.
 - stroke liaison emphasising education and information can have a positive impact on quality of life.
- Based on the available evidence, it is not possible to draw conclusions in relation to the effectiveness of:
 - self-management programmes delivered to post-stroke patients.
 - psychosocial interventions, motivational interviewing, lifestyle interventions, multidisciplinary care or family-orientated models of care.
- The identified economic literature was limited to four costing and cost-effectiveness studies relating to exercise-based programmes and computer-based rehabilitation therapy. The four included studies provided very limited evidence regarding the costs or cost-effectiveness of self-management programmes for post-stroke patients.

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

The best evidence was found for general rehabilitation therapy which if delivered in early stroke recovery has a positive impact on activities of daily living and extended activities of daily living. Virtual reality-based rehabilitation improves upper limb function and activities of daily living when used as an add-on to usual care.

Some evidence was found that information provision can improve patient and carer knowledge of stroke and some aspects of patient satisfaction with some evidence that stroke liaison emphasising education and information can have a positive impact on quality of life.

Evidence regarding the clinical and cost-effectiveness of other self-management support interventions for post-stroke patients is more limited, or conflicting.

Advice – Ischaemic heart disease

The key findings of this HTA in relation to self-management support interventions for adults with ischaemic heart disease, which precede and inform HIQA's advice, are as follows:

- Based on 14 systematic reviews (244 randomised controlled trials), five broad types of self-management support intervention were identified for patients with ischaemic heart disease. These focused on patient education, exercise, psychosocial or behavioural changes, home-based services or telehealth. Interventions such as education, exercise and behavioural changes are core components of cardiac rehabilitation, so the boundary between standard cardiac rehabilitation services and chronic disease self-management support is ill-defined.
- Good evidence of a statistically significant reduction in mortality was found for exercise programmes (including exercise-based cardiac rehabilitation) in suitable patient cohorts from studies with follow-up periods greater than 12 months. Exercise –based interventions are also associated with fewer rehospitalisations but inconsistent results have been reported for myocardial infarction rates.
- Some evidence was found that patient education programmes are associated with an improvement in interim outcomes such as smoking cessation and reduced blood pressure, but there is uncertainty about how long any such effect persists.
- Limited evidence was found:
 - to demonstrate the effectiveness of behavioural modification interventions, although some have reported positive effects on smoking cessation and symptom management.
 - that comparable home- and telehealth-based cardiac rehabilitation interventions achieve similar outcomes to centre-based interventions.
- Based on 15 costing and cost-effectiveness studies, the economic literature was broadly grouped into four main intervention types: cardiac rehabilitation, case management, telemedicine, and 'other interventions'.
- Compared with no rehabilitation, there is evidence that cardiac rehabilitation can create cost savings as a result of reductions in health care utilisation.
- It is not possible to draw conclusions in relation to the cost-effectiveness of telemedicine-delivered self-management support interventions and nurse-led case management programmes due to the heterogeneity of the interventions assessed and equivocal findings.

- The reported per-patient cost of self-management interventions varied according to the intensity of the intervention, but was typically low relative to the overall cost of care of these patients.

Based on these findings, HIQA's advice to the Health Service Executive (HSE) is as follows:

Exercise-based interventions (including exercise-based cardiac rehabilitation) can reduce mortality and rehospitalisations in selected patients with ischaemic heart disease. The optimal format of these interventions and the duration of effectiveness are still unclear. These interventions can result in modest cost savings through reductions or shifts in healthcare utilisation.

Some evidence was also found that patient education programmes are associated with an improvement in interim outcomes such as smoking cessation and reduced blood pressure. Evidence regarding the clinical and cost-effectiveness of other self-management support interventions for patients with ischaemic heart disease is more limited, or conflicting.

Advice – Hypertension

The key findings of this HTA in relation to self-management support interventions for adults with hypertension, which precede and inform HIQA's advice, are as follows:

- Sixteen systematic reviews (240 randomised controlled trials) of the clinical-effectiveness of self-management support interventions were identified for inclusion in this overview of reviews. A diverse range of interventions was identified with the largest volume of evidence obtained for reviews where self-monitoring of blood pressure was the main intervention. The remaining reviews assessed a range of self-management support interventions.
- Good evidence was found that self-monitoring of blood pressure alone or using a range of additional support, including telemedicine, is beneficial in lowering systolic and diastolic blood pressure. However, the clinical significance and durability of the effect are unclear. Additional support seems to enhance the blood pressure lowering effect.
- There is limited evidence of effectiveness of patient education interventions when used alone in improving medication adherence or blood pressure control, but these may form an important part of more complex interventions.
- There is some evidence that a range of complex self-management support interventions (that is involving multiple components, multiple providers and modes of delivery) lead to improvements in blood pressure control. A patient-specific approach may be the most beneficial, involving components tailored to the individual patient with hypertension.
- Some evidence was found that:
 - community pharmacist interventions which include patient education can lead to reductions in systolic and diastolic blood pressure.
 - simplification of medication regimens improves adherence although the clinical significance of this effect may be small.
- Based on 14 costing and cost-effectiveness studies, the economic literature assessed a diverse range of interventions with the largest volume of evidence obtained for reviews where self-monitoring of blood pressure was the main intervention. The remaining reviews assessed a range of self-management support interventions. The available evidence was largely for patients with uncontrolled hypertension.
- The cost-effectiveness results were inconsistent across outcomes of ambulatory blood pressure, costs, and healthcare utilisation. In some studies, the

intervention had a positive effect; in others it was negative, relative to usual care. The cost per patient of delivering the interventions was generally low.

- The context of high levels of undetected hypertension and poor blood pressure control in Ireland must be considered when evaluating the applicability of the findings of this overview. There are substantial levels of unmet need for routine care in Ireland, which may impact the estimated incremental benefits of self-management support interventions for hypertension.

Based on these findings HIQA's advice to the Health Service Executive (HSE) is as follows:

Good evidence was found that self-monitoring of blood pressure alone or using a range of additional support, including telemedicine, is beneficial in lowering systolic and diastolic blood pressure, although the clinical significance and durability of the effect is unclear.

There is some evidence that a range of complex self-management support interventions (that is involving multiple components, multiple providers and modes of delivery) lead to improvements in blood pressure control. A patient-specific approach may be the most beneficial, involving components tailored to the individual patient with hypertension.

There is some evidence that community pharmacy interventions, which include patient education, may lead to improvements in blood pressure control.

Evidence regarding the clinical and cost-effectiveness of other self-management support interventions for patients with hypertension is more limited, or conflicting.

There are substantial levels of unmet need for routine care in Ireland that may impact the applicability of these findings and the potential incremental benefits of self-management support.

Advice – Heart failure

The key findings of this HTA in relation to self-management support interventions for adults with heart failure, which precede and inform HIQA's advice, are as follows:

- Based on 20 systematic reviews (248 randomised controlled trials), five broad types of self-management support intervention were identified. These focused on patient education, psychosocial and behavioural interventions, exercise interventions, home visits, and telehealth (including telemedicine and structured telephone support). Interventions such as education, prescribed exercise and behavioural changes are core components of cardiac rehabilitation, so the boundary between standard cardiac rehabilitation services and chronic disease self-management support is ill-defined.
- Statistically significant reductions were reported for:
 - mortality for both telehealth interventions and home visit programmes in selected patients. However, there was a lack of consistency across reviews that examined these types of interventions, with some studies reporting no effect.
 - the rate of hospital readmissions for exercise interventions, home visit programmes and telehealth interventions.
- Limited evidence was found to support the effectiveness of patient education programmes or behavioural modification interventions.
- Despite the positive results that have been reported for telemedicine and structured telephone support interventions, concerns have been raised about these being considered the standard of care for the management of heart failure patients due to inconsistent findings across studies and a lack of understanding about which specific elements of the interventions contribute to the improved outcomes.
- Based on 46 costing and cost-effectiveness studies, the economic literature was grouped into five main intervention types: education, telemedicine, multidisciplinary care, disease management and 'other' self-management support interventions. The quality of the studies was generally poor, with only four identified as high-quality studies.
- Based on randomised controlled trials that showed improvements in health-related quality of life and reductions in healthcare utilisation, the majority of telemedicine interventions reported cost savings relative to usual care, although the interventions assessed were heterogeneous.

- Based on randomised controlled trials that showed reductions in healthcare utilisation, certain disease management and education programmes were found to be cost-effective or cost saving relative to usual care.
- The reported per-patient cost of self-management interventions varied according to the intensity of the intervention, but was typically low relative to the overall cost of care of heart failure patients.

Based on these findings, HIQA's advice to the Health Service Executive (HSE) is as follows:

Telehealth and home visit interventions are associated with reductions in mortality in selected patients with heart failure although the reductions in mortality were not consistently seen across all studies.

Exercise-based interventions (including exercise-based cardiac rehabilitation), telehealth and home visit interventions can reduce rehospitalisations in selected patients with heart failure over periods of six to 12 months.

Despite the positive results reported for telehealth interventions in some studies, concern has been raised about these being considered standard of care for the management of heart failure patients due to inconsistent findings across studies and insufficient information to identify which specific elements of the interventions contribute to improving outcomes.

Economic studies suggest that telemedicine, disease management and education interventions may be cost-effective or cost saving where they achieve reductions in healthcare utilisation or improvements in health-related quality of life.

Evidence to support the clinical and cost-effectiveness of other self-management support interventions is more limited.