TITLE: Peer Support for Diabetes, Heart Disease and HIV/AIDS: A Review of the Clinical Effectiveness, Cost-effectiveness, and Guidelines

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CONTEXT AND POLICY ISSUES

Chronic diseases are a significant and growing challenge in Canada. In the province of Ontario, for example, 33% of people were living with at least one chronic disease in 2005.[1] Diabetes, heart disease and HIV/AIDS are three of the most common health chronic conditions in Canada for which education, coaching, and other interventions such as peer support may help patients to gain the confidence, knowledge, skills, and motivation to manage their disease.[2-4]

Peer support is defined as support from persons who have the same health condition than the people they assist and experience the same challenges of living with the same chronic condition.[5] There are several models of peer support, ranging from professionally-led peer support groups to peer-led support groups, from face-to-face meetings to telephone-based, internet-based and email-based peer support.[6]

This Rapid Response report aims to review the clinical- and cost-effectiveness of peer support compared to usual care without peer support for chronic conditions such as diabetes, heart disease and HIV/AIDS. Guidelines associated with the use of peer support in the management of these chronic conditions will also be examined.

RESEARCH QUESTIONS

1. What is the comparative clinical effectiveness of peer support vs. usual care (no peer support) for chronic disease management?

2. What is the cost-effectiveness of peer support for chronic disease management?

3. What are the evidence-based guidelines for peer support for chronic disease management?

KEY FINDINGS

Peer support may provide some benefits to patients with chronic diseases such as type 2 diabetes, heart disease and HIV/AIDS, but the findings are inconsistent and evidence is limited. In patients with type 2 diabetes, peer support was shown to improve clinical, health behavioural, empowerment, and psychological outcomes. Peer support was also shown to reduce pain, anxiety, emergency room visits and increase self-efficacy, condition knowledge in patients with heart disease. In patients with HIV/AIDS, peer support may favourably affect sexual risk behavior, attitudes and cognition, HIV knowledge and substance use. Results from a cost-effectiveness analysis of peer support suggest that the intervention may be cost-effective in patients with diabetes, and there was no statistically significant difference in total health care cost between peer support and usual care. Peer support is recommended as a good practice to increase treatment adherence for patients with HIV/AIDS but because of lack of strong supportive evidence, the recommendation is only on the basis of individual patient circumstances.

METHODS

Literature Search Strategy

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 10), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, economic studies and guidelines. The search was also limited to English language documents published between Jan 1, 2008 and Oct 10, 2013.

Selection Criteria and Methods

One reviewer screened the titles and abstracts of the retrieved publications, selected potentially relevant articles for retrieval of full-text publications for further investigation and evaluated the full-text publications for final selection, according to the criteria listed in Table 1.

Table 1: Selection Criteria

Population	Adults with chronic conditions: diabetes, chronic heart conditions, hepatitis C, human immunodeficiency virus (HIV), hypertension, chronic obstructive pulmonary disease
Intervention	Peer support: -Professional-led group visits with peer exchange -Peer-led face-to-face self-management programs -Peer coaches -Support groups
Comparator	No peer support; Usual Care
Outcomes	Clinical effectiveness (improvement in health status/disease management), increased knowledge (education), morbidity, mortality, medication adherence, quality of life Cost-effectiveness

	Evidence-based guidelines
Study Designs	Health technology assessments (HTA), systematic reviews (SR), and meta-analyses (MA), randomized controlled trials (RCTs), economic evaluations, guidelines. If few HTA/SR/MA or RCTs were found, non-RCTs were included.

Exclusion Criteria

Articles were excluded if they did not meet the selection criteria in Table 1, if they were about mental disease (this condition is the topic of a separate Rapid Response review), if they were published prior to January 2008, if they were duplicate publications of the same study, or if they were referenced in a selected systematic review.

Critical Appraisal of Individual Studies

The quality of the included systematic reviews, trials, cost evaluations, and guidelines was assessed using the AMSTAR,[7] Downs and Black,[8] Drummond,[9] and AGREE[10] checklists, respectively. Numeric scores were not calculated. Instead, the strengths and limitations of the studies are summarized and presented.

SUMMARY OF EVIDENCE

Quantity of Research Available

The literature search yielded 580 citations. After screening of abstracts from the literature search and from other sources, 71 potentially relevant studies were selected for full-text review. Since numerous relevant systematic reviews and RCTs were identified, non-RCTs were excluded. Twelve studies on diabetes, heart disease and HIV/AIDS were included in the review. No information on peer support for hypertension or COPD was identified. The PRISMA flowchart in Appendix 1 details the process of the study selection.

Summary of Study Characteristics

A detailed summary of the included studies is provided in Appendix 2.

Study design

Of the 12 studies selected for inclusion, three included studies were narrative systematic reviews,[11-13] seven studies were randomized controlled trials,[14-20] one study was a cost-effectiveness analysis on peer support for patients with type 2 diabetes,[21] and one was an evidence-based guideline for patients with HIV/AIDS.[22]

Population

Six studies included patients with type 2 diabetes,[11,14-17,21] two studies were on patients with heart disease,[12,18] and four studies were included patients with HIV/AIDS.[13,19,20,22]

Interventions and comparators

Interventions in all studies were peer support programs, consisting of on-line, phone and face-to-face meetings with assigned patients. The comparator in all studies were usual care (no peer support) for diabetes,[11,14-17,21] heart disease,[12,18] or HIV/AIDS.[13,19,20,22]

Outcomes

The main study outcomes were glycemic control, cholesterol, physical activity, self-efficacy, depression, and cost effectiveness for patients with diabetes,[11,14-17,21] improvement in health status, physical activity, self-efficacy, emergency room visits, knowledge for patients with heart disease,[12,18] and sexual risk behavior, HIV knowledge, substance use, biological markers, treatment adherence, quality of life, and guidelines for patients with HIV/AIDS.[13,19,20,22]

Summary of Critical Appraisal

The included systematic reviews were narrative reviews, and provided an a priori design and performed a comprehensive literature search.[11-13] Other than one systematic review that included only RCTs,[12] the other two of the reviews included studies of different designs.[11,13] Considerable heterogeneity was found in the design, setting, outcomes and measurements tools among the included trials. No assessment of publication bias was performed in all three reviews, and one review did not have an independent study selection and data extraction process in place which could increase the risk of bias in this review.[12]

The included trials are randomized and controlled trials with hypotheses, method of population selection, main outcomes, interventions, patients characteristics, main findings clearly described.[14-20] Most studies had sufficient power to detect a clinically important effect, and the findings can be generalized to the patients with the condition. Patients and outcome assessors were not blinded to the intervention, a limitation inherent to this type of intervention (peer support).

The included cost study had the economic evaluation that is likely to be usable, with clinical outcomes derived from a well-designed RCT and costs assessed and compared.[21] An incremental cost-effectiveness analysis and sensitivity analyses were performed. Not all relevant complications of diabetes or health-related quality of life outcomes were considered in the model used.

The included guideline had specific and unambiguous recommendations, with a systematic and clearly described method of searching for and selecting the evidence, and clearly described methods used to formulate the recommendations.[22] Health benefits, and risks were stated, and procedures to update the guidelines were provided. It is unclear whether the guideline was piloted among target users, or whether patients' view and preferences were sought. Potential cost implications of applying the recommendations were not included.

Details of the strengths and limitations of the included studies are summarized in Appendix 3.

Summary of Findings

Main findings of included studies are summarized in detail in Appendix 4.

1. <u>What is the comparative clinical effectiveness of peer support vs. usual care (no peer support) for chronic disease management?</u>

In general, peer support may provide some benefits to patients with type 2 diabetes, heart disease, and HIV/AIDS but the findings were inconsistent and evidence very limited to support recommendations.

Diabetes

One systematic review[11] and four RCTs[14-17] examined the comparative clinical effectiveness of peer support to usual care for the management of patients with type 2 diabetes.

The narrative systematic review (literature search up to December 2011) included 14 RCTs comparing peer support to usual care in patients with type 2 diabetes.[11] In terms of clinical outcomes, three out of 13 RCTs found peer support to have a statistically significant beneficial impact on blood glucose control (HbA_{1c}). Two out of two RCTs found peer support group to have statistically significantly fewer symptoms of hypo- or hyperglycemia. In terms of health behavioural outcomes, two out of five RCTs found statistically significant improvement in physical activity/fitness in the peer support group and three out of four RCTs reported statistically significant improvements in healthy eating habits. In terms of empowerment outcomes, two out of three RCTs found significant improvement in self-efficacy which was maintained at 12-month follow-up. In terms of psychological outcomes, four out of seven RCTs found significant improvement in depression or health distress, and two out of two RCTs found significant improvement in perceived social support. The remaining RCTs found no statistically significant differences between the two interventions.

The included RCTs (published from 2012 to 2013) compared peer support to usual care in patients with diabetes in terms of diabetes control,[14-16] and self-efficacy.[17] Findings on the effect of peer support on blood glucose control (change in HbA_{1c} level) was inconsistent, with statistically significant,[14] or not statistically significant data.[15] Peer coaching led to a larger effect on lowering HbA_{1c} in patients with initial low level of medication adherence than in patients with higher levels,[16] and statistically increased self-efficacy in patients with low self-efficacy score at baseline.[17]

Heart disease

One systematic review[12] and one RCT[18] examined the comparative clinical effectiveness of peer support to usual care for the management of patients with heart disease.

The narrative systematic review (literature search up to July 2005) included six RCTs comparing peer support to usual care in patients with heart disease.[12] Two out of six included RCTs reported statistically significant differences in anxiety level, self-efficacy, physical activity, pain and emergency room visits. The remaining RCTs found no statistically significant differences in the measured outcomes.

The included RCT[18] (published in 2012) examined self-efficacy, knowledge and self-management behavior in the peer support group compared to the usual care group in cardiac patients with diabetes. Results showed a statistically significant improvement in heart disease

knowledge in patients with peer support compared to those with usual care, but no statistically significant difference in terms of self-efficacy and self-management behavior.

HIV/AIDS

One systematic review[13] and two RCTs[19,20] examined the comparative clinical effectiveness of peer support to usual care in the management of patients with HIV/AIDS.

The narrative systematic review (literature search up to November 2010) included 117 comparative and non-comparative studies evaluating the effectiveness of peer support to usual care in patients with HIV/AIDS.[13] The systematic review looked at the beneficial effect of peer support with or without comparing it to usual care. The majority of included studies found beneficial effects of peer support in terms of sexual risk behavior (76.9% of 78 studies), attitudes and cognitions (89.0% of 73 studies), HIV knowledge (84.6% of 52 studies), and substance use (70.4% of 27 studies). However, over one third of studies (37.5% of 16 studies) and over half of studies (55.6% of 9 studies) found the beneficial effects of peer support using biomarkers (such as HIV tests, CD4 counts) or other non-self-reported outcomes (such as electronically monitored HIV medication adherence, condom sales), respectively. In summary, objective outcomes such as biomarkers and other non-self-reported outcomes were less likely to show peer support benefits than subjective measures in this review.

The included RCTs (published in 2012 and 2013) examined antiretroviral treatment adherence (ART)[19] and quality of life[20] in HIV/AIDS patients with peer support compared to usual care. Results found a statistically significant increase in ART adherence,[19] and a statistically significant improvement in quality of life of patients in clinical stages 3 and 4 (those with symptoms of immunosuppression and opportunistic infections), an effect that was not shown in patients in clinical stages 1 and 2 (those with mild symptoms or asymptomatic).[20]

2. <u>What is the cost-effectiveness of peer support for chronic disease management?</u>

One economic study conducted a cost-effectiveness analysis of peer support for patients with type 2 diabetes in Ireland (published in 2012).[21] Costs were estimated based on 2008 prices. Despite peer support being associated with a savings of €637.43 in lifetime healthcare cost per patient compared to usual care, the difference was not statistically significant (95% CI, -2455 to 1125.45). Peer support was associated with an increase of 0.09 in mean QALYs per patient; this increase was also not statistically significant (95% CI, -0.05 to 0.25). Sensitivity analysis showed that peer support could be more than 80% probable of being more cost-effective than usual care across a range of threshold values.

3. <u>What are the evidence-based guidelines for peer support for chronic disease management?</u>

The International Association of Physicians in AIDS Care (IAPAC) panel developed evidence-based recommendations in 2012 guidelines for improving entry into and retention in care and antiretroviral adherence for persons with HIV.[22] Under "Education and Counseling Interventions", peer support was recommended in Recommendation 20:
Recommendation 20: Offering peer support may be considered (III C) (p 6).
The quality of this recommendation was ranked medium (III) (i.e., RCT evidence with critical limitations or observational study evidence without important limitations) and the strength of

recommendation was ranked optional (C) (i.e., there may be consideration for this recommendation on the basis of individual patient circumstances. Not recommended routinely)

Limitations

The inconsistencies in the findings included in the review caution their interpretation. The quality of the relevant studies is limited as previously described. There was no evidence found on the cost-effectiveness for heart disease and HIV/AIDS, and guidelines on peer support for diabetes and heart diseases are lacking. Subgroup analyses to recognize the characteristics of individuals who may have particular benefit from peer support are also needed.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

Limited evidence points to the beneficial role of peer support in improving many clinical, health behavioural, empowerment and psychological outcomes for patients living with chronic diseases such as type 2 diabetes, heart disease and HIV/AIDS. Objective measures such as HbA_{1c} levels in patients with diabetes, or biological markers such as HIV tests in patients with HIV/AIDS were less likely to indicate peer support benefits than self-reported measures. Peer support may be cost-effective in patients with diabetes, and there was no statistically significant difference in total health care cost between peer support and usual care. The cost-effectiveness findings were based on resource use and cost in Ireland, therefore not necessarily transferable to a Canadian system. Peer support is recommended as a good practice to increase treatment adherence for patients with HIV/AIDS but the recommendation is only on a basis of individual patient circumstances. Health Council of Canada in 2003 recommended the use of the power of peers as an important component of self-management support initiatives for chronic health conditions.[3]

Benefits of an intervention, peer support included, usually depends on the "receiver" of the intervention, in this case the patients, as well as the "helper", in this case the peers. With many patients living with chronic diseases being elderly, the type and frequency of conversations with peers can be limited by the models of support, such as online health forums, web- and email-based support. Health forums should also be in languages that are targeted to a specific group of populations. On the other hand, the credibility of peer information cannot be taken lightly, even though the concern about the accuracy of peer recommendations is not supported by results from a Canadian study that found that the vast majority of information from an unmoderated online health forum for retired diabetic patients was in agreement with the best practice clinical guidelines.[23]

In summary, a well-planned peer-led intervention can be successful for patients living with chronic diseases, taking into consideration the accuracy of the peers' information, the characteristics of the patients, and its cost-effectiveness.
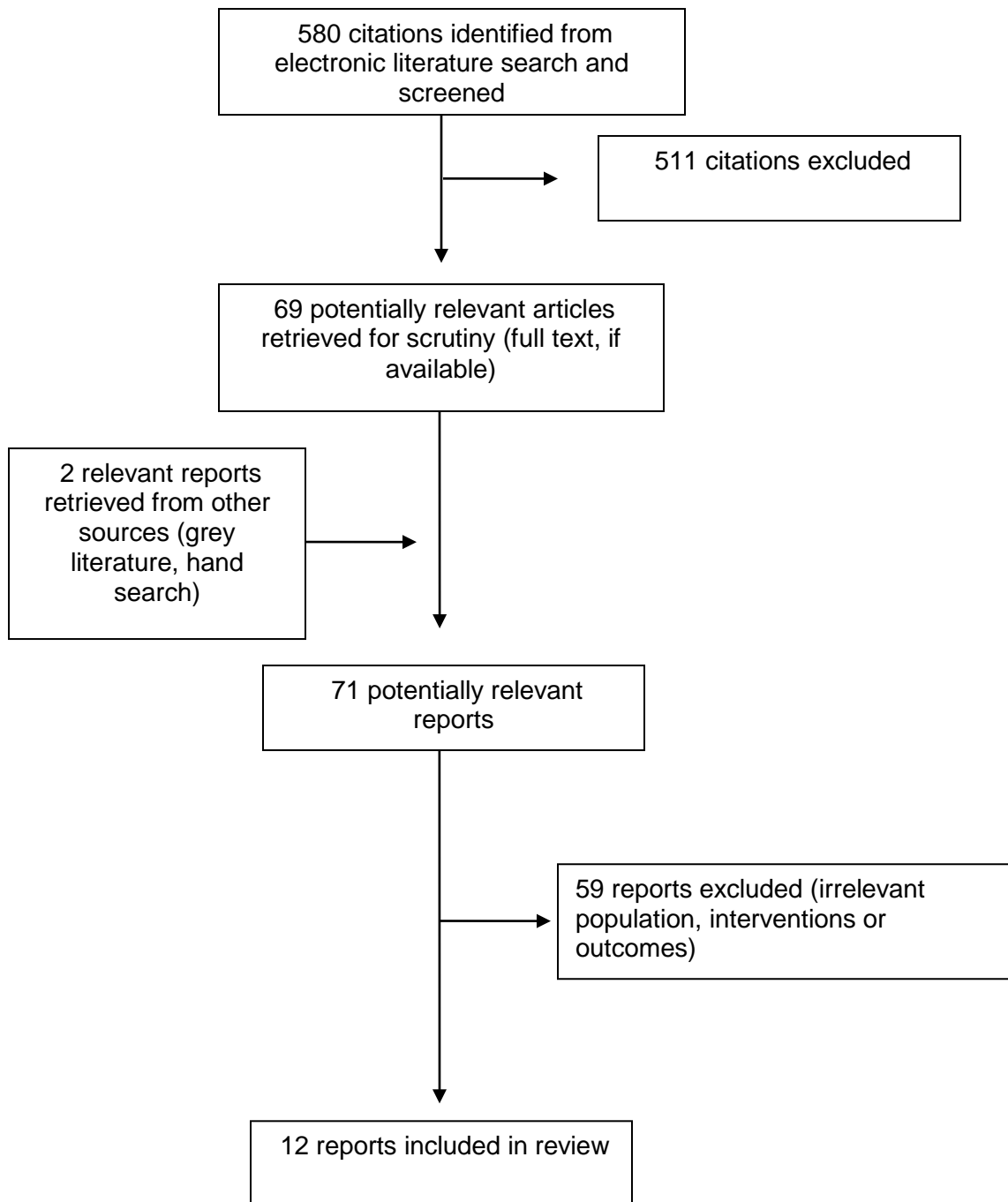
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Appendix 1: Selection of Included Studies

580 citations identified from electronic literature search and screened

→ 511 citations excluded

69 potentially relevant articles retrieved for scrutiny (full text, if available)

2 relevant reports retrieved from other sources (grey literature, hand search)

71 potentially relevant reports

→ 59 reports excluded (irrelevant population, interventions or outcomes)

12 reports included in review

Appendix 2: Characteristics of Included Systematic Reviews

Table A1: Characteristics of Included Systematic Reviews				
First Author, Year, Country,	Literature Search Strategy	Inclusion Criteria	Exclusion Criteria	Studies included Main outcomes
Diabetes				
Dale,[11] 2012, UK	*"We searched the Cochrane Library, MEDLINE, PubMed, EMBASE and CINHAL for the period 1966–2011, together with reference lists of articles for eligible studies"* (p 1361)	*"The inclusion criteria were: (1) published in English; (2) described a specific programme which included peers providing support to adults with diabetes; (3) all subjects (patients) were diagnosed and being treated for diabetes; (4) study designs included randomized or quasi-randomized controlled trials, controlled clinical trials, before-and-after studies, interrupted time series, descriptive studies or case studies; (5) interventions were aimed at improving the care or management of diabetes."* (p 1362)	Studies not fulfilling inclusion criteria	25 studies included Improvement in glucaemic control (HbA_{1c}) Symptoms of hypo- or hyperglycaemia BMI/weight Physical activity Diet Self-efficacy Depression Perceived social support
Heart Disease				
Parry,[12] 2010, Canada	*"The aim of this paper is to critically examine the effects of peer support interventions on health outcomes in individuals with heart disease"* (p 57)	*"Randomized controlled trials that examined clinical or functional outcome measures, and compared the effects of any kind of support delivered by peers, natural lay helpers or paraprofessionals with support given by professionals, wait list or control conditions were included in this review"* (p 58)	Studies not fulfilling inclusion criteria	6 studies included Improvement in health status Physical activity Pain Emergency room visits Self-efficacy
HIV/AIDS				
Simoni,[13] 2011, US	*"We describe the results of a review of the global literature, identifying 117 studies evaluating the efficacy of peer-based interventions in the area of HIV/AIDS."* (p 1589)	*"Randomized controlled trials (RCT), quasi-experimental designs (non-randomized comparison), and cross-sectional or other less rigorous designs (no comparison group"*. *"Articles were restricted to those that: (1) involved peers as the only or one*	Studies not fulfilling inclusion criteria	117 studies included Sexual risk behavior Attitudes and cognition HIV knowledge Substance use Biological markers

Table A1: Characteristics of Included Systematic Reviews				
First Author, Year, Country,	**Literature Search Strategy**	**Inclusion Criteria**	**Exclusion Criteria**	**Studies included Main outcomes**
		of the main modes of intervention, (2) addressed an HIV-related health concern as one of the main aims; (3) conducted a statistical evaluation of the effect of the peer intervention on at least one HIV related outcome; and (4) were original reports of the results." (p 1591)		

BMI: body mass index

Appendix 3: Characteristics of Included Randomized Controlled Trials

Table A2: Characteristics of Included Studies				
First Author, Year, Country,	**Sample Size, Patient Characteristics, Length of Follow-up**	**Intervention**	**Comparator(s)**	**Main Study Outcomes**
Diabetes				
Thom,[14] 2013, US	"*Patients with HbAic levels of ≥8.0% were recruited and randomized to receive peer coaching (n = 148) or usual care (n = 151)*" (*p 137*) 6 months follow up	Peer support (*target goals for coaching sessions were telephone contact at least twice a month and 2 or more in-person contacts over 6 months*) (p 139)	Usual care (*included all services normally available to patients, including access to a nutritionist and diabetes educator through referral from their primary care clinician*) (p 139)	Change in HbA_{1c} Percentage of patients whose HbA_{1c} dropped by ≥1.0% or percentage of patients with an HbA_{1c} level of < 7.5% at the end of the study
Gagliardino,[15] 2013, Argentina	"*The control group: 105 patients with type 2 diabetes, with an average mean diabetes duration of 6±6 years. The peer group: 93 patients with type 2 diabetes with comparable characteristics*" (p 155) 12 months follow up	Peer support (*The face-to-face visits among peers and their supportees were scheduled every second month. The telephone communications took place at least weekly for the first 6 months, biweekly for the next 3 months and monthly for the remaining study period*) (p 154)	Usual care (*delivered by professional educators; consisted of four weekly teaching units (90–120 min each) and a reinforcement session at 6 months*) (p 154)	Change in HbA_{1c} BMI Distress
Moskowitz,[16] 2013, US	"*Two hundred and ninety nine patients: 151 randomized to usual care and 148 to health coaching*" (p 940) Patients had poor glycemic control. 6 months follow up	Peer support (*met in person and talked by phone with assigned patients randomized to the intervention study group throughout the 6-month study period*) (p 939)	Usual care	Change in HbA_{1c} in patients with low or high levels of medication adherence
Van der Wulp,[17] 2012, the Netherlands	"*133 participants were randomly allocated either to the intervention group or the control group*" (p e392) Patients had type 2 diabetes for < 12 months 6 months follow up	Peer support (*Home visits lasted on average 1 h. Within 2 weeks after each visit, the expert patients contacted their participants by telephone; Between the visits, participants could contact their expert patient by telephone or email as often as they liked*) (p e391)	Usual care	Self-efficacy Coping Dietary habits Physical activity Psychological well-being Depressive symptoms Psychological distress
Heart Disease				
Wu,[18] 2012, Australia	"*Thirty cardiac patients with type 2*	Peer support (*Participants in the intervention group*	Usual care (*The control group*	Self-efficacy Self-care behavior

Table A2: Characteristics of Included Studies				
First Author, Year, Country,	**Sample Size, Patient Characteristics, Length of Follow-up**	**Intervention**	**Comparator(s)**	**Main Study Outcomes**
	diabetes were recruited" (p 345) Data collected at 4 weeks following discharge	*received usual education as well as the Peer-CDSMP, which comprises face-to-face sessions in hospital by a research nurse and telephone and text message follow-up by peers)* (p 346)	*received usual education only)* (p 346)	Knowledge
HIV/AIDS				
Horvath,[19] 2013, US	"*HIV-positive gay or bisexually-identified men self-reporting imperfect ART adherence in the past month were randomized to receive usual care (n = 57) or the eight week TWM intervention (n = 67)*" (p 2031) Data collected after eight-week intervention, and 1 month follow up	Peer support (eight-week on-line TWM program which consisted of exchanging messages, with videos segments, links to HIV-related websites and brief HIV-related articles provided)	Usual care	ART adherence
Vu,[20] 2012, VN	"*In the intervention group, participants (n = 119) received adherence support from trained peer supporters In the control group, participants (n = 109) were treated according to standard guidelines*" (p 1) 12 months follow up	Peer support (*trained peer supporters who visited participants' houses biweekly during the first two months, thereafter weekly*) (p 1)	Usual care (*according to standard guidelines, including adherence, counselling, monthly health check and drug refills*) (p 1)	Quality of life

ART: antiretroviral therapy; Peer-CDSMP: peer-led Cardiac-Diabetes Self-Management Program; TWM: "Thrive With Me" program; VN: Vietnam

Appendix 4: Characteristics of Included Cost Studies

Table A3: Characteristics of Included studies				
First Author, Year, Country,	**Study Objectives**	**Interventions/Comparators**	**Patients**	**Main outcomes**
Diabetes				
Gillespie,[21] 2012, Ireland	"*The aim of this study is to examine the cost-effectiveness of a group-based peer support intervention in general practice for patients with type 2 diabetes*" (p 3)	Peer support (for 2 years with nine peer-led meetings) Usual care	Patients with type 2 diabetes	Costs Cost-effectiveness QALY

QALY: quality-adjusted life years

Appendix 5: Summary of Critical Appraisal of Included Studies

Table A4: Summary of Critical Appraisal of Included Studies		
First Author, Publication Year	**Strengths**	**Limitations**
Critical appraisal of included systematic reviews (AMSTAR[7])		
Dale,[11] 2012	- a priori design provided - duplicate study selection and data extraction procedure in place - comprehensive literature search performed - list of included studies, study characteristics provided - quality assessment of included studies provided and used in formulating conclusions - conflict of interest stated	- list of excluded studies not provided, - no assessment of publication bias performed - considerable heterogeneity in the design, setting, outcome and measurement tools among the included trials
Parry,[12] 2010	- a priori design provided - comprehensive literature search performed - list of included studies, study characteristics provided - list of excluded studies provided - all included studies are randomized controlled trials - quality assessment of included studies provided and used in formulating conclusions	- duplicate study selection and data extraction procedure not in place - no assessment of publication bias performed - conflict of interest not stated
Simoni,[13] 2011	- a priori design provided - duplicate study selection and data extraction procedure in place - comprehensive literature search performed - list of included studies, study characteristics provided on-line	- list of excluded studies not provided - no assessment of publication bias performed - considerable heterogeneity in the design, setting, outcome and measurement tools among the included trials - unclear whether quality assessment of included studies was used in formulating conclusions - conflict of interest not stated
Critical appraisal of included trials (Downs and Black[8])		
Thom,[14] 2013	- hypothesis clearly described - patients randomized - method of selection from source population and representation described - main outcomes, interventions, patient characteristics, and main findings clearly described - estimates of random variability and actual probability values provided - losses to follow-up described - study had sufficient power to detect a clinically important effect	patients not blinded
Gagliardino,[15] 2013	- hypothesis clearly described - patients randomized - randomization assignment concealed - method of selection from source population and representation	- patients not blinded - unclear whether randomization assignment was concealed

Table A4: Summary of Critical Appraisal of Included Studies		
First Author, Publication Year	**Strengths**	**Limitations**
	described • main outcomes, interventions, patient characteristics, and main findings clearly described • estimates of random variability and actual probability values provided • losses to follow-up described • study had sufficient power to detect a clinically important effect	
Moskowitz,[16] 2013	• hypothesis clearly described • patients randomized • method of selection from source population and representation described • main outcomes, interventions, patient characteristics, and main findings clearly described • estimates of random variability and actual probability values provided	• patients not blinded • unclear whether randomization assignment was concealed • losses to follow-up not described • unclear whether study had sufficient power to detect a clinically important effect
Van der Wulp,[17] 2012	• hypothesis clearly described • patients randomized • method of selection from source population and representation described • main outcomes, interventions, patient characteristics, and main findings clearly described • estimates of random variability and actual probability values provided • losses to follow-up described • study had sufficient power to detect a clinically important effect	• patients not blinded • unclear whether randomization assignment was concealed
Wu,[18] 2012	• hypothesis clearly described • patients randomized • method of selection from source population and representation described • main outcomes, interventions, patient characteristics, and main findings clearly described • estimates of random variability and actual probability values provided • losses to follow-up described • study had sufficient power to detect a clinically important effect	• patients not blinded • unclear whether randomization assignment was concealed
Horvath,[19] 2013	• hypothesis clearly described • patients randomized • method of selection from source population and representation described • main outcomes, interventions, patient characteristics, and main findings clearly described • estimates of random variability and actual probability values provided • losses to follow-up described	• patients not blinded • unclear whether randomization assignment was concealed • unclear whether study had sufficient power to detect a clinically important effect

Table A4: Summary of Critical Appraisal of Included Studies		
First Author, Publication Year	**Strengths**	**Limitations**
Vu,[20] 2012	- hypothesis clearly described - patients randomized - method of selection from source population and representation described - main outcomes, interventions, patient characteristics, and main findings clearly described - estimates of random variability and actual probability values provided	- patients not blinded - unclear whether randomization assignment was concealed - losses to follow-up not described - unclear whether study had sufficient power to detect a clinically important effect
Critical appraisal of included cost study (Drummond[9])		
Gillespie,[21] 2012	- the economic evaluation is likely to be usable (a well-defined question posed in an answerable form; a comprehensive description of the competing alternatives given; evidence for the programme's effectiveness established) - outcomes and costs assessed and compared appropriately (all the important and relevant outcomes and costs for each alternative identified; outcomes and costs measured accurately in appropriate units prior to evaluation; outcomes and costs valued credibly; outcomes and costs adjusted for different times at which they occurred) - an incremental analysis of the outcomes and costs of alternatives performed - a sensitivity analysis performed - the presentation and discussion of study results include all issues of concern to users	- the study used the United Kingdom Prospective Diabetes Study (UKDPS) outcomes model that contain limitations, such as lack of all relevant complications - the QALY estimates do not include impacts on health related quality of life over the course of the trial - the impact of the intervention on the health of the peer supporters themselves was not considered
Critical appraisal of included guidelines (AGREE[10])		
Thompson,[22] 2012	- scope and purpose of the guidelines are clear - the recommendations are specific and unambiguous - the method for searching for and selecting the evidence are clear - methods used for formulating the recommendations are clearly described - health benefits, side effects and risks were stated in the recommendations - procedure for updating the guidelines provided - target users of the guideline are clearly defined	- unclear whether the guideline was piloted among target users - unclear whether patients' views and preferences were sought - potential cost implications of applying the recommendation not included

Appendix 6: Main Study Findings and Authors' Conclusions

Table A5: Main Study Findings and Authors' Conclusions		
First Author, Publication Year	**Main Study Findings**	**Authors' Conclusions**
Research question 1 (comparative clinical effectiveness of peer support vs. usual care (no peer support) for chronic disease management such as diabetes, heart disease and HIV/AIDS)		
Diabetes		
Dale,[11] 2012	Narrative systematic review. Data from RCTs: *Clinical outcomes* HbA_{1c}: 3 out of 13 RCTs found peer support to have a statistically significant beneficial impact. The rest found no statistically significant difference. Symptoms of hypo- or hyperglycaemia: 2 out of 2 RCTs found peer support group to have statistically significant fewer symptoms. BMI/weight/body fat: 2 out of 7 RCTs found statistically significant reduction in the peer support group. The rest found no statistically significant difference. *Health behavioural outcomes* Physical activity/fitness: 2 out of 5 RCTs found statistically significant improvement in the peer support group. The rest found no statistically significant difference. Diet: 3 out of 4 RCTS reported statistically significant improvements in healthy eating habit. The rest found no statistically significant difference. *Empowerment outcomes* Self-efficacy: 2 out of 3 RCTs found significant improvement in self-efficacy which was maintained at 12-month follow-up. The rest found no statistically significant difference. *Psychological outcomes* Depression/health distress: 4 out of 7 RCTs found significant improvement. The rest found no statistically significant difference. Perceived social support: 2 out of 2 RCTs found significant improvement. Data from non-RCTs: Most trials are before-and-after trials, and none compared peer support to usual care.	"*Peer support appears to benefit some adults living with diabetes, but the evidence is too limited and inconsistent to support firm recommendations*" (p 1361)
Thom,[14] 2013	At 6 months, HbA_{1c} decreased by 1.07% in the peer support group; 0.3% in the usual care group ($P = 0.01$) Percentage of patients whose HbA_{1c} dropped by ≥1.0%: 49.6% of the peer support group; 31.5% of the usual care	"*Peer health coaching significantly improved diabetes control in this group of low-income primary care patients*" (p 137)

Table A5: Main Study Findings and Authors' Conclusions		
First Author, Publication Year	**Main Study Findings**	**Authors' Conclusions**
	group ($P = 0.001$) Percentage of patients with an HbA_{1c} level of < 7.5% at the end of the study: 22.0% of the peer support group; 14.9% of the usual care group ($P = 0.04$)	
Gagliardino,[15] 2013	No statistically significant differences in change in HbA_{1c}, BMI, other clinical or metabolic indicators, or distress level between peer support and usual care after 12 months follow up.	*"The non-inferiority of the peer outcomes and the mentioned improvements in this group suggest that volunteer trained peer educators and ongoing support can be successful*" (p 152)
Moskowitz,[16] 2013	For participants with low level of medication adherence: HbA_{1c} decreased 0.9% in peer support group; increased 0.3% in usual care group (*P* value not reported) For participants with high level of medication adherence: HbA_{1c} decreased 1.1% in peer support group; decreased 1.0% in usual care group (*P* value not reported)	*"Peer health coaching had a larger effect on lowering A1c in patients with low levels of medication adherence and self-management support than in patients with higher levels"* (p 938)
Van der Wulp,[17] 2012	There was statistically significant difference in self-efficacy between peer support group and usual group in participants with low self-efficacy score at baseline ($P = 0.02$) but no statistically significant difference was found in any other studied outcomes.	*"A peer-led self-management coaching programme for recently diagnosed patients with Type 2 diabetes improved self-efficacy of patients experiencing low self-efficacy shortly after diagnosis*" (p e390)
Heart disease		
Parry,[12] 2010	Narrative systematic review. 2 out of 6 included RCTs reported statistically significant differences in anxiety level, self-efficacy, physical activity, pain and emergency room visits. The rest found no statistically significant differences in the measured outcomes.	*"The trials demonstrated some positive effects of peer support for individuals with heart disease, including higher levels of self-efficacy, improved activity, reduced pain, and fewer emergency room visits. Despite some evidence supporting peer support for individuals with heart disease, methodological problems preclude generalizations" (p 57)*
Wu,[18] 2012	Statistically significant difference in knowledge between the peer support group and the usual care group ($P < 0.05$) No statistically significant difference in self-efficacy and self-management behavior between the 2 groups.	*"Significant improvement in knowledge was achieved for the intervention group. Absence of significant improvements in self-efficacy and self-care behaviour represents an inconclusive effect; further studies with larger sample sizes are recommended"* (p 345)
HIV/AIDS		
Simoni,[13] 2011	Narrative systematic review Sexual risk behavior: 76.9% of the 78 studies indicated supportive result of peer support Attitudes and cognition: 89.0% of the 73 studies indicated result supportive of peer support HIV knowledge: 84.6% of the 52 studies indicated result supportive of peer support	*"the majority of studies provided some support for peer interventions according to outcome indicators in the domains of sexual risk behavior, attitudes and cognitions, HIV knowledge, and substance use. However, outcomes assessed using biomarkers and other non-self report variables were less likely to indicate intervention efficacy. Overall,*

Table A5: Main Study Findings and Authors' Conclusions		
First Author, Publication Year	**Main Study Findings**	**Authors' Conclusions**
	Substance use: 70.4% of the 27 studies indicated result supportive of peer support Biological markers: 37.5% of the 16 studies indicated result supportive of peer support Other non-self-reported measures: 55.6% of the 9 studies indicated result supportive of peer support	*findings suggest that we can have some confidence in peer interventions, yet more data are needed"* (p 1589)
Horvath,[19] 2013	ART adherence: 90.1 of peer support (TWM) group; 57.5% in usual care group (*P* = 0.02)	*"The TWM intervention appeared feasible to implement, acceptable to users, and demonstrated greatest benefits for current drug users"* (p 2031)
Vu,[20] 2012	Mean overall quality of life score (SD) In clinical stage 3 and 4 (patients with severe immunosuppression and opportunistic infections) Peer support group: 78.69 (8.47) Usual care group: 75.36 (9.6) In clinical stages 1 and 2 (patients asymptomatic or with mild symptoms): difference not statistically significant	*"The peer support intervention improved QOL after 12 months among ART patients presenting at clinical stages 3 and 4 at baseline, but it had no impact on QOL among ART patients enrolled at clinical stages 1 and 2. The intervention did not have an effect on Internal AIDS-related stigma"* (p 1)
Research question 2 (cost-effectiveness of peer support for chronic disease management)		
Diabetes		
Gillespie,[21] 2012	Cost: Peer support associated with a savings of €637.43 (95% CI, -2455 to 1125.45) per patient Cost effectiveness: Peer support associated with an increase of 0.09 (95% CI, -0.05 to 0.25) in mean QALYs per patient The probability of peer support to be cost-effective at cost-effectiveness threshold values of €5,000, €15,000, €30,000, and €45,000 was 87%, 91%, 92%, and 91%, respectively.	*"Our results suggest that while a group-based peer support intervention shows a trend toward improved risk factor management, we found no significant differences in final cost or effectiveness endpoints between intervention and control. The probabilistic results suggest that the intervention was more cost-effective, with probability values of higher than 80 percent across a range of potential cost-effectiveness threshold values"* (p 3)
Research question 3 (evidence-based guidelines for peer support for chronic disease management)		
HIV/AIDS		
Thompson,[22] 2012	***Education and Counseling Interventions*** *Recommendation 20: Offering peer support may be considered (III C) (p 6)* Quality of recommendation: medium (III) Strength of recommendation: optional (C)	Not applicable

ART: antiretroviral treatment; BMI: body mass index; HIV/AIDS: human immunodeficiency virus/acquired immunodeficiency syndrome; QALYs: quality-adjusted life-years; RCTs: randomized controlled trials; TWM: "thrive with me" peer support program