

Care Coordination on Postacute Stroke, Chronic Obstructive Pulmonary Disease, and Heart Failure Clients: A Rapid Review

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Conflict of Interest Statement

All authors in the Evidence Development and Standards branch at Health Quality Ontario are impartial. There are no competing interests or conflicts of interest to declare.

Rapid Review Methodology

Rapid reviews must be completed in a 2- to 4-week time frame. Clinical questions are developed by the Evidence Development and Standards branch at Health Quality Ontario, in consultation with experts, end users, and/or applicants in the topic area. A systematic literature search is then conducted to identify relevant systematic reviews, health technology assessments, and meta-analyses. The methods prioritize systematic reviews, which, if found, are rated by AMSTAR to determine the methodological quality of the review. If the systematic review has evaluated the included primary studies using the GRADE Working Group criteria (<http://www.gradeworkinggroup.org/index.htm>), the results are reported and the rapid review process is complete. If the systematic review has not evaluated the primary studies using GRADE, the primary studies in the systematic review are retrieved and the GRADE criteria are applied to 2 outcomes. If no systematic review is found, then RCTs or observational studies are included, and their risk of bias is assessed. All rapid reviews are developed and finalized in consultation with experts.

About Health Quality Ontario

Health Quality Ontario is an arms-length agency of the Ontario government. It is a partner and leader in transforming Ontario's health care system so that it can deliver a better experience of care, better outcomes for Ontarians, and better value for money.

Health Quality Ontario strives to promote health care that is supported by the best available scientific evidence. The Evidence Development and Standards branch works with expert advisory panels, clinical experts, scientific collaborators, and field evaluation partners to conduct evidence-based reviews that evaluate the effectiveness and cost-effectiveness of health interventions in Ontario.

Based on the evidence provided by Evidence Development and Standards and its partners, the Ontario Health Technology Advisory Committee—a standing advisory subcommittee of the Health Quality Ontario Board—makes recommendations about the uptake, diffusion, distribution, or removal of health interventions to Ontario's Ministry of Health and Long-Term Care, clinicians, health system leaders, and policy-makers.

Health Quality Ontario's research is published as part of the *Ontario Health Technology Assessment Series*, which is indexed in MEDLINE/PubMed, Excerpta Medica/Embase, and the Centre for Reviews and Dissemination database. Corresponding Ontario Health Technology Advisory Committee recommendations and other associated reports are also published on the Health Quality Ontario website. Visit <http://www.hqontario.ca> for more information.

About Health Quality Ontario Publications

To conduct its rapid reviews, the Evidence Development and Standards branch and its research partners review the available scientific literature, making every effort to consider all relevant national and international research; collaborate with partners across relevant government branches; consult with expert advisory panels, clinical and other external experts, and developers of health technologies; and solicit any necessary supplemental information.

In addition, Evidence Development and Standards collects and analyzes information about how a health intervention fits within current practice and existing treatment alternatives. Details about the diffusion of the intervention into current health care practices in Ontario add an important dimension to the review. Information concerning the health benefits, economic and human resources, and ethical, regulatory, social, and legal issues relating to the intervention may be included to assist in making timely and relevant decisions to optimize patient outcomes.

Disclaimer

This rapid review is the work of the Evidence Development and Standards branch at Health Quality Ontario, and is developed from analysis, interpretation, and comparison of published scientific research. It also incorporates, when available, Ontario data and information provided by experts. As this is a rapid review, it may not reflect all the available scientific research and is not intended as an exhaustive analysis. Health Quality Ontario assumes no responsibility for omissions or incomplete analysis resulting from its rapid reviews. In addition, it is possible that other relevant scientific findings may have been reported since completion of the review. This report is current as of the date of the literature search specified in the Research Methods section. Health Quality Ontario makes no representation that the literature search captured every publication that was or could be applicable to the subject matter of the report. This rapid review may be superseded by an updated publication on the same topic. Please check the Health Quality Ontario website for a list of all publications: <http://www.hqontario.ca/evidence/publications-and-ohnac-recommendations>.

Table of Contents

List of Abbreviations	5
Background	6
Objective of Analysis	6
Clinical Need and Target Population	6
Rapid Review	7
Research Question	7
Research Methods	7
Quality of Evidence	8
Results of Literature Search	9
Results for Outcomes of Interest	9
<i>Stroke</i>	9
<i>COPD</i>	11
<i>CHF</i>	11
<i>Discussion</i>	12
Conclusions	13
Acknowledgements	14
Appendices	16
Appendix 1: Literature Search Strategies	16
Appendix 2: Quality-Assessment Tables	17
References	19

List of Abbreviations

AHRQ	Agency for Healthcare Research and Quality
AMSTAR	Assessment of Multiple Systematic Reviews
CHF	Congestive heart failure
COPD	Chronic obstructive pulmonary disease
HRQoL	Health-related quality of life
RCT	Randomized controlled trial
SR	Systematic review

Background

As legislated in Ontario's *Excellent Care for All Act*, Health Quality Ontario's mandate includes the provision of objective, evidence-informed advice about health care funding mechanisms, incentives, and opportunities to improve quality and efficiency in the health care system. As part of its Quality-Based Procedures (QBP) initiative, Health Quality Ontario works with multidisciplinary expert panels (composed of leading clinicians, scientists, and administrators) to develop evidence-based practice recommendations and define episodes of care for selected disease areas or procedures. Health Quality Ontario's recommendations are intended to inform the Ministry of Health and Long-Term Care's Health System Funding Strategy.

For more information on Health Quality Ontario's Quality-Based Procedures initiative, visit www.hqontario.ca.

Objective of Analysis

The objective of this rapid review is to determine whether a care coordinator has the potential to improve the quality of life, the self-management ability, and the functional independence of patients in postacute stroke, chronic obstructive pulmonary disease (COPD), and congestive heart failure (CHF) scenarios.

Clinical Need and Target Population

In Ontario, eligible clients discharged from the hospital into the community are linked with a care coordinator through their local Community Care Access Centre, depending on the area and availability. The care coordinator is responsible for assessing a client's need for home care services, determining eligibility and availability of those services, developing a care plan, coordinating the provision of the care plan, reassessing if necessary, and supporting clients by linking them to resources in the community. (1) Ideally, this care coordination model should improve a client's health-related quality of life and ensure that home care services are efficiently used and not over-utilized. Thus, to determine the value of a care coordinator for these outcomes, a rapid review of the evidence was conducted.

Rapid Review

Research Question

For postacute clients in the community with stroke, COPD, and CHF, does care coordination have the potential to improve health-related quality of life (HRQoL), the ability to self-manage, or functional independence?

Research Methods

Literature Search

A literature search was performed on January 13, 2014, using Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, the Wiley Cochrane Library, and the Centre for Reviews and Dissemination database, for studies published from January 1, 2009, until December 13, 2014. Abstracts were reviewed by a single reviewer and, for those studies meeting the eligibility criteria, full-text articles were obtained. Reference lists were also examined for any additional relevant studies not identified through the search.

Inclusion Criteria

- English-language full reports
- published between January 1, 2009, and January 13, 2014
- health technology assessments, systematic reviews (SRs), and meta-analyses
- stroke, CHF, and COPD postacute clients in the community
- studies reporting a measure of quality of life and/or ability to self-manage

Exclusion Criteria

- primary studies (randomized controlled trials [RCTs], observational studies, case series, etc.)
- children (patients < 18 years of age)
- acute stroke, CHF, and COPD patients not yet discharged into the community
- studies where outcomes of interest cannot be extracted

Outcomes of Interest

- HRQoL
- ability to self-manage
- functional dependency

Expert Panel

In November 2013, an Expert Advisory Panel on Post-Acute Community-Based Care for Stroke Patients was struck. Members of the panel included physicians, nurses, allied health professionals, and personnel from the Ministry of Health and Long-Term Care.

The role of the expert advisory panel was to provide advice on primary stroke patient groupings; to review the evidence, guidance, and publications related to defined stroke patient populations; to identify and prioritize interventions and areas of community-based care; to advise on the development of a care pathway model; and to develop recommendations to inform funding mechanisms. The role of panel members was to provide advice on the scope of the project, the methods used, and the findings. However, the statements, conclusions, and views expressed in this report do not necessarily represent the views of the expert panel members.

Quality of Evidence

The Assessment of Multiple Systematic Reviews (AMSTAR) tool was used to assess the quality of the final selection of the SR. (2) Details on the outcomes of interest were abstracted from the selected review, and primary studies were referenced as needed.

The quality of the body of evidence for each outcome was examined according to the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) Working Group criteria. (3) The overall quality was determined to be very low, low, moderate, or high using a step-wise, structural method.

Study design was the first consideration; the starting assumption was that RCTs are high quality, whereas observational studies are low quality. Five additional factors—risk of bias, inconsistency, indirectness, imprecision, and publication bias—were then taken into account. Limitations in these areas resulted in downgrading the quality of evidence. Finally, 3 main factors that may raise the quality of evidence were considered: the large magnitude of effect, the dose response gradient, and any residual confounding factors. (3) For more detailed information, please refer to the latest series of GRADE articles. (3)

As stated by the GRADE Working Group, the final quality score can be interpreted using the following definitions:

High	Very confident that the true effect lies close to the estimate of the effect.
Moderate	Moderately confident in the effect estimate—the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low	Confidence in the effect estimate is limited—the true effect could be substantially different from the estimate of the effect.
Very Low	Very little confidence in the effect estimate—the true effect is likely to be substantially different from the estimate of effect.

Results of Literature Search

The database search yielded 609 citations published between January 1, 2009, and January 13, 2014 (with duplicates removed). Articles were excluded on the basis of information in the title and abstract. The full texts of potentially relevant articles were obtained for further assessment.

Two SRs met the inclusion criteria (4;5) with one reporting on HRQoL and functional dependency (4) and the other reporting on outcomes of HRQoL and ability to self-manage (5). Both SRs were included in this review, as each one reports on a different disease. The AMSTAR scores are shown in Appendix 2, Table A1. Table 1 gives a summary of the included SRs.

Table 1: Summary of Systematic Reviews Included

Author, Year	Review Type	Type of illness	Search Dates	Inclusion Criteria	No. of Studies	AMSTAR Score
Ellis et al, 2010 (4)	SR/MA	Stroke	To February 2009	RCTs	14	9
Hickam et al, 2013 (5) ^a	SR	CHF	To August 2011	All studies, including grey literature Adults with various complex care needs, including CHF	12	10

Abbreviations: AMSTAR, Assessment of Multiple Systematic Reviews; MA, meta-analysis; SR, systematic review.

^aOnly outcomes that are relevant to this review are included.

Results for Outcomes of Interest

Stroke

Health-Related Quality of Life

One SR by Ellis et al (4) met the inclusion criteria for HRQoL for community-dwelling, postacute stroke patients receiving care coordination. This SR captured 14 RCTs reporting on this outcome, but the individual RCTs differ in the HRQoL measurement tools (GHQ-12, SF-36, or EuroQoL),¹ as well as length of follow-up. Additionally, the individual RCTs have varying care coordination interventions. One RCT has a single care coordinator as the intervention group; another uses a multidisciplinary team of care coordinators intervening at multiple points post-discharge. The authors adjust for this variation by conducting a subgroup meta-analysis according to the service provision offered by the care coordinator.

Ellis et al (4) meta-analyzed the results to determine the subjective health status of postacute stroke patients with a care coordinator and determined that there was no difference in outcomes, regardless of the type of care coordination protocol offered. Results of the meta-analyses are summarized below in Table 2.

¹ GHQ-12, general health questionnaire, 12 item; SF-36, short form, 36-item health survey.

Table 2: Results of Meta-Analysis by Ellis et al (4) Assessing Subjective Health Status Based on HRQoL Indicators

Subgroup	Number of Studies	Treatment (n)	Control (n)	Std. MD (95% CI)	I ²	P-heterogeneity
Proactive and Structured ^a	4	496	537	-0.05 (-0.17, 0.07)	75%	0.01
Reactive and Flexible ^b	5	562	523	0.03 (-0.09, 0.15)	0.0%	0.58
Proactive and Focused ^c	5	568	426	-0.09 (-0.22, 0.04)	0.0%	0.75
<i>Combined</i>	14	1626	1486	-0.03 (-0.11, 0.04)	0.0%	0.41

Abbreviations: confidence interval; HRQoL, health-related quality of life; MD, mean difference; Std., standardized.

^aCare coordinators in these trials deliver a fixed number of visits for a defined follow-up time.

^bCare coordinators in these trials provide flexible interventions based on individual needs.

^cCare coordinators in these trials contacted all stroke patients and offered a fixed duration of intervention, but would also focus consultations on specific issues.

Based on the information provided by the authors about the individual studies, this outcome received a moderate GRADE quality of evidence (Appendix 2, Table A2).

Ability to Self-Manage

No evidence was found through the rapid review methodology addressing self-management after cessation of care coordination.

Functional Dependency

The Ellis et al (4) SR analyzed 2,494 participants in 10 RCTs and conducted a subgroup meta-analysis for the outcome of functional dependency. It was found that mild to moderate postacute stroke patients (Barthel index of 15–19) experience a significant reduction in dependence upon receiving care coordination (OR 0.62; 95% CI, 0.44–0.87, $P = 0.006$). These same results were not observed for more severe or extremely mild patients. The results are summarized below in Table 3.

Table 3: Results of Meta-Analysis by Ellis et al (4) Assessing Subjective Health Status Based on HRQoL Indicators

Subgroup	Number of Studies	Treatment (n)	Control (n)	OR (95% CI)	I ²	P-heterogeneity
Extremely mild ^a	9	499	424	1.15 (0.82, 1.62)	18%	0.28
Mild to moderate ^b	10	354	316	0.62 (0.44, 0.87)	0.0%	0.80
Severe ^c	9	362	325	0.98 (0.68, 1.42)	0.0%	0.79
<i>Combined</i>	10	1,215	1,065	0.88 (0.72, 1.08)	0.0%	0.51

Abbreviations: CI, confidence interval; MA, meta-analysis; OR, odds ratio.

^aBarthel index <15.

^bBarthel index of 15–19.

^cBarthel index ≥20.

Based on the information provided by the authors about the individual studies, this outcome received a moderate GRADE quality of evidence (Appendix 2, Table A2).

COPD

No evidence was found through the rapid review methodology addressing any outcome of interest for COPD.

CHF

Health-Related Quality of Life

A study published by the Agency for Healthcare Research and Quality (AHRQ), Hickam et al (5), assessed care coordination from a variety of lenses for multiple populations in the community, including the postacute CHF population. For this particular population, the study found 11 RCTs reporting on CHF, with 6 RCTs reporting on the impact of care coordination on quality of life indicators. The individual studies varied in the instruments they used to assess HRQoL, including the Kansas Study Cardiomyopathy Questionnaire, the Minnesota Living with Heart Failure Questionnaire, the Congestive Heart Failure Questionnaire, SF-36, and EuroQoL EQ-5D.

Three (n = 888) of the 6 individual studies found significant improvement in HRQoL in patients receiving care coordination, while the other 3 (n = 392) showed no significant difference between the care coordination and control group. No studies show a decline in HRQoL after the intervention. Additionally, 3 of the 6 studies were determined by Hickam et al (5) to be “good” quality (as compared to poor or fair quality). Of the 3 higher quality studies, 2 RCTs (n = 606) suggest an improvement in HRQoL with care coordination, while 1 RCT (n = 199) does not. The authors concluded that care coordination has the potential to improve HRQoL for postacute CHF patients. The study applied the GRADE framework to assess the quality of evidence and gave this outcome a low GRADE quality of evidence due to the high heterogeneity among individual studies (Appendix 2, Table A2).

Ability to Self-Manage

Hickam et al (5) found 3 studies examining the ability of postacute CHF patients to adhere to self-management and self-care practices upon receiving care coordination. All 3 studies found a significant improvement in patient adherence to these recommendations, ranging from lifestyle modifications to appropriate use of medications. The authors applied the GRADE framework and concluded that, based on moderate GRADE quality of evidence, care coordination improves adherence to self-care behaviours for postacute CHF patients (Appendix 2, Table A2).

Functional Dependency

No evidence was found through the rapid review methodology addressing functional dependency for postacute CHF.

Discussion

The evidence review published by Hickam et al (5) on care coordination suggests that in addition to patients with CHF, several types of clients in the community can benefit from care coordination. This includes patients with progressive chronic diseases, such as CHF and HIV; clients with debilitating and even irreversible diseases for which supportive care can enhance independence or HRQoL, such as dementia patients with chronic diseases such as diabetes, for which self-management can improve health and functioning; and clients such as the homeless, for whom serious social problems impair the ability to manage disease. (4)

Conclusions

On the basis of 2 SRs evaluating the effectiveness of care coordination programs, the following conclusions were reached:

- Moderate quality evidence indicates that care coordination provides no significant improvement in HRQoL in post-acute stroke patients.
- Moderate quality evidence indicates that care coordination has the potential to reduce functional dependency in mild to moderate post-acute stroke patients.
- Low quality evidence indicates that care coordination has the potential to improve HRQoL in post-acute CHF patients.
- Moderate quality evidence indicates that care coordination increases a patient's adherence to self-management behaviors recommended for patients with CHF.

Acknowledgements

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Health Quality Ontario's Expert Advisory Panel on Post-Acute, Community-Based Care for Stroke Patients

Name	Affiliation(s)	Appointment(s)
Panel Co-Chairs		
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Karyn Lumsden	Central West Community Care Access Centre (CCAC)	Vice President of Client Services
Neurology		
Dr Leanne Casaubon	Toronto Western Hospital; University of Toronto	Assistant Professor-Division of Neurology, Stroke Program
Physical Medicine and Rehabilitation		
Dr Robert Teasell	Stroke Rehabilitation Program at Parkwood Hospital; Western University	Medical Director; Professor
Family Medicine		
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Nursing		
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Patient Representation		
Daniel Brouillard	Kingston Heart Clinic	Internist, Stroke Survivor
Nicole Martyn-Capobianco	University of Guelph-Humber	Program Head of Human Services

Appendices

Appendix 1: Literature Search Strategies

Search date: January 13, 2014

Databases searched: OVID MEDLINE, MEDLINE In-Process and Other Non-Indexed Citations, All EBM Databases (see below)

Q: What is the utility of having a care coordinator in improving outcomes of quality of life and ability to self-manage?

Limits: 2009-current; English

Filters: Meta-analyses, systematic reviews, health technology assessments

Database: EBM Reviews - Cochrane Database of Systematic Reviews <2005 to November 2013>, EBM Reviews - ACP Journal Club <1991 to December 2013>, EBM Reviews - Database of Abstracts of Reviews of Effects <4th Quarter 2013>, EBM Reviews - Cochrane Central Register of Controlled Trials <December 2013>, EBM Reviews - Cochrane Methodology Register <3rd Quarter 2012>, EBM Reviews - Health Technology Assessment <4th Quarter 2013>, EBM Reviews - NHS Economic Evaluation Database <4th Quarter 2013>, Ovid MEDLINE(R) <1946 to January Week 1 2014>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <January 10, 2014>

Search Strategy:

```
1 exp Patient Discharge/ (19055)
2 exp Aftercare/ or exp Convalescence/ (10005)
3 "Continuity of Patient Care"/ or exp "Recovery of Function"/ (45752)
4 ((patient* adj2 discharge*) or after?care or post medical discharge* or post?discharge* or convalescen*).ti,ab. (36330)
5 or/1-4 (101485)
6 exp Stroke/ (84024)
7 exp brain ischemia/ or exp intracranial hemorrhages/ (128120)
8 (stroke or poststroke or tia or transient ischemic attack or ((cerebral vascular or cerebrovascular) adj (accident* or infarct*)) or CVA or cerebrovascular apoplexy or brain infarct* or (brain adj2 isch?emia) or (cerebral adj2 isch?emia) or (intracranial adj2 h?emorrhag*) or (brain adj2 h?emorrhag*).ti,ab. (190167)
9 or/6-8 (275532)
10 exp Heart Failure/ (88423)
11 (((cardia? or heart) adj (decompensation or failure or incompetence or insufficiency)) or cardiac stand still or ((coronary or myocardial) adj (failure or insufficiency))).ti,ab. (128263)
12 or/10-11 (154072)
13 exp Pulmonary Disease, Chronic Obstructive/ (36118)
14 exp Emphysema/ (10623)
15 (copd or coad or chronic airflow obstruction* or (chronic adj2 bronchitis) or emphysema).ti,ab. (55572)
16 (chronic obstructive adj2 (lung* or pulmonary or airway* or airflow* or respiratory or bronchopulmonary) adj (disease* or disorder*)).ti,ab. (34137)
17 or/13-16 (83885)
18 exp Pneumonia/ (73826)
19 (pneumoni* or peripneumoni* or pleuropneumoni* or lobitis or ((pulmon* or lung*) adj inflammation*).ti,ab. (135839)
20 or/18-19 (162415)
21 or/5,9,12,17,20 (742041)
22 exp Caregivers/ (21147)
23 exp Case Management/ (8659)
24 exp Patient Care Management/ (527957)
25 exp Social Support/ (51166)
26 exp Counseling/ (34710)
27 exp Patient Education as Topic/ (73630)
28 (liaison* or case manage* or care manage* or counsel* or healthcare worker* or health-care worker*).ti,ab. (106141)
29 or/22-28 (732586)
30 Meta Analysis.pt. (43687)
31 Meta-Analysis/ or exp Technology Assessment, Biomedical/ (52593)
32 (meta analy* or metaanaly* or pooled analysis or (systematic* adj2 review*) or published studies or published literature or medline or embase or data synthesis or data extraction or cochrane).ti,ab. (188592)
33 ((health technolog* or biomedical technolog*) adj2 assess*).ti,ab. (2598)
34 or/30-33 (204519)
35 21 and 29 and 34 (1287)
36 limit 35 to (english language and yr="2009 -Current") [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained] (628)
37 remove duplicates from 36 (609)
```


Appendix 2: Quality-Assessment Tables

Table A1: AMSTAR Score of Systematic Reviews

Author, Year	AMSTAR Score ^a	1) Provided Study Design	2) Duplicate Study Selection	3) Broad Literature Search	4) Considered Status of Publication	5) Listed Excluded Studies	6) Provided Characteristics of Studies	7) Assessed Scientific Quality	8) Considered Quality in Report	9) Methods to Combine Appropriate	10) Assessed Publication Bias	11) Stated Conflict of Interest
Ellis et al, 2010 (5)	9	✓	✓	✓	✓		✓	✓	✓	✓	✓	
Hickam et al, 2013 (4)	10	✓	✓	✓	✓			✓	✓	✓	✓	✓

Abbreviations: AMSTAR, Assessment of Multiple Systematic Reviews.

^aMaximum possible is 11. Details of AMSTAR method are described in Shea et al. (2)

Table A2: GRADE Evidence Profile for the Systematic Reviews

No. of Studies (Design)	Risk of Bias	Inconsistency	Indirectness	Imprecision	Publication Bias	Upgrade Considerations	Quality
Health-Related Quality of Life							
Stroke							
14 (RCTs)	No serious limitations ^a	No serious limitations	Serious limitations ^b (-1)	No serious limitations	Undetermined	None	⊕⊕⊕ Moderate
CHF^c							
15 (RCTs)	No serious limitations	No serious limitations	Serious limitations (-1)	No serious limitations (-1)	Undetermined	None	⊕⊕ Low
Ability to Self-Manage							
CHF^c							
13 (RCTs)	No serious limitations	Serious limitations	Serious limitations (-1)	No serious limitations	Undetermined	None	⊕⊕⊕ Moderate
Functional Dependency							
Stroke							
10 (RCTs)	No serious limitations ^a	No serious limitations	Serious limitations ^b (-1)	No serious limitations	Undetermined	None	⊕⊕⊕ Moderate

^aThe risk of bias for this outcome was determined based on the details of individual studies provided by Ellis et al. (4)

^bThe authors of the Ellis et al (4) SR meta-analyzed 14 RCTs with varying study designs, where the nature of the care coordination intervention differed across individual studies. While the authors did account for this by conducting a subgroup meta-analysis by type of approach, it did not control for the number of care coordinators involved, as well as the number of visits per client.

^cThe GRADE for HRQoL in CHF patients was assessed and reported by Hickam et al. (5)

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www.effectivehealthcare.ahrq.gov/reports/final.cfm.

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