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Criteria for Referral to Heart Failure Clinics: A Rapid Review

Health Quality Ontario

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Evidence Development and Standards Branch at Health Quality Ontario

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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 are completed in 2–4-week time frames. 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-ohtac-recommendations.

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List of Abbreviations

BNP	Brain natriuretic peptide
CHFN	Canadian Heart Failure Network
GRADE	Grading of Recommendations Assessment, Development, and Evaluation
NYHA	New York Heart Association
RCT	Randomized controlled trial
SCBC	Specialized community-based care

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 identify evidence-based criteria for referring patients to heart failure clinics.

Clinical Need and Target Population

Several systematic reviews have demonstrated survival benefits for patients who are enrolled in heart failure clinics, compared with patients who are not. (1) Health Quality Ontario, in a 2012 report on specialized community-based care (SCBC), of which such clinics are part, concluded that "There appears to be an added benefit to offering SCBC to patients with heart failure" and other specified conditions. (2)

On its website, the Canadian Heart Failure Network (CHFN) states that "All patients with suspected and established heart failure (NYHA Classes I to IV) should be eligible for treatment at [heart failure] clinics." (3) However, this is not feasible because of the resources that would be required. (4) Thus, the purpose of this review is to establish whether evidence-based criteria exist for determining patients' eligibility for heart failure clinic enrolment.

Note that some heart failure clinics have clearly defined referral criteria in place. For instance, St. Mary's Regional Cardiac Care Centre in Kitchener restricts referral eligibility to patients with NYHA Classes III to IV congestive heart failure who have had at least 2 hospital visits for heart failure within the past year. (5)

Rapid Review

Research Question

What criteria should be used to determine when to refer a patient to a heart failure clinic?

Research Methods

Literature Search

Search Strategy

A literature search was performed on March 19, 2014, using Ovid MEDLINE, Ovid MEDLINE In-Process and Other Non-Indexed Citations, and EBM Reviews, for studies published from January 1, 2008, to March 19, 2014. (Appendix 1 provides details of the search strategies.) 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-text publications
- published between January 1, 2008, and March 19, 2014
- observational studies, randomized controlled trials (RCTs), systematic reviews, and meta-analyses
- purpose of the study to determine eligibility criteria for heart failure clinics

Exclusion Criteria

- studies of any clinics designed for treating conditions other than heart failure
- case studies, editorials

Outcomes of Interest

- quality of life
- health resource usage (e.g., hospital readmissions, emergency department visits)
- patient mortality

Expert Panel

In December 2013, an Expert Advisory Panel on Post-Acute, Community-Based Care for CHF Patients was struck. Members of the community-based panels included family physicians, physician specialists, community health care administrators, and allied health professionals.

The role of the expert advisory panel was to provide advice on primary CHF patient groupings; to review the evidence, guidance, and publications related to defined CHF patient populations; to identify and prioritize interventions and areas of community-based care; and to advise on the development of a care

pathway model. 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 methodology for a rapid review of primary studies includes a risk of bias assessment based on GRADE Working Group criteria (6) to assess quality of evidence. Risk of bias is evaluated based on consideration of appropriate eligibility criteria, appropriate measurement of exposure, appropriate measurement of outcome, adequate control for confounding, and complete follow-up (see Appendix 2, Table A1).

Results of Rapid Review

The database search yielded 2,879 citations published between January 1, 2008, and March 19, 2014 (duplicates removed). Articles were excluded based on information in the title and abstract. The full texts of potentially relevant articles were obtained for further assessment.

Three observational studies met the inclusion criteria. The reference lists of the included studies and health technology assessment websites were hand-searched to identify other relevant studies, but none were identified. For each included study, the study design was identified and is summarized below in Table 1, a modified version of a hierarchy of study design by Goodman, 1996. (7)

Table 1: Body of Evidence Examined According to Study Design

Study Design	Number of Eligible Studies
RCTs	
Systematic review of RCTs	
Large RCT	
Small RCT	
Observational Studies	
Systematic review of non-RCTs with contemporaneous controls	
Non-RCT with non-contemporaneous controls	
Systematic review of non-RCTs with historical controls	
Non-RCT with historical controls	
Database, registry, or cross-sectional study	1
Case series	
Retrospective review, modelling	2
Studies presented at an international conference	
Expert opinion	
Total	**3**

Of the 3 studies identified that assessed the criteria for heart failure clinic enrolment, 2 (8;9) compared the characteristics of patients who were, versus those who were not, referred to heart failure clinics. In the third study, Amir et al (4) specifically assessed the role that patients' brain natriuretic peptide (BNP) can play in their eligibility for referral.

Table 2 summarizes the 3 studies. It is important to note, however, that neither the Gravely et al study (9) nor the Gharacholou et al study (8) are able to identify which patients are best suited for referral to heart failure clinics; and that the Amir et al study (4), as well as having a more specific objective, theorizes that the most severely ill patients are the ones who should be considered for heart failure clinics. This is in contrast to the much more inclusive CHFN website statement quoted earlier.

Table 2: Summary of the Observational Studies Included in This Rapid Review

Author, Year Country	Sample Size and Population	Objective	Study Design and Methods	Results Statistically Significant Differences Between Patients Enrolled in/ Not Enrolled in HF Clinics
Gravely et al, 2012 (9) Canada	270 patients hospitalized for HF (note: patients were part of a larger prospective cohort study in Ontario)	To observe the rates of referral and use of HF clinics	Patient survey	35 (13%) of the patients were enrolled in an HF clinic Enrolled patients were more likely to have: 1. university education 2. LVEF <40% 3. other referrals to DMPs 4. referral to CR 5. referral to diabetes clinic 6. referral to OT or PT 7. referral to a dietician 8. referral to a smoking cessation program
Gharacholou et al, 2011 (8) United States	57,969 HF patients at 235 U.S. sites from 2005 to 2010	To determine the characteristics of HF patients referred to HF clinics	Examination of administrative data	11,150 (19.2%) of patients were enrolled in an HF clinic Enrolled patients were more likely to: 1. be younger (mean 67 vs. 73) 2. be male 3. have co-morbidities 4. be smokers 5. have >2 HF admissions in past 6 months 6. be referred to CR
Amir et al, 2008 (4) Israel	70 patients referred to HF clinic	To determine if BNP can be used to guide HF clinic referrals	Prospective cohort study, measured BNP	BNP was the strongest predictor of 6-month mortality compared to ejection fraction, body mass index, NYHA class, ischemic etiology, presence of atrial fibrillation Enrolled/not enrolled comparison: N/A

Abbreviations: BMI, body mass index; BNP, brain natriuretic peptide; CR, cardiac rehabilitation; DMP, disease management program; HF, heart failure; LVEF, left ventricular ejection fraction; NYHA, New York Heart Association; OT, occupational therapy; PT, physical therapy; vs., versus.

Limitations

This rapid review has several limitations. The greatest limitation is that no studies were identified that were designed to define the optimal patients for referral to heart failure clinics. Also, the studies that were identified reported only on current practice, rather than ideal practice. In addition, there are many models of heart failure clinics, with different objectives. (2) This makes it challenging to develop a single list of criteria that would meet the needs of all.

Conclusions

Heart failure clinics have been shown to be effective at reducing patient mortality, and arguments have been made that the benefits of the clinics extend to all patients with suspected or established heart failure. Given resource limitations, a dilemma is posed as to how to best determine a patient's eligibility for referral to a heart failure clinic.

This rapid review found no studies designed to define the optimal patients for referral to heart failure clinics. Thus, it is unable to identify the criteria that should be used for making such referrals. The optimal eligibility criteria for heart failure clinics are unclear.

Acknowledgements

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Kory Kingsbury	Cardiac Care Network	Chief Executive Officer

Appendices

Appendix 1: Literature Search Strategies

Search date: March 19, 2014
Databases searched: OVID MEDLINE, MEDLINE In-Process and Other Non-Indexed Citations, All EBM Databases (see below)

Database: EBM Reviews - Cochrane Database of Systematic Reviews <2005 to February 2014>, EBM Reviews - ACP Journal Club <1991 to February 2014>, EBM Reviews - Database of Abstracts of Reviews of Effects <1st Quarter 2014>, EBM Reviews - Cochrane Central Register of Controlled Trials <January 2014>, EBM Reviews - Cochrane Methodology Register <3rd Quarter 2012>, EBM Reviews - Health Technology Assessment <1st Quarter 2014>, EBM Reviews - NHS Economic Evaluation Database <1st Quarter 2014>, Ovid MEDLINE(R) <1946 to March Week 1 2014>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <March 18, 2014>
Search Strategy:

#	Searches	Results
1	exp Patient Discharge/	19360
2	exp Aftercare/ or exp Convalescence/	10095
3	"Continuity of Patient Care"/ or exp "Recovery of Function"/	46813
4	((patient* adj2 discharge*) or after?care or post medical discharge* or post?discharge* or convalescen*).ti,ab.	37077
5	exp Stroke/	86536
6	exp brain ischemia/ or exp intracranial hemorrhages/	130198
7	(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.	197802
8	exp Heart Failure/	90065
9	(((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.	131398
10	exp Pulmonary Disease, Chronic Obstructive/	37018
11	exp Emphysema/	10760
12	(copd or coad or chronic airflow obstruction* or (chronic adj2 bronchitis) or emphysema).ti,ab.	56838
13	(chronic obstructive adj2 (lung* or pulmonary or airway* or airflow* or respiratory or bronchopulmonary) adj (disease* or disorder*)).ti,ab.	35191
14	exp Pneumonia/	74882
15	(pneumoni* or peripneumoni* or pleuropneumoni* or lobitis or ((pulmon* or lung*) adj inflammation*)).ti,ab.	138506
16	or/1-15	760031
17	exp "Referral and Consultation"/	57552
18	exp Needs Assessment/	22038
19	(referral* or (refer* adj4 (heart failure* or CHF or heart function* or specialty outpatient clinic* or disease management program*))).ti,ab.	71493
20	or/17-19	133813
21	16 and 20	8957
22	limit 21 to (english language and yr="2008 -Current") [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained]	3050
23	remove duplicates from 22	2879

Appendix 2: Evidence Quality Assessment

Table A1: Risk of Bias Among Observational Trials Included in This Rapid Review

Author, Year	Appropriate Eligibility Criteria	Appropriate Measurement of Exposure	Appropriate Measurement of Outcome	Adequate Control for Confounding	Complete Follow-Up
Gravely et al, 2012 (9)	No limitations	No limitations	Limitations[a]	Limitations[b]	No limitations
Gharacholou et al, 2011 (8)	No limitations[a]	No limitations	Limitations[a]	Limitations[b]	No limitations
Amir et al, 2008 (4)	No limitations	No limitations	No limitations	No limitations	No limitations

[a]These studies are seeking criteria for heart failure clinic referral using existing referral patterns, not necessarily ideal referral patterns.
[b]These are retrospective studies with little control for confounding.

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(3) Canadian Heart Failure Network. Establishing a heart failure clinic [Internet]. [updated 2014; cited 2014 May 20]. Available from: http://www.chfn.ca/clinic-resource-manual/the-hf-clinic

(4) Amir O, Paz H, Ammar R, Yaniv N, Schliamser JE, Lewis BS. Usefulness and predictive value of circulating NT-proBNP levels to stratify patients for referral and priority treatment in a specialized outpatient heart failure center. Isr Med Assoc J. 2008;10(2):109-12.

(5) St.Mary's Regional Cardiac Care Centre. Heart Function Clinic Referral Form [Internet]. [updated 2014; cited 2014 Apr 23]. Available from: http://www.smgh.ca/wp-content/uploads/2012/02/Heart-Function-Clinic-Referral-Form.pdf

(6) Guyatt GH, Oxman AD, Vist G, Kunz R, Brozek J, Alonso-Coello P, et al. Rating the quality of evidence - study limitations (risk of bias). J Clin Epidemiol. 2011;64(4):407-15.

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(8) Gharacholou SM, Hellkamp AS, Hernandez AF, Peterson ED, Bhatt DL, Yancy CW, et al. Use and predictors of heart failure disease management referral in patients hospitalized with heart failure: insights from the Get With the Guidelines program. J Card Fail. 2011;17(5):431-9.

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