

Retrospective Chart Reviews: Research Knowledge & Skill Builder

Michelle Howard, MSc, PhD

Jeff Templeton, BA

Learning objectives

- 1.To become aware of the types of research questions that can be answered through a chart review.
- 2.To learn about methods considerations for conducting chart reviews of primary care medical records.
- 3.To become familiar with how to conduct a chart review using OSCAR EMR through a demonstration.

Common uses of chart review for research

- Sometimes called “retrospective chart review”
- Clinical research, epidemiology, quality assessment
- Typically includes
 - Age, sex
 - Diagnoses
 - Medications/treatments
 - Tests
 - Referrals
 - notes

Example of audit of care:

➤ [BMC Fam Pract.](#) 2021 Mar 27;22(1):58. doi: 10.1186/s12875-021-01400-4.

Frequency of providing a palliative approach to care in family practice: a chart review and perceptions of healthcare practitioners in Canada

Erin Gallagher ^{1 2}, Daniel Carter-Ramirez ^{1 2}, Kaitlyn Boese ^{3 4}, Samantha Winemaker ^{1 2}, Amanda MacLennan ^{1 2}, Nicolle Hansen ¹, Abe Hafid ¹, Michelle Howard ⁵

Affiliations + expand

PMID: 33773579 PMCID: [PMC8005234](#) DOI: [10.1186/s12875-021-01400-4](#)

[Free PMC article](#)

Abstract

Background: Most patients nearing the end of life can benefit from a palliative approach in primary care. We currently do not know how to measure a palliative approach in family practice. The objective of this study was to describe the provision of a palliative approach and evaluate clinicians' perceptions of the results.

Methods: We conducted a descriptive study of deceased patients in an interprofessional team family practice. We integrated conceptual models of a palliative approach to create a chart review tool to capture a palliative approach in the last year of life and assessed a global rating of whether a palliative approach was provided. Clinicians completed a questionnaire before learning the results and after an

Variables documented in electronic medical record	Overall (<i>n</i> = 79), <i>n</i> (%)	Did the patient receive a palliative approach to care?		<i>P</i> -value ^{ab}
		Yes (<i>N</i> = 20), <i>n</i> (%)	No (<i>N</i> = 59), <i>n</i> (%)	
Mortality Acknowledgement				
Advance Care Planning topics addressed and documented:				
Goals of care for treatment decisions (to pursue a treatment or not and why)	42 (53.2)	18 (90)	24 (40.7)	< .01
Understanding of severity of illness (illness awareness)	32 (40.5)	17 (85)	15 (25.4)	< .01
Values/beliefs/priorities moving forward	26 (32.9)	18 (90)	8 (13.6)	< .01
Do-Not-Resuscitate & Do-Not-Resuscitate Confirmation Form	20 (25.3)	15 (75)	5 (8.5)	< .01
Power of Attorney for Personal Care & Substitute Decision Makers	18 (22.8)	9 (45)	9 (15.3)	.01
Desired place of death	13 (16.5)	11 (55)	2 (3.4)	< .01
Prognosis	11 (13.9)	11 (55)	0 (0)	< .01
Will	2 (2.5)	2 (10)	0 (0)	.06
Funeral arrangements	2 (2.5)	2 (10)	0 (0)	.06
Other	5 (6.3)	2 (10)	3 (5.1)	.60
Quality of Life				
Homecare involvement documented:				
Nurse	32 (40.5)	17 (85)	15 (25.4)	< .01
Personal Support Worker	22 (27.8)	10 (50)	12 (20.3)	.01
Occupational Therapist	8 (10.1)	5 (25)	3 (5.1)	.02
Physiotherapist	4 (5.1)	2 (10)	2 (3.4)	.26
Psychosocial/Spiritual Advisor	3 (3.8)	3 (15)	0 (0)	.01
Registered Dietitian	2 (2.5)	1 (5)	1 (1.17)	.38
Other	12 (15.2)	1 (5)	11 (18.6)	.28
Quality of Life focused symptom discussions documented:				
Physical Symptoms	71 (89.9)	19 (95)	52 (88.1)	.67

Study Design and Planning

1. Clear question
2. Sampling issues and statistical power
3. Inclusion/exclusion criteria
4. Operationalize variables (e.g. lab values in/out of range)
5. Training and monitoring abstractors (reliability, blinding)
6. Standardize abstraction form
7. Procedural manual (where to look in chart, what to include)
8. Pilot test
9. Confidentiality, ethics

Key considerations in operationalizing chart review

- Availability of data
- Data quality, accuracy, consistency
 - Case definitions
 - Free text
 - Data structure e.g. dates, current meds list vs renewals
- Time period
- Human error, training for inter-abstractor reliability
 - Data abstraction form, guide, pilot test, training

Example: data abstraction form

Patient ID: _ _ _ _ _

Abstractor: _____

Goals of Care Chart Abstraction

Health Conditions

Are there any existing comorbidities documented in the patient's chart?

☐ Yes, select all that apply ☐ No, not able to locate

(Instructions: Examine the cumulative patient profile (CPP), consult notes in the past 2 years, and the current list of medications to determine chronic health conditions)

Consult the *Medications Associated with Health Conditions* resource

0. ☐ NONE

MYOCARDIAL

- 1. ☐ Angina
- 2. ☐ Arrhythmia
- 3. ☐ Valvular
- 4. ☐ Myocardial infarction
- 5. ☐ Congestive heart failure (or heart disease)

GASTROINTESTINAL

- 18. ☐ Mild liver disease
- 19. ☐ Moderate or severe liver disease
- 20. ☐ GI Bleeding
- 21. ☐ Inflammatory bowel
- 22. ☐ Peptic ulcer disease
- 23. ☐ Gastrointestinal Disease (hernia, reflux)

Instructions: Examine the area of the paper chart or electronic medical record where goals of care designation would routinely be recorded by this physician or practice.

Date of patient's clinic visit: _ _ _ / _ _ _ / _ _ _ _ (DD/MMM/YYYY)

Looking back 2 years from the patient's clinic visit, is there any goals of care (GoC) designation noted in the medical chart?

☐ Yes ☐ No (stop here)



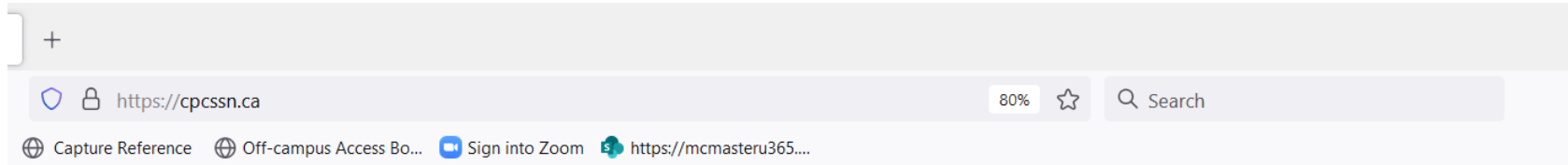
What was the source of that information?

- ☐ Patient profile (CPP)
- ☐ Periodic health exams **in the past 2 years**
- ☐ Advance Directive documentation
- ☐ Other, specify _____

Please select your region:

- ☐ Alberta
- ☐ Fraser Health MOST
- ☐ BCCA MOST
- ☐ All other regions

Automating chart review



Disease Surveillance

CPCSSN engages in the surveillance of many chronic, acute and neurological conditions. **By joining CPCSSN you will become a part of a community of clinicians committed to understanding communicable and chronic disease management and improving patient outcomes.**

CPCSSN For Clinicians



Quality Improvement

CPCSSN supports the creation and use of primary care electronic medical record data repository. **CPCSSN offers participating providers a rigorous web-based quality improvement tool.**

partnership with the University of British Columbia's Innovation Support Unit on a COVID Immunization Preparedness Primary Care Clinic Toolkit, the SPOR PIHCI Network's online seminar series, BC-PHCRN's involvement in SARS-CoV-2 Rapid Antigen Test summer clinical trials conducted at the University ... [Read more](#)

0 comments

Chronic Conditions in Canadian Primary Care Report

Posted: July 9, 2021

In May 2021 CPCSSN released a report on the prevalence of common chronic conditions seen in Canadian primary care. The results confirm that chronic conditions constitute an appreciable burden on Canadian health care systems. Further, the report reveals a sex disparity in primary care service trends, with more adult females than adult males using these ... [Read more](#)

Example:

Case definition of disease

Identifying heart failure in patients with chronic obstructive lung disease through the Canadian Primary Care Sentinel Surveillance Network in British Columbia: a case derivation study.

Rohit Vijh, Sabrina T. Wong, Matthew Grandy, Sandra Peterson, Allison M. Ezzat, Andrew
April 16, 2021 9 (2) E376-E383; DOI: <https://doi.org/10.9778/cmajo.20200183>

[Article](#)

[Figures & Tables](#)

[Related Content](#)

[Metrics](#)

[Responses](#)

[PDF](#)

Abstract

Background: Heart failure (HF) poses a substantial global health burden, particularly in patients with chronic obstructive pulmonary disease (COPD). The objective of this study was to validate an electronic medical record–based definition of HF in patients with COPD in primary care practices in the province of British Columbia, Canada.

Methods: We conducted a cross-sectional retrospective chart review from Sept. 1, 2018, to Dec. 31, 2018, for a cohort of patients from primary care practices in BC whose physicians were recruited through the BC node of the Canadian Primary Care Sentinel Surveillance Network. Heart failure case definitions were developed by combining diagnostic codes, medication information and laboratory values available in primary care electronic medical records. These were compared with HF diagnoses identified through detailed chart review as the gold standard. Sensitivity, specificity, negative (NPV) and positive predictive values (PPV) were calculated for each definition.

Results: Charts of 311 patients with COPD were reviewed, of whom 72 (23.2%) had HF. Five categories of definitions were constructed, all of which

Example: Coded and free text

[dx, billing, ACP, DNR, CPR, advance directive, death, CCAC, malignant, PPS, ESAS, frail]

**McMaster
M.U.S.I.C.**

Exhibit 1 # search
terms returned per
patients

6-16 search terms had
50-100% probability as
palliative

# of Search Criteria	# of Patients		Charts Audited	Pall (Y)	Pall(N)	% Palliative
1	1521		10	0	10	0.0%
2	1046		10	1	9	10.0%
3	765		10	2	8	20.0%
4	547		10	2	8	20.0%
5	345		10	3	7	30.0%
6	252		10	5	5	50.0%
7	169		10	8	2	80.0%
8	133		10	7	3	70.0%
9	74		5	3	2	60.0%
10	41		5	4	1	80.0%
11	35		5	5	0	100.0%
12	13		5	4	1	80.0%
13	12		5	4	1	80.0%
14	9		9	6	3	66.7%
15	2		2	1	1	50.0%
16	5		5	4	1	80.0%
Grand Total	4969		121	59	62	

HIREB retrospective chart review

HiREB Electronic Project Submission

Work Area

Contacts

Help

Dr. Michelle Howard

Actions

Project

Create Sub Form

Share

Roles

Completeness Check

View as PDF

Correspond

Navigation

Documents

Signatures

Collaborators

Submissions

Correspondence

14193

Show Inactive Sections

Retrospective Review of Medical Charts & Health Data

Section

Application for Retrospective Review of Medical Charts & Health Data

SECTION 1.0 - Filter Questions

SECTION 2: Study & Investigator Information

Section 3: Funding and Conflict of Interest

SECTION 4: Study Locations

SECTION 5: Study Methodology

SECTION 6: Data Extraction and Temporary Storage

SECTION 7: Handling of Data for Analysis and Transmission

Section 8: Other Study Related Documents

Confidentiality Agreement & Signatures

Questions

1.1 - 1.4

2.1 - 2.8

3.1 - 3.2

4.1

5.1 - 5.6

6.1 - 6.11

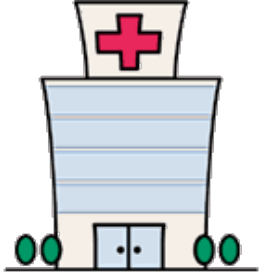
7.1 - 7.4

Documents Page

Signature Page

© Infonetica Ltd 2021 Version 2.5.1.0

Presenting methods and results



Setting: Academic interdisciplinary primary care group with 40,000 patients, 40 family physicians, diverse allied health professionals, 80 family medicine residents



Patient records: 100 charts randomly selected among 192 patients who died in 2017. Data used were encounter notes, list of conditions, demographics



Data Extraction: 2 family physician reviewers with palliative care expertise Agreement assessed (sub-set) with a third, blinded palliative care/family physician



Data Management: Lime Survey structured form

Reporting Checklist

https://www.record-statement.org

Capture Reference Off-campus Access Bo... Sign into Zoom https://mcmasteru365....

RECORD
Reporting of studies Conducted using Observational Routinely-collected Data

Home Discussion RECORD Group Links Members Contact

Information

- News
 - RECORD Checklist
 - RECORD-PE Checklist
- Publications
- Translations
- Commentaries
- Endorsements
- Aims and Methods
- Consensus Meeting (Workshop)
- Acknowledgements
- Get Involved

What is RECORD?

REporting of studies **C**onducted using **O**bservational **R**outinely-collected **D**ata (**RECORD**) is an international collaborative which will develop reporting guidelines for studies conducted using routinely-collected health data (such as health administrative data, electronic medical record data, primary care surveillance data, and disease registries).

RECORD was developed with the input from stakeholders who use routinely-collected health data, ranging from health researchers, physicians, and journal editors, all of whom hold differing specializations across all aspects of health care.

As an extension of the existing [STROBE](#) guidelines (**ST**rengthening the **R**eporting of **OB**servational studies in **E**pidemiology), it is our overall goal to enhance transparency by providing researchers with the minimum reporting requirements needed to adequately convey the methods and results of their research.

Practical aspects of chart abstraction

Welcome to the EMR jungle



Welcome to the EMR jungle

- Wide variety of EMR systems in use
- Some are focused on Primary Care, while others are more common in Long Term Care or Hospital settings
 - OSCAR, PointClickCare, PS Suite, AccuroEMR, etc
- While common elements exist, each has their own layout and design.
- Each site and clinician will use the same EMR differently

Areas to find data

- Progress Notes (TP roll in OSCAR)
- Medications
- Disease Registry/Medical History
- Documents
- Demographics
- Labs/Results
- Consults

OSCAR demonstration



Family Medicine

Department of Family Medicine
Michael G. DeGroote School of Medicine
Faculty of Health Sciences

fammedmcmaster.ca
[@McMasterFamMed](https://twitter.com/McMasterFamMed)