

*Original Article*

## **Patient Charts and Physician Office Management Decisions: Chart Audit and Chart Stimulated Recall**

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**Abstract:** *Accurate assessment of clinical competence and performance in office practice is enhanced through a multi-tool approach. Two assessment tools that offer a complementary range of information, specific to the patient's chart, are chart audit (CA) and chart stimulated recall (CSR). This paper demonstrates how chart audit and chart stimulated recall provide insights into the office management of osteoarthritis in the elderly. CA provides basic data for clinical choices when the areas of problem identification, history, physical, investigations, and treatments are examined. CSR illuminates the rationale behind decisions, as well as the choices considered and the options ruled out. Furthermore, CSR shows how individual patient and physician characteristics, practice and professional factors, and health care system and social factors, are influential variables on the physician's clinical management decisions. Supplementing the type of data extracted from the CA with those found through CSR allows for a broad range of information to be used in assessing a physician's ability to make clinical decisions. Physicians, educators, and assessors, will benefit from considering the value of using both of these patient chart approaches when reviewing clinical care.*

**Key Words:** Assessment tools, chart audit, chart stimulated recall, clinical competence, NSAID gastropathy, osteoarthritis, patient chart

With the high rate of osteoarthritis (OA) in the elderly, and the potential for drug-related illnesses due to the prescription of nonsteroidal anti-inflammatory drugs (NSAIDs), an understanding of how ambulatory geriatric osteo-

arthritic patients are managed is important.<sup>1</sup> A recent University of Calgary/McGill study examined the diagnostic, investigative, and treatment decisions for OA geriatric patients who visited physicians in their offices

complaining of stomach pains. Chart audit (CA) and chart stimulated recall (CSR) were the two techniques used, which utilize the patient chart.

Patient records have been a fundamental tool for assessing physician clinical competence and performance. Traditionally, especially in the hospital setting, CA has been an accepted method employed to study clinical choices.<sup>2</sup> In recent years, however, because of the recognized limitations of the CA—particularly in the office setting—the advantage of supplementing the CA with additional tools of assessment has been acknowledged.<sup>3</sup> A second assessment technique, CSR, which also uses the patient's chart, provides additional data that cannot be discerned through CA alone. CSR can determine not only physician choices, but the rationale behind those choices. Diagnoses, investigations, and treatment options ruled out can also be discovered.<sup>3-8</sup> Using both CA and CSR allows for a broad variance in the type of information gathered.

The purpose of this paper is to demonstrate two ways in which patients' charts can be used to provide insights into physician decision making in the office. Specifically, data collected by CA and CSR provide detail that can assist in understanding the complexity behind clinical choices.

### **Method**

All family physicians (n = 504) in active, full-time practice\* who saw geriatric patients and practised in the Calgary city area were eligible to participate. Potential participants were

\*minimum 3.5 days a week.

approached through the Alberta Primary Care Research Unit, Department of Family Medicine, Calgary Branch by means of an established recruitment process. Thirty-one physicians responded to the invitation. Twenty physicians participated in the actual study; eleven in the pilot, instrument testing, and training stage. All study instruments were piloted, and validity and reliability established, in this early phase.<sup>9-11</sup>

### **Case**

The physicians were visited in their office by a standardized patient. The practitioners were unaware of the patient's identity and presenting condition, which was NSAID gastropathy. Other factors of the patient's background included OA of the hip, diagnosed 3 years earlier; treatment for a gastric ulcer 10 years prior to the office visit; and controlled hypertension and diabetes. The patient's prescription medications included hydrochlorothiazide (25 mg once daily), a slow release potassium supplement (1 tablet twice daily), methyldopa (250 three times a day), glyburide (5 mg twice a day), and naproxen (250 mg four times a day as needed). The patient was also taking over-the-counter ibuprofen (200 mg as needed).

### **Chart Audit**

After the patient's office visit, either the standardized patient took the patient's chart to the research office in person, or it was mailed in from the study doctor's office. A trained and experienced health records technician completed a CA at the research center. Training had continued until the health record technician's data collection findings were consistent with those of the principal investigator—a health

record analyst. Data was collected on a standardized CA form, drafted initially by the principal investigator and tested in a pilot project. Further general details regarding the CA technique can be found in Neufeld, 1985, and Lockyer, Harrison, and Manning, *in press*.

### Chart Stimulated Recall

Using the patient's chart as a stimulus for recall, the physicians were interviewed after the office visit by a trained nurse using the CSR method.<sup>4</sup> The interviewer used a standardized protocol to elicit information specific to the physician's management of a patient with NSAID gastropathy—the rationale and determinants for clinical choices, the conditions ruled out, and the reasons. Problem identification, history, physical, treatment, and follow-up issues were addressed. Interviews lasted approximately 20 minutes and were audio taped and transcribed. Content analysis of the transcriptions was carried out by a trained research assistant using qualitative methodology.<sup>13</sup> A classification system for coding responses into categories was developed and patterns and trends were observed. The CSR methodology has been described in depth in a recent publication.<sup>4</sup>

## Results

### Clinical Management

**Problem identification.** Chart audit alone captured the presenting complaint and, at times, the closely associated differentials. CA was also adequate in recognizing the secondary diagnoses—in this case, controlled hypertension and diabetes. CSR did not elicit

further data specific to the presenting problems, but did add details as to which conditions were selected to be primary, and which were ruled out.

**Patient's history and physical examination.** Where CA focused on particulars that were charted by the physician, the CSR technique elicited additional, important factors; specifically, in the study of the 20 cases, 5 for patient's history and 2 for physical examination. In particular, these details were related to the following factors: physician inquiries made but not recorded; signs present or absent but not charted; or to an expansion as to why a particular decision was made (e.g., "patient is a smoker", or "Tylenol is no longer effective").

**Investigations.** While CA was able to precisely determine which tests were ordered, the additional CSR data revealed which tests were considered, but not ordered. As well, with CSR, the rationale behind these decisions was available (Table 1).

**Treatment.** CSR allowed for unrecorded treatments to be recalled by the physician. For example, although CA was efficient in its ability to reveal the prescriptions that were written down, it failed to uncover the nonpharmacologic treatments elicited by CSR. As well, with CSR, the rationale for decisions were given, as were the treatments that were considered, but not ordered (Table 2).

**Follow-up.** CSR allowed for additional information to be included. Although both CA and CSR revealed the time period in which the patients would be recalled, CSR gave the rationale as to why the physician felt 2 weeks were preferable to one, or vice versa. For example, "[NSAID gastropathy was] a serious condition [that] needs close follow-up", versus, "...give

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**Table 1 Investigative Details as Determined by Chart Audit and Chart Stimulated Recall**

Investigations	Chart Audit	Chart Stimulated Recall		
	%	Ordered (%)	Considered (%)	Rationale
<b>Radiology</b>				
UGI x-ray	7 (35.0)	8 (40.0)	1 (5.0)	test often doesn't show what's there
Hip x-ray	2 (10.0)	2 (10.0)		
Chest x-ray	1 (5.0)	1 (5.0)		
<b>Laboratory</b>				
Complete blood count	12 (60.0)	12 (60.0)		routine
Multichannel (SMA)	9 (45.0)	8 (40.0)		routine
Urinalysis	9 (45.0)	5 (25.0)		routine
Hemoglobin A1C	6 (30.0)	4 (20.0)		
Liver function tests	3 (15.0)	3 (15.0)		
Blood glucose		3 (15.0)		routine
Sedimentation rate	5 (25.0)	3 (15.0)		routine
Stool for occult blood	4 (20.0)	4 (20.0)	1 (5.0)	routine
Electrocardiogram	2 (10.0)	2 (10.0)		routine patient had PVCs
Serum amylase	4 (20.0)	2 (10.0)		
Creatinine clearance	5 (25.0)	2 (10.0)		
Cholesterol	2 (10.0)	2 (10.0)		
Electrolytes	2 (10.0)	2 (10.0)		
<b>Endoscopy</b>				
Blood urea nitrogen	1 (5.0)	1 (5.0)	1 (5.0)	takes too long to get results
Serum lipase	2 (10.0)	1 (5.0)		
Serum sodium	4 (20.0)	1 (5.0)		
Serum potassium	6 (30.0)	1 (5.0)		
Mean corpuscular volume		1 (5.0)		
<b>Ultrasound</b>				
Coombs tests	1 (5.0)	1 (5.0)	1 (5.0)	
Thyroid function test	1 (5.0)	1 (5.0)		routine
Mammography (female)	1 (5.0)	1 (5.0)		patient had history of breast cancer
Calcium		1 (5.0)		

n = 20 physicians.

time for [the] medications to work”, or for test results or previous records to arrive.

**Context of Clinical Choices**

Several patient characteristics, physician characteristics, practice or professional factors, and health care system and social factors were often stated to be influential variables in clinical decisions (Table 3). Their impact only

became apparent through CSR. Seven patient factors surfaced as determinants, as well as 26 physician characteristics, five practice elements, and seven health care system factors.

**Discussion**

Although for some time the medical record, through CA, has played a central role in

**Table 2 Treatment**

Treatment	Chart Audit	Chart Stimulated Recall		
	%	Ordered (%)	Considered (%)	Rationale
Pharmacological				
Pain: Prescription				
Ibuprofen		3 (15.0)		
Acetaminophen	1 (5.0)	3 (15.0)	1 (5.0)	
Naproxen		1 (5.0)		
Piroxicam			1 (5.0)	
Acetaminophen/ Codeine-15 mg	2 (10.0)	1 (5.0)		recommended by specialist
Acetaminophen/ Codeine-30 mg		1 (5.0)		
Acetaminophen/ Codeine-15/30 mg				
Codeine		1 (5.0)		
Gastroprotection: Prescription				
Ranitidine	11 (55.0)	10 (50.0)	2 (10.0)	had samples; diagnostic trial, as well as therapy, confirms the diagnosis; easier to take, qid, bid, better compliance; doesn't react with other medications; less side effects, other than GI; well tolerated in the elderly; gives better/quicker results; doesn't like to prescribe until sure of diagnosis; familiar;
Cimetidine			7 (35.0)	multiple times a day, less compliance; reluctant to use with elderly patients, not well tolerated; can cause other side effects; doesn't like to prescribe until sure of diagnosis; reacts with other medications
Misoprostol			4 (20.0)	
Omeprazole	1 (5.0)	1 (5.0)	3 (15.0)	expensive; gives better quicker results
H <sub>2</sub> blocker (not otherwise specified)	11 (55.0)		2 (10.0)	decreases acid but doesn't restore mucus barrier; doesn't like to prescribe until sure of diagnosis
Antacids	3 (15.0)	3 (15.0)	1 (5.0)	
Nizatidine		1 (5.0)	2 (10.0)	had samples; inexpensive; gives better/quicker results
Famotidene			1 (5.0)	
Cisapride			1 (5.0)	
Sulcralfate		1 (5.0)	1 (5.0)	multiple times a day, less compliance; reestablishes mucus barrier in stomach

n = 20 physicians.

Table 2 (continued) Treatment

Treatment	Chart Audit	Chart Stimulated Recall		
	%	Ordered (%)	Considered (%)	Rationale
Discontinue/Decrease				
Naproxen	10 (50.0)	13 (65.0)		
Ibuprofen	8 (40.0)	11 (55.0)		
Hydrochlorothiazide		3 (15.0)		increase blood sugar
Slow release potassium supplement		2 (10.0)		
Methyldopa		2 (10.0)		liver damage, hemolytic anemia, tiredness
Methyldopa or Hydrochlorothiazide	4 (20.0)			
Keep all medications the same	12 (60.0)			
Keep both NSAIDs	10 (50.0)			
Non-pharmacological				
Heat		2 (10.0)		
Rest		1 (5.0)		

n = 20 physicians.

hospital quality assurance programs, more recently, insights into how the patient's office chart can further be used to understand and assess management approaches have been demonstrated.<sup>3</sup> Findings from this study support this observation. CA, supplemented by CSR, can elicit information about clinical diagnostic, investigative, and treatment choices, and the rationale behind those decisions. It can also permit individual patient, physician, practice, and health care determinants of care to surface.

Traditionally, knowledge and skills have been the factors on which management, learning, and continuing medical education (CME) are based. Results from this study confirm that there are additional factors, other than physician competence, which are significant to consider when assessing man-

agement approaches, identifying areas for learning, and designing CME. The rationale behind decisions, and choices considered and ruled out, become part of the picture. As well, the practice care context, the health care system, patient's capabilities, and time constraints, among others, are acknowledged often as relevant factors. As other factors can come into play when clinical competence is translated into practice, it is necessary to view education, learning, and assessment more broadly than in the past.

Although the two assessment techniques, CA and CSR, have specific purposes, there are overlapping areas or items (e.g., what was done on history, physical, investigations, treatment, and follow-up). At times in our study, discrepancies between the findings elicited by CA and CSR in these areas were observed.

**Table 3 Factors That Influence Patient Management**

PATIENT CHARACTERISTICS		
Demographic Factors	Factor Present (%)	Rationale
Age	13 (65.0)	
Living alone	1 (5.0)	if patient not bright, would need to instruct caregiver
Personality factors		
Reliable	2 (10.0)	if patient not bright, would need to instruct caregiver; if patient is bright, not cognitively impaired, will be less parental/directive
Friendly	3 (15.0)	if patient is bright, not cognitively impaired, will be less parental/directive
Active	1 (5.0)	
Nervous	1 (5.0)	
Personality (not otherwise specified)	1 (5.0)	
PHYSICIAN CHARACTERISTICS		
Where Physician Learned Approach	Factor Present (%)	
Formal Training		
Where physician was trained	11 (55.0)	
Continuing medical education	9 (45.0)	
Experience	9 (45.0)	
Discussions with peers/consultants	2 (10.0)	
Developed own style	1 (5.0)	
Palliative care experience	1 (5.0)	
Personal Background		
Religious upbringing	1 (5.0)	
Physician in family	1 (5.0)	
Practice Style		
First Visit		
Doesn't do a battery of tests on first visit, no improvement, then tests	7 (35.0)	
Spends more time on first visit	6 (30.0)	
On first visit deals only/mainly with presenting complaint	7 (35.0)	
Uses first visit to get acquainted and build rapport	5 (25.0)	
Does an exam and tests on first visit, discusses results and goals on second	1 (5.0)	
Second Visit		
Does complete physical on second visit	9 (45.0)	
Spends more time on second visit	6 (30.0)	
Will make extra time, even if busy, if it is difficult for patient to come back for second visit	2 (10.0)	
General		
Patient will do what they want to do, so must work with what patients will do	2 (10.0)	
Open door policy, take them as they come	1 (5.0)	
If patient doesn't return, phones patient and encourages follow-up	1 (5.0)	
Must take into account cultural factors, affects patient expectations and compliance	1 (5.0)	
Doesn't refer to specialist unless case is serious or patient insists	1 (5.0)	

n = 20 physicians.

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**Table 3 (continued) Factors That Influence Patient Management**

General (continued)	
Doesn't do a lot of tests if considering consulting because consultant will just redo tests	1 (5.0)
Sees role as an advisor, doesn't like to take control of patient's illness	1 (5.0)
Tends to be abrupt, doesn't discuss non-medical things	1 (5.0)
Decides on whether to do exam and how much time to spend with patient	1 (5.0)
New physician so has more time to spend with patients	1 (5.0)
<u>PRACTICE/PROFESSIONAL FACTORS</u>	%
Time constraints	8 (4.0)
Proximity to x-rays and laboratories	9 (45.0)
Billing procedures	2 (10.0)
Location of physician's office	1 (5.0)
Resident in practice (practice used for resident training)	1 (5.0)
<u>HEALTH CARE SYSTEM/SOCIAL FACTORS</u>	%
Cost to health care system	1 (5.0)
Does not provide services that he/she doesn't get paid for	1 (5.0)
Tries not to let economic concerns interfere with services provided and time spent with patient	1 (5.0)
Salaried physician, can spend more time with patients	1 (5.0)
Fee for service system must be efficient	1 (5.0)
Does not feel provincial health system pays enough to do complete physical exam on first visit so has patient come back	1 (5.0)
Wants laboratory in office building but government will not allow any more labs in doctors' offices	1 (5.0)

n = 20 physicians.

These variations merit comment. Limited charting practices or habits can possibly help explain CA findings being lower in some instances than the CSR. The physician may have been able to recall the details during the CSR interview, although the particulars have not been documented. Alternatively, due to the dependence on memory and self-report during the CSR interview, the physician may have articulated something having been done that really had not. Although not the purpose of this article, it is important to note that if variation occurs when applying more than one assessment tool that accurate findings be sorted out.

Project limitations, such as relatively small sample size and focus on one clinical condition, are acknowledged. Also important to

understand are the strengths and limitations of each tool,<sup>2,3,8,12</sup> including costs, when deciding upon their use or feasibility. CA and CSR techniques, in combination, should be employed only when the purpose, study, or activity warrants.

### **Conclusion**

Although this study has limitations, it serves to illustrate how the patient's office chart, specifically a combination of CA and CSR, can help in capturing the factors associated with clinical decisions. Such data offers a complementary range of information, which can be useful to professional assessors, educators, doctors, and future physicians. The value of such observations cannot be underestimated

for medical education activities such as curriculum and assessment.

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