

Journal Clubs and Case Conferences: From Academic Tradition to Communities of Practice

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Introduction: As small group learning sessions, Journal Clubs (JCs) and Case Conferences (CCs), if structured interactively, have potential as educational formats that can change practice. However, the degree to which these formats, as currently typically structured, lead to practice change is unknown.

Methods: We used concepts of communities of practice (COPs) to structure JCs and CCs. We conducted an observational descriptive study of the learnings, implemented learnings, and barriers to implementing learnings identified in JC and CC sessions conducted in 2005–2006.

Results: Two hundred learnings in 10 different categories emerged from 73 JC or CC sessions. By self-report, over half of identified learnings were implemented in practice; 60 barriers to implementing learnings (8 different categories) were also identified. Patterns of learnings, implemented learnings, and barriers varied among sessions.

Discussion: JCs and CCs can be structured with explicit intent to articulate learnings and facilitate implementation of learnings in practice. Further work is needed to validate the learning and barrier categories we identified, objectively verify short- and longer-term practice outcomes, explore the role of JCs and CCs in addressing barriers to learning, and facilitate sustainability of learning in practice.

Key Words: journal club, case conferences, communities of practice, learnings, barriers, clinical practice

Introduction and Aims

Journal Clubs (JCs) and Case (“Morbidity and Mortality”) Conferences (CCs) are staples of graduate and continuing medical education (CME). *AMA category 1 CME credit*TM can be awarded for such conferences.¹ Typically, articles or cases are chosen on the basis of academic interest or interesting findings, rather than with explicit intention of changing practice. The degree to which JCs and CCs lead to practice change is unknown.

Adults learn most effectively when faced with meaningful problems they need to solve.² Schoen theorized that health professionals reflect on past experiences to frame important

personal learning questions (reflection on action). They then seek information (including colleagues’ experiences) and think about how to apply it. When subsequently faced with a similar situation, health professionals then consider the applicability of the newly learned information (reflection in action).³ Constructivist theories posit that learning occurs as individuals actively assimilate new knowledge with previous experience;⁴ social learning theories hold that knowledge is shaped by interactions with respected others in similar environments or situations.⁵ It therefore seems that JCs and CCs, structured as social learning activities for discussing new knowledge in the context of previous and current experience, could lead to new learnings that might translate into clinical practice.

A *community of practice* (COP) is “a group of people who share an interest in a domain of human endeavor and engage in collective learning that creates a bond among them.”⁶ COPs are self-selected and self-organized around a common interest, domain, or competence. They allow individuals to share evidence, ideas, tacit (“how-to”) knowledge, and practical experience in a safe environment for continuous learning.⁷ COPs are meant to be interactive; as opposed to a lecture or a meeting intended solely to provide information, interactivity in continuing education increases the likelihood that learnings will be translated into practice.^{8,9} COPs provide opportunities for sequenced learning

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that can be tried, modified, and shared with the group. Individuals support each other's learnings and use the group to validate their own experiences. Effective facilitation is thought to enable translation of learning into practice.¹⁰ COP facilitators are often not content experts: they schedule sessions, create a safe learning atmosphere, facilitate discussion, place learning in context, and facilitate follow-up.¹¹

In this paper, we describe how we used COP concepts to structure CME-accredited JCs and CCs. The new Accreditation Council for Continuing Medical Education (ACCME) criteria require that CME providers analyze changes in learner competence, patient care processes, and outcomes of care related to their CME programs. Providers desiring Accreditation with Commendation must also identify factors outside their control that impact on patient outcomes.¹² Given these requirements, we sought to categorize learnings, implemented learnings (self-report), and barriers to learning implementation identified during COP-structured JC and CC sessions. We also compared differences in learnings and implemented learnings between these JC and CC formats.

Setting

Kaiser Permanente Colorado (KPCO) is a group model health maintenance organization (HMO) consisting of the Kaiser Foundation Health Plan of Colorado and the Colorado Permanente Medical Group (CPMG). CPMG has approximately 900 physicians (800 full-time equivalent, or FTE) in 38 specialties, caring for approximately 440,000 members in 19 medical offices and two hospitals in the Denver, Colorado, metropolitan area. CPMG averages over 200 accredited yearly CME programs, and awards an average of more than 8,500 annual CME credits.

JC and CC Structure

The CPMG Director of Education (David W. Price, MD) discussed the new structure and goals of JCs and CCs (improving quality and implementation of evidence in practice) with interested individuals prior to submission of a CME accreditation request. JC and CC yearly series were accredited with the objective of attendees' identifying at least two learnings to incorporate into their practices. While acknowledging that some articles or cases may serve to verify current practice or present intellectually interesting findings (eg, rare cases or conditions), the Director of Education emphasized the need to select articles or cases with "incorporable learnings."

During the last 5–10 minutes of each session, facilitators solicited key concepts and learnings, which were recorded on a provided learning summary template. An electronic or written copy was submitted with the sign-in sheet to the CPMG Department of Education; facilitators kept a copy of the template for use in subsequent sessions.

Attendees desiring CME credit were required to sign in at each session. They were provided a template to create

"memos to myself" (MTM)¹³ and encouraged to record individual learnings and commitment to change practice statements^{14–17} in an ongoing learning log.

At the beginning of each subsequent session, facilitators ascertained which learnings from the previous session were implemented in practice. Factors facilitating or barriers hindering implementation in practice were solicited. Facilitators recorded these remarks by the appropriate learning on their learning summary sheet, which was again submitted (along with learnings from that session) to the Department of Education. This structure provided continuity between sessions and reinforcement of previous learnings and gathered short-term self-reported practice change outcomes data.

Methods

We conducted an exploratory, descriptive study of the "outputs" of these JCs and CCs. Each session's learnings and barriers to learning implementation were independently reviewed by the authors and categorized, using a qualitative approach.¹⁷ Learning categories were developed by the authors *de novo*; barriers were initially classified into categories developed by Cochrane et al.¹⁹ The authors compared and resolved discrepancies across coded raw data for each learning and barrier. Any newly arising learning or barrier themes were noted. The process was repeated until agreement was reached on the classification of all items and no new learning or barrier themes were noted.

The date, department, and type of each session (JC or CC) were recorded in a spreadsheet. Numbers and categories of learnings, implemented learnings, and barriers were noted for each session. Data were summarized for each conference series. This initial inquiry was not designed to compare differences between individual series. However, differences in learnings and implemented learnings by format of conference (JC or CC) were compared using Fisher's two-tailed exact test (because of the relatively small sample size and the independence of the JC and CC samples).

Participants

Six departments (Internal Medicine, Neuroradiology, Anesthesiology, Otolaryngology/Head and Neck Surgery, Dermatology, and Ophthalmology) participated in the program during this study. Neuroradiology CC sessions originated in the Department of Radiology but were also open to neurologists and neurosurgeons. Seventy-three sessions were held; 59 were CCs. Individual participation was self-selected and voluntary. Most attendees were physicians; however, several sessions were attended by other health professionals. TABLE 1 shows session total and average attendance, and the number of unique individuals who attended at least one program.

TABLE 1. JC and CC Sessions and Attendance, 2005–2006

Department	Type of Session	Total Number of Sessions	Range of Attendance/Session	Average Attendance/Session	Total Number Unique Attendees	
					Physicians	Other Clinicians
Internal Medicine	JC	10	3–12	7	16	1
Neuroradiology	CC	27	4–12	7.33	14	7
Anesthesiology	CC	27	9–21	12.6	52	0
Otology/head and neck surgery	CC	5	6–9	6.2	13	5
Dermatology	JC	3	3	3	2	1
Ophthalmology	JC	1	9	9	9	0

Note: JC = journal club; CC = case conferences.

Learnings Identified and Implemented

Two hundred total learnings were identified, 126 from CCs. We identified 10 categories of learning: information, diagnosis, screening, treatment, medication treatment, qual-

ity improvement, patient safety, clinician-patient communication/customer service, medical documentation, and patient education. TABLE 2 defines these categories, with representative examples of each. Patterns of learning varied by department (TABLE 3). For example, most learnings iden-

TABLE 2. Categories of Learnings Identified

Category	Definition	Example
Learning		
Information	Generic content not specific to screening, basic treatment, changes in medication, safety, quality improvement, or customer service	“A 7% weight reduction is significant.”
Diagnosis	Recommendations for evaluating symptoms, diagnosing disease, or considering the use of a diagnostic test	“In patients with history of cancer, gadolinium enhancement is needed to rule out leptomeningeal metastases.”
Screening	Recommendations for evaluating the presence or absence of a disease state	“Screen for abdominal aortic aneurysm in men over age 65.”
Treatment	Recommendations for managing a disease state, medications excluded	“Management of AV fistulas with angiography.”
Treatment—medicines	Recommendations for managing the disease state via a medication regimen	“Discourage aspirin for primary prevention of coronary artery disease in asymptomatic women.”
QI	Health services (including actions, intrateam communication) for individuals and populations that increase the likelihood of desired health or service outcomes and are consistent with professional knowledge ²¹	“There is sometimes a delay in radiology interpretation of critical findings, causing patients to wait in the emergency room.”
Safety	Actions or behaviors taken by a clinician to ensure freedom from accidental injury or the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim ²¹	“Epidural morphine and phenergan can lead to respiratory distress.”
Clinician-patient communication/customer service	Recommendations for discussion or communication between the clinician and patient	“Use humor cautiously in an empathetic manner . . . as a potential ice breaker.”
Documentation	Documentation or coding requirements	“Code ‘metabolic syndrome’ in the electronic medical record.”
Patient education	Information given to the patient	“Recommend behavioral strategies for coping with vasomotor symptoms.”

TABLE 3. Summary of Learnings from Journal Club and Case Conferences Sessions

Department	Internal Medicine		Neuroradiology		Anesthesia		Otology/Head and Neck Surgery		Dermatology		Ophthalmology		Total	
Sessions with initial learnings data available	10		27		27		5		3		1		73	
Total number of learnings	64		30		84		12		9		1		200	
Mean (range) learnings/session	6.4 (2–13)		1.11 (1–2)		3.11 (1–7)		2.40 (1–4)		3.0 (2–4)		1.0 (n/a)		2.74 (1–13)	
Patterns in learning	Info	8	Info	3	Info	8	Info	3	Info	0	Info	1	Info	23
	Dx	8	Dx	2	Dx	5	Dx	3	Dx	3	Dx	0	Dx	21
	Scr	6	Scr	0	Scr	0	Scr	0	Scr	0	Scr	0	Scr	6
	Tx	7	Tx	23	Tx	8	Tx	3	Tx	2	Tx	0	Tx	43
	Tx-Meds	18	Tx-Meds	0	Tx-Meds	5	Tx-Meds	1	Tx-Meds	4	Tx-Meds	0	Tx-Meds	28
	QI	0	QI	1	QI	22	QI	0	QI	0	QI	0	QI	23
	Safety	1	Safety	1	Safety	33	Safety	0	Safety	0	Safety	0	Safety	35
	CPC	0	CPC	0	CPC	3	CPC	0	CPC	0	CPC	0	CPC	3
	Doc	1	Doc	0	Doc	0	Doc	0	Doc	0	Doc	0	Doc	1
	Pt Ed	15	Pt Ed	0	Pt Ed	0	Pt Ed	2	Pt Ed	0	Pt Ed	0	Pt Ed	17
Sessions with learning implementation data available	10		27		26*		5		1		1		72	
Number (%) of learnings implemented	36 (56.3%)		14 (46.7%)		53 (63.1%)		7 (58.3%)		0 (0%)		0 (0%)		110 (55.0%)	
Mean (range) implemented learnings/session	3.60 (0–9)		0.52 (0–1)		2.12 (0–4)		1.40 (0–3)		—		—		1.53 (0–9)	
Patterns in learning	Info	6	Info	2	Info	8	Info	1	n/a	n/a	Info	17	Info	17
	Dx	1	Dx	1	Dx	4	Dx	1			Dx	7	Dx	7
	Scr	5	Scr	0	Scr	0	Scr	0			Scr	5	Scr	5
	Tx	3	Tx	10	Tx	6	Tx	3			Tx	22	Tx	22
	Tx-Meds	12	Tx-Meds	0	Tx-Meds	1	Tx-Meds	1			Tx-Meds	14	Tx-Meds	14
	QI	0	QI	1	QI	9	QI	0			QI	10	QI	10
	Safety	1	Safety	0	Safety	22	Safety	0			Safety	23	Safety	23
	CPC	0	CPC	0	CPC	3	CPC	0			CPC	3	CPC	3
	Doc	1	Doc	0	Doc	0	Doc	0			Doc	1	Doc	1
	Pt Ed	7	Pt Ed	0	Pt Ed	0	Pt Ed	1			Pt Ed	8	Pt Ed	8

Note: Info = information, Dx = diagnosis, Scr = screening, Tx = treatment, Tx-Meds = medication treatment, QI = quality improvement, Safe = patient safety, CPC = clinician-patient communication, Doc = documentation, Pt Ed = patient education.

*One follow-up sheet (with one learning from one session) missing.

tified in the internal medicine JC related to treatment with medications and patient education, most learnings in neuro-radiology CCs related to treatment, and most learnings in anesthesia CCs related to quality improvement or patient safety.

Fifty-five percent of identified learnings were reportedly implemented. The pattern of implemented learnings was similar to the pattern of learnings identified by department (TABLE 3).

Barriers to Implementing Learnings

We initially classified barriers into seven categories developed by Cochrane et al:¹⁹ cognitive/behavioral, attitudinal/rational-emotive, health care professional barriers, guideline/

evidence barriers, patient barriers, support/resource barriers, and organizational barriers. We identified an additional barrier (“physician did not remember to implement the learning”) not explicitly addressed by Cochrane, which we placed in the cognitive/behavioral domain. We also identified an additional category (patient with similar condition not seen since case or article discussed) that did not easily fit into Cochrane’s classification. Thus, our final classification included eight categories of barriers to implementing learnings (TABLE 4). Sixty-three barriers were identified (TABLE 5); cognitive/behavioral barriers (knowledge, attitude, skills) accounted for the majority (16 of 63), with the greatest proportion (14 of 16) noted in the Internal Medicine JC. Twelve of these 14 cognitive/behavioral barriers noted that physicians had difficulty remembering to apply the learnings for

TABLE 4. Barriers Identified (Starting With Classification System of Cochrane et al)¹⁹

Cognitive/behavioral barriers	
Knowledge	
Awareness	
Skill/expertise	
Critical appraisal skills	
Not remembering how to do it*	
Attitudinal/rational-emotive barriers	
Efficacy/perceived competence	
Perceived/outcome expectancy	
Confidence in abilities	
Authority	
Accurate self-assessment	
Health care professional/physician barriers	
Characteristics	
Age/maturity of practice	
Professional boundaries	
Legal issues	
Peer influence, models	
Gender	
Inertia	
Clinical practice guidelines/evidence barriers	
Utility	
Evidence/disagree content	
Access	
Structure	
Local applicability	
Patient barriers	
Patient characteristics/factors	
Patient adherence	
Support/resource barriers	
Time	
Support	
Costs/funding issues	
Resources	
System/process barriers	
Organizational	
System	
HR/workload/overload	
Team structure/work	
Referral process	
Lack of opportunity	
Patient with same condition not seen since case or article discussed*	

*Additions to Cochrane's schema.

applicable patients. To some extent, these could also represent systems issues (lack of team processes to identify targeted patients, lack of clinical decision support to prompt the physician). Notably, we identified only two health care professional barriers in this sample; the remaining barriers were distributed fairly evenly across the other categories.

Patterns in Learnings and Implemented Learnings, JC vs. CC

Mean number of learnings identified and implemented per session was higher in JCs than in CCs (TABLE 6). Four categories of learnings (screening, medication treatment, documentation, and patient education) were more commonly identified and implemented in JC sessions. Two categories (diagnosis and information) were more commonly identified in JC sessions; two categories (quality and safety) were more commonly identified in CCs. However, implementation of these four learnings did not differ between JCs and CC sessions. There was no difference in identification or implementation of two categories of learnings (treatment, clinician-patient communication) between JC and CC sessions.

Discussion

Case-based, reflective, interactive sessions are more likely to impact practice than traditional didactic sessions.⁸⁻¹⁰ Our observations suggest that facilitated interactive JCs and CCs focused on problems shared by attendees can be useful learning formats for translating evidence into practice and documenting barriers to evidence translation.

It is not surprising that learning patterns differed across specialties. Problems should vary with the identified concerns of each specialty and small group, as participants reflect on their clinical actions³ and identify cases or topics they would like to discuss in CC or JC sessions. One might expect general internists, because of the nature of their practice, to seek learning opportunities on medication treatments and anesthesiologists to seek opportunities to focus on patient safety. Similarly, one would expect differences in implemented learnings based on the articles or cases chosen and the nature of participants' individual practice system and microsystem and "reflection in action"³ on the learnings from the CC or JC session. Learnings, implemented learnings, and barriers might also differ in terms of the needs of individual session attendees' mix of disciplines (physicians, nurses, etc). Different attendees will probably carry different past experience to the JC/CC discussions, particularly in interdisciplinary sessions. This past experience will shape individuals' construction of new learning⁴ from their individual "starting points"; the discussions between attendees will be likely to influence the way new learnings are shaped.⁵ Because "learning is local" in COPs, it is likely that even within specialties, different small groups will have different learning needs and face different implementation barriers. Three of six departments (Head

TABLE 5. Summary of Barriers to Implementing Identified Learnings in Journal Club and Case Conferences Sessions

Department	Internal Medicine	Neuroradiology	Anesthesia	Otology/Head and Neck Surgery	Dermatology	Ophthalmology	Total
Total number of sessions with barriers data available	10	27	26*	5	3	1	72
Total number of barriers identified	30	8	21	1	2	1	63
Mean (range) barriers/session	3.00 (0–12)	0.30 (0–3)	0.84 (0–4)	0.2 (0–1)	0.67 (0–2)	1.0 (n/a)	0.88 (0–12)
Barriers/learning	0.47	0.27	0.25	0	0.22	1	0.32
Patterns of barriers identified	Cog 14 Att 2 Prof 1 Evid 4 Pt 2 Sup 3 Org 3 Opp 1	Cog 0 Att 1 Prof 0 Evid 4 Pt 2 Sup 1 Org 0 Opp 0	Cog 2 Att 1 Prof 1 Evid 1 Pt 3 Sup 4 Org 5 Opp 4				Cog 16 Att 5 Prof 2 Evid 9 Pt 7 Sup 8 Org 8 Opp 8

Note: Cog = cognitive/behavioral; Att = attitudinal/rational-emotive; Prof = health care professional/physician; Evid = clinical practice guidelines/evidence; Pt = patient; Sup = support/resource; Org = organizational; Opp = lack of opportunity to implement learning.

*One follow-up sheet (with one learning from 1 session) missing

and Neck Surgery, Dermatology, and Ophthalmology) held few sessions; two departments (Dermatology and Ophthalmology) started their conferences toward the end of the study period. Therefore, in this exploratory study, we did not consider it appropriate to make statistical comparisons across individual department conference series. Instead,

we examined whether structuring JCs and CCs as COPs would help make learnings explicit, facilitate implementation of learning into practice, and identify barriers to implementation.

While the numbers of learnings are too small to allow broad conclusions, it is not surprising that Dermatology and

TABLE 6. Journal Club vs. Case Conferences Sessions: Comparison of Learnings and Implemented Learnings

	Total Learnings Identified		Mean Learnings Identified/Session		<i>P</i>	Total Learnings Implemented		Mean Learnings Implemented/Session		<i>P</i>
	JC <i>n</i> = 14	CC <i>n</i> = 59	JC	CC		JC*	CC	JC	CC	
Overall	74	126	5.29	2.14	<0.001	36	74	2.57	1.25	<0.001
Screening	6	0	0.43	0	<0.001	5	0	0.36	0	<0.001
Treatment—medicines	22	6	1.57	0.10	<0.001	12	2	0.86	0.03	<0.001
Patient education	15	2	1.07	0.03	<0.001	7	1	0.50	0.02	<0.001
Documentation	1	0	0.07	0	0.040	1	0	0.07	0	0.040
Diagnosis	11	10	0.79	0.17	<0.001	1	6	0.07	0.10	0.742
Information	9	14	0.64	0.24	0.015	6	11	0.43	0.19	0.091
QI	0	23	0	0.39	<0.001	0	10	0	0.17	0.123
Safety	1	34	0.07	0.57	0.014	1	22	0.07	0.37	0.071
Treatment	9	34	0.64	0.58	0.770	3	19	0.21	0.32	0.509
Clinician-patient communication/ customer service	0	3	0	0.05	0.399	0	3	0	0.05	0.399

Note: JC = journal club, CC = case conference, PEPI, Fisher's exact test, two-tailed.

*All implemented JC learnings were from the Internal Medicine Journal Club.

P < 0.05 indicates a statistically significant difference between JCs and CCs in the identified or implemented learning.

Ophthalmology JCs led to fewer implemented learnings in our sample. The articles selected covered uncommon conditions; therefore little opportunity existed to apply these learnings in the short follow-up period. Internal Medicine JCs focused on more common clinical situations; Anesthesia and Neuroradiology CCs reviewed actual situations when learners were focused on improvements for the next similar situation.

As noted, difficulty remembering was a commonly identified barrier to applying learnings in practice. Whether, as we posit, these are systems issues or cognitive barriers (eg, learning something once without reminders or a chance to practice has a low likelihood of affecting practice), this finding is consistent with the review by Davis et al⁹ and suggests that multiple reinforcing efforts may be needed to increase the likelihood that learning will translate into action in practice.

Intuitively, CCs should lead to identifiable quality and safety learnings, since these concerns often serve as the impetus to review cases. It is also not surprising that more learnings emanated from JC sessions. Typically, several articles were covered in JC sessions, each with potential learning opportunities; CCs typically reviewed fewer cases per session. Since our study was observational and descriptive, involved a relatively small sample of attendees (120), and was designed to help broadly classify learnings identified and implemented, one cannot conclude which format should be used to implement specific learning categories. The underlying needs assessment (practice gap), session facilitation and interaction, learning points of the selected material, and participant openness to change are likely to influence outcomes more than whether the format is a JC or CC. CCs could include multiple cases; JCs could focus on fewer articles, including articles related to quality and patient safety. A “combined conference” discussing specific cases and related journal articles might be considered. Therefore, our observations are reflective of the current state of these conferences, not a generalization about which format to use based on the desired learning outcome.

Limitations

We have not previously assessed and did not include a control group of “usual” JCs or CCs; therefore we cannot draw any conclusions about whether our structured conferences are “better” or more interactive than traditional JC/CC formats. However, we are unaware of any systematic evidence that “typical” JCs or CCs improve practice. Furthermore, informal facilitator and participant feedback suggested that this COP structure helped create interaction and explicit linkage in participants’ minds between learning and practice improvement. We therefore believe this construct will be useful to others interested in starting or formalizing JCs and CCs, especially in cases where *AMA category 1 CME credit*TM is desired.

There was between- and within-facilitator variability in the detail of recorded learnings and barriers. We also did not vet our learnings and barrier categories with JC or CC facilitators or participants. Facilitators were not given common ways of formulating learnings or barriers; therefore the authors may have misclassified some facilitator notes. Future studies might gather facilitator feedback on learning and barrier categories, use facilitator training and templates for recording learnings and barriers, use a common pool of facilitators across sessions, or employ multiple recorders at the same sessions to assess “intrafacilitator interpretation.” The categories we identified could serve as a checklist for facilitators to record learnings and barriers.

Participants attended these conferences because of interest, comfort with the learning format, and convenience. Therefore we cannot generalize the degree of learning and learning implementation to nonattendees; nor can we generalize whether similar degrees of learning and implementation would occur in other health care systems. There may be commonalities in learnings and barriers between systems, but differences would also probably exist. Therefore, replication of this work should be conducted in other health care settings.

Finally, while intent to change statements have been shown to be reasonable proxies for actual practice changes,^{15–17} we did not conduct follow-up chart or administrative audits to verify that self-reported practice changes actually occurred in practice. The short-term follow-up period may actually underestimate the eventual learning implementation, although without short-term reinforcement, the likelihood of learning implementation may decrease over time.^{16,20}

Conclusions and Future Directions

COP concepts can be used to structure JCs and CCs as interactive, problem-focused sessions designed to improve practice. The learning and barrier categories we identified can help facilitate changes in practice. Multiple sessions on the same (or closely related) topics could help reinforce learnings and increase implementation in practice; additional discussion on steps to overcome barriers could focus on methods of providing practice prompts for implementation of key learnings. Further work is needed to explore the value of JCs and CCs structured in this manner compared with traditional JCs and CCs, validate the learning categories we identified, and determine the fit of “lack of opportunity to implement learnings” and “forgetting” in Cochrane’s barrier schema.¹⁹ Interviews with participants to describe more formally how they experienced the shift from traditional to new JC and CC formats may also be enlightening. In addition to the opportunities identified previously, future studies should use COP structured JC/CC (or combined) sessions to address specific pre-defined practice gaps, record the learnings and barriers using consistent constructs vetted with participants for face validity, follow up on identified learnings using both self-

Lessons for Practice

- Concepts of communities of practice can apply to journal club and case conference sessions, facilitating interactivity and articulation of learnings, while identifying barriers to application of learnings in practice.
- Learnings and barriers are likely to vary in relation to participants' area of practice and local needs.

report and objective measures, and revisit barriers in subsequent sessions. The role of JC and CC sessions in addressing barriers to learning and facilitating sustainability of learning in practice should also be explored.

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References

1. AMA Physician's Recognition Award Booklet, 2006 revision. Accessed November 27, 2007, at: <http://www.ama-assn.org/ama/pub/category/15889.html>.
2. Knowles MS, Holton EF, Swanson EF. *The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development*. 6th ed. Burlington, Mass: Elsevier; 2005.
3. Schoen DA. *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions*. San Francisco, Calif: Jossey-Bass; 1987.
4. Vygotsky L. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, Mass: Harvard University Press; 1978.
5. Ormrod JE. *Human Learning*. 3rd ed. Upper Saddle River, NJ: Prentice-Hall; 1999.
6. Wenger E, McDermott R, Snyder W. *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Cambridge, Mass: Harvard Business School Press; 2000.
7. Parboosingh JT. Physician communities of practice: Where learning and practice are inseparable. *J Contin Educ Health Prof*. 2002;22:230–236.
8. Mazmanian PE, Davis DA. Continuing medical education and the physician as learner: Guide to the evidence. *JAMA*. 2002;288:1057–1060.
9. Davis D, O'Brien MAT, Freemantle N, Wolf FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education: Do conferences, workshops rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA*. 1999;282:867–874.
10. O'Brien MA, Freemantle N, Oxman AD, Davis DA, Herrin J. Continuing education meetings and workshops: Effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2001;1. Art. No.: CD003030.
11. Harvey G, Loftus-Hills A, Rycroft-Malone J, et al. Getting evidence into practice: The role and function of facilitation. *J Adv Nurs*. 2002;37(6):577–588.
12. Pereles L, Lockyer J, Fidler H. Permanent small groups: Group dynamics, learning, and change. *J Contin Educ Health Prof*. 2002;22:205–213.
13. Accreditation Council for Continuing Medical Education Updated Accreditation Criteria. Accessed April 10, 2008, at: <http://www.accme.org>.
14. White MI, Grzybowski S, Broudo M. Commitment to change instrument enhances program planning, implementation, and evaluation. *J Contin Educ Health Prof*. 2004;24:153–162.
15. Wakefield J. Commitment to change: Exploring its role in changing physician behavior through continuing education. *J Contin Educ Health Prof*. 2004;24:197–204.
16. Wakefield J, Herbert CP, Maclure M, et al. Commitment to change statements can predict actual change in practice. *J Contin Educ Health Prof*. 2003;23:81–93.
17. Dolcourt JL. Commitment to change: A strategy for promoting educational effectiveness. *J Contin Educ Health Prof*. 2000;20:156–163.
18. Creswell, JW. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. London: Sage Publications; 1998.
19. Cochrane LJ, Olsen CA, Murray S, Dupuis M, Tooman T, Hayes S. Gaps between knowing and doing: Understanding and assessing the barriers to optimal health care. *J Contin Educ Health Prof*. 2007;27:94–102.
20. Getting evidence into practice. *Effective Health Care* 1999;5(1):1–16. Accessed January 4, 2008, at: <http://www.york.ac.uk/inst/crd/ehc51.pdf>.
21. Institute of Medicine Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC: National Academy Press; 2001.