The Status of the Clinicopathologic Conference in Academic Medical Centers

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To determine the current level of use, characteristics, and perceived value of the clinicopathologic conference (CPC), we sent a 22-item survey questionnaire to the program directors of internal medicine residency training programs. Of the 278 residency training programs that returned questionnaires, 221 (80%) indicated that they held CPCs regularly. The conference received a mean rating (Likert scale 1 = best to 5 = worst) of 2.2 (95% confidence interval 2.2, 2.3) for both its perceived educational value and its popularity. The CPC remains widely used in internal medicine training programs. Although relatively few programs have rigorous guidelines for preparation and evaluation of their presentations, the CPC is generally viewed as being popular and having sound educational value.

KEY WORDS: medical education; problem solving; clinicopathologic conference; teaching.

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The clinicopathologic conference (CPC) is a time-honored institution of 20th century medicine. Although Dr. Richard Cabot introduced it at the Massachusetts General Hospital in 1910, the concept of the CPC was derived from the case-based teaching method begun at Harvard Law School in the 1870s.¹ The value of the CPC as an educational conference has been called into question, however, with Lipkin considering it an anachronism.² In support of the CPC, Scully has countered that it remains a vehicle for transmitting current concepts about a wide variety of illnesses.³

Formal reports in the medical literature regarding the CPC are sparse. Although it has been stated that many institutions have abandoned it, that others use it only for teaching second-year or third-year students, and that attendance has dwindled,⁴ there have been no published reports from systematic surveys on the status of the CPC in

U.S. teaching programs. In this study, we sought to answer the following questions: (1) How many institutions use the CPC as a teaching conference? (2) How frequently are these conferences held? (3) Who is responsible for case selection and protocol preparation? (4) How are discussants chosen? (5) What is the perceived objective of the CPC, and how does it rate in comparison with other teaching conferences?

METHODS

All internal medicine residency training programs listed in the National Internship and Residency Matching Program book of 1993-1994 were surveyed. The first of two mailings was completed in March 1994 and included a self-addressed envelope without a stamp. Three months later, a second form was mailed to all initial nonresponders and included a stamped, self-addressed envelope.

Our survey instrument was a 22-item questionnaire. Information requested from each institution included the number of housestaff per year of training, academic affiliation, whether the CPC was used as a teaching conference at that site, its frequency of presentation, and details about the process of CPC formulation. The perceived educational value of the CPC in comparison with other teaching conferences was assessed using a 5-point Likert scale (1 = best, 3 = average, 5 = worst).

Student's *t* test and χ^2 test, respectively, were utilized for comparison of continuous and categorical variables, and Pearson's correlation coefficient was used to characterize the relationship among continuous variables. Statistical analyses were performed on a microcomputer utilizing SAS statistical software. (SAS Inc., Cary, N.C.) All reported *p* values are two-tailed.

RESULTS

A total of 398 questionnaires were mailed, and 184 completed forms were received. After a second mailing, another 94 questionnaires were returned, for an overall response rate of 71%.

Characteristics of the programs from which questionnaires were returned are presented in Table 1. The vast majority had some form of academic affiliation. There was a wide range in the number of trainees per program with slightly over 50 programs having 100 or more residents in training. Of the 278 responding programs, 80% stated that a CPC was scheduled regularly as one of their teaching conferences. The number of CPCs scheduled varied substantially across institutions from 2 per year to almost 2 per week. There was a positive correlation between the

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number of CPCs and number of trainees ($r = 0.31$, $p < .0005$).

The chief resident was the sole individual responsible for choosing the CPC case in 42% of the programs, with the remaining choosing cases in conjunction with the program director, a pathologist, or both. Similarly, the chief resident was responsible for the preparation of the protocol in 45% of the institutions. Cases were mostly selected from either the chief resident's log (31%) or the pathologist's logbook (46%).

In only 33 (15%) of the 221 responding institutions were all teaching faculty required to be discussants of the CPC, one quarter assigning them randomly. Among the remaining institutions, 91% of the discussants were assigned to cases by matching their clinical expertise to the case under consideration.

A total of 26 institutions (9%) provided guidelines to their CPC discussants. A larger proportion (42%) answered that their CPC was formally evaluated. When asked about the perceived educational value of the CPC compared with other teaching conferences, respondents favorably rated the CPC both in educational value (2.2; SD 0.8; 95% confidence interval [CI] 2.1, 2.3) and popularity (2.2; SD 0.96; 95% CI 2.1, 2.3).

Approximately half of the institutions felt that the primary objective of the CPC was to teach clinical problem-solving skills; another 41% felt it was a combination of this and the provision of an in-depth review of a topic. These objectives constituted two of three possible choices for the respective questions in the survey, with the third option being "other".

Ratings of the CPC stratified by program size and conference frequency are presented in Tables 2 and 3. Ratings for educational value and popularity from programs with either more frequent presentation of the CPC or larger number of trainees were not statistically significantly higher.

DISCUSSION

The survey data indicate that the CPC remains a widely utilized educational tool. The wide range in frequency of CPC scheduling suggests that some centers may be utilizing other competing conference formats to achieve similar educational objectives.

Excellent case selection, conference organization, and effective collaboration are likely to be central elements in the success of the CPC.⁵ In our survey, many of the institu-

Table 1. Characteristics of Responding Programs (n = 278)

Item	Response
Programs with academic affiliation, n (%)	237 (85)
Number of residents in program, mean (range)	54 (13–158)
Programs holding regular CPCs, n (%)	221 (80)
Number of CPCs per year, mean (range)	17 (2–100)

Table 2. Stratification of Clinicopathologic Conference Ratings by Frequency of Presentation

Rating	Group 1* (n = 145)	Group 2 (n = 71)	p Value
Educational, mean	2.24 [†]	2.07	.14
Popularity, mean	2.24	2.07	.16

*Group 1 institutions present 13 or more CPCs per year and group 2 fewer than 13 CPCs per year.

[†]Likert scale (1 = best, 3 = average, 5 = worst).

tions relied heavily on the chief resident for such duties. As the most junior individual among those responsible for the CPC, the chief resident has perhaps the most limited experience in the process. At the Massachusetts General Hospital, whose CPC has been successful for decades and has been published in *The New England Journal of Medicine* since 1924,⁶ several individuals participate in the process of CPC development. Case selection is based on the combined input from a pathologist and an internal medicine faculty member. Moreover, data abstraction and protocol preparation are done by a seasoned clinician to ensure fidelity and relevance of information.

The organization of the CPC has not been approached in a systematic fashion. Only a small proportion of the teaching programs we surveyed provided guidelines to discussants. This lack of guidance could result in presentations of uneven quality from the standpoints of content and format. Furthermore, as CPCs are formally evaluated in less than 50% of teaching institutions, there is likely to be insufficient feedback to ensure that learning objectives are being met.

The CPC's perceived educational objectives were remarkably similar in different locations. The vast majority of institutions (90%) felt that the CPC's primary value was its ability to convey an understanding of problem-solving skills and to provide an in-depth review of a unique topic in internal medicine. It is intriguing that the CPC seems to have survived the test of time as "the purest of our learning experiences,"⁷ although no formal measurements have been made of its impact on the development of such skills in training programs.

Table 3. Stratification of Clinicopathologic Conference Ratings by Number of Residents in Training Program

Rating	Group 1* (n = 109)	Group 2 (n = 105)	p Value
Educational, mean	2.26 [†]	2.16	>.5
Popularity, mean	2.24	2.13	>.3

*Group 1 programs have 45 or more residents in training, and group 2 programs have fewer than 45 residents. Group totals are less than 221 as there were 5 and 7 nonresponders, respectively, to those items on the questionnaires.

[†]Likert scale (1 = best, 3 = average, 5 = worst).

We recognize several limitations of our data. First, surveys were submitted to training program directors rather than directly to faculty or residents. Second, the exact format of the CPC used in each setting may have varied somewhat, making it difficult to derive valid inferences about specific reasons for popularity. Third, evaluation of the popularity and educational value was based on the subjective impressions of the program directors. Fourth, it is possible that nonrespondents to the survey had substantially different opinions. Finally, although the CPC is popular and well received, its influence on problem-solving skills is largely unknown.

Nonetheless, the CPC appears to be alive and doing well from the perspective of its continuous utilization as a teaching conference. Efforts to provide specific guidelines and objectives to presenters and to ensure collaboration among involved departments in conference preparation should improve its quality if not its educational value.

Formal comparison of the CPC with other competing paradigms for teaching clinical problem solving is warranted to ensure that the most effective one endures.

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