Self-Audit: Its Effect on Quality of Care

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Using a crossover design, it is shown that an individual criteria setting followed by immediate feedback of previous performance produced a sustained and continuing improvement in recording for two common conditions (cystitis and vaginitis). The intervention, which is simple and could easily be applied in other settings, produced improvements significant at the $P = .001$ level. The study controlled for overall improvement in record keeping. Further testing of this method of influencing physician performance is warranted.

Physicians are responsible for providing their patients with the best possible care. In their efforts to meet this responsibility, physicians complete a variety of continuing medical education (CME) activities. Physicians' professional organizations and regulatory bodies employ a variety of methods to attempt to influence physicians' performance for the better. Some studies have been undertaken to relate the above activities to changes in quality of care.

In his review Stein[1] found that programs based on sound educational principles were most likely to be effective. He recommends learning methods that take place in a clinical setting. Payne[2] has shown that continuing education programs have at least short-term effects on physician performance.

The effectiveness of CME, however, has continued to be questioned, especially when measured by physician performance. Brooks-Bertram and Bertram[3] suggested that the main problem was not insufficient knowledge, but that CME generally only increases knowledge without affecting behavior.

The study reported here is based on individual criteria setting, self-audit, and feedback. The quality of records is used as a measure of quality of care, as it often is.[4,5]

The use of feedback based on chart audit has been shown by Dickie and Bass[6] to improve the use of SOAP (subjective, objective, assessment, and plan) format in charting. Sheldon,[7] in a report from the United Kingdom, reported success in improving prescribing behavior for several common conditions by using an audit in which audit criteria

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were developed by the physicians who were audited. He emphasized the benefits of self-developed criteria over criteria established by an outside authority.

Methods

An educational maneuver was developed that consisted of three separate components. First, a commonly seen condition was selected, and the physician was asked to set his or her criteria for the management of this condition. Second, a retrospective audit of the physician's own charts for this condition was presented to the physician. Third, the physician was allowed to modify the set criteria and to assign a weighting (10 = essential, 0 = why bother?) to each criterion.

The setting of personal criteria, not the more traditional model of committee or expert criteria, is one strength of this strategy. Another strength is the provision of immediate feedback.

The study was carried out at a teaching unit. Six physicians agreed to have their charts audited for a two-month period (audit 1). The reason for the audit was not known to the physicians. For the two-month period, all charts with the diagnosis of cystitis or vaginitis were reviewed. When the audit was completed, the physicians were randomly allocated to one of two groups. Group A consisted of three physicians who were asked to carry out the maneuver with the identified condition being cystitis. No mention of vaginitis was made to these physicians, since it was to be used as a control condition as the study progressed. Group B was treated in a similar manner, but the roles of cystitis and vaginitis were reversed. The physicians agreed not to discuss their criteria or their study condition with their colleagues.

Six and 14 months later, the same auditor carried out retrospective audits over a two-month period for both conditions in each practice (audits 2 and 3). All three audits of cystitis were carried out by the same auditor using the same general and extensive audit form. Audits of vaginitis were conducted in a similar fashion. The auditor was blinded to all aspects of the study.

For each physician in group A, all audits for cystitis were mixed and then scored against that physician's criteria. The person scoring the audits was therefore unaware of the period from which any particular audit came. The vaginitis audits for group A, scored against the sum of all the vaginitis criteria set by group B, were also mixed in the same manner. Group B's audits were handled in a similar fashion.

Results

The physicians all enjoyed the task of completing their own criteria lists. These lists tended to be short and very concise for the physicians who had extensive practice experience. More junior faculty members produced long and quite complicated protocols. When presented with their own results from audit 1, all the physicians were surprised at their relatively poor performance. The audit results were reported in two forms. First, mean scores for the physician's audit, which took the form of an average percentage of audit items achieved per record, were presented. Second, actual audit sheets were duplicated and distributed.

At this time the physicians were allowed to change their criteria if they wished. In total only four changes were made in all the criteria lists. The physicians also assigned a weighting to each audit item. There were no further contacts with the offices for 14 months; then audits 2 (for months 5 and 6) and 3 (for months 13 and 14) were conducted.

In the cystitis audit for group A, the weights for each physician's audit were scaled so that the sum of the weights was equal to 100. Using these weights, means were calculated on 30 records for audit 1, 35 records for audit 2, and 37 records for audit 3 (Table 1). The records from all physicians in group A were combined for this analysis. Recall that, for group A, cystitis was the experimental condition and vaginitis was the control condition for improved overall record keeping. Table 1 reflects an improvement six months after the intervention, and at 14 months after intervention there was a further improvement. Using the Wilcoxon rank-sum test, each improvement was

Table 1. Mean Score per Audit (Number of Charts)

	Audit 1	Audit 2	Audit 3
Group A			
Cystitis	38.5 (30)	42.5 (35)	66.5 (37)
Vaginitis	25.9 (18)	31.3 (34)	30.4 (36)
Group B			
Vaginitis	22.6 (34)	26.3 (40)	31.3 (33)
Cystitis	42.2 (19)	31.0 (17)	37.8 (31)

Table 2. P Values Using Wilcoxon Sign-Rank Test

	Audit 1 to Audit 2	Audit 2 to Audit 3	Audit 1 to Audit 3
Group A			
Cystitis	.002	.001	.001
Vaginitis	.095	.097	.199
Group B			
Vaginitis	.161	.086	.008
Cystitis	.001	.075	.104

significant at the P = .002 level.

The analysis for the other three audits was carried out in a similar manner. The precise number of records in each audit, the mean value for each audit, and the P values are recorded in Tables 1 and 2. These results show that intervention produced a significant and sustained improvement and that control conditions were essentially unchanged.

The low score in the cystitis control condition for group B in audit 2 is a result of a large proportion of follow-up visits for cystitis. In all other cystitis audits, approximately 25 percent of the visits were of a follow-up nature, but for group B, audit 2, almost 50 percent of visits were for follow-up. Follow-up visits scored very low against the criteria.

Vaginitis criteria were more lengthy and complicated than cystitis criteria; as a result, the scores seen in vaginitis audits are lower than those for cystitis. It is also probable that for this reason significant improvement in vaginitis record keeping occurred only after 14 months had elapsed.

Conclusions

There is a need for simple and cost-effective methods to positively influence physician behavior. This experiment has shown that a simple mechanism of individual criteria setting followed by immediate feedback of personal performance is effective in producing a long-term effect on the quality of physician record keeping. The physician sample used here is admittedly skewed, and this method must be validated through trials in community physicians' offices.

An interesting additional observation is that as physicians gain practice experience, their personal criteria for clinical care become fewer, with most stated criteria being essential.

Acknowledgment

This research was supported by a grant from the Department of Family and Community Medicine of the University of Toronto.

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