Using Reminder Systems to Improve Papanicolaou Test Follow-up

An Example of Continuous Quality Improvement

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Objective: Using continuous quality improvement principles, we developed a Papanicolaou test recall system with the goal of increasing first and second follow-up Papanicolaou tests after cryotherapy by 20%.

Design: An initial study showed rates of 67% for the first follow-up Papanicolaou test and 31% for the second follow-up test. We formed a dysplasia project team. Using continuous quality improvement principles, we instituted a Papanicolaou test recall system. We remeasured first and second follow-up rates for Papanicolaou tests after cryotherapy. The staff and providers were surveyed regarding their acceptance of the system. No attempt was made to control for confounding factors.

Setting: The study was performed at the Family Medicine Clinic in Eau Claire, Wis. This is a community-based, university-administered family practice residency training clinic.

Participants: The first 53 consecutive women who had cryotherapy beginning August 1, 1991, were included in the study. All staff and providers were invited to answer a survey questionnaire.

Intervention: Patients received a reminder postcard when they were due for a Papanicolaou test. They received a follow-up letter the next month if no Papanicolaou test was done.

Main Outcome Measures: First and second follow-up Papanicolaou test rates after cryotherapy. Staff and provider satisfaction as measured by a survey.

Results: Eighty-four percent of the women returned for their first follow-up Papanicolaou test, and 53% returned for their second after cryotherapy. Staff and providers supported the recall system.

Conclusion: Continuous quality improvement principles led to a Papanicolaou test reminder system. Follow-up Papanicolaou test rates appeared to increase by 17% for the first Papanicolaou test and by 22% for the second.

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CONTINUOUS quality improvement (CQI), also known as total quality management, holds great promise in medicine for improving clinical effectiveness.[1] It enlists an entire organization to work toward the goal of continuous improvement in quality. It moves away from monitoring against standards and detecting adverse events and toward improving the system for everyone.[2] Continuous quality improvement involves organizational changes that give frontline workers, those most knowledgeable about the process or system, new responsibilities and power.[3]

All physicians depend on the systems in their private offices to provide quality care. A *system* is defined as a sequence of actions and interactions between units that brings about delivery of a service.[3] Defects in caring for individual patients do not usually stem from inattention or uninformed decisions. Quality patient care fails when the supporting system fails.[4] However, evidence about CQI implementation and application in the primary care setting is limited. This article describes a CQI approach to improve Papanicolaou test follow-up after cryotherapy at the Family Medicine Clinic in Eau Claire, Wis.

See Methods on next page

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METHODS

The Family Medicine Clinic is a community-based, university-administered residency training clinic in Eau Claire, a town of 50 000. We have 22 000 patient visits per year in our clinic. The providers include four MD-degreed family practice faculty, two nurse practitioners, and 18 residents. Twenty-one percent of the patients have no insurance; 18%, Medicaid; 9%, Medicare; and the remaining 52%, private insurance.

The CQI process aims at continuous efforts to improve services. The Hospital Corporation of America, Nashville, Tenn, developed the FOCUS-PDCA cycle, which is displayed in the **Table**.[14]

FIND A QUALITY IMPROVEMENT OPPORTUNITY

At the Family Medicine Clinic during the summer of 1991, we performed a retrospective chart audit that included women who underwent colposcopy from January 1, 1990, through August 1, 1990. Women were excluded if they required referral to a gynecologist for treatment following their colposcopy or if they were referrals to our clinic only for colposcopy and cryotherapy. At that time, we did not perform colposcopy on pregnant women or women who had been previously treated for an abnormal Papanicolaou test result. This study was done to evaluate the numbers of follow-up Papanicolaou tests at the recommended 4 and 8 months following cryotherapy. We found that 18 (67%) of 27 women returned for their first follow-up Papanicolaou test after cryotherapy at 4 months. One woman transferred her care prior to her second Papanicolaou test. Eight (31%) of the remaining 26 women returned for their second Papanicolaou test at 8 months following cryotherapy. Women were considered to have their Papanicolaou test at the appropriate time if the test was performed within 2 months of the recommended time.

ORGANIZE A TEAM THAT KNOWS THE PROCESSES INVOLVED

We formed an interdisciplinary dysplasia project team. Team members are listed below.

Dysplasia Project Team Members
Program director—team facilitator
Clinic administrator
Faculty physician—team leader
Medical assistant
Medical technologist
X-ray technician (responsible for paper flow in the office)
Resident physician
Medical-records representative
Front-office person

The dysplasia project team chose as their goal to institute a recall system that would be acceptable to staff and providers and that would improve the return rate for first and second follow-up Papanicolaou tests after cryotherapy by 20%.

CLARIFY CURRENT KNOWLEDGE OF THE PROCESS AND ITS VARIATION

The team charted the current system of flow of a Papanicolaou test result through the office. The result went to the laboratory where it was recorded and thereafter given to the provider. The provider did not routinely get the patient's chart or other information about the patient.

UNDERSTAND CAUSES OF PROCESS AND ITS VARIATION

Through brainstorming, the project group identified the problem in obtaining an adequate follow-up rate for Papanicolaou tests to be the lack of a system for ensuring that patients receive reminder cards when they are due for follow-up Papanicolaou tests. Providers also did not receive the patient's chart or any past information about the patient along with the Papanicolaou test result. Providers were responsible for remembering if the patient had had abnormal Papanicolaou test results, which would affect the recommendations for Papanicolaou test intervals. Providers were also responsible for getting a reminder card in the tickler file. They did so sporadically.

SELECT THE PROCESS IMPROVEMENT

The dysplasia project team developed three options for a recall system: a flow sheet in the patient chart, a card flow sheet kept external to the chart and filed alphabetically, and a card flow sheet filed by month. The group brainstormed advantages and disadvantages of each option. The nominal group technique was used to evaluate the advantages and disadvantages of each system. In the nominal group technique, each team member individually ranks items from a brainstorming session. The most preferred item is given the highest number. In our project, the team members were asked to rank the top three advantages and disadvantages. The most important advantage was given a 3; the next important advantage, a 2; and the third important advantage, a 1. This was done similarly for the disadvantages. The rankings of all team members for each advantage and disadvantage were totaled to reach a consensus of the most important advantages and disadvantages.[15]

After discussing the prioritized advantages and disadvantages of each option, the group again used the nominal group technique to rank the options from 3 to 1. The group selected the alphabetized card flow sheet. The major advantages of this system included the following: only the card and not the chart would be needed for laboratory and pathology results, the card would be available if the chart wasut, and the cards would be easier to pull than would the charts when information regarding Papanicolaou test his-

Continued on next page

tory was needed. Prior to instituting this system, there was no flow sheet for Papanicolaou test history, no systematic way for patients to receive reminders, and no follow-up to the reminders. Two project team members visited an office in our community where a card recall system was in place. Those team members then developed a plan for instituting a Papanicolaou test card recall system in our office and presented the plan to the entire group who adopted it.

PLAN THE PROCESS IMPROVEMENTS

We began a Papanicolaou test card recall system in the summer of 1991. The recall system included a 5×8-in Papanicolaou test card for each woman for whom the test had been performed. This card served as a flow sheet and part of the reminder system. Information documented on the Papanicolaou test card included the test result; any colposcopy, biopsy, and endocervical curettage results; any information on cryotherapy or other treatment undertaken; and date when a repeated Papanicolaou test was due. The Papanicolaou test cards were filed alphabetically in the front office and accompanied the chart when the patient returned for a Papanicolaou test. The Papanicolaou test card was returned to the provider with the Papanicolaou test or biopsy results.

A recall postcard was made from the Papanicolaou test card and was placed in a tickler file. Each month, the recall cards were sent to patients who were due for a repeated Papanicolaou test. If the Papanicolaou test was not completed the month it was due, a letter was sent the following month. If a Papanicolaou test was not obtained in the second month, a certified letter was sent to those patients previously diagnosed with dysplasia. A medical assistant who monitored the system kept and supervised the recall tickler file.

DO THE DATA COLLECTION, ANALYSIS, AND IMPROVEMENTS

Power analysis revealed that follow-up Papanicolaou test rates for 50 women would be needed to evaluate the effectiveness of the implemented system. The first 53 consecutive women with an abnormal Papanicolaou test result who underwent colposcopy and cryotherapy beginning August 1, 1991, were included in the study. Women were excluded if they were pregnant, had been previously treated for an abnormal Papanicolaou test result, required referral to a gynecologist for treatment following their colposcopy, or were referrals to our clinic for colposcopy and cryotherapy only. Using the rate of follow-up Papanicolaou tests as the clinic indicator, we pulled the Papanicolaou test cards at the conclusion of the study period and determined the follow-up rates at appropriate time intervals as recommended by the provider. The time intervals recommended by the provider were 4 or 6 months for the first Papanicolaou test and 8 or 12 months for the second. Papanicolaou tests were considered performed at the appropriate time if they were done within 2 months of the recommended time.

To evaluate staff and provider acceptance of the recall system, we used a written survey questionnaire. The 14 staff members who worked with the Papanicolaou test card recall system were each sent a three-question survey. Using a Likert scale from 1 to 5, they were asked to respond to the two questions "What do you think of the Papanicolaou test card recall system?" and "How is the Papanicolaou test card recall system working from your part in it?" The staff answered the third question, "Should we continue the Papanicolaou test card recall system?" with a yes or a no.

The 23 providers (five faculty physicians, 16 resident physicians, two nurse practitioners) who used the Papanicolaou test card recall system were sent a four-question survey. They were asked to respond to the following questions: (1) "What do you think of having the Papanicolaou test card when seeing patients for Papanicolaou tests/colposcopy/cryotherapy?" (2) "Is the paperwork expected of you to complete the Papanicolaou test cards reasonable?" and (3) "What do you think of having recall cards sent from your instructions on the Papanicolaou test card?" by scoring on a Likert scale from 1 to 5. Providers answered the last question, "Should we continue the Papanicolaou test card recall system?" with a yes or a no.

Medical offices have used various recall systems to improve follow-up rates for Papanicolaou tests, including patient education materials, reminder letters, and computer tracking. Numerous authors have looked at recall systems with results that vary from no improvement to significant improvement with return rates of 60% to 85%.[4-13]

Recall systems are time-consuming. They require time spent tracking patients who are due for health interventions, making phone calls, or sending letters. Recall systems also have been done as part of a special cervical cancer screening program and have not been the responsibilty of the office employees.[9] Davidson et al[12] found that initiating a reminder system in the office required most of one nurse's time, limiting her ability to help with regular staff duties.

Initiating a reminder system in our clinic requires the contribution of front-office people, medical-records people, medical assistants, laboratory technicians, and providers. Acknowledging that the reminder system would involve and affect much of our organization and that teamwork would be necessary for its success, we chose to use a CQI approach to evaluate the possibility of a recall system in our office. The following project describes the CQI process and results following implementation of a Papanicolaou test recall system.

RESULTS

CHECK THE DATA FOR PROCESS IMPROVEMENT AND CUSTOMER OUTCOME

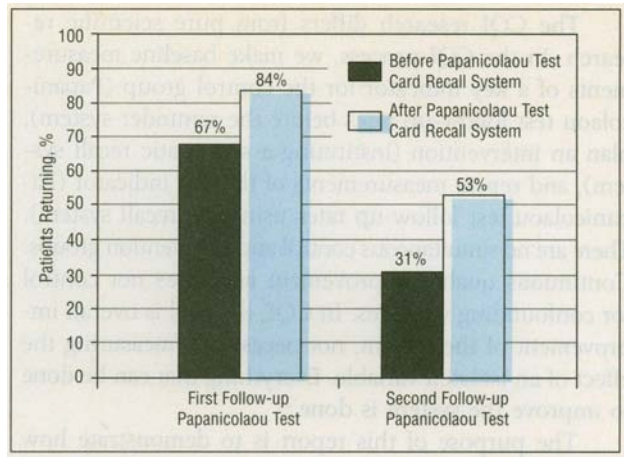
We included all 53 women in our study group. Four were lost to follow-up prior to their first follow-up Papanico-

FOCUS-PDCA Cycle*

*F*ind a quality improvement opportunity
*O*rganize a team that knows the processes involved
*C*larify current knowledge of the process and its variation
*U*nderstand causes of process and its variation
*S*elect the process improvement

*P*lan the process improvements
*D*o the data collection, analysis, and improvements
*C*heck the data for process improvement and customer outcome
*A*ct to hold the gains made

**The FOCUS-PDCA Cycle is registered with the US Patent and Trademark Office and is used with permission from the Hospital Corporation of America, Nashville, Tenn.*



Follow-up Papanicolaou tests after cryotherapy.

laou test: three transferred their care to another clinic and another moved without leaving a forwarding address. Of the remaining 49 women, 41 (84%) returned for their first follow-up Papanicolaou test.

Two more women were lost to follow-up prior to their second Papanicolaou test after cryotherapy because they transferred their care. Of the remaining 47 women, 25 (53%) returned for their Papanicolaou test at the appropriate time. See **Figure** for a comparison of the results.

Our internal customers are staff members and providers. Eleven of the 14 staff members returned their survey regarding the implemented system. The staff members were asked to respond to the question "What do you think of the Papanicolaou test card recall system?" on a scale from 1 to 5 with 1 being "useless" and 5 being "good idea." Ten staff members scored it a 5, believing it to be a good idea. One staff member rated it a 4, between a neutral and a good idea.

Staff members answered the question "How is the Papanicolaou test card recall system working from your part in it?" by responding on a scale from 1 to 5 with 1 being "too much work" and 5 being "no problem." Six staff members rated it a 3, believing there to be small hassles associated with it. They described the small hassles as occurring when the Papanicolaou test card did not come back with the chart when the patient was being seen and they had to look for it. Four staff members rated it a 4, between small hassles and no problem. One staff member rated it a 5, believing there was no problem.

The third question asked of the staff was "Should we continue the Papanicolaou test card recall system?" They were asked to respond yes or no. All 11 staff members said yes. Written comments by the staff members were that the Papanicolaou test cards were helpful for recording data and seemed to save time.

Twenty-one of the 23 providers returned the survey questionnaire. Providers were asked to respond to the question "What do you think of having the Papanicolaou test card when seeing patients for Papanicolaou tests/colposcopy/cryotherapy?" by scoring on a scale from 1 to 5 with 1 being "no use" and 5 being "helpful." One provider rated it a 1, two providers rated it a 3 (don't care), one provider rated it a 4 (between don't care and helpful), and 17 providers rated it a 5.

The second question asked of the providers, "Is the paperwork expected of you to complete the Papanicolaou test cards reasonable?" was scored on a scale from 1 to 5 with 1 being "too much work" and 5 being "no problem." Seventeen providers rated it a 5, and four providers rated it a 4 (between small hassle and no problem).

The question "What do you think of having recall cards sent from your instructions on the Papanicolaou test card?" was scored on a scale from 1 to 5 with 1 being "useless" and 5 being "great idea." Twenty providers rated it a 5, and one provider rated it a 4 (between don't care and great idea).

The providers responded to the question "Should we continue the Papanicolaou test card recall system?" with a yes or no answer. All 21 providers responded yes.

Written comments by the providers enthusiastically supported the system.

ACT TO HOLD THE GAINS MADE

The Papanicolaou test card reminder system remains in place. Our dysplasia project group meets every 6 months to reevaluate its effectiveness and identify any system problems.

COMMENT

There are few descriptions of applying CQI principles to clinical practice. Physicians are more likely to involve themselves with CQI if they can appreciate its applicability to patient care.[16] This article identifies follow-up of cervical dysplasia as a clinical problem and then uses CQI principles to develop an acceptable solution.

The CQI research differs from pure scientific research. In the CQI process, we make baseline measurements of a key indicator for the control group (Papanicolaou test follow-up rates before the reminder system), plan an intervention (instituting a systematic recall system), and repeat measurements of the key indicator (Papanicolaou test follow-up rates using the recall system). There are no simultaneous control and intervention groups. Continuous quality improvement also does not control for confounding variables. In CQI, the goal is overall improvement of the system, not necessarily measuring the effect of an isolated variable. Everything that can be done to improve the system is done.[15]

The purpose of this report is to demonstrate how the CQI principles and process apply to a clinical problem. After using CQI principles to implement a reminder system, the first follow-up rate for Papanicolaou tests after cryotherapy increased by 17% from 67% to 84%. The follow-up rate for the second Papanicolaou test after cryotherapy increased by 22% from 31% to 53%. This approximated our established goal of a 20% increase in follow-up rates. Because CQI does not control for confounding variables, we cannot determine if the recall system resulted in the higher follow-up rate. Although we would have liked higher return rates, there will be a certain percentage of patients who fail to return no matter how well the system is designed. The challenge with CQI is to narrow the gap between the best care theoretically possible and the care actually provided.[3] We continue to meet as a group every 6 months to try to improve the system and increase the follow-up rates.

Recall systems have shown varying results in previous studies. McDowell et al[11] noted that reminders are more successful in small practices. In contrast, our residency training clinic is a larger practice with 23 providers, including resident physicians, nurse practitioners, and faculty physicians. Our providers also have part-time clinical practices, which makes follow-up of results and appointments more difficult. Using CQI principles to evaluate Papanicolaou test follow-up, we accepted that it was not the individual providers who were failing but the system in general. The instituted recall system improved the system of care for all providers.[3]

To our knowledge, other studies did not evaluate staff or provider acceptance of the reminder system. We believe acceptance of the program by staff and providers is crucial to successfully incorporate the Papanicolaou test card recall system into our ongoing patient care. Our staff members and providers responded favorably to the implemented system. We believe the acceptance resulted from the use of CQI principles with extensive involvement by all affected groups of people in our clinic. The staff noted small hassles when the card did not come back with the chart and they had to look for it. We have continued to work on this aspect. Now staff members no longer look for missing Papanicolaou test cards. If the card does not come back with the chart, a new card is used. If this is a duplicate, the medical assistant in charge of the system finds the original when filing the card and eliminates the duplicate. When increased numbers of duplicates occur, we meet as a team to work out why the Papanicolaou test cards are not coming back with the charts. Our CQI approach leads to a multidisciplinary perspective for problem solving.[17] With this approach, we have been able to develop a solution that is acceptable to all.

A limitation of this study was the small study group of 53 patients in one small midwestern practice. The provider and staff surveys came from within our clinic, which may affect results. We performed this study using CQI methods, which differ from pure scientific research methods in the type of control group used and by not controlling for confounding variables.

Future studies in CQI may want to address the time and cost involved in CQI projects.

The CQI methods will flourish in health care as they have in other industries, and all of us (patients, clinicians, managers, and payers) will profit.[3] Total quality management holds great promise for improving clinical effectiveness.

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Reprints not available.

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