CLINICAL RESEARCH STUDY

Prolonging the return visit interval in primary care

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ABSTRACT

PURPOSE: Extending the scheduled return visit interval has been suggested as one means to improve clinic access to the provider. However, prolonging the return visit interval may affect quality of care if prevention measures and chronic disease management receive less attention as clinic visits become less frequent. The purpose of this study was to determine whether a comprehensive education program could encourage providers to lengthen their return visit interval without compromising performance on key quality indicators.

SUBJECTS AND METHODS: This was a prospective cohort study monitoring scheduling and performance data of primary care providers at the Milwaukee Veterans Affairs Medical Center. Following collection of baseline data (January through June 1999), providers were encouraged to lengthen the return visit interval while increasing reliance on nurses and other clinic staff for interim management of chronic disease. Provider-specific feedback of return visit interval and performance data was utilized to motivate behavioral change. Scheduling and clinical data were abstracted from random medical record audits performed at baseline and from July through December in the years 2000 and 2001.

RESULTS: Compared with the baseline period, the percent of patients scheduled ≥6 months was significantly increased among staff providers and medicine residents at 2 years (Staff providers: 31% vs. 62%, P < 0.001; Medicine residents: 22 vs. 44%, P < 0.001). Colorectal screening, pneumonia immunizations, and achievement of therapeutic goals for diabetes, hypertension, and lipid disorders significantly improved at 2 years compared with baseline measurements.

CONCLUSIONS: Educational interventions can successfully retrain providers to extend the return visit interval and reduce the scheduling of routine and perhaps unnecessary appointments. This can be accomplished without compromising important performance monitors for diabetes, lipid disorders, hypertension, and prevention.

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KEYWORDS:
Return visit interval;
Primary care;
Advanced access

Inordinate waits and delays have become commonplace in many health care settings, as prompt access to a primary care clinician is often not readily achievable.1 Poor access to health care may result in inappropriate visits to the emergency department for nonurgent problems, as patients are unable to receive a timely appointment with their providers.2 “Timeliness” has been identified as one of 6 key areas in health care targeted for improvement.3 To address poor timeliness, an innovative health care system called “advanced” or “open” clinic access has been proposed to improve efficiency in health care and ensure timely patient access to clinicians.4-5

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Training providers to lengthen the scheduled return visit interval is an important change concept recommended to increase provider access. The return visit interval is the time interval determined by the provider to be appropriate between the current visit and the next visit and is usually determined by the clinician near the end of each clinic visit. Lengthening the return visit interval has the potential to reduce the number of routine and possibly unnecessary clinic visits, thereby enhancing provider availability to address urgent/emergent patient issues.

Studies investigating the return visit interval in clinical practice suggest several important determinants, including patient-specific factors (such as how ill the patient appeared to the clinician) and clinician management factors (such as if a decision to order tests or change patient management occurred at the visit). However, provider practice style also explained much of the variance of the scheduled return visit interval, a finding that persisted even after adjustments for important patient characteristics. Provider practice style may reflect scheduling habits acquired from previous training independent of the patient’s medical needs. For example, providers have often been trained to schedule their patients every 3 or 4 months routinely, regardless of disease severity. There is also a common belief among clinicians that frequent provider-patient visits are needed to achieve therapeutic goals in many common chronic illnesses. Thus, patient-provider visits were often encouraged to facilitate closer chronic disease monitoring.

Although prolonging the return visit interval may help promote patient access to health care, data suggesting that clinicians can be retrained to accomplish this without compromising important chronic disease outcomes are not available.

In primary care clinics at the Milwaukee Veterans Affairs Medical Center, we sought to influence clinician choice of the return visit interval through provider education; clinicians were encouraged to adjust the return visit interval according to medical necessity rather than upon a fixed time interval. We wished to test the hypothesis that the routine 3- or 4-month return visit interval commonly found among our providers (and encouraged by their previous training) could be modified through relatively simple interventions without compromising clinical performance. Internal medicine residents were included in this program, as appropriate return visit scheduling was considered to be an important element of their clinical training.

Methods

Staff providers at the Milwaukee Veterans Affairs Medical Center and associated community-based outreach clinics who had at least 2 clinics weekly were included. Resident physicians were also included, although each had only one primary care clinic weekly for the 3-year duration of their training. Approximately 15% of primary care patients seen at the Medical Center were managed by resident physicians. Beginning in January 1999, 120 chart audits from staff and 30 from residents, selected at random, were reviewed per 6-month observation period. Clinic policy dictated that all patients were to have a return appointment scheduled within 2 weeks of the clinic visit. Chart audits were conducted 2 weeks after a clinic visit. Patients without a return visit interval scheduled by this time were excluded. Data were abstracted from medical data available on the electronic record through the VA’s Veteran Health Information System Technology Architecture (VISTA) database. The return visit interval was defined as the number of months between the date of the clinic visit and the next primary care appointment date entered into the scheduling package for the subsequent return visit.

Patients were identified as having diabetes if either a past glycated hemoglobin was greater than 7% or the patient was currently taking 1 or more glucose-lowering medications. Glycemic goals were considered achieved if the patient’s most recent glycohemoglobin level performed within the past year was less than 8%.

Patients were considered to have hyperlipidemia if either a lipid profile was above goal levels or prescriptions for lipid-lowering medications were present. Lipid goals were derived from National Cholesterol Education Program recommendations and included minor modifications consistent with HEDIS (Health Plan Employer and Data Information Set). Lipid goals were considered achieved if the patient met the following criteria:

- 0 or 1 coronary risk factors: LDL cholesterol ≤4.91 mm/L (190 mg/dL) and triglycerides ≤4.52 mm/L (400 mg/dL)
- Two or more coronary risk factors: LDL cholesterol ≤4.14 mm/L (160 mg/dL) and triglycerides ≤4.5 mm/L (400 mg/dL)
- Presence of coronary heart or peripheral vascular disease: LDL ≤3.36 mm/L (130 mg/dL), TG ≤3.39 mm/L (300 mg/dL), and HDL ≥0.78 mm/L (30 mg/dL)

Patients were identified as having hypertension by a review of diagnostic codes from patient problem lists or discharge diagnoses from either clinic or hospital within the past 5 years. Although less accurate than pharmacy records, diagnostic codes were used to identify hypertension as antihypertensive medications often have multiple indications. A review of diagnostic coding accuracy routinely demonstrated a sensitivity and specificity for the actual presence of hypertension of >90%. Hypertension goals were achieved if the mean blood pressure of the last 2 blood pressure determinations was less than 140/90 mm Hg. Although stricter clinical goals have been recommended for dyslipidemia, diabetes and hypertension management, we selected more liberal performance goals to allow for the potential for poor compliance, known variability of drug efficacy, and gaps in research supporting intensification of drug therapy...
when LDL cholesterol, glycated hemoglobin or blood pressure are only minimally abnormal.\textsuperscript{12}  

Colorectal cancer screening was required for all individuals $>50$ years old and considered accomplished if fecal occult blood screening was performed within the past year, colonoscopy was performed within the past 10 years, or flexible sigmoidoscopy was performed in the past 5 years. Pneumonia immunization was required every 10 years for patients $>55$ years old or at particularly high pneumonia risk.\textsuperscript{13}

\section*{Intervention to lengthen the return visit interval}

A performance improvement initiative was implemented in June 1999 to encourage primary care providers to prolong the return visit interval whenever medically feasible. This concept was promoted as a means to reduce congestion in busy primary care clinics and decrease workload of providers and staff. To facilitate lengthening of the return visit interval without compromising quality of care, increased reliance on the allied health professionals working within the primary care team was recommended. Each primary care team included registered nurses, licensed practical nurses, and medical assistants; clinical pharmacists and dietitians were also available on a more limited basis. Additional support personnel were not added to the primary care teams during this initiative; rather, ancillary support staff adopted efficiencies designed to optimize utilization consistent with advanced access principles.\textsuperscript{4}

To encourage return visit interval lengthening, a series of meetings targeting important stakeholders in the primary care clinic were initiated. These included:

- **Primary care providers for two 1-hour meetings:** Clinicians were encouraged to arrange return visits when a face-to-face patient visit would be particularly useful, such as to check wound healing or to evaluate resolution of an acute illness; the scheduling of “routine” visits every 3 or 4 months independent of the patient’s medical status was discouraged. Providers were instructed to plan a specific agenda for the next visit; if only laboratory or blood pressure monitoring were required, the provider was encouraged to consider arranging these outside of a provider visit. During this initiative, quarterly reports were disseminated to all clinicians disclosing their own return visit interval for the past quarter, ranked anonymously with all other primary care providers.

- **Registered nurses and clinical pharmacists for two 1-hour meetings:** National VA clinical practice guidelines for diabetes, hypertension and lipid disorder were reviewed and effective collaboration with their providers was encouraged to facilitate guideline implementation.

- **Licensed practical nurses and medical assistants for four 1-hour meetings:** techniques to provide interim surveillance between extended return visits were taught, including routine blood pressure, laboratory monitoring, and medication compliance checks. Implementing preventive measures according to algorithms for cancer screening (such as fecal occult blood testing) and immunizations (such as for pneumonia and influenza) was also encouraged.

- **Patients:** A 1-page brochure was distributed to patients informing them that their provider may wish to lengthen their return visit interval if appropriate, possibly substituting greater participation in their care by ancillary team members. Patients were encouraged to call the clinic to be seen sooner by their provider for any medical need or concern.

Data were collected prospectively beginning in January 1999. For purposes of analysis, this was divided into a preintervention baseline period (January to June 1999) and three postintervention periods (July to December 1999, July to December 2000, and July to December 2001). To assess the impact of the prolongation of return visit interval on the utilization of primary care clinic staff, emergency department, and specialty clinics, we retrospectively reviewed a simple random sample of patient visits occurring during the baseline (January to June 1999) and final periods of data collection (July to December 2001).

The return visit interval was grouped into 2 dichotomous categories, $<4$ months and $\geq 4$ months. To assess the impact of multiple clinical variables on the return visit interval, a logistic regression model using simultaneous entry of all independent variables was used. Analyses from patients sampled within providers were adjusted for clustering by provider (Tables 1 and 2). The outcome “return visit interval” was analyzed using a normal linear model with a provider-specific random effect. All other outcomes being binary, clustering for these was accounted for by using generalized estimating equations.\textsuperscript{14} Analyses were carried out using the Statistical Analysis System (SAS; SAS Institute Inc.; Cary, NC).

\section*{Results}

During the baseline period, 3525 patients having scheduled appointments with 24 staff providers and 22 medicine residents between January and June 1999 were initially reviewed; 3418 were scheduled for a return visit (97%). The mean baseline return visit interval for all patients was 4.4 $\pm$ 2.4 months. Patients had a mean age of 64 $\pm$ 13 years and a mean of 2.2 $\pm$ 1.0 cardiac risk factors.

During the baseline period (January–June 1999) for staff physicians, 57\% of patients were scheduled for return appointments at $>4$ months and 31\% were scheduled for return appointments at $>6$ months (Table 1). Following the baseline period, strategies to prolong the return visit interval, including team-building, provider and team education, and provider-specific performance reports concerning the return visit interval were implemented (see Methods). The percent of patient return visits scheduled at 4 and 6 months increased steadily through December 2001 (Table 1). This
lengthening of the return visit interval observed subsequent to the baseline period was highly significant. Increases in the return visit interval for resident physicians paralleled those observed for staff through December 2000, although the return visit interval for residents was shorter for each period of data collection. Data collection through December 2001 showed continued lengthening of the return visit interval for staff but not for resident providers. Individual staff return visit interval for baseline and 2 follow-up periods are shown in Figure 1. During the base-

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Effect of team training and provider feedback on the return visit interval*</th>
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<tbody>
<tr>
<td><strong>Time period</strong></td>
<td>Baseline</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
<td></td>
</tr>
<tr>
<td># Patients</td>
<td>2899</td>
</tr>
<tr>
<td>Patient age in years (mean ± SD)</td>
<td>64 ± 13</td>
</tr>
<tr>
<td>Return visit interval ≥4 months (%)</td>
<td>1648 (57)</td>
</tr>
<tr>
<td>Return visit interval ≥6 months (%)</td>
<td>889 (31)</td>
</tr>
<tr>
<td>Mean return visit interval (months)</td>
<td>4.3 ± 2.4</td>
</tr>
<tr>
<td><strong>Residents</strong></td>
<td></td>
</tr>
<tr>
<td># Patients</td>
<td>519</td>
</tr>
<tr>
<td>Patient age (years)</td>
<td>63 ± 13</td>
</tr>
<tr>
<td>Return visit interval ≥4 months (%)</td>
<td>259 (50)</td>
</tr>
<tr>
<td>Return visit interval ≥6 months (%)</td>
<td>113 (22)</td>
</tr>
<tr>
<td>Mean return visit interval (months)</td>
<td>3.9 ± 2.1</td>
</tr>
</tbody>
</table>

*24 staff and 22 resident providers monitored during baseline period, expanding to 25 staff and 26 resident providers during first follow-up period and second follow-up period, and 31 staff and 26 resident providers during final follow-up period.
‡ P < 0.001.
§ P < 0.01.
§§ P < 0.05 compared to baseline period (January to June 1999).

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Performance measures during implementation of intervention to lengthen the return visit interval</th>
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<tbody>
<tr>
<td><strong>Time period</strong></td>
<td>Baseline January to June 1999</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
<td></td>
</tr>
<tr>
<td>Glycated hemoglobin &lt;8%</td>
<td>54 (359/667)</td>
</tr>
<tr>
<td>Achieved lipid goals</td>
<td>57 (701/1220)</td>
</tr>
<tr>
<td>Achieved blood pressure goals†</td>
<td>43 (533/1247)</td>
</tr>
<tr>
<td>Patients screened for colorectal cancer</td>
<td>31 (756/2457)</td>
</tr>
<tr>
<td>Patients receiving Pneumovax</td>
<td>33 (636/1907)</td>
</tr>
<tr>
<td><strong>Residents</strong></td>
<td></td>
</tr>
<tr>
<td>Glycated hemoglobin &lt;8%</td>
<td>51 (61/120)</td>
</tr>
<tr>
<td>Achieved lipid goals</td>
<td>50 (80/161)</td>
</tr>
<tr>
<td>Achieved blood pressure goals†</td>
<td>43 (132/306)</td>
</tr>
<tr>
<td>Patients screened for colorectal cancer</td>
<td>39 (174/444)</td>
</tr>
<tr>
<td>Patients receiving Pneumovax</td>
<td>31 (103/337)</td>
</tr>
</tbody>
</table>

*n/N-numerator n represents those patients achieving the defined goal (for example the number of patients achieving glycated hemoglobin levels <8% or the number of patients screened for colorectal cancer) and denominator N represents those eligible to be included in the sample (for example, the number of patients with diabetes or the number of patients eligible for colorectal cancer screening).
†During the baseline period, use of electronic data entry for blood pressure measurements had just been initiated and only 54% of blood pressures were entered electronically into the medical record and available for review. This number increased to >98% by the end of the study.
‡P < 0.001.
§P < 0.01.
§§P < 0.05 compared to baseline period (January to June 1999).
line period, marked heterogeneity in provider practice was observed in the return visit interval, as the proportion of patients per provider with a return visit interval ≥6 months varied from 3% to 70%. Following feedback and training, the proportion of patients scheduled ≥6 months increased in 22 of 24 providers. The largest increases were noted in providers who initially had the shortest return visit interval (correlation coefficient between initial return visit interval and magnitude of the change in the return visit interval from baseline through December 2001: −0.70; 95% confidence interval 0.39−0.87, \( P < 0.001 \)). However, even with this improvement, marked provider heterogeneity persisted through the last 6 months of data collection (July–December 2001), as the proportion of patients with a return visit interval scheduled ≥6 months varied from 17% to 84%.

Despite prolongation of the return visit interval in primary care, performance measures monitored subsequent to the baseline period showed improvement (Table 2). Compared with baseline, a greater proportion of patients achieved therapeutic goals for diabetes, hypertension, and lipid disorder management. In addition, more patients received appropriate colorectal screening and pneumovax immunization. Patients managed by both internal medicine trainees and primary care staff providers showed similar improvements.

The impact of the intervention to prolong the return visit interval on clinical resources is shown in Table 3. Compared with the baseline period, provider visits to the primary care team were reduced by 27%, visits to specialty care were reduced by 14%, and visits to the emergency department for urgent care were unchanged. In contrast, patient visits to the primary care registered nurse increased by 100% and telephone calls to the primary care nurse increased by 150%. Patient visits to the licensed practical nurse and to the clinical pharmacists in the follow-up period were not significantly different compared with the baseline period. Telephone contacts for licensed practical nurses and clinical pharmacists were not recorded.

### Discussion

In this study, we assessed the impact of an intervention designed to affect clinician behavior regarding return visit interval scheduling and also addressed the important question of whether lengthening the return visit interval would be associated with deleterious effects on selected hypertension, diabetes, lipid, and prevention outcomes. We found that an intervention to prolong the return visit interval utilizing provider and ancillary staff education
and performance feedback was associated with substantial lengthening of the return visit interval. No deterioration in diabetes, lipid disorders, hypertension outcomes were found, and prevention measures showed substantial improvement. These changes were observed in both staff and resident physician practices, and persisted during a 2.5-year period of observation. These data suggest that primary care providers can be educated to modify their practice patterns to extend the return visit interval without compromising quality of care.

Prolonging many routine primary care appointments beyond 6 months raises the concern that patients, perceiving incorrectly that access to their provider is reduced, may shift their care to either an urgent or specialty care setting. In our study, this concern did not materialize. There was no significant increase in emergency department utilization, and specialty care visits actually decreased. Although non-VA health care utilization was not monitored, most veterans would have faced much higher charges obtaining their care from this sector, and thus major shifting of care in this direction is unlikely. However, within the primary clinic, there appeared a marked shift in resource utilization from the primary care provider to the primary care registered nurse. The ability to maintain or improve important performance measures despite fewer contacts with the provider was likely due to the expanded role of the registered nurse in the clinic. Sharing of the clinical workload within a primary care team of health professionals is an important concept of advanced access clinical systems.

Our quality improvement program to prolong the return visit interval was multifaceted and was not designed to evaluate the relative importance of each specific component. However, it did appear that individual provider education and provider-specific feedback were particularly important for providers who initially had the shortest return visit intervals. These providers showed the greatest return visit interval prolongation, perhaps because their initial return visit interval scheduling was more heavily dependent upon their training and least adapted to individual patient characteristics such as disease burden or severity. On the other hand, providers who had a longer return visit interval at baseline appeared to benefit more from interdisciplinary training of the primary care team. These providers were more likely to require greater involvement of the primary care team ancillary staff to further extend the return visit interval.

Certain limitations of this study should be mentioned. Our study was conducted at a large Veterans Affairs Medical Center and therefore results may not be generalizable to other institutions. This may be particularly true for institutions with a fee-for-service, rather than a capitated reimbursement model. VA providers therefore have an incentive to efficiently manage the health care of their patients independent of the number of clinic visits. This study was not a randomized controlled trial and therefore, observed associations may not be causal. For example, patient variables not collected may affect patient case-mix (such as total number of comorbidities, functional status, and number of medications) and thereby influence the provider return visit interval. Patient case-mix was likely to be similar between providers, as new patients were not selectively distributed to providers based upon specific patient or provider characteristics. An additional concern is that the before-after design utilized in this study cannot adjust for time-dependent factors. Thus, if all providers had recently been assigned new patients at the start of the observation period, increasing familiarity with their medical problems may have resulted in longer return visit intervals and improved performance measures independent of the training intervention. However, this is unlikely because staff physicians at program initiation had relatively mature patient panels with little turnover during the observation period. However, a randomized controlled trial would be necessary to address these potential confounders, to more completely assess the impact of specific interventions to increase the return visit interval, and to more fully evaluate the relationship between the return visit interval and clinical outcomes. The serious methodological difficulties in the design of such studies have been previously discussed.

In conclusion, our data suggest that provider decision-making regarding the return visit interval can be significantly modified by feedback and education without compromising performance. Because many ambulatory care settings in the United States are characterized by full provider clinic schedules and limited patient access to health care, lengthening the return visit interval may be one important approach to create provider access and improve health care. Increasing reliance on ancillary health professionals, and particularly registered nurses, working closely together within a primary care setting, allowed clinicians to reduce the frequency of patient visits while maintaining high standards of care.

Acknowledgment

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References