The Effect of Patient Reassignment on Future Continuity in a Pediatric Resident Continuity Practice

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Background: When residents complete their pediatric training, patients from their continuity practices in academic settings must be reassigned to either a known resident of their selection or an unknown, incoming intern.

Objectives: To determine what antecedent factors were associated with patient reassignment to a known resident of their selection, whether such reassignment was associated with increased health care use, and what factors were associated with continuity with the new resident provider.

Design: Nonconcurrent cohort study.

Setting: Hospital-based resident continuity clinic practice.

Participants: Patients of residents graduating in June 1993.

Results: Seven hundred fifty-eight patients of 18 graduating residents required reassignment: 86 patients (11%) were assigned to a resident colleague, defined as the study group. From the remaining 673 patients who were assigned to unknown, incoming interns, a control group was randomly selected (n = 160), with approximately 2 patients for each study group subject. Looking at antecedent factors, study group patients were more likely to have chronic medical problems and to have seen their graduating resident more often and more recently. Univariate analysis explored the consequent factors of health care use and found that study group patients were more likely to return for a visit and to make more visits with the new provider. Multiple logistic regression analysis demonstrated that being in the study group, younger age at the original encounter with the graduating resident, and a shorter interval since the last visit with the graduating resident were all associated with increased continuity with the new resident.

Conclusions: The method of patient reassignment at a continuity clinic was associated with chronic disease of the patient and regularity of visits with the graduating resident. Increased continuity with a new resident, as determined by multivariate analysis, was associated with the method of reassignment, a younger age at first encounter with the graduating resident, and a shorter interval since the last visit with the graduating resident. This study has implications at ambulatory sites where transitions occur.


Editor’s Note: Are you surprised that frequent fliers receive special assignments even in the clinics?

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PATIENTS AND METHODS

The study took place at a hospital-based pediatric resident continuity clinic practice in Baltimore, Md. The study was a nonconcurrent cohort study involving patients whose resident pediatrician was graduating from residency in June 1993. Although parents might be encouraged to choose a new provider themselves, it was our experience that they rarely did and that reassignment decisions were usually made by the graduating resident.8,9 The reassignment choices included reassignment to a known current resident whom the departing resident selected and who would provide health care for a maximum of 2 years, referred to as the study group, or to an incoming pediatric intern whom the graduating resident did not know but who would provide health care for 3 years, referred to as the control group. The parents were notified of their new provider’s name at a clinic visit, by letter, or by telephone.

Patients of graduating residents were identified by means of a computerized appointment system (Epic Systems Corporation, Madison, Wis). Each graduating pediatric resident reviewed his or her list in early May prior to graduation and revised the list by eliminating patients who had moved, switched health care clinics, or died. The graduating resident then reviewed the remaining patients and reassigned patients to a known current resident whom they selected (study group) or an unknown, incoming intern (control group). Clinic preceptors assured that the correct reassignments took place and intern assignment was done randomly.

Eighteen months after graduation, we reviewed these lists and identified the study and control group patients. Study group patients were defined as those assigned to a known provider. The remaining patients who had been assigned to an unknown, incoming intern constituted the pool from which the control group was selected. Siblings were excluded from both groups so only 1 child per family was eligible. Two control group patients were randomly selected for each study group patient matched for the resident as the primary provider using a random-number method.

OUTCOMES

Outcome variables were obtained by review of patients’ medical records. The antecedent factors or independent variables included chronic medical conditions, whether the graduating resident was the provider at birth, whether the graduating resident was the health care provider for other siblings in the family, the number of visits with the graduating resident, and the time in months since the patient most recently saw the graduating resident prior to his or her departure in July 1993. Chronic medical conditions were defined as chronic diseases and/or medical problems for which the patient had made at least 3 clinic visits. Examples of these chronic conditions are asthma, congenital anomalies, sickle cell disease, mental retardation and/or cerebral palsy, lead poisoning, and eczema.

The dependent variables included health care use for the 18 months following reassignment (July 1993 through January 1995). Specific health care use variables included whether any visit was made with the new resident, whether the patient established continuity with the new provider (defined as >1 visit with the new resident), total number of visits with the new resident, and the time in months to the first visit with the new resident (from July 1993).

Variables we abstracted from a review of the patients’ medical records that we thought would be relevant to continuity included whether the patient was in the study group, type of medical coverage, chronic medical problems, age at reassignment, age at first clinic visit, age at first encounter with graduating resident, whether the resident was the health care provider since birth, the number of visits with the graduating resident, and the time in months since the last visit with the graduating resident.

DATA ANALYSIS

The Statistical Program for Social Scientists (SPSS Inc, Chicago, Ill) was used. Univariate analysis was done using χ2 for discrete variables and the Student t test for continuous variables. Multiple logistic regression was used to determine the odds ratios (ORs) for the independent variables associated with our outcome of interest, continuity.

RESULTS

Eighteen graduating residents reassigned 758 patients. Of those, 86 patients (11%) were reassigned to a known resi-
dent of their selection (study group). The remaining 672 patients were randomly assigned to unknown, incoming interns. From this group, 160 control group patients were selected. We were unable to perfectly select 2 control patients per study patient per resident in 3 resident patient panels. In 2 resident panels, elimination of siblings left an insufficient number of control patients, resulting in 6 study patients being matched with 6 control patients instead of the desired number of 12. In the third resident panel, the resident assigned more than one third of his patients to the study group, resulting in an inadequate pool from which to select the control patients. Again, 6 study patients were matched with 6 control patients.

The demographic variables were comparable between the study and control groups (Table 1). There were no differences in sex, patient age at reassignment, age at first clinic visit, age at first encounter with the graduating resident, or number of past reassignments. The mean number of past reassignments was 2.6 in the study group and 2.4 in the control group. The comparison of medical assistance or self-pay was somewhat higher in the study group (OR = 2.8), and age at which the patient first saw the graduating resident (OR = 1.3). Stated another way, the

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The health care use data are presented in Table 3. Study group patients compared with control group patients were more likely to have returned for a visit with the new resident within 18 months following reassignment, to have established continuity with the new resident, and to have made more visits with the new resident (all P<.001).

Because there were many significant differences in the independent variables between the study and control groups and because these differences may have been confounded by other variables, multiple logistic regression was performed. Because continuity of care was the main outcome of interest, we performed a univariate analysis of all patients looking at the dependent variable of continuity, defined as having made more than 1 visit with the new resident (Table 4). We found that 8 variables were statistically significant. Multiple logistic regression was used to further explore the relationship between the method of patient reassignment and continuity of care. These 8 independent variables were put into the multiple logistic regression analysis.

The 3 variables that remained significant from the multiple logistic regression analysis (Table 5) were presence in the study group (OR = 2.8), time since last visit (OR = 2.8), and age at which the patient first saw the graduating resident (OR = 1.3). Stated another way, the
multiple logistic regression analysis demonstrated that being in the study group, having seen the graduating resident more recently, and being younger at the original encounter with the graduating resident were all associated with increased continuity with the new resident. The ORs for the time since the last visit and age at which the patient first saw the graduating resident were based on a 1-year increment of time. Thus, patient A was 2.8 times more likely to have continuity with a new provider than patient B, whose last visit with his old provider was 1 year earlier than patient A’s visit with his provider.

We discovered by univariate analysis that several factors were associated with a graduating resident specifically reassigning a patient to a known colleague. These included the patient having a chronic medical condition, providing medical care for siblings, and having more numerous and more recent visits with the family. This is in agreement with what the graduating residents had stated during focus groups at our site. They believed they were more likely to reassign a patient with complex medical problems to someone with more experience and with whom they could discuss the patient in person, rather than to an unknown, incoming intern with less medical expertise who might be overwhelmed. Residents were also more likely to reassign a patient and family whom they knew better, since they would be more likely to be aware of the patient’s needs and put more effort into making as successful a transition as possible.

More patients from the study group returned for a visit with the new resident and established continuity with the new resident than those from the control group. This occurred independently of whether the patient had a chronic medical problem. A possible reason may have been that the parents felt the provider specifically selected their new physician. However, it may also have been owing to other factors that we did not measure, such as a closer bond between the family and resident, the family’s close relationship with the clinic staff, greater dependency on the clinic, greater psychosocial needs, or perceived need of this family for greater support. Those in the study group also made twice as many visits with the new resident as those in the control group. However, the time since the first visit with the new resident was not statistically different. We had wondered whether parents might schedule a new visit to specifically meet their child’s new provider, such as in July or August, but it was rare that parents specifically made an appointment at that time. In many cases the next appointment was for a health maintenance visit, which was usually 1 year after their last health maintenance visit.

The factors associated with continuity by univariate analysis were interesting. Being in the study group was associated with continuity, as was having a chronic medical problem. Patients who were younger at their first clinic visit or first encounter with the graduating resident were more likely to maintain continuity. This seemed to be independent of the present age of the child since the mean age at the time of reassignment was 52 months for patients in both the study and control groups. Children who had been cared for by the same resident since birth were significantly more likely to have greater continuity with their new provider, which is consistent with previous literature reports that birth is an important time for physicians and families to bond. It would be difficult, however, to perpetuate this practice in a continuity clinic setting, from which residents graduate after 3 years of training.

Because the independent variables may have confounded each other, ie, chronic illness may bias toward reassignment because of the need for more frequent appointments, multiple logistic regression analysis was used to control for such confounding variables. The results of the multiple logistic regression show that the method of assignment is more strongly associated with continuity than the variable of chronic medical disease. The other variables noted to be significant, “shorter time from last visit” and “younger age when first interacted with graduating resident,” attest to the importance of the relationship that develops. Certainly, individual characteristics of the resident pediatricians, such as their communication skills, the bond they developed with the family, and their interest in primary care may have affected patient continuity, but this was not measured in this study.

Although there may be advantages of patient reassignment to a known provider, it would be very difficult for resident training programs to accomplish this goal for all patients. At academic centers, an adequate number of patients must be provided to incoming interns to start their patient panels. To redistribute all the graduating residents’ patients to current house staff who already have patients might overwhelm their patient panels and lead to inadequate accessibility in making appointments. However, these results suggest that there may be a role for this type of reassignment in some cases, such as in the case of patients with chronic medical problems. A randomized trial of patient reassignment would need to be done to compare the outcomes and benefits of each of these types of reassignments. Our study was a first step in identifying some of the important issues to consider.

Because high physician turnover may occur in other settings, these data may have implications for other sites. Physician turnover may range from 3% to 16% annually in some health maintenance organizations, and as high as 50% within the first year of physicians’ being hired in neighborhood health clinics. The method of reassignment may be important in maintaining continuity of patients in a practice.

### Table 5. Multiple Logistic Regression Analysis of 3 Independent Variables

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<thead>
<tr>
<th>Independent Variable</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
</tr>
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<tbody>
<tr>
<td>Participation in study group</td>
<td>2.8</td>
<td>1.47-5.16</td>
</tr>
<tr>
<td>Interval from last visit (1-y increment)</td>
<td>2.8</td>
<td>1.55-5.07</td>
</tr>
<tr>
<td>Patient age at first encounter with graduating resident (1-y increment)</td>
<td>1.3</td>
<td>1.14-1.52</td>
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LIMITATIONS

There were several potential limitations to this study. Because there was no clear-cut way of identifying patient disenrollment from the clinic other than the report from the resident, control group patients may have included patients who had already disenrolled from the clinic setting prior to patient reassignment. However, the mean number of 5 visits with the graduating resident in the control group and the 11-month mean interval to last visit implied continued involvement at the clinic site.

Another limitation is that patients in the control group may not be comparable to those in the study group. There may be other unmeasured factors that influenced the resident's decision to reassign a patient to a selected colleague. Possibilities include a closer bond between resident and family, close relationship with the clinic staff, greater dependency on the clinic, greater psychosocial needs, and perceived need for greater support. These factors were not measured but may have influenced the initial reassignment decision in addition to future continuity.

These findings may not be generalizable to all other outpatient settings because we had many patients with chronic disease, as is common in hospital-based clinics. The prevalence of chronic disease in our study may have been somewhat inflated since we chose a liberal definition of chronic disease, including patients who sought care 3 or more times for a specific problem. However, we thought it was important to define it in that way to identify factors that may encourage patients to maintain continuity.

CONCLUSIONS

Patient reassignment to a resident colleague selected by their past pediatrician was more likely to occur if the patient had a chronic disease and had more frequent appointments with the graduating resident as determined by univariate analysis. Multiple logistic regression analysis demonstrated that increased continuity with a new resident was associated with the method of reassignment, a younger age at first encounter with the graduating resident, and a shorter interval since the last visit with the graduating resident. Patient reassignment to a selected resident colleague is associated with increased continuity of health care with a new resident.

IMPLICATIONS

These data have implications for methods of patient reassignment both in resident continuity clinic practice and at sites where frequent turnovers take place. Patients who make health care visits frequently and have chronic diseases may best benefit from selected reassignment.

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REFERENCES