

# Continuity of Care and Family Medicine: Definition, Determinants, and Relationship to Outcome

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Continuity of care is central to the philosophy and teaching of family medicine. Studies of continuity have yielded conflicting results with regard to outcomes. Reasons for this include a failure to agree upon a theoretical definition of continuity as well as a failure to account for a number of influential determinants of the continuity process. It is suggested that continuity is an attitude based upon prior knowledge of and for each participant in the medical encounter. This attitude is made operational in a process consisting of five continuity dimensions: chronological, geographical, interdisciplinary, interpersonal, and informational. A working model of analysis is proposed, and the results of various studies are critically assessed. Future research in the area of continuity of care must provide reliable measures of the different continuity dimensions followed by well-controlled trials assessing the impact of these dimensions on the satisfaction, comfort, and health status of patients.

Continuity of care is integral to any and all definitions of family medicine. An attitude, a process, an action, a slogan—each in some way describes the nature of continuity. Continuity is assumed to be a veritable good, a sound attribute of personal-

ized and quality health care. It is said to result in a host of benefits ranging from improved physician-patient relationships<sup>1</sup> to reduced illness episodes, hospitalizations, and number of diagnostic tests.<sup>2-4</sup> A review of the expansive and burgeoning literature, however, reveals a disturbing nonuniformity of opinion concerning the nature of continuity as well as its effects on outcome. As continuity of care is both complex and multidimensional, it is associated with a plethora of untested and sometimes paradoxical beliefs. It is the intent of this article to examine the various elements of continuity, which then culminate in a hypothetical working model of analysis. The results of various

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studies are applied to this model to illustrate the diversity of outcomes possible.

## Definition of Continuity

Definitions of continuity abound in the literature. Without a commonly accepted definition, it is not surprising to encounter disparate conclusions. Each definition may be criticized as being incomplete, describing only one (or several features) of a greater whole. The first four definitions appear to be theoretical, while the latter two are operational.

1. Personal responsibility neither limited by the nature of the illness nor by the time spent with the patient<sup>5</sup>

2. The extent to which services are received as part of a coordinated and uninterrupted succession of events consistent with the medical care needs of patients<sup>6</sup>

3. The expectation of an enduring relationship<sup>7</sup>

4. The amount of prior knowledge possessed by the elements (consumers and providers) involved in medical care<sup>8</sup>

5. A process variable that accounts in part for the relationship between system organization and physician utilization<sup>9</sup>

6. The extent to which a single physician manages the health needs of a patient<sup>10-13</sup>

For McWhinney, continuity is likened to a feeling that has to be carried into action by the physician.<sup>5</sup> It should be noted that no evidence exists to support the contention that such an attitude is conducive to better health care. Shortell sees continuity as having five characteristics: the extent to which the same provider is seen at each visit (provider continuity), the degree to which broken appointments are minimized, the extent to which unnecessary or duplicated diagnostic procedures are minimized, the extent to which patient follow-up and compliance are realized, and the degree to which care is delivered in a single location (site continuity).<sup>6</sup>

A dictionary definition of continuity refers to an uninterrupted or unceasing succession. In a medical context, this addresses both the temporal aspects of care as well as the nature of the medical encounter. Carmichael speaks of affinity, inti-

macy, and reciprocity in reference to the relational character of continuity.<sup>14</sup> As an attitude, continuity is operationalized in a process (the medical encounter) through certain actions. In order for this attitude to be present, some prior knowledge of patient and provider must be said to exist for each participant.<sup>8</sup>

## Dimensions of Continuity

Hennen describes four dimensions comprising the "continuity environment."<sup>15</sup> These include the chronological, the geographical, the interdisciplinary, and the interpersonal.

*Chronological* continuity refers to care provided over time to a defined population. This dimension has sometimes been referred to as longitudinal continuity and has been confused conceptually with continuity of care.

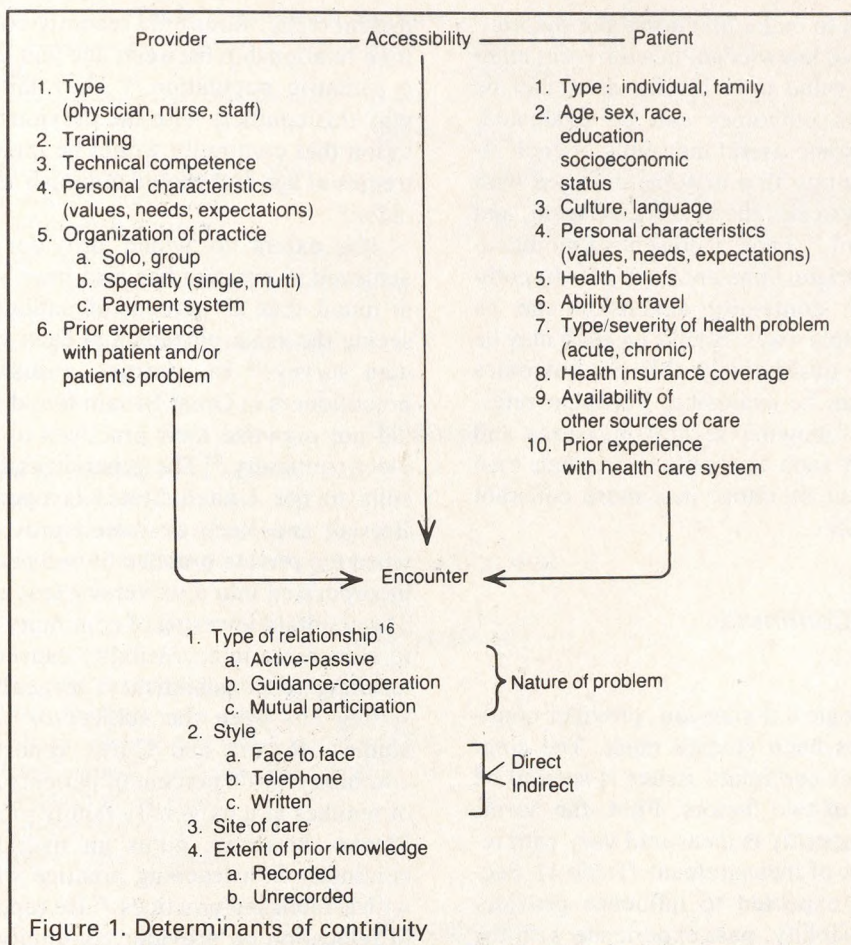
*Geographical* continuity has two connotations. One that can be called "site continuity" refers to the provision of care in a single location. The second, to which Hennen refers, is the constancy of physician presence regardless of site (office, hospital, home).

*Interdisciplinary* continuity suggests the diversity of problems commonly encountered in family medicine. Within the limits of his expertise, the family physician confronts complex illnesses and, when necessary, coordinates a wide range of consultative services.

*Interpersonal or relational* continuity is a continuity of process that involves the quality of relationships. This dimension is central to the notion of family medicine in which the "family" refers to the form of relationship between patient and physician rather than a unit of care.<sup>7</sup> Continuity in this context involves the expectation of an enduring relationship.

*Informational* continuity is seen by Hennen as the matrix for interpersonal growth. This refers to the medical record as well as all forms of communication between patient and provider. It consequently forms a knowledge base as well as a potential resource to identify patient problems and needs. Rogers and Curtis have included this as a fifth and separate dimension.<sup>8</sup> The utility of this division is that it permits a more detailed stratification of evaluative strategies.





## Determinants of Continuity

A recurrent issue in the literature concerns the possible confounding influences of various determinants of continuity. Figure 1 is a representation of some frequently mentioned factors as they occur in the process of the medical encounter. The interrelated nature of many of these implies a highly complex problem when one attempts to evaluate the results of a given dimension of continuity. It will be shown that few studies to date have adequately accounted or controlled for these numerous variables. This is not without reason, however. Many of these determining factors are extremely difficult to control for, much less alter, to any significant degree, even under experimental

conditions. It should be noted that accessibility has been considered an independent variable in Figure 1. Both provider and patient accessibility are seen to influence continuity to a significant degree. Further evidence is that the type of relationship having an impact on the quality of the encounter is determined in part by the nature of the problem.

## Measures and Outcomes of Continuity

The conceptual framework of continuity of care has been suggested to involve these five elements: the chronological, the geographical, the interdisciplinary, the interpersonal, and the informational.



Each may be said to make functional the theoretical definition (prior knowledge) in a different manner. Each is of value only insofar as it can be measured and its outcomes can be evaluated. Sloane suggests some useful measures of each dimension of continuity that may be analyzed with respect to the physician, the health care team, and the medical record.<sup>17</sup> Table 1 presents a modification of Sloane's original presentation. It is hypothesized that each continuity dimension can be measured in multiple ways. Similarly, each may be expected to have qualitatively different outcomes on care which can be evaluated. Pertinent references are cited following several measures and outcomes. Given such an outline, one can then assess the existent literature in a more coherent and logical manner.

### *Chronological Continuity*

#### **Measures**

In the chronological dimension, provider continuity has perhaps been studied most. The complexity of provider continuity issues is seen to be the direct result of two factors. First, the norms against which continuity is measured vary with respect to the index of measurement (Table 1). Second, the factors expected to influence provider continuity (accessibility, past experience with the health care system, type of medical problem, and patient care-seeking behaviors) are accounted for by each measure to different degrees. Steinwachs has provided a comprehensive review of the existent measures of provider continuity and suggests that more than one may be necessary to assess the extent of continuity provided.<sup>18</sup> Provider continuity alone is subject to multiple influences (eg, type of provider, site of care, practice organization).

Shortell notes the influence of income (the poor are influenced less than those above the poverty level), age (those older than 55 years are influenced more than those below), and payment status (self-paying patients are influenced more than those with insurance or free care) on the extent of provider continuity.<sup>6</sup> Steinwachs notes the impact of similar variables<sup>18</sup>; however, females and those receiving medical assistance experienced greater provider continuity. His study population consisted of a nonrandomized group of hypertensive patients receiving care in a teaching hospital out-

patient clinic. Roos et al recently confirmed a positive relationship between age and continuity with a pediatric population.<sup>10</sup> They failed to address why this conflicts with the previously held expectation that continuity would be greatest at the extremes of age and should diminish as a child grows older.<sup>3</sup>

The extent to which provider continuity is achieved in practice has also been studied. Hill et al found that 83 percent of patients admitted to seeing the same physician at each visit in a Canadian survey.<sup>19</sup> In contrast, a survey of general practitioners in Great Britain found that a majority did not organize their practices to reinforce provider continuity.<sup>20</sup> The generalizability of these results to the United States is open to question. Breslau and Reeb evaluated provider continuity when the private practice of two pediatricians was incorporated into a university teaching program.<sup>11</sup> The resultant lowering of continuity was attributed to a decrease in accessibility caused by increased teaching responsibilities. The academic practice setting has been the subject of two conflicting studies. Rogers and Curtis report on provider continuity for 76 percent of patients and 67 percent of families at a university family practice center.<sup>21</sup> Sloane, however, notes an overall lowering of continuity in a teaching practice when compared with established practices.<sup>17</sup> He reported the effect of relocation on provider continuity and noted an increased percentage of revisits for previously established patients. The importance of the setting in which each of the above studies was undertaken should be evident. There would seem to be a real need to assess provider continuity in a variety of settings to more accurately evaluate the extent to which it is achieved.

#### **Outcomes**

Several studies have noted reductions in missed or broken appointments resulting from increased provider continuity. Steinwachs found that other variables, notably source of payment and appointment interval, also influence appointment-keeping behavior.<sup>18</sup> Again, more studies are called for which control for such factors.

The relationship between illness visits and provider continuity was examined by Breslau et al.<sup>11,26</sup> The reduction in provider continuity had little effect on well-child visits, while the number of acute illness visits increased. This inverse rela-



Table 1. Continuity Elements: Measures and Outcomes

Measures	Outcomes
<b>Chronological</b>	
<ol style="list-style-type: none"> <li>1. Length—duration of relationship (longitudinal continuity)</li> <li>2. Rate of practice turnover</li> <li>3. Provider continuity: Extent to which the provider seen on the first visit is seen on subsequent visits<sup>6,10,11,13,17-21</sup></li> <li>4. Percentage of patients that change physician</li> </ol>	<ol style="list-style-type: none"> <li>1. Return for follow-up<sup>22</sup></li> <li>2. Percentage of broken appointments<sup>3,18,23-25</sup></li> <li>3. Number of illness visits<sup>2-4,9-11,26,27</sup></li> </ol>
<b>Geographical</b>	
<ol style="list-style-type: none"> <li>1. Extent to which care is received in a single location (site continuity)</li> <li>2. Extent to which care is given by the same provider regardless of location (home, hospital, etc)</li> </ol>	
<b>Interdisciplinary</b>	
<ol style="list-style-type: none"> <li>1. Number and percentage of visits where               <ol style="list-style-type: none"> <li>a. New diagnoses are made<sup>17</sup></li> <li>b. Past problems/treatments are referred to<sup>17</sup></li> <li>c. Psychosocial diagnoses are made<sup>17</sup></li> </ol> </li> <li>2. Coordination of services               <ol style="list-style-type: none"> <li>a. Appropriate consultations</li> <li>b. Appropriate referrals<sup>4</sup></li> </ol> </li> </ol>	
<b>Interpersonal</b>	
<ol style="list-style-type: none"> <li>1. Extent to which family or household members receive care from the same source<sup>17,21,28</sup></li> <li>2. Completeness of family data base</li> <li>3. Number and percentage of interpersonal diagnoses</li> <li>4. Patient-physician concordance in problem identification<sup>29,30</sup></li> <li>5. Family APGAR of               <ol style="list-style-type: none"> <li>a. Patient<sup>31</sup></li> <li>b. Provider</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Satisfaction of               <ol style="list-style-type: none"> <li>a. Patient<sup>1,3,6,22,26,32-41</sup></li> <li>b. Provider<sup>1,12,36,39,42,43</sup></li> </ol> </li> <li>2. Compliance with plan of care<sup>1,22,23,27,32,33,42,44-47</sup></li> </ol>
<b>Informational</b>	
<b>Medical Record Audit</b>	
<ol style="list-style-type: none"> <li>1. Extent to which all health care contacts are documented in the medical record</li> <li>2. Completeness of necessary data base (problem list, immunization status, medicine lists, allergies, etc)</li> <li>3. Provider acquaintance of patients' problems and needs<sup>2,3,19,38,48</sup></li> </ol>	<ol style="list-style-type: none"> <li>1. Extent to which unnecessary or duplicated diagnostic tests are minimized<sup>2,3</sup></li> <li>2. Response to an abnormal finding, laboratory test, or identified risk factor<sup>38</sup></li> </ol>



tionship had previously been noted by Alpert and his colleagues,<sup>3,4</sup> and is perhaps explained either by the more urgent care seeking behavior stemming from the nature of acute illness or the anxiety generated by the absence of a known health care provider.

### *Interdisciplinary Continuity*

#### **Measures**

In the dimension of interdisciplinary continuity, the one study which examines the relationship between referral for specialty care and provider continuity suggests an inappropriate delay in referral.<sup>4</sup> This disturbing finding occurred among upper class patients who received more personalized, continuous care. Again, however, measurements of different levels of provider continuity was lacking. Clearly, more sophisticated operational measures of this dimension are called for.

### *Interpersonal Continuity*

#### **Measures**

Reference has previously been made to one report of continuity of family care.<sup>21</sup> The artificiality of the training setting is apparent when one compares the experience of a group of private family physicians.<sup>28</sup> Only 28 percent of families (excluding single-person households) received care from the same physician in the private setting.<sup>28</sup>

Patient-physician concordance as to problem recognition during the medical encounter is one measure of interpersonal continuity that is only beginning to be studied. Taylor et al interviewed patients and physicians after 200 encounters in a university family practice center.<sup>29</sup> Agreement as to the primary purpose of the encounter occurred in 70 percent of encounters and was found to be independent of the number of prior visits, the degree of satisfaction of each participant, or the subsequent agreement as to diagnosis, treatment, or prognosis. Almost one half of all visits were ostensibly for continuing health care (eg, health maintenance, follow-up care).

#### **Outcomes**

A large number of studies have focused on the issue of patient and provider satisfaction as it re-

lates to continuity of care. The majority conclude that both patient and provider appear to be happier in continuity settings. The implication is that continuity has intrinsic value for the participants of the medical encounter. Further, some have held that such satisfaction may have an important influence on subsequent health outcome.<sup>22,23,32,33,44,45</sup> Two studies<sup>12,34</sup> have noted the importance of patients' social class (the higher the class, the greater the expectation of continuity) and type of medical problem (those with chronic diseases exerting a preference for continuity) on patient satisfaction. Becker et al<sup>1</sup> have shown that income status may be less important an influence on patient desire for continuity than previously believed. Differences in accessibility may have influenced their results. The health beliefs of their patient population may have been the instrumental factor (those expressing a preference for the continuity environment being more dependent on the medical care system at the outset). Even if one accepts the conclusions of such studies, it is difficult to reconcile the report of Lewis,<sup>35</sup> which describes a consistently low preference for continuity by different population groups. One more recent study compares the priorities for health care as ranked by physicians, consumers, and public health nurses.<sup>36</sup> While continuity assumed a high priority for physicians, consumers were more concerned with accessibility. Continuity was ranked low on their list. One is left to question whether continuity in any context is a patient- or physician-generated concept.

Compliance issues, as they relate to continuity of care, are frequently discussed in the literature. In many studies, increased compliance and cooperation with medical advice has been attributed to continuity of provider.<sup>44</sup> The evidence is far from conclusive, however. Gordis and Markowitz<sup>27</sup> in a two-part study assessed compliance with a rheumatic fever prophylaxis regimen of daily oral penicillin. The authors found no difference in compliance between those receiving episodic care and those children in a continuity setting. A host of determinants influence compliance, including health beliefs, past medical experience, type of medical problem, and type of regimen prescribed.<sup>22,42</sup> Further, it can be questioned whether the crucial factor in areas of compliance is patient satisfaction independent of provider continuity.<sup>33</sup> Few studies consider that the interpersonal dimension of continuity, rather than the chronologi-



cal, is best assessed by evaluations of satisfaction and compliance.

## *Informational Continuity*

### **Measures and Outcomes**

Continuity of information has been held to reduce the number of diagnostic tests and increase physician knowledge of patients' needs and problems. The major work in this regard is reported in a series of papers by Heagerty, Alpert and others,<sup>2-4,37</sup> sampling 750 low-income families in the Boston area. The families were randomly assigned to either a continuity setting or a conventional ambulatory clinic. A major flaw in the study design, however, is that the services provided were in no way comparable. The continuity setting offered telephone access and a variety of outreach efforts that simply were not present with the episodic care setting. Consequently, the effect of provider continuity is masked by the confounding variables of differential services and accessibility. Starfield et al report an increased recognition of patients' problems when provider continuity is assured.<sup>38</sup> In addition, she poses the interesting question of the relative importance of continuity of provider vs continuity of information system. There is some evidence that the quality of the medical record may very well reflect patient understanding of the diagnosis,<sup>49</sup> compliance,<sup>50</sup> and problem detection.<sup>51</sup> Stokes,<sup>48</sup> on the other hand, suggests that continuity of care might dull clinical recognition of the slow emergence of new, unrelated health problems.

### **Operational Model of Continuity**

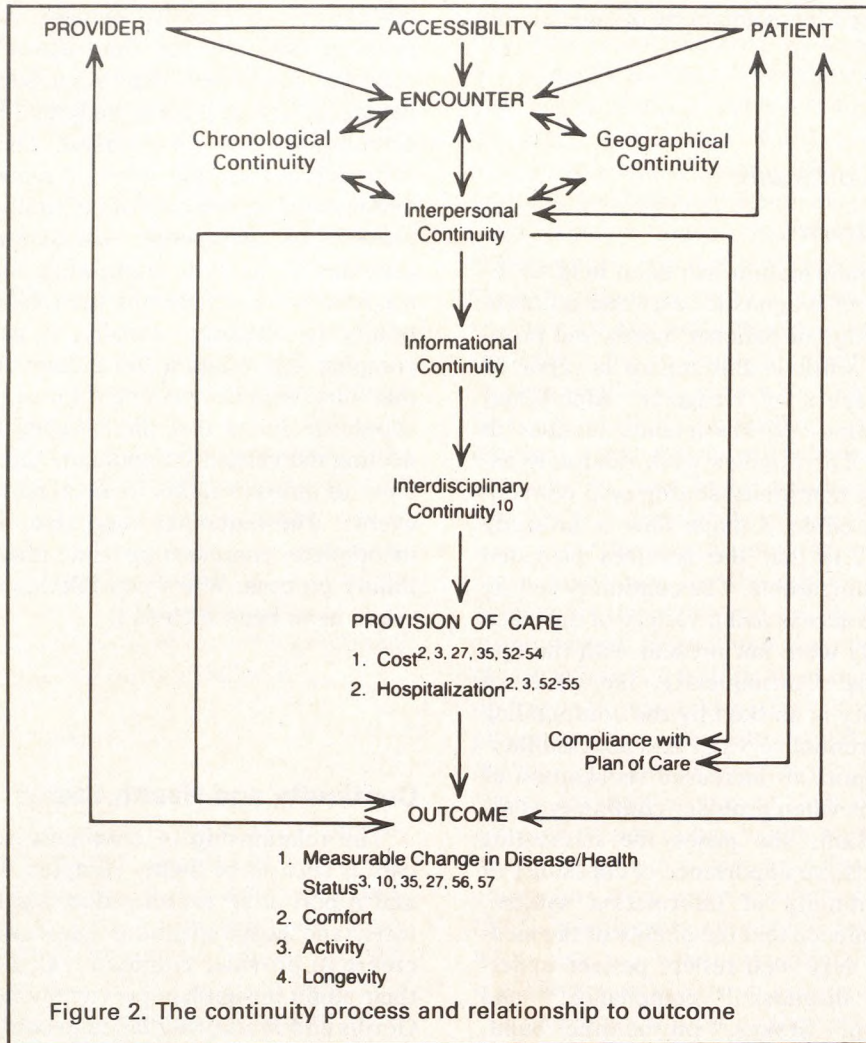
From the previous discussion, an operational model of continuity can be hypothesized. Rogers and Curtis<sup>8</sup> have offered one such model that seems to incorporate many of the elements cited. It fails, however, to reflect the actual process of the therapeutic encounter, and more important, it is "static" with respect to the dimensions of continuity. What is meant here is that the model assumes that each continuity element has specific outcomes which are separate from each other. In

reality, this may not be the case. A dynamic relationship between the dimensions of continuity may be postulated that acknowledges each as having an impact upon another. Figure 2 is an elaboration of this hypothesis. The value of this approach is threefold. First, it matches the multi-dimensional framework of continuity with the real process of therapeutic interaction. Second, it provides an analytic framework for much of the reported work concerning the relationship of continuity to outcome. Finally, it acknowledges a complex interrelationship among the dimensions that must then be accounted for in such studies. It should be noted that the arrowed lines interconnecting the various components represent possible lines of impact rather than a particular flow of events. The outcomes suggested, while certainly incomplete, represent possible results of the continuity process. When possible, appropriate references have been included.

### **Continuity and Health Status**

The relationship of continuity to provision of care is seen to be highly complex. Heagerty et al<sup>2</sup> and Alpert et al<sup>3</sup> report reduced costs, laboratory tests, and hospitalizations associated with an increase in provider continuity. Critical analysis of their study design has previously been discussed. Gordis and Markowitz failed to confirm these findings using a population of high risk but normal infants.<sup>27</sup> Measurable indicators of health status were compared between the continuity and the noncontinuity groups, but no attempt was made to study the change in health status before and after care was provided. Consequently, a cause-effect relationship could not be established. Hanchett and Torrens provided an interesting study of the effects of geographical and interpersonal continuity on the provision of care.<sup>55</sup> They randomly assigned a population of patients with chronic congestive heart failure into a study and control group. Both received regular care at an outpatient clinic, but the study population had additional home care visits by public health nurses. After two and a half years, they found little difference between the two groups insofar as hospitalization rates were concerned; however, the mean hospital





stay for the study population was less than one half of that of the controls. They suggest that the anticipatory care given at home detected problems earlier, resulting in shorter hospital stays. One can only speculate as to the effects on undetected disease states.

Gonnella and Herman maintain that outcome measures of continuity should be based upon demonstrable changes in patient health status while controlling for potential confounding factors.<sup>58</sup> Two studies appear to satisfy the above criteria. Lewis et al examined the care provided by nurse practitioners to a population having a variety of

illnesses (hypertensive cardiovascular disease, arteriosclerotic heart disease, exogenous obesity, psychophysiologic reactions, and arthritis).<sup>56</sup> Patients were first screened to determine the relative stability (and presumably, comparability) of their illness. After stratification according to diagnosis, age, sex, and race, they were randomly allocated to a control group who received care from their regular medical clinic and to an experimental group who received their primary care from a nurse clinic emphasizing provider continuity. While no differences in morbidity or mortality could be detected, there was a significant reduc-



tion in discomfort, dissatisfaction, and disability among those receiving more continuous care.<sup>35</sup> This study, however, failed to distinguish provider continuity from system continuity. Further lacking was an appropriate measure of continuity level.

Katz et al assessed the impact of geographical (home care) and interdisciplinary (comprehensive care) continuity on a randomized population of rheumatoid arthritis patients.<sup>57</sup> There was less deterioration of functional activity level, clinical disease activity, and economic dependence in the study population when compared with controls after one year.

Roos et al recently studied the effect of different levels of provider continuity on several quality of care measures.<sup>10</sup> The process measure of quality concerned conformity with accepted standards of patient selection for tonsillectomy and adenoidectomy. Beneficial outcomes were assumed to be a decrease in respiratory illness and otitis media following the surgical procedure. The authors found that patients with less provider continuity were more likely to meet standardized criteria for surgery. As no other correlation between continuity and outcome could be established, the authors concluded that attempts to improve quality of care by increasing continuity are unfounded. In fact, their findings suggest that when a tonsillectomy and adenoidectomy is used as the intervention model, increased continuity does not affect outcome.

## Conclusion

What can be concluded then about continuity of care given this review of the literature? As a concept, an attitude, a process, or an action, continuity must be regarded as complex, dynamic, and multidimensional. A fundamental problem is the lack of agreement on a focused theoretical definition of continuity. It has been proposed that the essence of continuity is an attitude based upon prior knowledge of and for each participant in the medical encounter. This conceptualization then translates into an operational or process framework consisting of five continuity dimensions. Each dimension is seen to have specific measures and outcomes. In addition, the influence of several impacting variables upon the therapeutic encounter is acknowledged.

A review of the literature with regard to specific measures and outcomes reveals that considerable work is called for. Further research must necessarily (1) distinguish and isolate the significant dimensions of continuity, (2) utilize several different measures that have previously been validated to assess the dimensions, (3) control and account for relevant extrinsic factors, and (4) select and evaluate the results of care relative to a given continuity dimension.

An operational model of continuity has been proposed to reflect its complex character as well as its dynamic, interactional relationship with the therapeutic process. The effects of continuity on health status indicators is only beginning to be explored.<sup>10,58</sup> If continuity is understood as an attitude that focuses on care or comfort and is concerned with rights and duties,<sup>14</sup> one might view satisfaction, comfort, and interpersonal dynamics as intermediate outcomes. These in turn could be studied in relation to their impact on health status.

Clearly, the issue of continuity—its definition, its measurement, its operation and value—remains unresolved. In family medicine, continuity remains a convenient slogan of humanistic dedication. At the core of the philosophy and teaching of family medicine, continuity may well represent a premature leap of faith rather than a proven component of quality care. As Lewis suggests,<sup>35</sup> it is time to have evidence for what family physicians claim to believe in.

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