Open Peer Review on Qeios

[Commentary] Potential Mechanisms of Continuity of Care and Future Research

Michel Wensing[1]

1 Ruprecht-Karls-Universität Heidelberg

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

High continuity in primary care has positive impact on the health of patients and populations, but the traditional long-term relationship of a patient with one specific primary care provider is no longer given. Insight into the underlying mechanisms of continuity in primary care can help to design effective teams and networks of healthcare providers. Eight different mechanisms of continuity of care are proposed: matching of patient and provider, time for patient care, healing relationship, effective information delivery, effective counselling, monitoring in care episodes, coherence of treatment, and absence of interruption due to hand-overs. Empirical research on the mechanisms of continuity in modern primary care is required.

Michel Wensing[1,2]

[1] *Heidelberg University, Germany*

[2] *Heidelberg University Hospital, Department of General Practice and Health Services Research, Germany*

Address: Im Neuenheimer Feld 130.3, 69120 Heidelberg, Germany

E-Mail: Michel.Wensing@med.uni-heidelberg.de

Keywords: continuity of care, primary care, health services research.

Introduction

Strong primary care has positive impact on population health, health equity, responsiveness to individual patients' needs and preferences, and overall efficiency of the healthcare system [1]. High continuity of care is one of the defining characteristics of strong primary care, which is directly associated with lowered risk of hospitalisation [2] and increased survival rates [3][4]. Traditionally, continuity of care has been understood as a long-term relation of a patient with a specific primary care. However, this is not or no longer given in many parts of the world [5]. Modern healthcare is often provided in

teams or networks of healthcare providers. This offers obvious advantages, such as better access to healthcare, more comprehensive care, the possibility of second opinion, and higher resilience in times of crises [6]. However, it also implies that a lower proportion of patient's contacts is with one specific healthcare provider. Healthcare teams and networks may nevertheless achieve high information continuity (meaning up-to-date patient-relevant information is available to all healthcare providers involved) and high management continuity (i.e. treatment and care approaches are aligned across different providers) [7]. The use of information technology for communication and documentation can facilitate this. However, it needs to be considered whether they can achieve the full theoretical potential of continuity in the sense of ''the degree to which formal (professional) and informal care is provided as a coordinated and uninterrupted sequence of activities in accordance with the experienced needs of the patient during the illness trajectory'' [8].

To explore this issue, insight into the mechanisms of continuity of care is required. Much research on the positive impact of continuity of care relates to settings, which are characterized by a relatively high relational continuity of care (i.e. patients have most contacts with a specific primary care provider). In addition, many of the published studies are correlational, which provides limited insight into the underlying mechanisms of continuity of care. This commentary aims to provide ideas on the potential mechanisms of continuity of care and future research.

Mechanisms of continuity of care

Eight types of mechanisms of continuity in primary care are proposed (see Table 1). The relevance of these may differ between individuals, depending on their diseases, health risks and capabilities (e.g. literacy, social support). Nevertheless, all mechanisms seem relevant in a typical primary care population of patients, particularly those with chronic diseases and vulnerability.

The first two hypothesized mechanisms of continuity of care provide favourable generic conditions for effective healthcare delivery. The first is based on the decision of a patient and a healthcare provider to pursue a long-term relationship, which also enhances patient autonomy. This matching of patient and provider is a type of social selection, which generally reflects shared or matching values and interests [9]. As a consequence, both patient and provider feel committed to the relationship. The second mechanism concerns time for patient care, that is clinical decision-making and clinical procedures, rather than administrative and coordination tasks. As a consequence of high continuity, there is more time for clinical work than in situations of low continuity, which enhances quality and outcomes of clinical practice.

Three further mechanisms of continuity of care relate to the patient-provider relationship, which ideally involves engagement from both sides. First, a long-lasting relationship has by itself healing effects, because patients feel safe and cared for, and they are more prepared to disclose information [10]. It may also enhance non-specific effects of clinical interventions, which are based on the patient-provider relationship [11]. Second, the long-lasting relationship between provider and patients helps to tailor information to individual needs, to enhance coherence of information over time, and to address misinformation from other sources [12]. Finally, high continuity may enhance the effectiveness of counselling on health-related lifestyle, thus impacting on patients' self-management of health and disease. A long-lasting relationship

between provider and patient is characterized by repeated exchange which helps to transcend short-term interests and to focus on long-term goals, such as healthy life styles [13].

Table 1. Potential mechanisms, impacts and facilitating conditions of continuity of care

Mechanisms	Description	Impacts	Facilitating conditions
Matching	Patient and provider have selected each other for a long-standing relationship, based on shared or matching values and interests.	Commitment of patient and provider to the relationship	Patients have a choice between different healthcare providers: they can change provider in case of poor provider-patient match.
Time	Providers can focus on clinical activities (diagnosis, treatment) rather than administration and coordination, or reading patients' records.	Rigorous clinical performance	In teams and networks: total time for patient care is same or higher; no decline of patient care time due to additional administration and coordination work.
Relationship	A long-lasting relationship has healing effects, and patients are prepared to disclose information	Patient feels safe and cared for	Patients perceive to have a long-lasting relationship with providers (i.e. not restricted to specific procedures).
Information	The long-lasting relationship between provider and patients helps to tailor information to individual needs, to enhance coherence of information over time, and to address misinformation from other sources.	Coherent information delivery to patients	Patients trust providers. In teams and networks also: information content is aligned across providers.
Counselling	A long-lasting relationship between provider and patient is characterized by repeated exchange, which helps to transcend short-term interests (e.g. unhealthy life styles) and focus on long-term interests.	Effective self-management of health and disease by patient	Providers are stable over time (e.g. few rotations/absence).
Care episode	Providers can effectively monitor symptoms and disease over time, pick up alarm signals early, and avoid overtreatment at the same time.	Absence of (avoidable) deterioration of health problems	Adequate information sharing on individual patients by healthcare providers; and clear role allocation in case of signals and signs that require action.
Coherence	Providers feel responsible for coherence of treatment and care over time.	Coherence of treatment and care contents	Presence of a provider with a position in the healthcare system that facilitates coordination of treatment and care.
No interruption	There are few hand-overs between healthcare providers.	Absence of adverse events due to hand-overs	Adequate sharing of individual patient data; and clear role allocation in case of risks or events that require action.

The last set of mechanisms concern the coordination of care over time and across healthcare providers. As as a consequence of the continuity of care, the provider can effectively monitor symptoms and disease over time in order to pick-up alarm signals early and avoid overtreatment at the same time. This helps to intervene in case of sudden deterioration of health problems. This mechanisms may also involve the assessment of the quality of care provided in an episode of care. Second, high continuity of care is associated with a perception of responsibility of coherence of treatment and care over time in the physician, also if more healthcare providers are involved. As a consequence, treatment and care are probably more coherent. Finally, high continuity of care helps to reduce adverse events due to hand-overs between healthcare providers. There are fewer hand-overs, which may reduce the number and severity of adverse events. [14]

Facilitating conditions

The activation and unfolding of continuity of care mechanisms may be dependent on the presence of specific contextual conditions (see Table 1). If these conditions are not present in a given situation, the related mechanisms of continuity of care remain inactive, thus the beneficial impact of continuity of care on outcomes is not realized. These contextual conditions differ between the various mechanisms. For instance, matching of patient and provider depends on the presence of multiple providers to chose from, while the healing relationship mechanism depends on patients' perceptions of the patient-provider relationship. The presence or absence of these factors is influenced by a wide range of broader contextual factors at meso- and macrolevels of the healthcare system, such as features of the information technology infrastructure, financial reimbursement system, public or private character, prevailing working routines, organizational cultures, laws and regulations, healthcare providers' competences and attitudes, and local work force shortages.

Research provided clues for the categorization of system-level factors, but little insight into the exact mechanisms for their impact [15]. Nevertheless, specific characteristics of healthcare systems probably enhance specific mechanisms. For instance, in countries with sufficient numbers of primary care physicians, patients have better opportunities to relate to a physician who matches with their values and interests. Vocational programs for primary care providers that emphasize counselling skills produce providers who capitalize on the potential of the provider-patient relationship. In countries with a gatekeeper role for the primary care physician, it may be more likely that care is coherent und non-interrupted over time. The use of computerized patient records and communication systems may further enhance these effects.

Future research

In research on the mechanisms of continuity of care, studies ideally consider four aspects: a) degree of continuity of care, b) intermediate effects, c) mechanisms that underly these impacts, and d) contextual conditions for unfolding of these mechanisms.

The actual degree of continuity of care can be measured with patient questionnaires, which may cover relational, informational and management continuity (e.g. [16]). It can also be measured on the basis of healthcare utilization data in administrative databases (e.g. health insurance claims), resulting in coefficients such as the Usual Provider Index (percentage of contacts with the main healthcare provider) [17]. Databases can be used to measure relational continuity, but they are rarely suitable for measuring information and management continuity. Another approach are surveys among healthcare providers, but this tends to give only a global impression.

The impact of continuity of care on health and healthcare is the result of intermediate effects, which can be measured with questionnaires for patients. A literature review identified 18 validated questionnaires that covered these intermediate effects; most frequently covered were aspects of ‘’supportive counselling’’ and ‘’coherence of treatment across providers’’ [18]. Other effects were less frequently in questionnaires for patients and relevant items were often spread over different questionnaires, suggesting a need to develop targeted questionnaires. In addition to patient questionnaires, some effects may be measured in other ways, such as analysis of patient records, interviews or questionnaires for primary care providers.

While the degree continuity of care and its effects can be reasonably well measured in routine practice, this is very challenging for mechanisms of continuity of care. Therefore, mechanisms are often postulated in observational studies, if a correlation is found between continuity and impact, which is not confounded by other factors. For instance, an observed correlation between continuity of care and patients' self-management behaviours would indicate the mechanism of effective counselling. However, it is often difficult to exclude alternative explanations of correlations. Mechanisms of continuity of care may also be documented in interviews with healthcare providers or patients. However, it is uncertain whether their perceptions reflect actual mechanisms. For teasing out mechanisms, healthcare providers or patients can also be interviewed about simulated case scenarios, which systematically vary conditions. This seems an attractive approach, although the transferability of answers to hypothetical cases to the real world remains an issue.

Conclusion

More research on continuity of care in teams and networks of healthcare providers is required. A focus on the underlying of mechanisms of continuity of care would help to design teams and networks with a view on the positive benefits of high continuity of care. Given the methodological complexities, the use of multiple methods and triangulation are recommended.

Statements and Declarations

Author contributions: Conceptualization, writing, and revising: MW.

Funding: This work did not receive external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data availability Statement: Not applicable.

Conflicts of interest: The author declares no conflict of interest.

References

1. ^*Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. Milbank Q 2005;83:457-502.*
2. ^*Kao YH, Lin WT, Chen WH, Wu SC, Tseng TS. Continuity of outpatient care and avoidable hospitalization: a systematic review. Am J Manag Care 2019;25:e126-e134.*
3. ^*Baker R, Freeman GK, Haggerty JL, Bankart MJ, Nockels K. Primary medical care continuity and patient mortality: a systematic review. Br J Gen Pract 2020;7:e600-e611.*
4. ^*Pereira Gray DJ, Sidaway-Lee K, White E, Thorne A, Evans PH. Continuity of care with doctors—a matter of life and*

death? A systematic review of continuity of care and mortality. BMJ Open 2018;8:e021161.

5. ^*Tammes P, Morris RW, Murphy M, Salisbury C. Is continuity of primary care declining in England? Practice-level longitudinal study from 2012 to 2017. Br J Gen Pract 2021;71:e432-e440.*
6. ^*Pereira Gray DP, Evans P, Sweeney K, Lings P, Seamark D, Seamark C, Dixon M, Bradley N. Towards a theory of continuity of care. J R Soc Med 2003;96:160-6.*
7. ^*Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. BMJ 2003;327:1219–21.*
8. ^*Philipsen HH, Stevens FC. Modernization, rationality and continuity of care: theoretical concepts and empirical findings. Sociological Focus 1997;30:189-204.*
9. ^*Simon HA. A mechanism for social selection and successful altruism. Science 1990; 250:1665-1668.*
10. ^*Haggerty JL, Roberge D, Freeman GK, Beaulieu C. Experienced continuity of care when patients see multiple clinicians: a qualitative metasummary. Ann Fam Med 2013;11:262-271.*
11. ^*Meijers MC, Stouthard J, Evers AWM, Das E, Drooger HJ, Jansen SJAJ, Francke AL, Plum N, van der Wall E, Nestoriuc Y, Dusseldorp E, van Vliet LM. Possible alleviation of symptoms and side effects through clinicians' nocebo information and empathy in an experimental video vignette study. Sci Rep 2022;12:16112.*
12. ^*Nan X, Wang Y, Their K. Why do people believe health misinformation and who is at risk? A systematic review of individual differences in susceptibility to health misinformation. Soc Sci Med 2022;314:115398.*
13. ^*Nishi A, Christakis NA, Evans AM, O'Malley AJ, Rand DG. Social Environment Shapes the Speed of Cooperation. Sci Rep 2016;6:29622.*
14. ^*Spruce L. Back to Basics: Patient Care Transitions. AORN J 2016; 104:426-432.*
15. ^*Burns LR, Nembhard IM, Shortell SM. Integrating network theory into the study of integrated healthcare. Soc Sci Med 2022;296:114664.*
16. ^*Uijen AA, Schers HJ, Schellevis FG, Mokkink HG, Van Weel C, Van den Bosch WJ. Measuring continuity of care: psychometric properties of the Nijmegen Continuity Questionnaire. Br J Gen Pract 2012;62:e949–57.*
17. ^*Hetlevik Ø, Holmås TH, Monstad K. Continuity of care, measurement and association with hospital admission and mortality: a registry-based longitudinal cohort study BMJ Open 2021;11:e051958.*
18. ^*Wensing M, Roth C, Krug K. Measuring valued output in primary care: challenges and reconciliation. Expert Rev Pharmacoecon Outcomes Res 2023;23:723-731.*