

Continuity of Care at the Primary Health Care Level: Narrative Review

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Abstract

The crucial significance of continuity of care at the level of primary health care is unquestionable. Proper implementation and monitoring are under execution worldwide due to lack of understanding of its importance, and way of assessment. There is a great need to focus on making continuity of care a routine element of quality of care, especially between the primary and secondary care. This review attempts to summarize the most updated knowledge about the continuity of care. It highlights the concept of continuity of care, definitions, types, significant benefits, common challenges and obstacles, and different means and tools for assessment and, finally, some available data about the current situation internationally. It is mandatory to have ongoing monitoring of continuity of care in any health care service by using more than one tool to have a more comprehensive assessment, which subsequently guides and improves the quality of health care.

Keywords: Continuity of care; Primary health care; Informational continuity; Relational continuity management continuity; Longitudinal continuity; Interpersonal continuity; Health care provider

Abbreviations: ACSS-MH: Alberta Continuity of Services Scale for Mental Health; ADL: Activity of Daily Living; BBI: Bice-Boxerman Index; CCALCS: Care Continuity Across Levels of Care Scale; COC: Continuity of Care; CPCI: Components of Primary Care Index; Dx: Diagnosis; HIS: Health Information System; IC: Informational Continuity; IPC: Interpersonal Continuity; LC: Longitudinal Continuity; MC: Management Continuity; MD: Medical Data; NCD: Non-Communicable Disease; PCAS: Primary Care Assessment Survey; PCAT: Primary Care Assessment Tool; PHC: Primary Health Care; RC: Relational Continuity; RDI: Referral Data Inventory; SECON: Sequential Continuity Index; TCI: Temporal Continuity Index; UPC: Usual Provider of Care; WHO: World Health Organization

Introduction

Continuity of Care (COC) recently gains great attention from health care institutes especially at the level of Primary Health Care (PHC) as well as countries health strategic officials. This could be a result from tremendous expansion in health care complexity, involvement of a great number of services, increase burden of Non-Communicable Diseases (NCD).

Furthermore, advances in electronic medical recording systems, National Health Information System (HIS), widespread

use of intranet that influence the communication between different care levels and consider it as important part of health care quality measures. This was additionally supported by many studies in literature that support the crucial role of COC [1,2].

There is accumulative evidence that COC is greatly reducing the hospital admissions, emergency departments visit and overall medical costs. Also, it strengthens the trusted relationship between the patients and health care providers which leads to more integrated people centered health services. Continuity of care is simply defined as the level to which patient's experience health care over time as coherent and interconnected [3-5].

The main aim of the current review is to address the concept of COC, highlight its element and different types, list the facilitators and various obstacles for its proper implementation, review available evidence about its effectiveness & benefits to the health sector and to be aware of methods and tools to measure it. Finally, some international numerical data about the COC in some medical services.

Continuity of Care the Concept and Definition

The concept of Continuity of Care (COC) initially discussed in the medical literature during the eighties. Group of authors raised the concept and its essential importance like Starfield, Wall, Fletcher, Ruane [6-9].

It has been used to define a diversity of relations between patients from one side and the followings from the other side:

- Delivery of health care
- Availability of information
- Availability or constancy of clinician
- The usual source of care
- Follow-up appointment keeping
- The goal of seamlessness in transitions from one setting to another

It is essential to address definitions of three important terms or concepts that are sometimes misunderstood and misused. These are care coordination, case management, and continuity of care. Care coordination is defined as proactive management to assemble care professionals and providers to meet the needs of service users, so they receive more integrated, person-focused care across various settings. While case management is a targeted and proactive approach that involves clinical case assessment, care planning, and management to integrate services to encounter the needs of patients with long-term conditions.

The definition of COC as per the World Health Organization (WHO) is the degree to which people experience a series of discrete health care events as coherent and interconnected over time and consistent with their health needs and preferences. Both COC and care coordination are inter-related. Continuity of care permits care coordination by creating the relationships to support seamless relations among numerous providers within interdisciplinary teams or across care settings or sectors [10].

Continuity of Care Elements and Types

The concept of COC perceived contrarily in Primary Health Care (PHC) is commonly presumed as defined. It has two main core elements that must co-exist to ensure continuity; otherwise, one element alone does not constitute continuity. Moreover, three types of continuity that bond the domains of PHC together, where the interaction between those types and elements is vital to ensure proper COC [11].

The central core elements of COC are:

- Patient's care experience with the health care provider. How much experience is well linked to each other and more coherent over time?
- Longitudinal or chronological continuity is continuity of the care on a more chronological pattern.

The three COC types are:

Informational Continuity (IC): is how far is the available medical record and other information are utilized on prior visits, investigation, management, and events to improve the current care for the patient and his or her medical condition. Information, especially nowadays, is very vital to link health care from one provider to another and from one health event to another. The vast majority of the current medical information about the patient's condition focuses on clinical management with neglect

of other social determinants and the patient's knowledge, values, preferences, and social context developed through a steady provider-patient relationship [12,13].

Patients experience IC as the aggregate medical information is consistent, updated, and accessible for all healthcare providers. Furthermore, IC necessitates clarity, adherence to confidentiality recommendations, completed well-documented information. Such information must include not only all patients' aspects of medical care medical history, investigation, and nursing notes. It might be hugely beneficial to have other health allied information, sociodemographic, health education, behavioral, community engagement, and quality of life indicators.

Relational Continuity (RC): It reflects the therapeutic connection between the patient and all related providers, where current and old care management is well connected to the future management plan. It is characterized by:

- Most obviously experienced by patients as well as the communities.
- It is more to reflect continuous, healing relationships between patients and health care providers that encourage confidence and engagement.

Management Continuity (MC): It considers timely care delivery more comprehensively and consistently parallels to a standard management plan. Elasticity and flexibility are crucial to adopt a new managed care plan if patients' medical conditions needed. Nevertheless, ensuring consistency in the management between providers and even institutes is highly recommended by many authors. Disease-specific literature emphasizes the content of care plans to ensure consistency. Managerial continuity characterized by the followings:

- Uniformity, and coherent management of patients' medical conditions.
- Highly responsive to any changing needs over lifetimes that link primary, secondary, and tertiary care levels.
- Integrated experiences of health care in ways that improve patient compliance with the management plan. Make sense for patients and families, thus enabling adherence to care plans.

Many references including WHO added the two core elements as types of COC: Interpersonal Continuity (IPC), and Longitudinal Continuity (LC) which are considered as elements here.

Interpersonal Continuity (IPC): which is basically the subjective experience that reflects the relation between the patients and the health care provider. It represents the following.

- The trustable relation between the patients and health care providers.
- Long term consistent care.
- Adaptable health care to meet patients personal, behavioral, cultural, and family needs.

Longitudinal Continuity (LC): is essentially the history of contact and interaction with a similar health care professional in a series of discrete occurrences. It is significantly linked to the followings:

- Home discharge and follow up plan for the subsequent visits to the health care provider sites regardless of the health care level.
- Clear strategies for referrals to and back to each level of care.
- Care guide or community connector.
- Family and outer social support.

Importance of Continuity of Care

There are several studies conducted in the literature, principally in the area of primary health care and family medicine practice. Overall, COC resulted in improved patient satisfaction and allowed the health care provider to gather knowledge that saved time, effort, influenced their use investigations, allowing for management, and to a lesser level affected the prescribed drugs. In addition to stimulating the patients to value their relationship with their doctor health care providers, they become more control over their medical condition and health. Furthermore, studies concluded that more time is efficiently used for investigations and increased take-up of health promotion [14,15].

Gray et al. reported reduced all-cause mortality rate associated with COC, through systematic review with a meta-analysis conducted in 2018. Although all the evidence was observational, it looks at the great benefits of COC [16]. Generally, the benefits of COC can be classified into the following: patients related, health care provider related, and health care system related.

Patients Related Benefits

It is well documented that COC increases patient satisfaction for both patients and the health care provider. It is not only the treating physician but also nurses and other health care allied staff. Furthermore, COC enhances loyalty and trust from both directions, patients, and care providers [17-19].

Through many studies, it was also observed that patients value their health care providers, mainly the treating physician by their readiness to wait for their appointments, adhere to the management recommendations, long-term preventive regimens, and even to pay more fees if needed [20,21]. Fan et al. also confirmed this fact. However, it looks more for the non-acute conditions, while many patients had no preference toward any treating physician if their condition is emergency [22]. In addition to increased security and trust between patients and treating physicians, it facilitates the management of the self-limiting symptomatology by waiting to observe disease progression. It also limits the use of the unneeded laboratory, radiological investigation, and medication [23]. Chen et al. reported in 2013, the significant improvement in the glycaemic control and overall medication adherence among type II diabetic patients and subsequently reduce or delay the long-term diabetic complications [24].

Health Care Provider Benefits

Continuity of care was steadily reported to minimize the conflicts of responsibility for treating physicians [25]. It eases the identification of different medical problems, facilitates history and clinical examination process, reduces the time for the treating physician to convene & explain the patient care plan, and improves the overall quality of management mainly on chronic diseases. Continuity of care gives treating physicians a more profound understanding of the patient's condition, including psychosocial, past medical history, the current condition, and other related health determinants [26,27].

Health Care System Benefits

From health care perspectives, there is evidence that COC reduces the direct overall medical costs. This includes clinic visits, emergency department episodes, lab tests, radiological investigations, and medication prescriptions [28-32]. Further new evidence is supporting the fact of increasing survival of older people. Otto R, et al. reported during (2016), increase in the survival among those with maximum COC compared to those with minimum one, through 17-years cohort study for (759) participants [33].

There is overall agreement from many resources about the crucial role of COC in maintaining effective and patient-centered care. Many recommendations from different institutes call for making COC essential in all health care systems, especially PHC, to ensure high-quality healthcare. Moreover, COC must be a fundamental part of all health systems in both high-income as well as low income countries [34].

Further to an essential role in preventing unnecessary hospitalization reported earlier by Barker, et al. COC results in reducing the likelihood referral from PHC to specialized clinics in the higher care level [35]. Cabana and Jee reported a valid point of increasing the uptake of many preventive services at the level of PHC, such as breast cancer screening and vaccination [36].

Challenges and Factors Affecting Proper Continuity of Care Implementation

Implementing COC at the PHC level is changing and often faced with many obstacles. The widespread health care systems with sub-specialty clinics made the COC difficult. Barriers and factors that influence the COC can be stratified into three main categories as followings; factors related to the patient's experience in the health care system, factors related to the health care providers, mainly the treating physicians, and the third factor is related to the overall health care system.

Patients Experience in the Health Care System

With the advances and increasing the complexity of service provision, patients might be lost in the system. This is due to either multitask overwhelmed duty or lack of customer service to guide the patients inside the system. Accessibility is particularly essential to the health care facility or appointment opportunity, which may lead many patients to ask for any physician to see them. Lack of

social support as well as community involvement to encourage practicing the culture of appointments with same treating physician [37].

Health Care Providers Related Factors

Many references indicated the lower awareness of treating physicians to comply with consistent follow-ups as part of the management plan. Furthermore, physicians are less likely to communicate with each other about single cases that require more COC permanently. Also, the interpersonal communication skills among treating physicians are always suboptimal.

Health Care System Related Factors

Many health settings suffering from staff turnover due to many reasons also lack staff awareness and training regarding COC's importance. Further, the HIS failure, unavailability of electronic medical record system & poor communication between different care levels leads to improper information transfer between treating physicians [38].

It is also observed that increase work duties, especially a lot of documentation, make the COC less practiced and incredibly challenging [39,40]. Such both benefits and challenges are universal; they are both summarized in Table 1.

	Benefits	Challenges & Factors Affecting COC Implementation
Patients Related	<ul style="list-style-type: none"> • Increasing patient's satisfaction • Enhancing loyalty & trust toward health system • Giving value their health care providers • Increase adherence to management plan • Facilitating management of self-limiting disease • Limiting use of un-needed investigation 	<ul style="list-style-type: none"> • Causing patients lost in complexity of the system • Lacking accessibility • Lacking social support & community involvement
Health Care Provider	<ul style="list-style-type: none"> • Minimizing conflicts of responsibility • Identifying of different medical problems easily • Facilitating clinic visit • Reducing time for design management plan. • Giving treating physician more understanding of patient's condition 	<ul style="list-style-type: none"> • Overwhelming multitask duty • Lower awareness of the treating physicians • Physicians are less likely to communicate to each • Lacking interpersonal communication skills
Health Care System	<ul style="list-style-type: none"> • Reducing direct overall medical costs • Increasing survival of older people • Maintaining effective and patient-centered care • Ensuring high-quality healthcare • Preventing unnecessary hospitalization • Increasing the uptake of preventive services 	<ul style="list-style-type: none"> • Staff turnover • Lacking staff awareness and training • HIS failure • Unavailability of electronic medical record system • Poor communication between different care levels

COC: Continuity of Care; HIS: Health Information System.

Table 1: Importance & Benefits and Challenges & Factors Affecting Continuity of Care Implementation.

Measurement of Continuity of Care

There is a broad spectrum for the measurement of COC with variable validity. Measurement is stratified based on the three main types of COC: informational continuity, relational continuity, and management continuity. Measurements are carried out by using several types of tools that are diverse in their validity and implication.

Measurement of Informational Continuity

Measurement of IC can be divided into first, the information transfer between health care providers, and secondly, the extent of use of that information by successive health care providers.

Measuring IC through Transfer Information

The best way to measure IC transfer information is to assess how much of the patient's information transferred from one care level to another, especially from PHC to secondary care. The best examples are the vitals & anthropometric charts, medical history, progress notes, management plan, and referral forms. Currently, the widespread electronic health system facilitates theoretically

the information transfer as well as data extraction and assessment [41-43].

The assessment mechanism could be via regular auditing, critically appraising existing instruments for endorsement between health care providers at the same level or between different institutions and higher levels of care. Assessment internationally done without a standardized methodology, which makes the comparison between studies very impractical. Nevertheless, few studies have been conducted to thoroughly evaluate the extent of such information transfer like Boyd, et al. and Semke in 1991 [44].

There is no known formula to calculate the IC through transfer information. However, one commonly recognized tool is Referral Data Inventory (RDI) developed by Anderson & Helms in 1995. It assesses the four main themes for the patient's data of the patient's background data, psychosocial, medical, and nursing. It has a total of (40) items that must be accomplished to ensure the complete information transfer between healthcare providers or between different care levels, as summarized in Table 2 [45].

Background Data (11 Items)		
Vital Statistics (5)	Method of Payment (2)	Referral Source (4)
Name Age Sex Marital status Address	Medicare number Additional payment sources	Name Phone number Title Organizational affiliation
Psychosocial Data (9 Items)		
Psychological Status (2)	Social History (4)	Knowledge Level (3)
Psych. care needs Support systems	Living arrangements Primary caretaker Economic situation Religious preference	Informed consent Teaching done Teaching needed
Medical Data (10 Items)		
Medical Problems (3)	Medical Instructions (5)	M.D. Identification (2)
Primary Dx. Medications Secondary Dx. Rehabilitation potential	Medications Assessments/treatments Equipment/supplies Diagnostic data History & physical	Name Signature
Nursing Care Data (10 Items)		
ADL Needs (5)	Functional Capacity (3)	Continuity of Patient Care (2)
Grooming Mobility Nutrition Elimination Sleep rest	Sensation Communication Cognition	Hospital discharge summary Hospital nursing care plan
Dx: Diagnosis, MD: Medical Data, ADL: Activity of Daily Living		

Table 2: Referral Data Inventory for Measuring Transfer Information.

Referral Data Inventory is an easy way to assess the IC and is applicable in many health care settings that use discharge summaries. It is used for more specific communication between teams and care levels. However, it focuses on completeness of the information, especially discharge forms only, not applicable for patients under management by multi-task teams, and cannot assess uptake of the data.

Measuring IC through Information Usage

There is no agreed formula to measure IC by information uptake. Nonetheless, there are a couple of tools available in the literature vary in validity and complexity. Among the standard tools are the following that assesses COC including IC beside measuring other types of COC; the Components of Primary Care Index (CPCI), Primary Care Assessment Survey (PCAS), and Primary Care Assessment Tool (PCAT), these tools are readily available, with excellent performance but their use is sophisticated [46-48].

Measurement of Relational Continuity

Two main domains can achieve measurement of RC: assessment of affiliation between patient & health care provider(s) and strength of the relationship.

Assessment of Affiliation between the Patient and Health Care Providers

Classically, this can be carried out by questioning the patients about the identity of their regular health care providers or whether they have the same health care provider in each clinic visit of the same facility or same specialist. Currently, such data can be extracted from the HIS or any other electronic medical record system. It is used widely on the PHC level and easy to assess. However, it does not measure the strength of the relationship between patient and health care providers [49,50].

Assessment of Strength of Relation between Patient & Health Care Providers

This is measured by many available survey tools, which differ by the complexity of conduction and the extent of details needed to assess the relationship [51]. Among the most commonly used tools are:

Survey questions on the extent of patient-health care provider affiliation: simple can be done by questioning the patients on regular bases or each visit [52]. It can be done through new technology through a satisfaction survey widely implemented in many modern facilities.

- Chao Perception of Continuity Scale [53].
- Alberta continuity of services scale for mental health (ACSS-MH) [48].
- Care Continuity Across Levels of Care Scale (CCAENA) [54].
- Nijmegen Continuity Questionnaire with two versions [55,56].

- Patient-Doctor Depth of Relationship Tool [57].
- Multi-dimensional Primary Care Surveys can be done by many tools that measure COC's different aspects, including the intensity of the relationship between patients and health care providers such as PCAT, PCAS, and CPCI.

Measurement of Management Continuity

This is achieved by two critical dimensions; assessment of evidence of longitudinal follow-up and adherence to disease-specific protocols & consistency of care over time.

Assessment of Evidence of Longitudinal Follow-Up

This can be achieved by many means that aim to have clear evidence or documentation of continued follow-ups of the same medical condition. Most common ways are:

- Assessment of time between the management prescription and the follow-up.
- Monitoring of missed appointments or no-show rate. The higher no-show rate indicates weak MC from longitudinal follows up.
- Use of the Temporal Continuity Index (TCI), which evaluates durations between the index and a follow-up visit concerning what would be expected [58].
- Treatment or management completion rates that determine the proportion of patients with completed medications. Such a rate is useful for chronic cases with long-term medication plans, e.g., chronic infection of hepatitis or even short management of antenatal management.

Evaluation of Adherence to Disease-Specific Protocols & Consistency of Care over Time

This can be carried out by auditing and assessing how far the different health care providers follow the main management plan over time. The best example of management plan for patient with diabetes, where multi- multidisciplinary team approach is needed to achieve better outcome. Such a way is immensely helpful for chronic conditions like hypertension, diabetes, hepatitis, and other chronic infections, even it is subjective and overlaps with other quality care dimensions [59].

Measurement of Longitudinal or Chronology of Continuity of Care

The vast majority of the available tools focus on measuring the chronology of the care, mainly patients- health care provider interaction e.g., period and regularity of the clinic visits, and the sequence of care. Among the popular tools are the followings:

Duration and Intensity of Patient/Provider Affiliation

This is simply done by extracting for the patient's medical record, which is much more facilitated by the availability of the electronic HIS or by implementing a survey. Duration and intensity of patient/provider affiliation determine by measuring the followings:

- The time duration between the first assessment visit and last encounter between the patient and the health care provider.
- Quantifying the attrition rate of patients over a demarcated time interval. It measures how much the turnover or rate of patients is leaving the care. High attrition rate means many patients are leaving the follow-up appointments or not showing, while a low rate indicates more continuity and more extended patient health care providers [60,61].
- Primary Care Assessment Tool for pediatric age group (0-14) years old [62].
- As mentioned earlier, some tools that assess different types of COC are also used for determining the duration and intensity of patient/provider affiliation such as PCAT, CCAENA, and Nijmegen Continuity Questionnaire.
- Assessment of intensity of the relationship between patient and health care provider some authors carried out the following approaches:
- Application of threshold intensity levels, where they determine the minimum clinic visits to preserve continuity [63].
- Measuring 'discontinuity' by calculating time intervals with no visits or contact [64].

Concentration of Care among Different Providers Sequential Care

Many tools were developed and readily available in the literature with considerable validity. The most straightforward approach is to check the quantity of various health care providers with whom a patient had contact over a specific period or hospital admission. Among commonest indices are:

- Usual Provider of Care (UPC) index is calculated by n_1 / N , where n_1 is the total number of visits to usual health care provider & N is total visits over a specific period and to the usual provider [65].
- The Continuity of Care (COC) index, also known as Bice-Boxerman Continuity of Care. It measures both the concentration as well as the dispersion of care [66]. Other indices that also measure both concentration and dispersion of care less commonly used are FRAC, CON and K- index [67-69].

Sequential Care Measurements

- Sequential Continuity Index (SECON) is a well-recognized tool that measures patients' consecutive visits with a similar health care provider or provider institute [70].
- Alpha Index $CI\alpha$ reflects the mean of sequential continuity and providers' concentration over a period of time [71].

International Situation

There is considerable variability in the COC internationally due to differences in the health care system, implementation &

monitoring of COC, medical conditions, and resource availability. The more the chronic cases with multiple conditions, the high the COC measuring index.

Some studies showed high scores in Korea by Jae-Seok Hong and his team, where a score of (0.75) determined while assessing the COC between adult diabetics during (2004) by cohort study [72]. Close results were also reported by Leleu and Etienne in (2010) after evaluating the longitudinal COC for significant strata of the general population in France at the level of PHC [73,74].

Other studies, on the contrary, revealed the medium level of COC like Napolitano et al. reported mean COC of (0.44) by using the Bice-Boxerman Index (BBI), through face to face interviews survey in Italy during (2014) among adult patients with chronic disease [75]. However, it was for the elderly age group, with whom they suffered from multiple chronic diseases; the BBI was (0.31) in the US through a retrospective cohort study done during (2015) [76]. Almost similar (0.37 – 0.39) results were reported from Taiwan among diabetic patients by Chen et al. using the same index [77]. Edith R. Gjevjon and his colleagues reported a low COC score when they assessed the Interpersonal continuity cross (79) patients were receiving frequent long - term care in (2010) [78].

Conclusion

The vital importance of the COC is not negotiable for all care levels, mainly the primary health care level. Still, many health services in great need of implementing and on-going monitoring of COC by using different available tools. For a comprehensive assessment, it is recommended to use more than one tool due to a lack of perfect measurement tools. There is a valuable need to have standardized cut off values for each type of COC so that every health service would determine their goal. Continuity of care must always be linked to improving the patients' quality of life, especially those with chronic disease.

Study Limitations

Lack of qualitative references to assess the COC in some health services made the development of this paper difficult. Few systematic reviews done about COC measurement tools in the literature, especially with the widespread use of non-validated tools. Furthermore, the overall benefits still in need of more quantitative studies rather than observational studies.

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