

Mohammad Ashiqur
Rahman Khan ¹
Stanislav Karapetrovic
Linda Carroll

ISO 10004-BASED MEASUREMENT AND INTEGRATIVE AUGMENTATION IN A HEALTH CARE CONTINUUM

Abstract: *This paper investigates an application of ISO 10004 in a specific care continuum assumed to be an integrated health care case. It also illustrates the integrative augmentation of ISO 10001- and ISO 10002-based promise and feedback systems. An emergency and inpatient care continuum within a Canadian hospital was investigated by interviewing nurses and managers. Patients' service encounters with the care and support providers were examined and the existing measurement activities were studied. Steps for customer satisfaction measurement along the continuum were defined. Sources to determine patient expectations were identified and the measurement activities, such as a survey encompassing all stages within the care continuum, were developed. Research participants were interviewed again to verify the usefulness of the developed measurement activities. The presented work depicts the relationships among the aspects of customer satisfaction, key principles of integrated care and ISO 10004. It is one of the first examples of an application of ISO 10004 and the integrative augmentation of systems standardized by the ISO 10000 customer satisfaction series in health care. This paper is a revised version of Khan et al. (2017).*

Keywords: *Customer satisfaction, Emergency department, Inpatient care, Integrated care, Patient centeredness, Integrative augmentation*

Article info:
Received 11.05.2018
Accepted 30.08.2018

UDC – 616.08/083
DOI – 10.18421/IJQR12.04-14

1. Introduction

Although a related standard, namely ISO 10004, has been in place for the last eight years, standardized patient satisfaction measurement is not abundant in Canadian health care. ISO 10004 is also useful in augmenting the systems based on other customer satisfaction standards, for example, ISO 10001 and ISO 10002. However, such integrative augmentation is not yet widely practiced. This paper reports on the development of patient satisfaction

measurement activities in an emergency and inpatient care continuum of a Canadian hospital by applying ISO 10004, and also provides examples of the integrative augmentation of ISO 10001- and ISO 10002-based systems. It is an updated version of a paper presented at the QFEST conference in October 2017 (Khan et al., 2017). The key updates include a more detailed literature review and illustrations of integrative augmentation, as well as additions and upgrades to the development of the patient satisfaction measurement activities

¹ Corresponding author: Mohammad Ashiqur Rahman Khan
Email: mohammadk@nait.ca

according to a newer version of ISO 10004, which has recently become available.

Health care integration, which is “*an organizing principle*” intended for improved care through better coordination of services provided (Shaw, Rosen & Rumbold, 2011), is attracting attention from both practitioners and researchers as a means for providing patient-centered care (e.g., Armitage, Suter, Oelke, & Adair, 2009; Kerber et al., 2007; Lamb, 1997; Suter, Oelke, Adair, & Armitage, 2009; Ouwens, Wollersheim, Hermens, Hulscher, & Grol, 2005; Thomas & While 2007). Integrated care is given in a continuum of services, from the initial contact between the patient and the care provider to the end of the care and its follow-up (Lamb, 1997). Traditionally, overall patient satisfaction with the care is often measured as an aggregate of individual scores obtained from the measured care aspects, but may not focus on a patient’s complete experience that builds along the care life cycle (Stauss & Weinlich, 1997). Moreover, classical instruments such as SERVQUAL may not capture the patient’s perception of service quality (Stauss & Weinlich, 1997). In integrated care, however, decisions and actions are focused on patient needs, preferences and participation (O’Malley et al., 2006). It provides a “*broad overview*” of the delivered care (Deffenbaugh, 1994), with the intent to decrease fragmentation and increase continuity and coordination (Ouwens et al., 2005).

Since one of the tools to address these challenges is ISO 10004, an example of its application in a continuum, assumed as an integrated care case, is presented in this paper. The next section overviews the literature relevant to integrated care and patient satisfaction measurement. The methodology of the development of a direct measurement tool, specifically a patient satisfaction survey, using ISO 10004, is described. Subsequently, the entire process of developing the survey and its verification through interviews of caregivers from the

continuum and experts involved in patient satisfaction measurement is reported. The integrative augmentation of both ISO 10001- and ISO 10002-based systems by using ISO 10004 is illustrated.

2. Literature

Health care customers can include patients and the general public (Deffenbaugh, 1994; Smith, & Swinehart, 2001), as well as patient families and friends (O’Malley, Brown & Krug, 2008). Integrated care can be defined as a coordinated, organizational process that “*seeks to achieve seamless and continuous care, tailored to the patients’ needs*” (Mur-Veeman et al., 2003, p. 227). Integrated care combines physicians, hospitals and medical services (Rygh & Hjortdahl, 2007) and intends to provide coordinated and comprehensive care to the patients, acknowledging their diverse needs and expectations and involving them in care-related decisions (Lamb, 1997). Researchers attempted to identify the integrated care “attributes” (Friedman & Goes, 2001), “principles” (Suter et al., 2009) and “components” (Rygh & Hjortdahl, 2007). However, “*patient centeredness*” (Coddington, Fischer, & Moore, 2001; Friedman et al., 2001; O’Malley et al., 2008; Ouwens et al., 2005; Suter et al., 2009) and comprehensive services across the continuum of care (Friedman et al., 2001; Suter et al., 2009) consistently appeared in the literature as the core principles of integrated care and are relevant to the measurement of patient satisfaction.

Although there are examples of measurement of the level of health care integration (e.g., Simoens and Scott, 2005; Singer et al., 2011), measuring the performance of integrated care from the patient’s perspective has not been well explored (Mastellos et al., 2014; Singer et al., 2011). In a contemporary study, a survey on patient experience of integrated care was developed, including scales to measure five specific domains of patients’ experience of

integrated care (Walker, Stewart, & Grumbach, 2016), which was based on a framework proposed by Singer et al. (2011) for measuring integrated care. The survey in Walker, Stewart, & Grumbach (2016) focused on measuring the performance of integrated care based on patient experience. However, the literature still lacks research on patient satisfaction measurement in integrated care. Braun, Kreimeier and Greiner (2010) also argued about the lack of standardized instruments for investigating patient satisfaction in integrated care networks, and illustrated the implementation of a patient satisfaction survey in integrated care services, adapted from an existing ambulatory care survey. In a 2015 poster, Alabiso, Lee and Tavares (2015) have reported a pilot survey with only six items on patient satisfaction in integrated care settings and intended to validate and implement a complete survey.

In another investigation, Baalbaki, Ahmed, Pashtenko and Makarem (2008) illustrated the development and implementation of a patient satisfaction survey consisting of 50 items that was administered in the Emergency Department (ED) and inpatient care, interestingly the same care continuum this paper focuses on. However, the work of Baalbaki et al. (2008) does not focus on integrated care or the continuum of care, and emphasizes the aspects of care impacting patient satisfaction instead. Hence, the survey in Baalbaki et al. (2008) is an example focusing on patients' satisfaction with the individual care stages, for instance, not including items regarding the patient being transferred from the ED to the inpatient care. Such a survey should also focus on all the "service encounters" (Osborne, 2004), i.e., contacts between patients and care providers, are the "moments of truth" when the patient makes a judgment about the quality of care (Osborne, 2004), which may help capturing the patient perception of the overall care (Steiber & Krowinski, 1990). Moreover, patient satisfaction with the service

encounters and their overall satisfaction with the hospital are correlated (Baalbaki et al., 2008).

ISO 10004 is a management system standard that provides guidance on establishing customer satisfaction measurement and monitoring processes (ISO 10004:2018, sub-clause 0.1). In its Annex B, the standard defines customer satisfaction as the gap between the customer's perception and expectation of the product. However, traditional health care is provider-centered (e.g., Baalbaki et al., 2008; Dagnone, 2009) and, therefore, may lack this customer focus of ISO 10004. Nevertheless, the general guidelines of ISO 10004 need to be adapted when applied in an integrated care case.

3. Methodology

ISO 10004, through ISO 9000, defines "customers" (sub-clause 3.2) as the recipient of a "product", which is a "result of a process" (sub-clause 3.1). In this research, patients were the customers and the received care was the product. Because different care continua can have diverse and unique attributes, the measurement activities need to acknowledge and address such differences. As a real case of integrated care could not have been found within the constraints of the research, an emergency and inpatient care continuum in a Canadian hospital was considered as an example of an integrated care case. Out of the integrated care principles discussed in the literature (e.g., Suter et al., 2001), only patient experience along the "continuum of care" and "patient centeredness" were focused on, because of their importance and relevance to the measurement of patient satisfaction. Instead of investigating a patient's care experiences at different stages (e.g., emergency and inpatient care) in isolation, the entire continuum was considered as a system of care services, just as a patient experiences it. The patient focus was maintained by identifying their expectations and needs (e.g., ISO 10004, sub-clause 7.2).

The research involved studying the care continuum, determining the existing measurement activities, and then developing the measurement activities based on ISO 10004, followed by verifying the developed survey (Khan, 2016). To obtain an understanding of the hospital's care activities, service encounters and existing measurement activities, internal documents and publicly-available reports were studied and interviews of caregivers and experts involved in feedback-handling activities were performed after obtaining the necessary research ethics approval. Subsequently, the measurement activities were developed, which included a patient satisfaction survey consisting of items focused on the integrated care, as well as items on the emergency and hospital care adapted from the HQCA (2009) and HCAHPS (2010) surveys, respectively. The survey also included two sets of items related to patient satisfaction on an implemented promise and a feedback handling system, respectively, illustrating an integrative augmentation of the corresponding standardized systems. Details of the establishment and implementation of an ISO 10001-based customer satisfaction promise were reported in Khan and Karapetrovic (2013), while the development and verification of an ISO 10002-based feedback-handling system were illustrated in Khan and Karapetrovic (2014). Further information on the measurement aspects of the work is available in Khan (2016).

To verify the survey feasibility and usefulness, a group of caregivers and experts that included one Program Manager, three Unit Managers, four Registered Nurses from the emergency and inpatient care and two personnel involved with data analysis were interviewed using a semi-structured interview guide to assess the usefulness, improvement and feasibility of survey items. The approach taken was iterative in that, as each participant was interviewed, the resulting feedback was used to modify the survey, and the next participant would be asked to comment on the modified tool.

In the following sections, an investigation of the existing processes, determination and development of the measurement activities that included a patient satisfaction survey and its verification, are detailed. The updates made to the work based on the latest version of ISO 10004 are also discussed.

4. Investigation

4.1. Care continuum

Through interviews of research participants, care flowcharts were developed, detailing which activity is performed at what stage, what personnel are involved, how patients proceed from one activity to another and what the service encounters are. For each care activity, the "SIPOC" elements, i.e., "Supplier-Input-Process-Output-Customer" (Miller & Ferrin, 2005), and caregivers were identified to focus on the patient's care experience and service encounters, as well as connections among the care stages.

4.2. Existing measurement and monitoring activities

The emergency care of the hospital is evaluated in an emergency patient experience survey by the HQCA that is performed every three or four years (HQCA, 2009). Each year, the provincial HCAHPS survey is conducted to evaluate hospital care, and about once every three years, an urban hospital such as the one in this research is selected for the survey (HCAHPS, 2010). Therefore, an evaluation of the inpatient care of this hospital may be performed once every three years, at best. Regarding ISO 10001, the hospital makes no formal promise or guarantee to patients regarding the services offered. For handling unsolicited feedbacks, which would be related to ISO 10002, a department of the provincial health provider has an established system that encompasses all health care facilities within the province. Although the version of ISO 10004 existing at the time of this research did not

specifically address the activities shown in section 4 here (as noted in Khan et al., 2017), ISO 10004:2018 includes the “context of the organization” in its sub-clause 5.1, which is related (please see section 8 below).

5. Determination

5.1. Measurement activities

As identified in 4.2 above, the existing measurement activities within the hospital currently focused on the individual care stages in an isolated and disconnected way, without consider the patient’s experience along the continuum. Therefore, in this research, the measurement activities were designed to provide “a broad overview” (Deffenbaugh, 1994) of patient satisfaction within the continuum of care, as well as “reduce fragmentation” (Ouwens et al, 2005) in the measurement activities. The activities are described below, including the corresponding ISO 10004 clauses in parenthesis.

5.2. Patient expectations (ISO 10004, 7.2, 7.3 and Annex B)

5.3.

A number of sources from which information on patient expectations can be obtained were identified first, for instance existing reports and results from the provincial health care provider, external sources such as the government and regulatory agencies, public media and patient feedback, as well as analysis of the care process flowcharts (see Khan, 2016). The inventory of sources provided in Khan (2016) is not exclusive and is based on guidance on “customer groups” in the second paragraph of sub-clause 7.2.1 of ISO 10004, on the list of “requirements and desires” in the first paragraph of sub-clause 7.2.2 in the same standard, and on the list of “sources” in the first paragraph of sub-clause 7.3.2, also from ISO 10004.

5.4. Patient satisfaction aspects (ISO 10004:2012, 7.3.1)

Six care aspects connected with the two integrated care principles mentioned above were focused on in the measurement activities, as illustrated in Table 1 (Khan, 2016).

Table 1. Aspects of care selected for measurement (adapted from Khan, 2016)

| Aspect | Number of related items in the survey | Related integrated care principles | ISO 10004: 2018 “Guiding principles” (4.3) |
|---|---------------------------------------|---|---|
| Communication between the patient and care provider (Baalbaki et al, 2008; Naidu, 2009; Siyambalapitiya et al., 2007; Taylor, Wolfe & Cameron, 2002; Trumble, O'Brien, O'Brien & Hartwig, 2006) | 12 | Patient centeredness | “Customer-focused approach” (4.3.10) |
| Patient involvement in decision making (Suter et al., 2009) | 2 | | |
| Existence of a feedback handling process (Stichler & Schumacher, 2003) | 4 | | |
| Existence of a customer satisfaction promise (Hart, 1988; McDougall, Terrence & VanderPlaat (1998) | 4 | | “Accessibility” (4.3.4) |
| Handing off and discharge (Baalbaki et al, 2008; Steiber & Krowinski, 1990) | 3 | Continuum of care | “Continuity” (4.3.14) |
| Quality of service encounters (Baalbaki et al, 2008; Blouin, 2011) | 11 | Patient centeredness Continuum of care | “Customer-focused approach” (4.3.10) “Continuity” (4.3.14) |

Table 1 also illustrates the number of items from the survey that are related to each specific care aspect. Since some items are related to multiple care aspects, the total number of related items is higher than the number of distinct items in the survey. The third and fourth columns in Table 1 contain the principles of integrated care and ISO 10004, respectively, illustrating connections among the principles and the survey aspects. While it is evident that aspects i) to iv) and vi) represent patient centeredness, aspect vi) can be broken down into multiple sub-aspects because the service encounters can be complex when all of them are considered (e.g., Simoens & Scott, 2005). Patient transfer from one stage to another (aspect v) is a point of potential problems and complaints (Blouin, 2011). Aspect iii) provides the means for patients to communicate concerns and recommendations, thus emphasizing patient-centeredness (Stichler & Schumacher, 2003). As for aspect iv), a well-designed and implemented promise enhances customer loyalty (Hart, 1988; McDougall, Terrence & VanderPlaat, 1998) and satisfaction (McDougall, Terrence & VanderPlaat, 1998; Levy 1999), by communicating to patients

what to expect and the organization’s commitment to meeting those expectations (Hart, 1988; McDougall, Terrence & VanderPlaat, 1998; Hogreve, & Gremler, 2009). Therefore, such a promise is related to patient centeredness. Aspects iii) and iv) are also connected to the ISO 10002 and ISO 10001 standards, respectively.

6. Measurement

As per ISO 10004, clause 8 and sub-clause 7.3.3, qualitative methods such as interviews and focus group discussions involving patients and the staff can be performed to measure patient satisfaction. However, considering the resource scarcity and feasibility of such methods, it was decided that a patient satisfaction survey focused on the six selected care aspects and two chosen integrated care principles would be developed as an example of a measurement instrument for the care continuum. The survey was divided into six parts with a total of 28 items, including 14 items adapted from the HQCA (2009) and HCAHPS (2010) surveys (see Table 2).

Table 2. Organization of the ISO 10004-based survey (Khan 2016)

| Part | Total items | Items adapted from the HQCA survey [15] | Items adapted from the HCAHPS survey [16] | New items | Applicable ISO 10004: 2018 sub-clauses |
|---|-------------|---|---|-----------|--|
| A. In the emergency department | 9 | 6 | 1 | 2 | 7.3.4 8.0 |
| B. Move from emergency department to hospital | 1 | 0 | 0 | 1 | |
| C. At the hospital | 8 | 2 | 5 | 1 | |
| D. Discharge from hospital | 2 | 0 | 0 | 2 | |
| E. Feedback-handling process | 4 | 0 | 3 | 1 | 7.3.1 7.3.2 |
| F. Customer satisfaction promise | 4 | 0 | 0 | 4 | 7.3.1 8.0 |

The benefit of this adaptation is that the items are already validated, are familiar to the users and allow the possibility of comparison of results. Parts A to D follow the patient’s journey along the continuum, while parts E and F relate to feedback-

handling activities and promises made to patients, respectively. Table 1 above already showed the number of items for each selected aspect, while Table 2 below details the adapted and new items in the survey, as well as the relevant ISO 10004 clauses,

illustrating the connections of the specific survey items with the standard guidelines.

Part A, which relates to the emergency department and includes closed-ended questions only, starts with potential service encounters with the Emergency Medical Services and security personnel at the entrance to the emergency department. It is important to investigate these initial encounters, in which patient satisfaction may not be measured otherwise. For example, the HQCA survey (2009) does not have items specific to such encounters. Four questions regarding a patient's encounter with the nurse and the doctor were adapted from the HQCA survey. In addition, the survey has these two caregivers separated, which helps in differentiating their performance. A patient may have service encounters with a number of other support personnel, such as various technicians, bed coordinators, volunteers and porters. Hence, an item was introduced to explore those encounters. Additionally, two items adapted from the HQCA survey relate to the sharing of information with patients and their involvement in decisions. An item on the overall rating of the emergency care was adapted from the HCAHPS survey (2010).

Part B relates to patient handing-off from the emergency to the inpatient care and includes one open-ended question: *"Did you experience any problems in getting a hospital bed? Please specify"*. Therefore, additional information can be obtained on waiting time and patient expectations.

Part C is related to the inpatient care and follows the same pattern as Part A, with items on doctors and nurses, information sharing, patient involvement and overall hospital care. An item is included on service encounters with other inpatient personnel, such as therapists, people who deliver food, cleaning and housekeeping, social workers, volunteers and porters.

Part D includes two items, asking patients what problems they faced during and after their discharge from the inpatient care. These

items are kept open-ended to obtain additional information on patient expectations.

Part E relates to a patient feedback-handling process (see Khan & Karapetrovic, 2014). Items include asking patients if they knew about the existence of such a process and about their experience of leaving feedback, as well as their overall satisfaction with the process. This part illustrates how feedbacks collected through an ISO 10002-based system can work as an *"Input"* (ISO 10004:2018, Figure A.1) into an ISO 10004-based monitoring and measurement system. They would form an indirect indicator of patient satisfaction and would provide the means for collecting the related data according to sub-clauses 7.3.2 and 7.3.4, respectively. This part also demonstrates how ISO 10004 provides *"Support"* to an ISO 10002-based system by feeding data on satisfaction with, and monitoring of, the patient feedback based on sub-clauses 8.3 and 8.4, respectively.

Part F addresses a patient satisfaction promise. A pilot implementation of an ISO 10001-based promise in an inpatient unit of the hospital promises was performed that involved nurses identifying themselves to the patient and explaining their role in the care process (Khan & Karapetrovic, 2013). Items in part F include one close-ended question on the existence and usefulness of the promise and feedback on the promise, as well as three open-ended questions on the promise and its improvement. Hence, an ISO 10001-based code system is supplying an *"Input"* (ISO 10004:2018, Figure A.1) into an ISO 10004-based monitoring and measurement system in identifying and selecting characteristics related to patient satisfaction and providing the means for collecting patient satisfaction data according to sub-clauses 7.3.1 and 7.3.4, respectively. This part of the survey also exemplifies how ISO 10004 lends *"Support"* to an ISO 10001-based system by delivering data on the satisfaction with the code and evaluation of its performance according to sub-clauses

8.3 and 8.2, respectively. This augmentation was conceptualized in Fernandez-Ruiz, Karapetrovic and Khan (2017), while its practical implementation is demonstrated here. Therefore, Parts E and F illustrate the integrative augmentation of ISO 10001- and 10002-based systems by applying ISO 10004.

Two items on the overall measures of patient satisfaction within the emergency and inpatient care are included, but they are not directly related to the selected care aspects. Additional parts can be added to the survey if patients experience additional care stages (e.g., rehabilitation).

The complete survey with further details regarding its construction is available in Khan (2016).

7. Verification

Suggestions obtained by interviewing the research participants as explained in section 3 and incorporated in the survey include:

- The number of items was reduced from 47 in the initial version of the survey to 28. For instance, items regarding the overall performances of the emergency and inpatient care nurses and doctors, the overall individual ratings of the emergency and inpatient care, as well as patient interactions with volunteers, social workers, care coordinator, unit clerk and porter, were included initially. In the final version of the survey, all these items were streamlined into one overall rating item, asking about the performance of the entire continuum. The unit clerk was omitted, and the rest of the support staff were lumped into one new category called "other".
- Transition from one stage of care to another was made distinct by providing proper titles of the care stages and their contexts.

Two other suggestions were illustrated in Khan et al., (2017).

The developed survey was not implemented into the emergency and inpatient care of the hospital due to a number of reasons. First, the objective of this research was to investigate how two other aspects of patient satisfaction (e.g., promises and feedback handling) can be integrated into the same patient satisfaction measurement system, keeping the focus on the patients and the continuum of care. Second, this research helped in conceptualizing a framework for patient satisfaction by using the ISO 10000 standards. This is a novel approach, considering no such framework exists in the integrated care research. Third, the results from the verification interviews of the experts were considerably decisive in predicting the usefulness, practicality and feasibility of the patient satisfaction measurement system. Fourth, testing the survey on a sample of patients comes with substantial costs and risks, such as the required resources, disclosure of patient information, commitment from various levels of the hospital management and a rigorous expansion of the existing research ethics approvals from both the related hospital and the university boards.

8. Updates

The 2018 version of the ISO 10004 standard has a number of changes in the "Guiding principles" (sub-clause 4.3), as well as added sections in "Context of the organization" (5.1) and "Establishment" (5.2) that impact the proposed measurement of patient satisfaction. Although this research was performed with ISO 10004:2012, the work has already been updated with the changed and added sub-clauses. For instance, "Accessibility" (sub-clause 4.3.4) principle is implemented by providing patients the opportunity to leave feedback through the survey. Similarly, the "Continuity" (4.3.14) principle is applied through a system of coordinated and

continuous patient satisfaction measurement activities spanning the entire patient experience. The “*Customer-focused approach*” (4.3.10) is analogous to the patient-centeredness principle that is portrayed in a number of items (see Table 1). Section 4 of this paper is in accordance with sub-clauses 5.1 and 5.2 of ISO 10004:2018.

9. Conclusion

Patient satisfaction measurement in integrated care has not yet been extensively explored. The presented work helps in addressing this gap by applying ISO 10004 as the conceptual framework for the measurement. There are examples of measurement of patient experience in integrated care, focusing on the generic domains (e.g., Singer et al., 2011; Walker et al. 2016). However, the work in this paper concentrates on a patient’s journey and the buildup of satisfaction or dissatisfaction with the care from one stage to the next within the continuum, concurrently keeping an involved view of the service encounters. Therefore, it could be a useful baseline for care providers and quality managers on how a patient-centered satisfaction measurement specific to a care continuum can be constructed.

As ISO 10004 is not specific to integrated care, new activities and additional concepts were introduced, along with the existing standard guidance. As already discussed, the investigation steps (i.e., studying the care continuum and determining its existing measurement of customer satisfaction) were not included in the 2012 version of the standard. They are, however, included in the 2018 version, as elaborated on in section 8. Similarly, in the survey, some items were adapted from two currently-administered surveys, although the standard does not suggest such adaptations. These inclusions and adaptations contribute practical examples of how the implementation of a quality standard can be made useful and effective.

The presented work should be applicable in other organizations with minimal modifications, as the selected continuum is common in any hospital. The steps followed in developing the measurement activities, as well as the applied principles (e.g., patient centeredness) and approaches (e.g., following the patient’s experience along the continuum and the “*SIPOC and care provider*” analysis) are all generic, and therefore should be replicable in other continua. For a totally different continuum, such as maternal health or chronic disease management, the survey items might be substantially different. However, the measurement activities are generic and should be very similar. Although the care continuum focused on in this research was within a public hospital in a universal health care system, the learning should be even further applicable in private health care settings, considering that some key challenges of a public health care system (e.g., lack of competition among health care providers and lack of incentives to improve) may not be as prominent.

The survey, when administered, should hopefully help in providing an overview of patient satisfaction along the continuum. Adaptation of items from existing surveys demonstrates streamlining the work by looking into current activities and picking their useful components. This approach could reduce fragmentations and discontinuity seen in traditional measurement activities. The HQCA (2009) and HCAHPS (2010) surveys did not include specific items related to the support staff (e.g., the therapist and dietary, cleaning and security personnel), all of whom were identified in the “*SIPOC and care provider*” analysis and included in the developed survey as part of investigating the service encounters.

The paper shows how the measurement of patients’ care experiences, the performance of a feedback-handling process and promises made to patients can be brought together in one instrument. It serves as one of the first

examples of integrative augmentation of ISO 10001 and 10002-based systems using ISO 10004 in health care. Therefore, this work should be a useful addition to the body of research on quality standards and their integrative augmentation.

Not all of the integrated care principles were met in the selected care continuum because the care was not actually “*integrated*”. The developed survey was partially validated and conducting the survey on patient samples would aid in further development of the tool. The ISO 10004 guidance on monitoring customer satisfaction had not been included because the actual implementation of the

survey was not performed. In future research, a study can be undertaken by involving patients in validating the survey, which should be useful in further investigating the appropriateness and feasibility of the survey items. It should be interesting to investigate the applicability of the developed measurement activities, especially administering the survey on a sample of patients in a real integrated care case.

Acknowledgment: The authors thank Alberta Health Services for research support and its personnel for facilitating this study.

References:

- Alabiso, J., Lee, C. S. & Tavares, T. (2015). *Patient satisfaction surveys in integrated care settings*. Research, Innovation and Scholarship Expo, Northeastern University. Retrieved from <https://www.northeastern.edu/rise/presentations/patient-satisfaction-surveys-in-integrated-care-settings/>.
- Armitage, G. D., Suter, E., Oelke, N. D., & Adair, C. E. (2009). Health systems integration: state of the evidence. *International Journal of Integrated Care*, 9(June), 1-11.
- Baalbaki, I., Ahmed, Z. U., Pashtenko, V. H. & Makarem, S. (2008). Patient satisfaction with healthcare delivery systems. *International Journal of Pharmaceutical and Healthcare Marketing*, 2(1), 47-62.
- Blouin, A. S. (2011). Improving hand-off communications: new solutions for nurses. *Journal of Nursing Care Quality*, 26(2), 97-100.
- Braun, S., Kreimeier, S., & Greiner, W. (2010). Measuring patient satisfaction in integrated healthcare projects - a pilot study with a modified ZAP questionnaire. *Zeitschrift für Evidenz Fortbildung und Qualität im Gesundheitswesen*, 104(2), 106-112.
- Carr-Hill, R. A. (1992). The measurement of patient satisfaction. *Journal of Public Health*, 14(3), 236-249.
- Coddington, D. C., Fischer, E. A., & Moore, K. D. (2001). Strategies for integrated health care systems. *Healthcare Leadership & Management Report*, 9(11), 8-15.
- Dagnone, T. (2009). *For patients' sake. Patient first review commissioner's report to the Saskatchewan Minister of Health*. Retrieved from <https://www.saskatchewan.ca/government/health-care-administration-and-provider-resources/saskatchewan-health-initiatives/patient-first-review>.
- Deffenbaugh, J. L. (1994). Health-care continuum. *Health Manpower Management*, 20(3), 37-39.
- Fernandez-Ruiz, E., Karapetrovic, S., & Khan, M. A. R. (2017). Three examples of integrative augmentation in health care and engineering education services. *International Journal of Advanced Quality*, 45(2), 13-18.

- Friedman, L., & Goes, J. (2001). Why integrated health networks have failed / Commentaries / Reply. *Frontiers of Health Services Management*, 17(4), 3-54.
- Goldwag, R., Berg, A., Yuval, D., & Benbassat, J. (2002). Predictors of patient dissatisfaction with emergency care. *Israel Medical Association Journal: Imaj*, 4(8), 603-606.
- Hart, C. W. L. (1988). The power of unconditional service guarantees. *Harvard Business Review*, July-August.
- HCAHPS (2010). *Provincial Hospital Consumer Assessment of Healthcare Providers and Systems*. Alberta Health Services, Internal Document.
- Hogreve, J., & Gremler, D.D. (2009). Twenty years of service guarantee research. *Journal of Service Research*, 11(4), 322-343.
- HQCA (2009). *Urban and regional emergency department patient experience report*. Health Quality Council of Alberta. Retrieved from <http://hqca.ca/surveys/emergency-department-patient-experience/2010/>.
- Kerber, K. J., de Graft-Johnson, J. E., Bhutta, Z. A., Okong, P., Starrs, A., & Lawn, J.E. (2007). Continuum of care for maternal, newborn, and child health: from slogan to service delivery. *Lancet*, 370(9595), 1358-1369.
- Khan, M. A. R., & Karapetrovic, S. (2013). Implementing an ISO 10001-based promise in inpatients care. *International Journal for Quality Research*, 7(3), 335-346.
- Khan, M. A. R., & Karapetrovic, S. (2014). An ISO 10002-based feedback handling process for emergency and inpatients care. *European Accounting and Management Review*, 1(1), 25-43.
- Khan, M. A. R. (2016). *An ISO 10000-based patient satisfaction framework* (Doctoral dissertation, University of Alberta, Canada). Retrieved from <https://era.library.ualberta.ca/items/d69ce4af-bf43-428a-b161-fa890035d318>
- Khan, M. A. R., Karapetrovic, S., & Carroll, L. (2017). ISO 10004-based measurement in a health care continuum, *QUALITY FEST 2017 Proceedings* (pp. 83-92). University of East Sarajevo, Faculty of Mechanical Engineering.
- Lamb, G. S. (1997). Outcomes across the care continuum. *Medical Care*, 35(11 Suppl), NS106-114.
- Levy, J. S. (1999). Marketing service guarantees for health care. *Nursing Economics*, 17(4), 214-218.
- Mastellos, N., Gunn, L., Harris, M., Majeed, A., Car, J., & Pappas, Y. (2014). Assessing patients' experience of integrated care: a survey of patient views in the North West London Integrated Care Pilot. *International Journal of Integrated Care*, 14(2). doi: <http://doi.org/10.5334/ijic.1453>
- McDougall, G. H. G., Terrence, L., & VanderPlaat, P. (1998). Designing the service guarantee: unconditional or specific? *Journal of Services Marketing*, 12(4), 278-293.
- Miller, M. J., & Ferrin, D. M. (2005). The application of simulation methodology in a hospital's six sigma project. *The 37th Conference on Winter Simulation Proceedings* (pp. 2016-2019), IEEE Xplore, Orlando, Florida, USA.
- Mur-Veeman, I., Hardy, B., Steenbergen, M., & Wistow, G. (2003). Development of integrated care in England and the Netherlands: Managing across public-private boundaries, *Health Policy*, 65(3), 227-241.

- Naidu, A. (2009). Factors affecting patient satisfaction and healthcare quality. *International Journal of Health Care Quality Assurance*, 22(4), 366-381.
- O'Malley, P. J., Brown, K., & Krug, S. E. (2008). Patient-and family-centered care of children in the emergency department. *Pediatrics*, 122(2), e511-521.
- Osborne, L. (2004). *Resolving patient complaints: a step-by-step guide to effective service recovery*, 2nd Edition. Sudbury, MA: Jones and Bartlett Publishers.
- Ouwens, M., Wollersheim, H., Hermens, R., Hulscher, M., & Grol, R. (2005). Integrated care programmes for chronically ill patients: a review of systematic reviews. *International Journal for Quality in Health Care*, 17(2), 141-146.
- Rygh, E. M., & Hjortdahl, P. (2007). Continuous and integrated health care services in rural areas. A literature study. *Rural & Remote Health*, 7(3), 766.
- Shaw, S., Rosen, R., & Rumbold, B. (2011). *What is integrated care. An overview of integrated care in the NHS*. London, U.K: The Nuffield Trust.
- Simoens, S., & Scott, A. (2005). Integrated primary care organizations: to what extent is integration occurring and why? *Health Services Management Research*, 18(1), 25-40.
- Singer, S. J., Burgers, J., Friedberg, M., Rosenthal, M. B., Leape, L., & Schneider, E. (2011). Defining and measuring integrated patient care: promoting the next frontier in health care delivery. *Medical Care Research and Review*, 68(1), 112-127.
- Siyambalapitiya, S., Caunt, J., Harrison, N., White, L., Weremczuk, D., & Fernando, D. J. (2007). A 22 month study of patient complaints at a National Health Service hospital. *International Journal of Nursing Practice*, 13(2), 107-110.
- Smith, A. E. & Swinehart, K. D. (2001). Integrated systems design for customer focused health care performance measurement: a strategic service unit approach. *International Journal of Health Care Quality Assurance*, 14(1), 21-28.
- Stauss, B., & Weinlich, B. (1997). Process-oriented measurement of service quality: applying the sequential incident technique. *European Journal of Marketing*, 31(1), 33-55.
- Steiber, S. R., & Krowinski, W. J. (1990). *Measuring and managing patient satisfaction*. Schenectady, NY: American Hospital Publishing.
- Stichler, J. F., & Schumacher, L. (2003). A gift of customer complaints. *Marketing Health Services*, 23(4), 14-5.
- Suter, E., Oelke, N. D., Adair, C. E., & Armitage, G. D. (2009). Ten key principles for successful health systems integration. *Healthcare Quarterly*, 13(Spec No), 16-23.
- Taylor, D. M., Wolfe, R., & Cameron, P. A. (2002). Complaints from emergency department patients largely result from treatment and communication problems. *Emergency Medicine*, 14(1), 43-49.
- Thomas, P., & While, A. (2007). Should nurses be leaders of integrated health care? *Journal of Nursing Management*, 15(6), 643-648.
- Trumble, S. C., O'Brien, M., O'Brien, M., & Hartwig, B. (2006). Communication skills training for doctors increases patient satisfaction. *Clinical Governance: An International Journal*, 11(4), 299-307.
- Tucker, J. L. (2002). The moderators of patient satisfaction. *Journal of Management in Medicine*, 16(1), 48-66.

Walker, K. O., Stewart, A. L., & Grumbach, K. (2016). Development of a survey instrument to measure patient experience of integrated care. *BMC Health Services Research*, 16(1), 193. doi: 10.1186/s12913-016-1437-z

Mohammad Ashiqur

Rahman Khan

Northern Alberta Institute of
Technology

Edmonton, Alberta
Canada,

mohammadk@nait.ca

Stanislav Karapetrovic

University of Alberta

Edmonton, Alberta
Canada

stanislav@ualberta.ca

Linda Carroll

University of Alberta

Edmonton, Alberta
Canada

lcarroll@ualberta.ca
