Assessing The Benefits Of Implementing An Oncology Electronic Medical Record In A New Cancer Center

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Abstract

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Purpose
The Centre intégré de cancérologie de Laval (CICL) opened in 2012 as a fully electronic clinic as all clinical and administrative activities are carried out through an Oncology Electronic Medical Record (OEMR). The implementation of an OEMR was chosen to support the objectives of exceptional care coordination, high quality care, superior information access, patient safety and patient satisfaction. This initiative was a unique opportunity to assess the benefits resulting from the implementation of an OEMR associated with process optimization and automation. However, the implementation of specialized informational systems remains complex and there is little research that establishes what the real benefits of these changes are and how they are generated.

Methods and Materials
This project was approved by the local Research Ethics Board (REB). Part of this project was a prospective questionnaire to assess user’s perception. The DeLone and McLean model was use as a framework. Each of the variables was consistent with the six major information systems success dimensions of the model. The implemented OEMR is MOSAIQ®. The questionnaire was conducted at two points in time: before implantation of OEMR in the spring of 2011 (T0) including expectations (T0E) and post-implantation in the fall of 2012 (T1). The
questionnaire was sent to all users at the cancer center and included 6 variables with specific items. Each item was measured using a Likert scale with 5 levels.

**Results**

At T0, 61 valid questionnaires were analysed and the response rate was 77.5%. At T1, 46 valid questionnaires were analysed and the response rate was 56.8%. The majority of respondents (85.48%) had never used MOSAIQ® in any health facility before (Table 1). The frequency of use of MOSAIQ® is high for 89% of respondents. The overall score obtained for the 6 variables are 1) Quality of the clinical information system T0 3.28 and T1 3.95 (NS) (Table 2), 2) Quality of the clinical information T0 3.0 and T1 3.7, an improvement of 23.3% (p<0.0001) (Table 3), 3) Benefits in terms of individual practice T0 3.03 and T1 3.42, an improvement of 12.9% (p=0.05) (Table 4), 4) Benefits in terms of collective practice T0 2.64 and T1 3.72, an improvement of 40.9% (p<0.0001), (Table 5), 5) Quality of care in terms of waiting time T0 2.63 and T1 3.82, an improvement of 45.2% (p=0.05) (Table 6), and 6) Quality of Care T0 2.81 and T1 3.49, an improvement of 24.2% (p=0.01) (Table 7).

**Conclusions**

Users' perception demonstrates a strong adoption and a highly significant improvement for the satisfaction after the OEMR implementation in almost all the variables with the exception of the Quality of the clinical information system where there is no difference. The lack of improvement could be related to confounding factors as a new virtualized desktop infrastructure. The most significant improvement is for the collective practice and this should translate in improved care coordination which is consistent with the cancer center's objectives. There is also general consensus that the implementation of the OEMR has significantly changed the working methods and the results are positive.
Assessing the benefits of implementing an oncology electronic medical record in a new cancer center

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PURPOSE
The Centre intégré de cancérologie de Laval (CICL) opened in 2012 as a fully-electronic clinic as all clinical and administrative activities are carried out through an Oncology Electronic Medical Record (OEMR). The implementation of the OEMR was chosen to support the objectives of optimal care coordination, high quality care, rapid information access, patient safety and patient satisfaction. This study was an unique opportunity to assess the benefits arising from the implementation of an OEMR associated with process optimization and automation. However, the organization of critical information systems remains complex and there is little research that establishes the real benefits of these changes and what they are generated.

METHODS AND MATERIALS
The study was prospective and the data was collected from 2012 to 2013. Part of the project was a prospective promotion to assess early promotion. The 33 patients and the 45 patients mode was used in a framework. Data of the variables was conducted with the six major information systems across departments of the model. The implemented OEMR is MOSAIC. The coordination was evaluated over 2012 to 2013 and the first year of operation of the OEMR (2013) including observations (2013) and post-implementation in the fall of 2013 (2013). The questionnaire was sent to all areas of the cancer center and included 4 variables with specific items. Each item was measured using a Likert scale with 5 values.

RESULTS
A total of 71 data were analyzed and the response rate was 77.2%. A total of 45 valid questionnaires were analyzed and the response rate was 45.5%. The majority of respondents (64.8%) had never used MOSAIC in any health facility before (Table 1). The frequency of use of MOSAIC is high (99.9% of respondents). The average score obtained for the 4 variables is the following: 1) Quality of the information system (Table 2 and 3.3.2) as a percentage of 3.0 and 3.142, an improvement of 0.2% (p-value 0.8), 2) Quality of the coordination of the clinical information (3.13 and 3.37), 3) Quality of the coordination of the clinical information in terms of the value of 3.87 and 3.64, an improvement of 0.2% (p-value 0.1), 4) Quality of the coordination of the clinical information in terms of the value of 3.87 and 3.64, an improvement of 0.2% (p-value 0.1). (Table 1).

CONCLUSION
OEMR implementation demonstrates a strong advantage and has a highly significant improvement on the satisfaction after the OEMR implementation at almost all the variables with the exception of the Quality of the Coordination of the Clinical Information where there is no difference. The lack of improvement could be related to the implementation factors as well as the nature of the tool itself, that is, that the tool can be seen as an additional database in the process of care coordination which is connected with the cancer center's objectives. There is also general consensus that the implementation of the OEMR has significantly changed the working methods and the results are expected.