Decision Support for the Service Needs Assessment Process in Elderly Care

Tanja Kaarna
Eksote
Lappeenranta, Finland
tanja.kaarna@eksote.fi

Jukka Korpela
Chainalytics
Espoo, Finland
jkorpela@chainalytics.com

Kalle Elfvengren
Lappeenranta University of Technology, Finland
kalle.elfvengren@lut.fi

Tarja Viitikko
Eksote, Lappeenranta, Finland
tarja.viitikko@eksote.fi

Merja Tepponen
Eksote, Lappeenranta, Finland
merja.tepponen@eksote.fi

Abstract

The paper presents a new solution for the service needs assessment process for elderly care in the South Karelia District of Social and Health Services (Eksote). Eksote is a forerunner in the development of health and social care services in Finland, as it combines primary and secondary health care, elderly care and social care in a totally new way, covering eight municipalities that worked independently earlier.

The paper describes a new process and a supporting information system for the service needs assessment process. The focus is on the elderly health care. The article describes empirical experiences gained about the actual usage of the solution in daily operations.

1. Introduction

In South Karelia, a region situated in South-Eastern Finland, previously separate municipal health care and social services were integrated into a new organization called Eksote in the beginning of 2010. Since then Eksote has arranged secondary health care, primary health care, care of the elderly, and social welfare services for its eight member municipalities. Primary and secondary health care systems have extensive public sector administration. Eksote works for delivering patient-oriented care to the approximately 130 000 citizens of South Karelia and it employs approximately 4 100 people.

The main reasons for the large organizational change, where Eksote was established, were solving challenges in economy, efficiency and service quality. Implementing the new strategy requires turning the strategic goals into distinct practical actions.

The objective of this paper is to introduce a Clinical Decision Support System (CDSS) for the service needs assessment in elderly care. The CDSS was developed in Eksote which is a forerunner in the development of health and social care services in Finland. Improving process efficiency through creation and utilization of CDSS has been one of the development areas of Eksote during the past few years.

The purpose of the service needs assessment process is to analyze and determine a person’s needs for care and various services. The service needs assessment process ensures that a person receives the right care and service in a timely manner. Service needs assessment is done as the first step in every contact between a patient/customer and an Eksote representative.

The primary objective in elderly care is to allow the elderly persons live in their homes as long as possible. Thus, the service needs assessment process is needed to determine the level of home care services needed. If an elderly person cannot stay at home even with home care services, the right type of care in a nursing home or hospital have to be defined.

The general objectives Eksote have set for the development and utilization of CDSS solutions are effective workflow management and standardization of tools. During the past five years, Eksote have implemented CDSS for multiple processes. Some examples of the developed CDSS included the placement process in elderly care, diagnostics processes in mental health care and patient logistics processes. One of the main development areas at the moment is to connect all implemented and future
CDSS through a joint customer management solution which gives an overview of a customer’s status across all processes. All CDSS have been developed by using the Serena Business Manager (www.serena.com) as the common development platform.

In the service needs assessment process in elderly care, the developed CDSS ensures that the assessment is done holistically and based on equal criteria and tools for each person. The assessment workflow and criteria have been defined to take into account all aspects needed in the assessment process and to fulfill the requirements set by law. The users of developed CDSS will have to follow the defined workflow and thus standardization in the way of working is achieved. Furthermore, the CDSS supports in the management of the ever-increasing number of potential customers in elderly care. The developed CDSS is one component in the overall customer management solution at Eksote.

2. Previous research on assessing service needs

Lahtinen and Tetri [1] described the nursing staff’s experience in using the Resident Assessment Instrument (RAI) as a basis for the planning of nursing care for the elderly in two nursing homes in Finland. The RAI is well known and widely used tool in assessing the elderly care. The RAI process drives the care plan that is developed for the resident. According to Lahtinen and Tetri [1] the nursing staff used the RAI-tool for the planning of nursing care and found the tool helpful in the process. The questions in the RAI-tool were partly considered not to be comprehensive enough when planning the nursing care. The nursing staff felt that there is not enough time for making the assessments.

Detering et al. [2] investigated the impact of advance care planning on end of life care in elderly patients. Elements of advance care planning include clarifying a patient’s understanding of their illness and treatment options; understanding their values, beliefs, and goals of care; and identifying their wishes. According to Detering et al. [2] advance care planning improves end of life care and patient and family satisfaction and reduces stress, anxiety, and depression in surviving relatives.

Schoen et al. [3] surveyed patients with complex care needs in 11 countries (Australia, Canada, France, Germany, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States) and found that in all of them, care is often poorly coordinated. All studied countries shared the challenge of how to meet the needs of patients with complex conditions in often fragmented care systems. According to Schoen et al. [3] there is a need for improvement in all countries through redesigning primary care, developing care teams accountable across sites of care, and managing transitions and medications well.

Taguchi et al. [4] present a Home Visiting Nursing Service Need Assessment Form (HVNS-NAF) to standardize the decision about the need for home visiting nursing service. It is the first validated standard based on characteristics of elderly patients who need home visiting nursing service. The HVNS-NAF may reduce the unmet need for nursing service and prevent hospitalization [4].

There are tools for elderly client care service need assessment. Widely used tools are for example the Minimum Data Set-Home Care [5], Camberwell Assessment of Need for Elderly [6], the Omaha System [7] and Outcome and Assessment Information Set [8]. These tools can assess both the mental and physical condition, and also the living conditions of elderly client who are living at home. In addition, these tools are used to clarify their care needs and health problems [4]. However, these tools cannot tell the types of services needed to solve client’s health problems. According to Taguchi et al. [4] standardization of the decision about the need for home visiting service would lead to further improvement of integrated care for older people.

There is also the INTERMED interview, which is an integrative assessment method that identifies patients with complex health care needs. Wild et al. [9] developed and evaluated the INTERMED for the Elderly (IM-E), specifically for use in populations of elderly persons. According to Wild et al. [9] the IM-E is a reliable integrative assessment instrument. It can be used to identify elderly patients in need of interdisciplinary care.

3. Service needs assessment in elderly care

Both the social and the health care system are based on service needs assessment that takes place in various stages of the process. Service needs assessment consists of all the assessments including assessment of one’s service, support or treatment needs.

The service needs assessment varies widely depending on the situation. Basic health care needs are assessed differently than service needs for home care or service needs for the disabled. Furthermore, the service needs assessment in elderly care is most
often done at an elderly person’s home and the specific circumstances have an impact on the content of the specific service needs assessment situation. All the service needs assessment should, however, be based on the common criteria which are used as the basis in each assessment situation but the emphasis may vary between different assessment situations.

The service needs assessment and treatment assessment have to meet certain time limits governed by the law. According to the social service law the service needs assessment in urgent cases needs to be carried out immediately. In non-urgent cases the service needs assessment needs to be carried out within seven days from a contact of an elderly person, his relative, or an authority [10].

The law on services for the elderly states that the service needs assessment concerning the elderly needs to be holistic [11]. It should include one’s need for social and health care services as well as assessment of one’s well-being, health, capability and one’s ability to get by independently with some assistance. The client is entitled to a plan of treatment and services needed.

The persons responsible for the service needs assessment process at Eksote have summarized the requirements the services to be organized for the elderly based on the Finnish laws and regulations as follows:

- social service law services i.e. home and housing services
- support for caretaker
- institutional care
- special social service law services i.e. services for the disabled, drug abuse programs and services for supplementary benefits.

Public officer decides what social services the county provides [12].

4. Challenges in elderly care at Eksote

As a requirement set by the law, service needs assessment was performed by Eksote also prior to the development of the CDSS. However, the process for service needs assessment had not been defined systematically and there was no uniform operating model for the process. The challenges that Eksote wanted to solve through the introduction of a CDSS for service needs assessment were gathered through interviews and workshops with the actors responsible for the process.

Previously the clients were assessed by the home care. The service needs assessment was done by the nurses of the home care. There was no concordant way for service needs assessment. Furthermore, there was no clear perception of what service needs assessment should include to meet the requirement of the law. Assessment varied between counties and was sensitive to subjective assessment. There was no regular follow up on client’s situation within home care services. The services remained the same even if there was a change in the client’s needs. There was no clear effort to facilitate the client’s daily routine before the home care services were started.

There are various ways to measure one’s performance and need of help. There are tests for memory and one’s ability to process data e.g. Mini-Mental State Examination (MMSE) and Geriatric Depression Scale (GDS-15). There are test of nutritional evaluation and of drug abuse. If these evaluation methods are used separately the services may be over- or under-estimated. According to a test a person’s performance level may seem to be low and he may seem to be in need of various kinds of assistance. However, he may have relatives to help him get along or he may have alternative sources of help other than that provided by Eksote.

Apart from tests and measurements the client’s situation was not necessarily viewed holistically or individually enough. Solutions to facilitate the client to manage at home on daily basis were not discussed efficiently enough.

During the evaluation visits the focus was on evaluating whether the client met the criteria at the moment of evaluation. In some cases this may have led to a situation in which the person was deprived of adequate follow-up guidance. From the service provider’s point of view the client may have been provided with home care on inadequate basis and this only led to excessive costs.

5. Development objectives

To improve an elderly’s chances to get along at home is the basis for developing the service needs assessment process. The aim is to make sure that everyone can manage at home as long as possible and as independently as possible. The fundamental objective is to support this by actions and services that make the rehabilitation easier and that support one’s performance. These actions can procrastinate the need for twenty-four –hour care.

Each case is evaluated independently. Evaluation covers such questions as ”What kind of things make it hard for a client to manage at home?”; ”Can a client manage at home if with proper tools or rehabilitation is/are provided?””. Home care service is planned individually. The quantity and quality is flexible to changing needs.
The criteria for home care services were updated in 2013. The main criteria to be taken into account in service needs assessment were defined as the following:
- the current living conditions
- the current state of health
- the ability to function
- current social networks.

These main criteria were divided into multiple sub-criteria and the overall service needs assessment questionnaire is very extensive and holistic.

The redefined approach to the criteria resulted to the need for developing the process. In the beginning of 2014 the task to refine the assessment process was given to the service needs assessment team. The aim was to make sure that the service needs assessment was carried out on equal basis for every client within Eksote.

It became obvious that an IT-solution will need to be created for the process to make it easier to follow the fulfillment of the agreed actions and objectives following the service needs assessment. Thus, a CDSS was developed to guide and follow the process of home care service needs assessment. The target for the IT solution was to ensure that the defined criteria are followed by all actors who are responsible for service needs assessment.

6. CDSS for service needs assessment in elderly care

Eksote has utilized an agile business process management (BPM) approach to the development of CDSS in various areas since 2010. Overall, the objectives for the development of CDSS have been set as follows [13]: 1) effective workflow management in order to ensure that all necessary steps in the processes are taken in a timely manner, and 2) process standardization in order to unify the diagnostics and service assessment processes by enforcing the use of jointly agreed diagnostic tools, question templates and logic.

The development platform for the CDSS is Serena Business Manager –software (www.serena.com/products/sbm). CDSS have been developed for various areas, like mental health care [14][15] and patient logistics. In elderly care, CDSS have been developed earlier for the patient placement process and for the interval care process. Although all CDSS at Eksote have been developed by using the common development platform, they all have their unique workflows and data content. Furthermore, the CDSS for service needs assessment is being used for monitoring and evaluating the customers during a period of multiple months, while the process lead times in other implemented CDSS is only weeks at maximum.

6.1. CDSS workflow for the service needs assessment process in elderly care

The development of the CDSS was started by defining the process workflow for the service needs assessment process in elderly care. The principles of an agile business process development approach [16] were followed when the service needs assessment team defined the process steps with the support of a facilitator. The team used the existing operating model as the basis, identified the needed improvements to the process and then defined the to-be process as illustrated in Figure 1. When defining the to-be process, the team considered the challenges
related to the current operating model, the objectives set by Eksote management, the requirements set by law and other relevant factors.

The process workflow consists of the following steps:

1. **Enter a new customer:** The service needs assessment team receives information about a new customer needing a service needs assessment. The contact can come through various channels, like other departments of Eksote, the customer himself or the relatives of the customer. A member of the service assessment team enters the customer’s information into the CDSS by using a standard template. The customer will be given counseling of potential services at this stage but if that is not sufficient for deciding on the needed service, the process will move to the next step.

2. **Evaluate service needs at home:** A member of the service needs assessment team visits the customer at home in order to execute a holistic evaluation of the customer’s situation and service needs. The evaluation is done by using specific, standardized questionnaires and tools that have been modelled in the CDSS. These tools include e.g. Alcohol Use Disorders Identification Test (AUDIT) [17], Rajala-Vaissi Test (RAVA) [18], Instrumental Activities of Daily Living (IADL) [19], Activities of Daily Living (ADL) [20], Mini Nutritional Assessment (MNA) [21], Mini-Mental State Examination (MMSE) [22] and Geriatric Depression Scale (GDS) [23]. The outcome of this process step is an in-depth evaluation of the customer’s specific situation and a decision for the service needs can be made. There are three main options available based on the evaluation: (1) the customer will be accepted to a home care evaluation period, (2) a place in a nursing home will be found for the customer if staying at home even with the help of home care is not possible, or (3) the process ends if the customer’s situation does not necessitate any addition of services.

3. **Execute a home care evaluation period:** If the customer is accepted to a home care evaluation period, the needed services for the customer will be organized in order to help the customer stay at home. In order to increase the customer’s possibilities for staying at home, a rehabilitation plan is defined for the customer by using a standard template in the CDSS. A rehabilitation plan will be written in the beginning of the evaluation period together with the client, the caretaker in charge and the physiotherapist. The baseline of the rehabilitation plan is the client's own aspiration for the rehabilitation. The rehabilitating evaluation period lasts for four weeks during which the customer’s situation and condition are continuously assessed by the caretaker in charge. The assessments are done by using the tools in the CDSS and all results are recorded in the CDSS.

4. **Evaluate service needs after the evaluation period:** After the evaluation period the customer’s situation is re-evaluated and the decision for organizing the needed services is taken. The aim is to define a service portfolio that enables the customer to stay at home but in case that is not possible, alternative options like a nursing home will be used.

5. **Organize regular home care:** If the customer can stay at home with the help of the defined services, a customership with the Eksote home care unit is established and the customer is provided with the agreed services.

6. **Assess service needs continuously:** The need of services and the customer’s situation is verified by the caretaker in charge regularly once a month or more often if a change occurs in the client’s situation. The nurse of service needs assessment team will also verify each client’s situation twice a year. The assessments are done by using the tools and templates in the CDSS and thus, all events and assessments for a specific customer are easily accessible in the CDSS.

The main actors in the process are the members of the service needs assessment team and the members of the home care services team.

The target was to define a workflow that ensures that all relevant factors are taken into account in the assessment holistically which is an improvement compared to the earlier practices and methods in this area. Another main improvement to the earlier practices and methods introduced in the new process is the home care evaluation period which creates more depth and reliability for the outcome of the assessment.

### 6.2 Benefits and challenges of the CDSS

The developed CDSS enables Eksote to achieve the following two main goals in the service needs assessment process.

Firstly, the clearly defined process flow which is implemented in practice through the CDSS helps achieve effective workflow management. The CDSS shows clearly the responsibilities and tasks of each person involved in the process and keeps track of the performance of the actors in the process. The CDSS
records time stamps for each action and thus the process lead time can be measured easily. The overall customer flow is managed through the CDSS and the status of each customer is visible at all times. As there are time limits set by law for the service need assessment process, the CDSS is instrumental for ensuring that the processing times are not exceeding the time limits.

Secondly, the CDSS ensures that the assessment tools are standardized and similar criteria are used for assessing the situation of each customer. Furthermore, the results of the assessments are recorded and various analyses and comparisons can be executed easily in order to ensure equal treatment of each customer. In the past, the lack of a common process and tool resulted to a situation where the assessments were made by using tool set that depended on the individual making the assessment. Thus, no uniformity across the customer base could be guaranteed.

A specific feature of the service needs assessment process in elderly care is that it is continuous by nature. A customer can enter the process multiple times as their situation and condition change over time. Furthermore, the customers in the evaluation period and in actual home care are constantly re-assessed in order to reveal changes in their situation. The CDSS supports this overall management of the customer base as the history of each customer can be seen and trends in the development of their condition and service needs can be analyzed.

The main challenge with the CDSS is to create a two-way integration with the patient health record system that is used as the basic operational IT-system at Eksote. There is a need to import a customer’s relevant data from the patient health record system to the CDSS and to export the relevant results of the assessments to the patient health record system in order to avoid double entry of data. The integration work has been started and is expected to be finalized by the end of 2015.

6.3. User experiences and results of the CDSS

The new service needs assessment model in elderly care was taken into use in the beginning of 2014. The CDSS supporting the evaluation process was taken into use in August 2014.

User experiences were collected from the team using the CDSS through interviews and workshops. The users have found the CDSS to be easy-to-use. No wide general experience on IT-systems is needed, as the CDSS guides the users through the process. All users can only act within their roles in the process and they will always see their personal task lists in the CDSS.

The agile development approach and the IT-platform used for creating the CDSS enable quick reactions to the potential change requests of the users. Some usability and process improvement ideas have risen through the actual usage and those improvements have been implemented within a few hours into the CDSS. One of the main advantages of the developed CDSS is the quick adaptability to changing requirements and circumstances.

In 2014, overall 1 426 service needs assessment appointments in elderly care were made by Eksote. 794 appointments were made by the centralized service needs assessment team and 632 by the home care team. The home care appointments were made by nurses, in general for new rehabilitating patients and re-evaluating old patients’ situation.

After appointments made by the assessment team less than 10% of the clients proceed to the rehabilitation evaluation period. For instance in Lappeenranta 10 of 139 clients met by the case manager and a physiotherapist proceeded to the rehabilitating home care evaluation period and 6 of them proceeded as regular customers of home care.

The aim of rehabilitation evaluation period is to rehabilitate the client and to restore his performance as good as possible. The effectiveness of the rehabilitation evaluation period is best shown as a decrease in the service needs. When specialized home care is applied during the evaluation period, the need of permanent home care in many cases has been unnecessary.

The results suggest that the CDSS has increased the efficiency of the service needs assessment process in the following ways:

1. only the customers with clear increased service needs have been approved to the evaluation period
2. the rehabilitating services provided during the evaluation period have been effective as only very few customers need permanent home care services.

The achieved results have shown that the standardized process implemented through the CDSS has increased the efficiency and effectiveness of the service needs assessment process in elderly care. The experiences from the CDSS suggest that a similar approach will be applicable in other service areas at Eksote as well and investigations for expansion of the approach are currently on-going.
7. Conclusions

The service needs assessment process is an essential tool for ensuring the right level of service in a timely manner in elderly care. Failures in the assessment process may lead to either unnecessary costs due to providing unnecessary services or to deterioration in a customer’s condition due to insufficient or wrong services.

Eksote is one of the forerunners in public social and health care in Finland. In early 2014, Eksote introduced a centralized and standardized process for assessing service needs in elderly care. In order to ensure the implementation of the process in practice, a CDSS supporting the process was created and taken into use in late 2014.

The CDSS has been in use at Eksote since August 2014. Based on the experiences gathered through interviews and workshops with the actors in the process and on the quantitative reports derived from the CDSS, the main results achieved through the use of the CDSS are the following:

- **Standardizing the service needs assessment’s measurements and criteria:** The CDSS ensures that all customer are treated equally and based on the same criteria in the assessment process.
- **Centralizing the service needs assessment in the whole area of Eksote:** Development of the substance and processes has been executed by an agile business process development approach. The logical and standardized process and wide evaluation have improved the quality and equality of the service for the clients in the whole area of Eksote. The customers’ overall situation has been surveyed within the assessment appointment, as well as different options for living at home have been discussed. Customer’s own wishes, opinions and aims have been noted in the follow-up plan.
- **Using the rehabilitation evaluation period before initiating regular home care:** From early intervention and health promotion's point of view, the client has been offered case management, counselling for exercise, nutrition and social activities. Physiotherapist has been found useful in supporting the evaluation, working together with the case manager. Almost all of the clients have problems with motoric skills in which the physiotherapist has been able to go into detail, evaluate and give guidance. Positive feedback and enthusiasm has been received especially from the close relatives of the clients.

Based on the positive experiences gathered from the service needs assessment process, Eksote is planning to expand the utilization of the approach and CDSS to new areas. The service needs assessment process and the case management system should be expanded to all social- and healthcare processes. In all contacts with the customer, evaluation of the customer’s situation and needs of service should be done analytically in order to make the right decisions. In the next stage, the service need assessment model in elderly care should be adapted to the rehabilitation and services for the disabled.

In addition, the developed services for the elderly home care service needs assessment process must be connected as an integral part of the CDSS solutions for patient placements and logistics in the areas of acute are, elderly care and mental health care. These solutions have been created with the same IT-platform and thus the integration is a straightforward task.

The developed CDSS for service needs assessment will be an important tool for the Contact Centre –based operating model that Eksote is currently creating. The aim of the Contact Centre – model is to create a single point of contact for all customers. The customers will call a single service number in which the customer's need for services is estimated. The Contact Centre will enter the customers with home care service needs into the developed CDSS and the service needs assessment process will then go on without interruption from this first contact and continue from one stage to another until the service needs have been defined and satisfied.

In parallel with the service needs assessment process a CDSS application called the Welfare Plan is being developed. The Welfare Plan is a summary of a person’s rehabilitation and service plans covering all service areas of Eksote. The Welfare Plan gives an overview of a customer’s status within Eksote services and thus serves as an important starting point for the service needs assessment process in elderly care. The Welfare Plan solution allows all customers’ rehabilitation and service plans to be managed and accessed through a specific CDSS application developed on the same IT-platform as the service needs assessment solution.
References


