Designing an Assessment Method for the Effectiveness of Direct Referral of Elderly with a Social indication from the Emergency Department of a Hospital

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Abstract. To tackle increasing health care costs and increase quality of health care the prevention of unnecessary admission by direct referral for elderly with a social indication from the hospital to other care institutes is perceived successful by stakeholders. No method to assess the effectiveness was present in literature. A six-step assessment method is designed based on literature and tested and reflected by an application to the Zorgtransferium-process of the Albert Schweitzer Hospital. The six steps are the the Description of the object of study, the Stakeholder selection, the Indicator collection, the Indicator selection, the Data collection and the Data analysis. The Zorgtransferium-process is effective on 'Availability of hospital beds' (374 occupant days/year), 'Referral Distance'(average:8.7 km, min: 0 km, max: 19 km) and 'Referral Time' (average: 22.6 hours, min: 2 hours, max: 78 hours). The assessment method creates overarching insight for the stakeholders on the process and makes future assessment of effectiveness possible. In the future more research is needed to create a benchmark or generally accepted norms to place the results on effectiveness in broader context, the process should be expanded to other patient groups and the evidence-based management approach used in this research should be applied to other pilot projects in hospitals.

Keywords: Assessment methodology · Effectiveness · Social Indication · Direct referral · Hospital

1 Introduction

The aging population in the Netherlands leads to an expected increase of 157 percent increase in elderly health care costs to an amount of 174 billion euro's in 2040(Rijksinstituut voor Volksgezondheid en Milieu, 2018), which can lead to unaffordable and inaccessible care in the Netherlands. One of the means to tackle the increasing health care costs is to decrease unnecessary hospital admissions. A necessary hospital admission is *an admission based on a need for diagnosis, observation or treatment which only can be provided at the hospital.*

The Albert Schweitzer Hospital (2018) in Dordrecht claimed to have a successful direct referral process for elderly patients at the Emergency Department, which have a large risk to be unnecessary admitted to the hospital. Within this process patients with a social indication[1] are identified and directly referred to another form of care. This referral process should decrease health care costs and increase the quality of care for these patients. However, no method to assess the effectiveness of such referral processes exists in literature. Besides that, no researcher has ever described such a process in a formal way, which makes further application to or comparison with other hospitals impossible. Therefor this research focuses on the research question: *How to describe and assess referral processes for elderly patients with a social indication?*

2   Research method

A two-step approach is taken to come to an assessment method (with the description of the process implemented). The first step is the design of a assessment method based on challenges for effectiveness assessment found in literature. The second step is the testing and reflection of the designed assessment method by applying it to a case (The Albert Schweitzer Hospital in Dordrecht) to identify challenges within the practical application of the method.
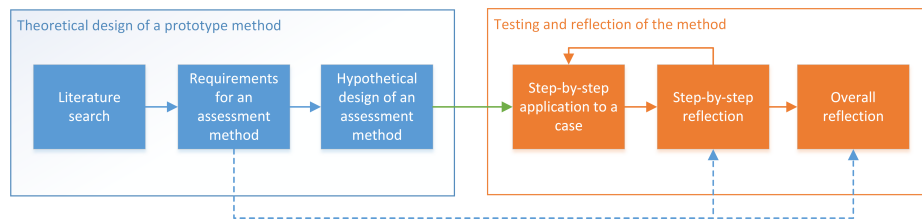

Fig. 1. Two-step design approach to come to a tested assessment method for the effectiveness of direct referral of patients with a social indication from the ED of the Hospital.

2.1   The Design of a assessment method

From literature, challenges in assessing quality and effectiveness are collected to come to a set of requirements for the assessment method. No prior literature is available on the effectiveness of direct referral processes for patients with a social indication, therefor more general literature on the assessment of quality and effectiveness will be used. To come to a list of requirements which represents the

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[1] Patients with a social indication are elderly patients with need of care from a care institute other than the hospital, presented at the emergency department.

core challenges within effectiveness assessment, articles which address multiple generic challenges and are written by widely cited authors will be chosen. The search starts with the search terms: ((Assessing OR Evaluating) AND (Quality OR (Quality AND Care)) en ((Assessing OR Evaluating) AND (Effectiveness OR (Effectiveness AND Care)). From there the researcher searches for interesting articles which focus on the challenges within effectiveness assessment to come to requirements for an assessment method. The found challenges will be translated to a list of functional requirements for the assessment method, since the method has to deal with this challenges. By determining which functional requirement has to be dealt with in which order (or in other words, in which order the functions of the assessment method has to be fulfilled) a step-by-step method can be designed. Per step a tool will be chosen to fulfill the function based on the fit to the context of the referral process in the hospital. Familiarity by the stakeholders and evidence that it is suited for the function to fulfill, are important factors for choosing the right tool.

2.2   Testing and reflecting the assessment method

The different designed steps will be applied step-by-step on the case. After every step will be reflected on this step, otherwise nothing can be said on the feasibility of the step. Within this reflection will be reflected to what extend the step meets the purpose of the step or the requirement the step should fulfill. New challenges found by executing the step will be elaborated on and a way to deal with these will be explained. From this different design rules for future design of assessment methods for referral processes are distilled and presented. Based on the different reflections of the individual method steps it can be said under what conditions the method is feasible to use in practice. Besides that, some overall reflection is needed to explain what the overall quality of the method is, and to what extend the assessment method can be used in the future for the assessment the effectiveness of direct referral processes from the ED of the Hospital.

2.3   A case: The Albert Schweitzer Hospital in Dordrecht

The Zorgtransferium-process is developed within 2017 to make quick referral of patients from the Emergency Department to nursing homes possible(Albert Schweitzer Hospital, 2018). The process first started as a pilot and since this pilot was, according to the different stakeholders, successful, the process is now implemented as a standard on the ED. This process is already seen as an improved referral process. The stakeholders have insight in the process itself, since it is explicitly designed in cooperation with these stakeholders and because of their involvement, clear stakeholder perspectives on effectiveness exist. Stakeholders have the hunch that the process is very effective, but this is never formally researched. Within 2018 101 patients with a social indication were identified at the Zorgtransferium. Data on these patients will be collected retrospective from the patients' files.

3   Results

One of the main challenges in assessing effectiveness is that quality and effectiveness are subjective. According to Cameron (1981) effectiveness is *"a construct which cannot be observed directly (p.107)"* and Donabedian (1966) described that *"... the definition of quality may be almost anything anyone wishes it to be, although it is, ordinarily, a reflection of values and goals current in the medical care system and in the larger society of which it is a part."* Because of this problem a construct space for effectiveness needs to be determined out of different important values, goals or indicators. The definition of effectiveness used in this article is: *Effectiveness is the construct of individual indicators perceived important, which describes the extend to which the intended result is achieved.* Since the search for effectiveness within the research lies on system level the different perspectives on which indicators are perceived important by the stakeholders has to be combined to construct the effectiveness on system level. These indicators need to be measured in order to determine the effectiveness. Based on the mentioned literature a requirement list is constructed for an assessment method for the effectiveness of referral processes:

1. The method has to clearly describe the object of study.
2. The method has to take the perspectives of different stakeholders into account. (Donabedian, 1988)
3. The method has to determine which stakeholders to take into account. (Donabedian, 1988)
4. The method has to collect indicators determined important by different stakeholders. (Donabedian, 1988)
    – The method should focus on indicators of output, rather than indicators of process or structure. (Donabedian, 1966)
    – The method should take the change of indicators over time into account. (Cameron, 1981)
    – The method should take the perspectives of individuals rather than organizations into account. (Cameron, 1981)
5. The method has to produce a set of indicators as the construct space of indicators. (Cameron, 1981; Donabedian, 1966)
    – The method should help individuals to identify their preferences on indicators. (Cameron, 1981)
6. The method has to measure the chosen indicators.

Out of this requirements a six-step assessment method is designed:

Description of the Object of study The researcher needs to analyse which activities and decisions are made from the moment a patient arrives at the ED until the moment the patient is referred to another care institute and show this activities in a flowchart(Edraw, 2019).

Stakeholder selection The visualized flowchart is used to determine per process step which stakeholders are involved. The stakeholders are classified in

both the process step they are involved in and their role within this step. This makes it easy to determine which selection of stakeholders was a good representation.

Indicator Collection The selected stakeholders are interviewed with help of the goal tree method(Enserink et al., 2010). This is a method which helps the stakeholders to translate their perspective into measurable indicators. The generated indicators of all stakeholders are added to a list of all potential indicators.

Indicator Selection Out of the list of collected indicators a small set of most important indicators needs to be selected based on importance (preference of the stakeholders above other indicators), availability of the data and uniqueness(two indicators measuring the same aspect of effectiveness should not be included).

Data Collection On the chosen indicators data needs to be collected in order to come to a value for the indicator.

Data Analysis Per indicator a representative value needs to be calculated. These values need to be placed into context to give meaning whether the concluded value is effective or not. This context can be a benchmark to similar processes or generally accepted norms.

The application of this method to the case has given insight on the added value of the method. A total of 21 indicators was generated by interviewing six stakeholders. Out of 21, five indicators were selected for the final indicator set:

Shorter referral time measured in time between the moment the patient arrives at the ED and the patient leaves the hospital

Lower referral distance measured in the distance between the home address of the patient and the location of the care institute the patient is referred to

Better fit of the goal of care provided on the patients' care need measured in the amount of patients with a good fit

Better fit of the intensity of care provided on the patients' care need measured in the amount of patients with a good fit

Higher availability of hospital beds measured in the amount of occupancy days prevented by a direct referral process per year.

Determining the effectiveness per indicator was impossible for two out of five indicators (Better fit of the goal and the intensity of care provided), due to privacy regulations. The research was performed by the hospital and due to the retrospective data collection it was impossible to ask the patients permission to retrieve data from other organisations. On the other three indicators the data was available and concluded in the following values:

Availability of hospital beds The amount of extra availability of hospital beds is a total of ***374 occupant days/year*** under the assumptions that all patients referred where otherwise admitted to the hospital.

Referral distance The average referral distance is ***8.7 kilometers*** with a minimum of 0 kilometers and a maximum of 19 kilometers.

Referral duration The average referral duration of **22.6 hours** with a minimum of 2 hours and a maximum of 78 hours.

Fully objective effectiveness was only possible when the data could have been compared to data on similar processes or if a generally accepted norm was present. Due to the lack of both, the context to give objective meaning to the values was not available. Due to the opinion of the researcher the process is effective on all three indicators.

4   Conclusion and Discussion

4.1   Reflection on the assessment

Different Design Rules for assessment methods for processes of direct referral of patients with a social indication from the ED of the hospital to care institutes can be concluded from the research. Important to notice is that only the assessment method as a whole is able to assess the effectiveness of referral processes from a systemic perspective. The individual steps it itself are not very innovative and are proven in earlier research. However, the combination of these steps to use them for health care assessment of problems on health care system level is novel and recommended to apply in the future.

– A visualization of the process is required, in such a way that it can be used to determine whether the understanding of all important stakeholders is the same and to come to a collective agreement of the stakeholders that the described process is the process to assess.
– The identification and selection of important stakeholders have to be implemented in such a way that the perspectives of these stakeholders together form a representative perspective on system level. A representative perspective is reached when the stakeholders are spread out over the process in both the phase of the process they are involved in and the kind of role (operational or managerial) they play in this phase.
– It is required to map and translate the perspectives of the most important stakeholders into measurable indicators in such a way that it is possible to create a construct of indicators which can be quantitatively analyzed.
– A selection of the most important indicators is needed in order to form the construct space of effectiveness in such a way that the construct represents the most important indicators which data is available on and which do not overlap in the effects they measure.
– Data collection and data analysis of the indicators in the indicator set is needed in such a way that numbers on the indicators are created which make it possible to conclude the effectiveness of the process on these indicators.

When assessing the effectiveness of these processes in the future, the assessment method could be used in three different ways. Depending on the similarity of the referral process to assess in the future and the referral process used within

this research on two factors a researcher could use three approaches. These factors are the scope of the process (ED of a hospital as start point, leaving the hospital as end point) and the scope of the perspectives taken into account (Operational and managerial actors within health care institutes). If these are not similar a researcher is recommended to take approach 3. Otherwise a researcher is recommended to take approach 1 or 2 dependent of availability of data on the indicator set and the degree to which the stakeholders in the referral process to assess, agree with the set chosen in this research.

1. Take the set of the five selected indicators in this research and determine the values for the indicators for the process to assess.
2. Take the full list of collected indicators, choose a set of indicators based on the specific context of the process to assess and determine values for these indicators.
3. Visualize the process, select the important stakeholders, collect the indicators which the stakeholders perceive important, select a set of indicators and determine the values for these indicators.

4.2   Recommendations

There are three main recommendations for the future. Evidence-based management should be implemented more often within health care, which entails that decisions on the organisation of processes within health care are made based on evidence instead of based on opinions of professionals. Next to that, a research framework should be created with the goal to increase the recognition of patients with a social indication and to function as a basis for norm-setting in society. At least, research on costs, patient perspective and further application of the assessment method should be included in this framework. The third recommendation is to expand the process to two other patient groups which the process is expected to be beneficial for: patients with a long-term care need and patients with a need for follow-up care after hospital admission.

4.3   Overall reflection on the research

From the start of the research the goal of this thesis, to determine the effectiveness of direct referral from the ED of an hospital for patients with a social indication, seemed relative straightforward. However, looking at the final conclusions on the effectiveness these are not fully satisfactory yet.

   This study took place in a double explorative nature and therefor can be described as a pilot-pilot study (a new method applied on a new research subject). Although the goal of the research seemed relative straightforward, reaching this goal within an explorative research was far more challenging than expected. There are a couple of reasons why an easy assessment of the effectiveness was impossible. At first, there was a lack of easy-to-understand and accepted descriptions of the referral process. Secondly, no generally accepted set of indicators was

available to base the effectiveness on. Thirdly, the data needed to assess the effectiveness was not available. Fourthly, the context needed to conclude whether the process was effective was not available. This also leads to a disclaimer on the conclusions within this research. It reflects on the used method and the subject, however it cannot be concluded that the effectiveness is objectively determined and it also cannot be determined whether other methods to assess effectiveness would be more successful in delivering satisfactory conclusions on the effectiveness of these referral processes.

But, when satisfactory conclusions on effectiveness cannot be reached, the question arises what the actual value of this research is. This research started untangling a large problem in the current health care sector. To the opinion of the researcher, elderly which should be cared for are not receiving the right care at the moment. This thesis creates awareness on problems with patients with a social indication, which cannot be neglected. Besides that, it shows that very much is still unknown on these patients and on potential solutions for the problems. Even relative basic data, needed to analyze the health care provision for this group of patients, is missing. This thesis has opened a Pandora's box by showing these unknowns and on the same hand this box cannot be closed by neglecting the need to deal with these problems. The general value of this research is that it made first steps in the recognition of the problems for these patients and that it creates first insights in the system and processes affecting these problems. These steps and insight create the needed attitude to, eventually, come to the needed knowledge to create actual solutions for these patients. This research should be seen as the first push, which should set the health care sector in motion to take the steps to deliver the right care for these patients.

Bibliography

Albert Schweitzer Hospital (2018). Proef geslaagd: voortaan korte route voor ouderen van seh naar verpleeghuisbed. https://www.asz.nl/professionals/nieuws/2018/3/23222/.

Cameron, K. (1981). Construct space and subjectivity problems in organizational effectiveness. *Public Productivity Review*, pages 105–121.

Donabedian, A. (1966). Evaluating the quality of medical care. *The Milbank memorial fund quarterly*, 44(3):166–206.

Donabedian, A. (1988). The quality of care: how can it be assessed? *Jama*, 260(12):1743–1748.

Edraw (2019). Flow chart description. https://www.edrawsoft.com/Flowchart-Definition.php.

Enserink, B., Kwakkel, J., Bots, P., Hermans, L., Thissen, W., and Koppenjan, J. (2010). *Policy analysis of multi-actor systems*. Eleven International Publ.

Rijksinstituut voor Volksgezondheid en Milieu (2018). Impact van de vergrijzing. https://www.vtv2018.nl/impact-van-de-vergrijzing.