

# **The effect of implementation strategies in the implementation of the multidisciplinary innovation Fast Diagnostics**

Student: J.S. Bas  
Student number: 3379876  
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University: University Utrecht  
Faculty: Clinical Health Sciences, master Nurse Sciences  
Supervisors: R.H. van Linge  
Course instructor: H. van Os-Medendorp  
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## Introduction

By 2050 one third of the population in the developed countries is likely to be 60 years or older (1). The Netherlands also faces this problem. Due to the ageing population it is to be expected that there will be an increasing demand on healthcare and an increase in cost (2). According to the Dutch Government these problems need to be solved by the implementation of innovative methods (3) and better multidisciplinary care (4). The estimation is this will lead to better quality of care and cost reduction (5,6). An innovative method is, hereby, defined as an idea, practice or object that is perceived as new by an individual or unit (7).

Healthcare organizations are thus confronted with an increasing demand on healthcare and policies focused on multidisciplinary care. They are challenged to find new ways of delivering integrated healthcare to their patients, from a multidisciplinary stance, and implement these new healthcare concepts in their organization. So it is important to know which way is best, to implement multidisciplinary innovations. Especially so for nurses who are important actors in multidisciplinary innovations (8). Literature gives no clear definition of a multidisciplinary innovation. In this study it is an innovation that is perceived as new by various healthcare professionals. For example a multidisciplinary guideline or an integrated care program.

Several studies report about the use of implementation strategies in the implementation of multidisciplinary innovations. An implementation strategy can be described as a set of actions and events, which leads to the use of an innovation (9). Qualitative research has shown that the use of different implementation strategies is important for the implementation of multidisciplinary innovations (10-12). For example Hysong et al. (2007) described that the use of champions and adaption of the intervention and organization were key factors for successful implementation. These findings are supported in two randomized trials where the use of multifaceted and tailored implementation strategies showed promising results; although no firm conclusions can be made (13,14). A systematic review confirms that the use of multifaceted implementation strategies appears to be more effective than the use of a single-faceted implementation strategy, but further empirical research is needed (15). Single-faceted implementation strategies use one type of intervention, whereas multifaceted implementation strategies use a combination of interventions (16). A tailored implementation strategy is a planned strategy that takes prospectively identified barriers of change into account (17).

## **The multidisciplinary innovation Fast Diagnostics**

Four hospitals in the Netherlands are going to implement the multidisciplinary innovation Fast Diagnostics. In this innovation various healthcare professionals work together to give a patient a diagnosis for cancer, within 48 hours after referral by a general practitioner or another hospital. A central planner plans all the tests the patient must undergo. A hostess welcomes the patient, and ensures that the patient receives his tests on time. Radiologists, physicians and nurses conduct the tests. An academic hospital has implemented this multidisciplinary innovation as a pilot. This way the other hospitals gain insight into how the innovation Fast Diagnostics can be implemented.

## **The innovation contingency model of Van Linge**

One way to examine the effect of implementation strategies is the innovation contingency model of Van Linge (9,18,19). This assumes that an implementation is successful when a fit is realized between the demands of the innovation and the characteristics of the context, and is meant to help design tailored implementation strategies (9,19). Proctor et al. (20) describes this as appropriateness. Van Linge (2006) derives four basic configurations from his model over two dimensions (internal versus external focus and control versus flexibility); the regulation-orientated configuration, in which processes and standards are formalized; the result-orientated configuration, in which goals and targets for results are formalized; the team-orientated configuration, in which cooperation and consensus are important; and the development-oriented configuration, in which creativity, flexibility and external focus are important. A configuration is applicable to a unit or an innovation, when the unit or innovation is coherent on the operational features, explicit values and basic assumptions. When innovation and organization have the same configuration, one can speak of a fit. (9,21)

## **Problem statement, aim and research questions**

To ensure the successful implementation of the multidisciplinary innovation Fast Diagnostics, it is necessary to know which implementation strategies are effective in which context. Literature has shown that it is not clear what the most effective implementation strategies are, in the implementation of multidisciplinary innovations. Therefore the purpose of this study was to determine the effect of the used implementation strategies on the course of the implementation process, in the implementation of the multidisciplinary innovation Fast Diagnostics. Furthermore the aim was to determine which factors influenced the implementation process.

This has led to the following research questions:

1. What is the effect of the used implementation strategies on the course of the implementation process, in the implementation of the multidisciplinary innovation Fast Diagnostics in an academic hospital?
2. Which barriers and facilitators have influenced the implementation process in the implementation of the multidisciplinary innovation Fast Diagnostics in an academic hospital?

## **Methods**

A comparative case study, using a mixed methods design, was conducted to examine the effect of the used implementation strategies on the implementation process, and the barriers and facilitators that influenced the implementation process. This allowed us to gather in-depth information on an organizational and an individual level, through which the relationship between the used implementation strategies and the course of the implementation process could be examined (22). The quantitative data were used to examine the effect of the implementation strategies on the implementation process; whereas the qualitative data were used to explicate the meaning of the quantitative data and to gain insight into factors that influenced the implementation process (22).

The study was conducted according to the principles of the declaration of Helsinki (59<sup>th</sup> version, October 2008). Because no people were subjected to proceedings and no conducts were imposed on them, a medical ethics review wasn't deemed necessary.

## **Participants and setting**

Four hospitals in the Netherlands are planning to implement the multidisciplinary innovation Fast Diagnostics. From these four a convenience sample was taken, resulting in two cases, namely two units in one academic hospital. This academic hospital served as a pilot site for the implementation of Fast Diagnostics. All the healthcare professionals who worked with the multidisciplinary innovation Fast Diagnostics were included in the study, for the quantitative data collection. The professionals were nurses, managers and staff, physicians, a hostess, planners and radiologists.

A purposive sampling strategy was used for the qualitative data collection. The participants needed to be involved in the implementation process of Fast Diagnostics. A contact in the academic hospital provided the names of participants .

## Data collection

Data was collected from January 2012 to April 2012. In order to examine the effect of the used implementation strategies on the implementation process, two main study parameters were formulated. The first is the fit between unit and innovation, (appropriateness). To see if there was a fit between unit and innovation the 'Observed Innovation Characteristics'-questionnaire (WIK) and the 'Observed Unit Characteristics'-questionnaire (WOK) were used (see Appendix I). Both are derived from the innovation contingency model by Van Linge. The questionnaires consist of 12 items each. Three items for every configuration. The items are rated on a Likert scale ranging from 1 (totally disagree) to 5 (totally agree). A configuration is applicable if the mean score of all three items ranges between 4 and 5. One study reported a Cronbach's Alpha between 0.76 and 0.91 for the questionnaires (21). Another study reported a Cronbach's Alpha between 0.71 and 0.78 for the WIK, and a Cronbach's Alpha between 0.70 and 0.75 for the WOK. This study also reported a positive construct validity for the questionnaires. (18)

The second parameter was the adoption of the innovation by healthcare professionals. To measure the adoption, a Numeric Analogue Scale was used. This gave insight into the intention of professionals to try the innovation (22,23). The professionals were asked to fill in the NAS for the question 'How satisfied are you with the innovation Fast Diagnostics?'. The NAS had a range between 0 and 10 (0 = maximally unsatisfied and 10 = maximally satisfied).

The secondary study parameter is the experience of healthcare professionals with the implementation of the multidisciplinary innovation Fast Diagnostics. These experiences will give insight into facilitators and barriers that influence the implementation process. Data about the experiences were collected through semi-structured interviews. The following topics are discussed:

- Relationship of the participant with the multidisciplinary innovation Fast Diagnostics.
- Experiences with Fast Diagnostics.
- Barriers and facilitators of the implementation of Fast Diagnostics.

The complete topic guide can be found in Appendix II. The interviews were tape recorded. The duration of the interviews was between 39 and 47 minutes. The questions were open-ended to encourage the professional to share all relevant data and experiences (22). To help the professional feel comfortable during the interview, it was conducted on a quiet and known location for the participants (22).

In the first week of the study the questionnaires were sent to the participants, for the pretest. Two weeks before the end of the study the questionnaires were sent to the participants for the posttest. All the interviews were taken in the last month of the study.

## **Data analysis**

### **Quantitative analysis**

All statistics are computed for the first study parameters. The Statistical Packages for the Social Sciences, version 17, was used to compute the data.

The demographic data were translated into frequency tables. The mean scores of the WIK and the WOK on the four configurations are given. A configuration was applicable to an innovation or unit when it had a mean score between 4 and 5. The mean score of the NAS is given.

### **Qualitative analysis**

The qualitative data was processed with NVIVO 9. The interviews were transcribed verbatim. For each interview a summary was made for member checking.

The data was analyzed with the method of Strauss and Corbin. This consists of three types of coding: open, axial, and selective. With open coding, data was broken down into parts and compared for similarities and differences. Similar data was grouped together into categories. With axial coding, categories were systematically developed, and subcategories were linked to these. With selective coding, the core category was selected by writing a story line and linked to the remaining categories. (22)

Open coding was done by the first author and reviewed by two other persons. Axial coding and selective coding were done by the first author and reviewed by the last author. Any disagreement in coding was discussed by the coders and resolved by consensus.

## **Results**

### **Characteristics of the participants**

Twenty-two healthcare professionals were invited to participate in the study, by filling in the questionnaires. Fourteen professional from Fast Diagnostics and the policlinic for breast cancer and eight professionals from Fast Diagnostics for other tumors.

From the fourteen professionals who work at the policlinic for breast cancer, ten didn't respond. From the eight professionals who work at Fast Diagnostics for other tumors two

didn't respond. It is unclear why. The characteristics of the participants who did respond, are shown in table 1.

For the interviews eight healthcare professionals were approached. Two healthcare professionals from the policlinic for breast cancer; five healthcare professionals from Fast Diagnostics for other tumors; and one professional who worked for both units. Two professionals couldn't participate due to time restraints. One professional was member of the advisory committee, another was project manager for the implementation of Fast Diagnostics at the policlinic for breast cancer, three were project managers for Fast Diagnostics for other tumors, and one was a nurse practitioner for Fast Diagnostics for other tumors.

>>insert table 1 here<<

### **Quantitative results**

The abovementioned information shows that ten professionals responded on the questionnaires. The results can be found in table 2.

The Numeric Analogue Scale, that measured the adoption of the innovation by the healthcare professionals who worked at the policlinic for breast cancer, resulted in a mean score of 7.00. For the healthcare professionals who worked at Fast Diagnostics for other tumors the NAS resulted in a mean score of 7.33.

For the WIK and the WOK a mean score was computed for each configuration (see table 2). The results from the policlinic for breast cancer show that on a low level a fit can be found between the regulation-orientated configuration (WIK: 3.58; WOK: 3.58) and the team-orientated configuration (WIK:3.50; WOK: 3.83). The mean scores from the WIK and the WOK are all below four, so there is no dominant configuration for the innovation and the organization.

The results from Fast Diagnostics for other tumors show that the strongest fit can be found between the regulation-orientated configuration (WIK: 3.61; WOK: 4.00) and the team-orientated configuration (WIK: 3.78; WOK: 4.17). The scores from the WIK are all below four, so there is no dominant configuration for the innovation. The results from the WOK show that a regulation-orientated configuration and a team-orientated configuration are applicable.

There are no results from the posttest.

>>insert table 2 here<<

### **Qualitative results**

The interviews with the participants resulted in four important factors: involvement of stakeholders, adaptation of the organization, dedicated management, and communication. Furthermore the interviews gave insight into the used implementation strategies.

### **Implementation strategies**

For Fast Diagnostics and the policlinic for breast cancer a business case was created, in which steps for the realization of Fast Diagnostics were formulated. These steps were building blocks for the implementation process.

Fast Diagnostics for other tumors didn't have a set plan for the implementation. An organic implementation strategy was used, with the motto 'just do it'. Gradually it became clear what needed to be changed.

### **Involvement of stakeholders**

The data indicated that the involvement of stakeholders was an important facilitator for the implementation process, in both cases. Representatives of the different divisions and the professionals together thought up solutions to make the implementation of Fast Diagnostics possible. This resulted in commitment and ownership by the stakeholders.

The data from Fast Diagnostics and the policlinic for breast cancer indicated that not all stakeholders were involved. The nurses, managers of the policlinic, nurse practitioners, and secretaries weren't consulted at the start of the project. So they lagged behind, which led to resistance according to the interviewees. The data from this unit also indicated that the healthcare professionals perception of Fast Diagnostics is an important factor. When the professional perceives Fast Diagnostics as valuable for the patient and themselves, they are more inclined to change.

### **Dedicated management**

The involvement of the management and the dedication of the management to Fast Diagnostics was seen as another important aspect in the implementation process, in both cases. The organization is structured into divisions. Every division has her own processes

and controls her own funds. This was seen as a barrier for the implementation of Fast Diagnostics, because it is a division transcending innovation.

About the policlinic for breast cancer is mentioned that the advisory committee didn't feel responsible for the implementation of Fast Diagnostics. There were also different project managers assigned to the project, so there was no continuity in leadership. This caused confusion among healthcare professionals.

The data from Fast Diagnostics for other tumors also indicated that the advisory committee didn't have the right mandate to make decisions. This was considered a barrier.

### **Adaption of the organization and the innovation**

The adaption of the organization was considered a necessary aspect for the implementation of Fast Diagnostics, in both cases. Work processes needed to be changed to ensure that Fast Diagnostics could be delivered to the patient. A minor change in the ICT was also deemed necessary to ensure that the speed for Fast Diagnostics could be delivered. A central location was created for Fast Diagnostics for other tumors, which is seen as an important factor. The policlinic for breast cancer is also moving to one location, where all the necessary disciplines are available. The perception is that this makes it easier to deliver Fast Diagnostics.

Adaptation of the innovation was also an important factor in the implementation process, for Fast Diagnostics for other tumors. This was necessary to ensure that the innovation could be embedded in the organization, because not all aspects of Fast Diagnostics were feasible for the organization; and some couldn't be delivered due to diagnostic limitations.

### **Communication**

The communication during the project wasn't always clear, in both cases. This caused confusion and misunderstanding amongst project members. This was considered a barrier for the implementation process.

Nevertheless for Fast Diagnostics for other tumors communication was also seen as a facilitator.

>>insert table 3 here<<

## Discussion

The aim of this study was, to examine the effect of the used implementation strategy on the implementation process of the implementation of the multidisciplinary innovation Fast Diagnostics. Furthermore the aim was, to examine which factors influenced the implementation process.

The quantitative data show that Fast Diagnostics and the policlinic for breast cancer has no dominant configuration for the innovation and the organization. There is, on a low level, a fit between the innovation and organization on the regulation-orientated configuration and team-orientated configuration. The data from Fast Diagnostics for other tumors show that the organization has a regulation-orientated and team-orientated configuration. There is no dominant configuration for the innovation. The best fit between innovation and organization, is found with the regulation-orientated configuration and the team-orientated configuration. The results from the NAS show that professionals from Fast Diagnostics for other tumors seem to be more ready to adopt the innovation, than Fast Diagnostics and the policlinic for breast cancer.

There were no results on the posttest for this study, so no effect over time could be measured.

The results from the qualitative data show that the involvement of all stakeholders is an important factor in the implementation process. It creates commitment and ownership. Adaptation of the organization is also important. Adaptation of the organization helps to ensure the embedment of the innovation within the organization. Furthermore the innovation Fast Diagnostics for other tumors needed to be adapted to make the innovation work within the organization. In both cases the divisional structure of the organization was considered a barrier. The management must be willing to transcend their own division to make resources, such as people and funds, available for the implementation process. Thus dedicated management seems important for the implementation process. Communication was also important. It is necessary that all project members communicate with their division, so that it is clear for all stakeholders which decisions have been made.

The quantitative data of the two cases show more positive results for Fast Diagnostics for other tumors. These differences may be explained by the manner of implementation. There was an organic implementation approach in which the context where the innovation was implemented, was taken more into account. Van Os-Medendorp et al. (19) describes in her study that implementation strategies, which take into account the demands of the innovation

and the characteristics of the organization, are useful. Hakkennes et al. (24) describes in a systematic review that the choice of implementation strategy should depend on the context. In addition, Fast Diagnostic for other tumors made more use of stakeholders, and adapted not only the organization, but also the innovation. Hysong et al. (11) reports in her study that adaptation of the organization and innovation are important facilitators for the implementation. Goldman et al. (10) and Schuman et al. (12) report that using stakeholders is an important facilitator.

This study gives insight into factors that influence the implementation of multidisciplinary innovations. Nevertheless it has limitations.

Because Fast Diagnostics was implemented as a pilot, the sample was small. Therefore the study has low power.

Furthermore no effect over time could be measured. After the first round, there were signs that the questionnaires weren't received well by the respondents. So it was decided not to do a posttest. Respondents were asked why the questionnaires weren't received well. The first response was that the questions were difficult to understand. Because of this, the question is whether the data from the first round are reliable. Maybe better instructions on the questionnaires could have prevented this. Second, respondents reported that they did not know the first author. An introductory meeting could have avoided this. Due to the fact that respondents were from different units and had limited time, it was decided not to plan such a meeting.

Lastly 5 out of 6 interviewees were project members and not healthcare professionals, who work with Fast Diagnostics. This may have caused an information bias.

## **Conclusion**

This study provides insight into factors that influence the implementation process of the multidisciplinary innovation Fast Diagnostics. Involvement of stakeholders, dedicated management, adaptation of the organization and innovation, and communication, all seem to be important factors in the implementation of multidisciplinary innovations. Furthermore implementation strategies that take into account the context, seem to yield better results.

Due to the limitations of the study, the results should be apprehended with caution.

Because no posttest is administered, no effect over time was measured. Future research on the effect of implementation strategies that take the context into account while implementing multidisciplinary innovations, is still needed.

## Reference list

- (1) DESA. World Population Ageing 2009. 2010.
- (2) RIVM. Door vergrijzing in de toekomst meer en andere zorg nodig. 2006; Available at: [http://www.rivm.nl/vtv/object\\_document/o5519n30038.html](http://www.rivm.nl/vtv/object_document/o5519n30038.html). Accessed February/1, 2011.
- (3) VWS. Arbeidsmarktbrief 2007 Werken aan de zorg. 2007;MEVA/ABA/2807123.
- (4) Klink A, Bussemaker J. Programmatische aanpak van chronische ziekten. 2008;PG/ZP 2.847.918.
- (5) Nederlandse Zorgautoriteit. Functionele bekostiging vier niet-complexe chronische zorgvormen; Diabetes, COPD, cardiovasculair risicomangement en hartfalen. 2009:5-97.
- (6) In Voor Zorg. Kenmerken van Ketenzorg. 2011; Available at: <http://www.invoorzorg.nl/ivz/ivz-ic-ketenzorg/Kenmerken-van-Ketenzorg-.html?tab=ictab3>. Accessed 11/3, 2011.
- (7) Rogers EM. Diffusion of innovations. 4th ed. New York: Simon & Schuster; 1995.
- (8) Overman JA, Cox DL, Buchl LL, Campion JK, Raihle PC, Sloan TR. Role of the nurse in the multidisciplinary team approach to care of liver transplant patients. Mayo Clin Proc 1989;64(6):690-698.
- (9) Linge Rv. Innoveren in de gezondheidszorg; theorie, praktijk en onderzoek. Maarssen: Elsevier gezondheidszorg; 2006.
- (10) Goldman J, Meuser J, Lawrie L, Rogers J, Reeves S. Interprofessional primary care protocols: a strategy to promote an evidence-based approach to teamwork and the delivery of care. J Interprof Care 2010 Nov;24(6):653-665.
- (11) Hysong SJ, Best RG, Pugh JA. Clinical practice guideline implementation strategy patterns in veterans affairs primary care clinics. Health Serv Res 2007 ;42(1 I):84-103.
- (12) Schuman ZD, Lynch M, Abrahm JL. Implementing institutional change: An institutional case study of palliative sedation. J Palliative Med 2005 ;8(3):666-676.
- (13) Becker A, Leonhardt C, Kochen MM, Keller S, Wegscheider K, Baum E, et al. Effects of two guideline implementation strategies on patient outcomes in primary care: A cluster randomized controlled trial. Spine 2008 ;33(5):473-480.
- (14) Stroebel RJ, Scheitel SM, Fitz JS, Herman RA, Naessens JM, Scott CG, et al. A randomized trial of three diabetes registry implementation strategies in a community internal medicine practice. Jt Comm J Qual Improv 2002 Aug;28(8):441-450.
- (15) Hakkennes S, Dodd K. Guideline implementation in allied health professions: a systematic review of the literature. Qual Saf Health Care 2008(17):296-300.
- (16) Francke AL, Smit MC, de Veer AJE, Mistiaen P. Factors influencing the implementation of clinical guidelines for health care professionals: A systematic meta-review. BMC Medical Information and Decision Making 2008;8(38):1-11.

- (17) Baker R, Camosso-Stefinovic J, Gillies C, Shaw EJ, Cheater F, Flottorp S, et al. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes (Review). *Cochrane Database of Systematic Reviews* 2010(3):1-77.
- (18) Koekkoek R, Linge Rv, van der Hooff-Leemans G. Team and Organizational Learning and Implementation success; A study at the influence of Team and Organizational Learning on the Implementation Success of the innovation 'Zorgleefplan' in the context of the Innovation Contingency Theory. 2011.
- (19) Os-Medendorp Hv, Eland-de Kok P, Linge Rv, Buijnzeel-Koomen C, Grypdonck M, Ros W. The tailored implementation of the nursing programme 'Coping with itch' *J Clin Nurs* 2008;17(11):1460 <last\_page> 1470.
- (20) Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, et al. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. *Adm Policy Ment Health* 2011(38):65-76.
- (21) Timmermans O, Van Linge, Van Petegem, Denekens. Team learning and context; assessing the relationship between team-learning activities and contextual factors of team-learning environment and team-configurations *Nursing: Research and Reviews* 2011:1.
- (22) Polit DF, Beck CT. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 8th ed. New York: Lippincott Williams & Wilkins; 2008.
- (23) Tauböck TT, Attin T, Schmidlin PR. Implementation and experience of a new me... [*Acta Odontol Scand*. 2011] - PubMed - NCBI *Acta Odontologica Scandinavica* 2011:9.
- (24) Hakkennes S, Dodd K. Guideline implementation in allied health professions: a systematic review of the literature. *Qual Saf Health Care* 2008(17):296-300.

## **Samenvatting**

Titel: De effectiviteit van implementatiestrategieën bij de implementatie van de multidisciplinaire innovatie Sneldiagnostiek.

Inleiding: In de komende decennia wordt de wereld geconfronteerd met vergrijzing. Dit leidt tot een toename in de kosten van en de vraag naar zorg. Beleid is daarom gericht op de implementatie van innovatieve methoden en multidisciplinaire zorg. De implementatie van Sneldiagnostiek is hiervan een voorbeeld. Meervoudige of op maat gemaakte implementatiestrategieën vergroten de kans op succesvolle implementatie, maar het is onduidelijk wat de meest effectieve aanpak is.

Doelstelling: Deze studie heeft tot doel te onderzoeken hoe het implementatieproces verloopt bij de implementatie van Sneldiagnostiek. Ook wordt in kaart gebracht welke factoren dit proces beïnvloeden. Dit leidt tot de volgende onderzoeksvragen:

1. Wat is het effect van de gebruikte implementatiestrategieën op het verloop van het implementatie proces, bij de implementatie van de multidisciplinaire innovatie Sneldiagnostiek in een academisch ziekenhuis?
2. Welke barrières en stimulerende factoren hebben het implementatieproces beïnvloed, bij de implementatie van de multidisciplinaire innovatie Sneldiagnostiek in een academisch ziekenhuis?

Methode: een vergelijkende casestudie met een mixed method studie design, waarin een pre/posttest design werd gecombineerd met interviews.

Resultaten: De gemiddelde score van adoptie voor Sneldiagnostiek bij de Mammapolikliniek was 7.00, en 7.33 bij Sneldiagnostiek overige tumoren. De vragenlijst resulteerde in een zwakke fit van innovatie en organisatie op de regelgerichte en teamgerichte configuratie, bij de Mammapolikliniek. Bij de overige tumoren was er een fit op de regelgerichte en teamgerichte configuratie.

Belangrijke factoren bij de implementatie zijn: betrekken van belanghebbenden, betrokken management, communicatie en aanpassing van organisatie en innovatie.

Conclusie: Implementatiestrategieën die rekening houden met de context waarin de innovatie geïmplementeerd worden, lijken de beste resultaten op te leveren. Verder onderzoek naar de effectiviteit van implementatiestrategieën, waarbij rekening wordt gehouden met de context, is nodig.

Trefwoorden: Implementatiestrategieën, multidisciplinaire innovatie.

## **English abstract**

**Title:** The effect of implementation strategies in the implementation of the multidisciplinary innovation Fast Diagnostics.

**Background:** Next decades, the world is faced with an ageing population. This causes an increase in cost of and demand for care. Policy is therefore focused on implementing innovative methods and multidisciplinary care for example the implementation of Fast Diagnostics. Multi-faceted or tailored implementation strategies increase the chance of successful implementation, but it is unclear what the most effective approach is.

**Objective:** The aim of this study is to determine the course of the implementation process in the implementation of Fast Diagnostics, and factors that influence this process. This led to the research questions:

1. What is the effect of the used implementation strategies on the course of the implementation process, in the implementation of the multidisciplinary innovation Fast Diagnostics in an academic hospital?
2. Which barriers and facilitators have influenced the implementation process in the implementation of the multidisciplinary innovation Fast Diagnostics in an academic hospital?

**Method:** A comparative case study with a mixed method study design, in which a pre/posttest design was combined with interviews.

**Results:** The average adoption score for Fast Diagnostics at the polyclinic for breast cancer was 7.00, and for Fast Diagnostics for other tumors 7.33. Questionnaire responses showed a weak fit of innovation and organization on the regulation-oriented and team-oriented configuration, for Fast Diagnostics at the polyclinic for breast cancer. For the other tumors there was a fit on the regulation-oriented and team-oriented configuration. Important for the implementation are: involvement of stakeholders, dedicated management, communication and adaptation of organization and innovation.

**Conclusion:** Implementation strategies that take into account the context, seem to yield the best results. Further research into effectiveness of implementation strategies, which take into account the context, is necessary.

**Keywords:** implementation strategies, multidisciplinary innovation.

## Tables

**Table 1. Characteristics of participants**

**Fast Diagnostics for Breast Cancer (n = 4)**

- Sex (female/male)	3/1
- Age (mean, minimum/maximum)	49,25 yrs (48;52)
- Occupation	Manager (n = 2) Advisor (n = 1) Physician (n = 1)
- Years employed at current unit (mean, minimum/maximum)	16,38 yrs (0.5;26)
- Educational level	University (n = 2) Community college (n = 2)

Values are n, unless otherwise indicated

**Fast Diagnostics for other tumors (n = 6)**

- Sex (female/male)	4/2
- Age (mean, minimum/maximum)	37,67 yrs (23;53)
- Occupation	Manager (n = 2) Nurse Practitioner (n = 2) Project leader (n = 1) Secretary (n = 1)
- Years employed at current unit (mean, minimum/maximum)	5,33 yrs (1;13)
- Educational level	University (n = 4) Community college (n = 1) High school (n = 1)

Values are n, unless otherwise indicated

**Fast Diagnostics for the polyclinic breast cancer**

**Fast Diagnostics for the other tumors**

**Quantitative results\***

Regulation-orientated configuration innovation	3.58 (2.33/4.33)	Regulation-orientated configuration innovation	3.61 (2.67/4.33)
Result-orientated configuration innovation	3.08 (2.33/3.67)	Result-orientated configuration innovation	3.72 (3.33/4.33)

Team-orientated configuration innovation	3.50 (2.33/4.00)	Team-orientated configuration innovation	3.78 (3.33/4.33)
Development-orientated configuration innovation	2.83 (1.00/3.67)	Development-orientated configuration innovation	3.44 (3.00/4.00)
Regulation-orientated configuration organization	3.58 (2.00/4.33)	Regulation-orientated configuration organization	4.00 (3.67/5.00)
Result-orientated configuration organization	3.67 (2.00/4.33)	Result-orientated configuration organization	3.72 (3.00/4.33)
Team-orientated configuration organization	3.83 (2.33/4.67)	Team-orientated configuration organization	4.17 (3.33/5.00)
Development-orientated configuration organization	3.58 (3.00/4.67)	Development-orientated configuration organization	3.83 (3.00/4.33)
Adoption	7.00 (6.00/8.00)	Adoption	7.33 (6.00/8.00)

### Qualitative results

#### Involvement of stakeholders:

- Gave feedback on feasibility of the innovation.
- Not all stakeholders were involved.

#### Dedicated management

- Divisional structure of organization was barrier for funds and resources, management still thinks from their own division
- No continuity in project management.

#### Involvement of stakeholders:

- Help thought up solutions as to make Fast Diagnostics possible.
- Resulted in commitment and ownership.

#### Dedicated management

- Divisional structure of organization was barrier for funds and resources.
- Advisory committee didn't had the right mandate from their management to take decisions.

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### Adaptation of the organization

- Work processes and ICT facilities needed to be adapted, as to make Fast Diagnostics possible.

### Adaptation of the organization and innovation

- Processes within the organization needed to be changed.
- Central location was needed.
- Innovation needed to be changed, due to organizational restraints and diagnostic limitations

### Communication

- Communication not always clear, which led to confusion among project members.

### Communication

- Continuous communication with stakeholders to create understanding.
- Too little communication from advisory committee to their own divisions.

**\*Values are mean scores, with minimum and maximum**

### Table 2: summary of results

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### Table 3: Citations from the interviews

#### Involvement of stakeholders

##### Fast Diagnostics and the polyclinic for breast cancer

*"...if we deliver tissue from the breast at 11 o'clock, at what time can the pathologist give the results about whether the tumor is malign or not. Normally the pathologist needed more time, so we asked the pathologist if it was feasible in a shorter amount of time ... this way we created new standards."*

*"That is the core of change, what is the value, what does it yield, for whom. If you can make that visible ... for the organization or the professional, it is easier to implement an innovation."*

##### Fast Diagnostics for other tumors

*"The people who work with the innovation must be quickly involved. You want the people to have great commitment for the change and assist in designing the innovation and in the implementation of the innovation in the organization. Otherwise, solutions will be thought up that eventually aren't solutions. You need to know from the professionals what is and what*

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*isn't possible, to make the ambition of Fast Diagnostics feasible."*

### **Dedicated management**

#### Fast Diagnostics and the polyclinic for breast cancer

*"The innovation is a multidisciplinary innovation and transcends the different divisions, while the organization is divided into a divisional structure ... Who is in fact responsible for what, how is it funded. People still think from their own division."*

#### Fast Diagnostics for other tumors

*"The structure and culture of the organization has also been a bump on the road. Everything is organized within the divisions, in which every division is responsible for its own people and finances. Professionally, this hurdle is overcome. The divisions are more service-oriented now. At the level of the management, however this is still a hurdle. A part of the management teams are committed to change, but some are still lagging behind."*

*"There was no good mandate for the advisory committee. This was the assumption, but the management teams of the divisions have never experienced it like this."*

### **Adaptation of the organization and the innovation**

#### Fast Diagnostics and the polyclinic for breast cancer

*"Work processes needed to be adapted as to ensure the implementation of Fast Diagnostics."*

#### Fast Diagnostics for other tumors

*"To enable Fast Diagnostics, a second innovation was needed. The question was how the various wheels in the chain could be made stronger. The answer lay in a central location. This resulted in one entrance for referrers and patients. Furthermore the work can be better managed."*

*"And ultimately, that has grown to, yes, that objective is fun but that is not fully feasible for the UMC ... So we have worked with what was the most attainable scenario, what the organization wanted to do and could do in time."*

### **Communication**

#### Fast Diagnostics and the polyclinic for breast cancer

*"I had the assumption that everybody knew what was written in the business case, but this wasn't true. People within the project had different assumption and expectations."*

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Fast Diagnostics for other tumors

*“Members from the advisory committee didn’t communicate enough with their own division.”*

*“Furthermore you needed to continuously communicate with the professionals. For example, if the implementation was delayed, you needed to communicate that with the stakeholders, as to create understanding amongst these people.”*

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**Appendix I – Questionnaires (in Dutch)**

**VRAGENLIJST WAARGENOMEN  
INNOVATIEKENMERKEN**

***VERKORTE VORM***

***VERSIE 4C***

**Toelichting:**

Hieronder treft u een aantal stellingen aan die gaan over de wijze waarop u nu de innovatie waarneemt. Het gaat dus om de kenmerken die u nu aan de innovatie toekent.

U kunt bij iedere stelling aangeven in hoeverre u het met de stelling eens bent

**1 = geheel mee oneens**

**2 = mee oneens**

**3 = noch mee oneens, noch mee eens**

**4 = mee eens**

**5 = geheel mee eens**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. De wijze van uitvoering/gebruik van deze innovatie ligt vast zoals in een procedure, standaard of protocol               | 1 | 2 | 3 | 4 | 5 |
| 2. De resultaten die met deze innovatie bereikt moeten worden zijn heel concreet en te meten                                | 1 | 2 | 3 | 4 | 5 |
| 3. De wijze van gebruik en resultaten van deze innovatie moeten voortdurend door de groep van gebruikers worden afgesproken | 1 | 2 | 3 | 4 | 5 |

4. De wijze van gebruik en resultaten van deze innovatie Moeten per situatie worden gekozen	1	2	3	4	5
5. Deze innovatie is bedoeld om onze processen meer eenvormig en herhaalbaar te maken	1	2	3	4	5
6. Deze innovatie is bedoeld om de resultaten van ons werk beter te kunnen meten controleren	1	2	3	4	5
7. Deze innovatie is bedoeld om de afstemming tussen  onze zorg- en onderdelen te verbeteren	1	2	3	4	5
8 Deze innovatie is bedoeld om als afdeling/ organisatie sneller en beter in te spelen op ontwikkelingen en veranderingen	1	2	3	4	5
9. Deze innovatie roept bij mij het beeld op van een Gestroomlijnd en vastliggend proces	1	2	3	4	5
10. Deze innovatie roept bij mij het beeld op dat je heel doelgericht denkt en handelt	1	2	3	4	5
11. Deze innovatie roept bij mij het beeld op van een hecht samenwerkende groep of team	1	2	3	4	5
12. Deze innovatie roept bij mij het beeld op Van een heel beweeglijk iets zoals een organisme	1	2	3	4	5

**Deze vragenlijst is eigendom van Dr R.H. van Linge**

**GEGEVENS:**

**Ingevuld door (functie noemen):**

**Ingevuld voor (innovatie noemen):**

# VRAGENLIJST ORGANISATIE(UNIT)KENMERKEN

## *Verkorte Vorm*

### *Versie4*

#### **Toelichting:**

Hieronder treft u een aantal stellingen aan. Deze gaan over uw huidige waarneming van de kenmerken van uw organisatie unit (afdeling of team)

U kunt bij iedere stelling aangeven in hoeverre u het met de stelling eens bent:

**1 = geheel mee oneens**

**2 = mee oneens**

**3 = noch mee eens noch mee oneens**

**4 = mee eens**

**5 = geheel mee eens**

In deze unit:

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 13. wordt het werk georganiseerd door middel van procedures, protocollen en standaarden    | 1 | 2 | 3 | 4 | 5 |
| 14. wordt het werk georganiseerd door het plannen en controleren van resultaten            | 1 | 2 | 3 | 4 | 5 |
| 15. wordt het werk georganiseerd door overleg en afstemming tussen de medewerkers          | 1 | 2 | 3 | 4 | 5 |
| 16. wordt het werk georganiseerd door flexibel in te spelen op situaties en ontwikkelingen | 1 | 2 | 3 | 4 | 5 |

In deze unit is het beleid gericht op:

17. vergroten van eenduidigheid en voorspelbaarheid van de (zorg/werk) processen	1	2	3	4	5
18. verbeteren van doelmatigheid, produktiviteit of uitkomsten van de zorg	1	2	3	4	5
19. verbeteren van de kwaliteit van (zorg/werk) processen	1	2	3	4	5
20. het ontwikkelen van nieuwe vormen van zorg	1	2	3	4	5

In deze unit vinden wij met elkaar belangrijk:

21. het naleven van regels en procedures	1	2	3	4	5
22. het leveren van concrete prestaties	1	2	3	4	5
23. loyaliteit en onderling vertrouwen	1	2	3	4	5
24. betrokkenheid bij innovatie en ontwikkeling	1	2	3	4	5

Deze vragenlijst is eigendom van Dr. R.H. van linge

**GEGEVENS:**

**Ingevuld door (functie noemen)**

**Ingevuld voor (afdeling/team noemen)**

## **Appendix II – Topic guide (in Dutch)**

1. Introductie reden onderzoek en waarborgen privacy van geïnterviewde
2. Relatie van geïnterviewde tot de innovatie
3. Ervaringen met de innovatie Sneldiagnostiek
4. Wijze waarop Sneldiagnostiek geïmplementeerd is of wordt
5. Factoren die aan de implementatie van Sneldiagnostiek hebben bijgedragen
6. Factoren die belemmerend waren bij de implementatie van Sneldiagnostiek
7. Tips voor implementatie op andere afdelingen