

From Better Implementation Diagnostics to Better Implementation Strategy and Outcome: a Qualitative Study

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List of abbreviations 3

Summary 4

1. Introduction..... 5

2. Objectives..... 7

3. Method 8

4. Results 11

5. Discussion 14

6. References 18

Appendix; Figures, boxes and tables 22

List of Abbreviations

BU	Brain-care Unit
CVA	Cerebral Vascular Accident
EB	Evidence Based
EPF	Electronic Patient File
FG	Focus Group
GT	Grounded Theory
HBO-V	Higher Vocational Education; Nursing College
IC	Informal Caregivers
IC(-Model)	Innovation Contingency (-Model)
LWU	Learn-Work Unit
MBO-V	Intermediate Vocational Education, Nursing College
QT	Qualified Trainer
RN	Registered Nurse
SU	Stroke Unit
TL	Team Leader
UMC	University Medical Centre
WBP	Personal Data Protection
WMO	Medical Research Involving Human Subjects Act
Zon MW	<i>Dutch:</i> Zorg Onderzoek Nederland Medische Wetenschappen

Summary

Aim: To gain insight into the best-fitting strategy for implementing the “Education CVA-patients and caregivers” guideline, taking characteristics and experiences of registered nurses (RNs) into implementation diagnostics.

Methods: A qualitative exploratory study was conducted using a Grounded Theory approach. Seven semi-structured interviews and one focus group (FG) interview were held with ward RNs. Analytical techniques that are common in Grounded Theory were used to gain insight into their personal characteristics and experiences with the guideline and its previous implementation in 2014. This research is part of a larger mixed-method study being undertaken to improve implementation diagnostics and thus implementation by creating a more effective and tailored implementation strategy.

Results: Five themes that outline RNs’ experiences with the guideline and its former implementation were identified: the current guideline does not fit in daily practices, implementation of common innovations, implementation of the 2014 guideline was unsuccessful, necessary preconditions are missing, control is lacking. These five themes were discussed in the FG interview to identify important factors about the organisation’s configuration in relation to successful implementation of the guideline. Consensus was reached with participants about the organisation’s configuration, which they feel should be ruled-oriented.

Conclusion and Implications of Key Findings: Experiences of RNs show that the guideline needs adjustment before it can be implemented in daily practice. Their experiences confirm pre-existing knowledge about successful implementation, for example the need for a TL as a role model. In this organisation, the innovative guideline best suits a rule-oriented configuration. Qualitative research can be a valuable complement of the IC-Model during development of an implementation strategy.

Based on these outcomes, a tailor-made implementation strategy was developed. However, further research must be undertaken concerning the guideline’s contents before it can be implemented following the steps of this strategy.

MeSH terms: Innovation, Nurse, Diagnostics, Implementation Strategy, Tailormade

1. Introduction

Worldwide, fifteen million people suffer from a Cerebral Vascular Accident (CVA) each year; one-third die and one-third are left permanently disabled (1). In Europe, the incidence of CVA varies from 101.1 to 239.3 per 100,000 in men and 63.0 to 158.7 per 100,000 in women (2). In 2014, an estimated 44,397 patients were hospitalized in The Netherlands because of a CVA (3). Expectations are that the number of people suffering from CVA will increase 56% within men and 37% within women between 2011 and 2030 (4).

Problems related to CVAs include difficulty in speaking, memory-loss, emotional issues and fear (5). Patients suffering from CVAs have difficulty in coping and decision-making (6). Education supports CVA-patients in understanding their illness and in decision-making (6). However, many studies demonstrate that CVA-patients and informal caregivers (IC) express a lack of understanding, which leads to misconceptions, anxiety, fear, poor health status and emotional problems (6,7).

Most patients in the acute phase of CVA are ignorant and lack accurate information about their disease(8). Nurses can play a decisive role in educating and guiding these patients (7,8).

In 2013, an Evidence-Based (EB) guideline entitled “Education CVA-patients and caregivers” was developed to support nurses in providing this education (8). This innovative guideline, which focuses on educating and counselling CVA-patients and their ICs, aims to improve safety and quality of patient-care by providing clinicians with graded recommendations based on evidence of best practice (9,10).

Rogers (2003) (18) describes an innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”. Four elements are important to spread a new idea: the innovation, communication channels, time and social system (14,19). A tailor-made implementation-strategy can improve these four elements (16,21,22). The innovation must also be widely adopted in order to self-sustain (14,18-20).

The Innovation-Contingency model (IC-Model), *Figure 1*, has proven to be useful as a theoretical framework in research aimed at achieving better fitting tailor-made implementation strategies (23-26). This IC-Model is designed and tested for research concerning implementation of EB nursing innovations (16,23).

According to the IC-Model, successful change is based on a fit between characteristics of the innovation, characteristics of the organisation and the implementation-strategy (16,24). This model presumes the necessity of a fit between innovation and the organisation’s

characteristics for achieving successful implementation; in other words: what is needed to create an effective innovation process and is there a fit between the innovation and the organisation? (16).

Innovations and organisations can be seen as configurations, or systems with consistent characteristics. The four configurations are: rule-, result-, team- and development-oriented (16), *Figure 2*. When fit is accomplished, an implementation strategy is chosen and the implementation process starts. The IC-Model is used to tailor this strategy.

Figure 1. Innovation Contingency Model 'van Linge 2006'.

Figure 2. Four Configurations Model 'Van Linge, 2006'.

In 2014, a (unpublished) study explored implementation of the “Education CVA-patients and caregivers” guideline in a neurology ward of a general hospital in The Netherlands. This implementation was unsuccessful. The suspicion is that insufficient effort was made to explore the individual characteristics and experiences of the registered nurses (RNs) towards the guideline or its implementation that resulted in this failure (11-15). These aspects are important factors in determining a tailor-made implementation strategy and achieving successful implementation (13,16,17). Better understanding RNs' individual characteristics and experiences concerning the guideline and its former implementation is also important for achieving a more detailed implementation diagnostic, which is a requirement for successful implementation of this innovative guideline.

2. Objectives

The aim of this qualitative study is to gain insights into the best fitting implementation strategy for the “Education CVA-patients and caregivers” guideline, taking RNs characteristics and experiences into account in the implementation diagnostics.

Research Question

The following research question will allow the primary objective to be fulfilled:

- What characteristics and experiences of registered nurses working at the neurology ward of a general hospital in The Netherlands come forward during interviews about implementing the guideline and the guideline itself?

This qualitative research is part of a larger mixed-method study being undertaken to improve implementation diagnostics and thus implementation by creating a more effective and tailored implementation strategy.

3. Method

A qualitative exploratory study was conducted using semi-structured interviews, a focus group (FG) interview and using a Grounded Theory approach (GT) (27-29). This design was chosen because the study aims to focus on RNs individual characteristics and experiences (30).

Semi-structured interviews were first held to collect and analyse these experiences and characteristics. Based on these results, a FG interview was then conducted to determine organisation characteristics.

Population and Sampling

The population comprises RNs of a neurology ward at a general hospital in The Netherlands. The ward consists of three units: Brain-Care Unit (BU), Stroke-Unit (SU) and Learn-Work-Unit (LWU). RNs were considered eligible if they met the following inclusion criteria: they are an RN of level 4 or 5, they worked in the ward during implementation of the guideline in 2014 and they still worked there at the time of this study.

The exclusion criteria were not working on Fridays or at night, because this is when the researcher was absent. Students, flex-workers, trainees and RNs working less than two months in the ward were also excluded, *Table 1*.

A heterogeneous purposive sample was taken (27,31); although all selected RNs have experience with the guideline and its former implementation in 2014, they differed in age, educational level and work-history to allow for contrasting experiences and opinions.

RNs were enrolled after receiving confirmation from the ward's qualified trainer (QT) that she had informed them about the study's goal and asked for their permission for the researcher to contact them.

The researcher developed a poster to inform RNs about her background, her presence at the ward every Friday and the study's aim.

The researcher immersed herself in the ward for one day and gave a short presentation about the study. After two weeks she sent an email to all RNs to again explain its purpose.

Table 1. Inclusion and Exclusion criteria for registered nurses

Data Collection

To achieve triangulation, data was collected through semi-structured interviews and a FG-interview (27,28). To enhance the quality of interviewing, the researcher received two hours of training in advance.

The semi-structured interviews were conducted from January to February 2015. Written informed consent was obtained from all participating RNs in advance.

To make sure all relevant areas were discussed, a topic guide based on the previous study of the guideline's implementation, literature and the supervisor's knowledge was used during the interviews, see *Box 1* (30,32,33). The supervisor reviewed the questions to check language, to see if the terms of reference were clear and to ensure that all important issues were addressed.

At the end of the interview, key points were verbally summarized while the respondent was still there. All interviews were recorded, transcribed verbatim and summarized directly afterwards.

In order to make all steps and choices of the research process transparent to the supervisor, fieldnotes were written during the interviews and an audit trail was kept (27,32,34).

Box 1. Topic Guide for the Semi-structured Interviews

For the FG interview, RNs who were not interviewed previously and the team leader (TL) were invited to participate.

Written informed consent was obtained from participating RNs before the FG took place. This FG interview was conducted in March 2015, after the semi-structured interviews were analysed. Important findings from the semi-structured interviews served as a topic guide for the FG, see *Box 2*. To create a clear structure and audit-trail during the discussion, an action-plan was designed by the researcher. Two PowerPoint-presentations were made to support the FG session. During the FG, an assistant recorded responses, themes, body language and the mood of discussion.

Box 2. Topic Guide Focus Group

Data Analysis

To gain insight into RNs' experiences about the guideline and its implementation in 2014 (27,29,32), analytical techniques that are common in GT (29,35) were used.

The collected data was analysed systematically in a cyclical pattern (35,36) and using constant comparison (37). Central concepts about experiences were deducted through a process of open, axial and selective coding (27,28,37).

Two researchers analysed the transcript of the first interview separately to create a list of codewords reflecting specific factors concerning RNs' experiences about the guideline and implementation. Five interviews were transcribed verbatim, analysed and coded only by the researcher. To protect the researcher against attempting to fit interpretations and explanations that cannot be substantiated by the data, the results were sent to the supervisor to check for bias or inappropriate subjectivity (27,36). Consensus was achieved.

To achieve credibility and ensure the researcher's trustworthiness, a summary was sent to each interviewee for member checking (32,38).

The software programme N-Vivo MAC 10.1.3 was used to support the analysis (27,36,39,40). It enhanced the efficiency of data-storage and retrieval and allowed the researcher to share work with the supervisor and thus enhance reliability (27,34).

The FG interview was recorded and summarized directly afterwards. The researcher and assistant evaluated the FG, summarized and discussed the findings until consensus was reached. A summary was sent to each participant for memberchecking.

Ethical Issues

The research process is undertaken in accordance with the Declaration of Helsinki(41). Ethics committee approval was obtained from the Medical Ethical Review Committee of a University Medical Centre. No ethical approval was needed (41,42). Research is done regarding Good Clinical Practice. The option of withdrawing from the study at any time without consequence was mentioned to RNs before they participated.

To prevent identification, the researcher granted anonymity to the participants by using codes.

4. Results

Participants

A total of 31 RNs work in the neurology ward (see *Table 2* for baseline-characteristics). Seven RNs participated in the semi-structured interviews (see *Table 3* for their characteristics). Two RNs worked at the SU, two at the BC and three at the LWP. Three RNs refused to participate, as they found being interviewed scary. Two RNs were too busy to participate. Two potential opportunities failed because the QT was absent and thus no RN was asked to participate. Three RNs were asked to participate in a semi-structured interview by the researcher herself.

The interviews lasted between fifteen and thirty-two minutes. After seven interviews, it seemed theoretical saturation was reached. One interview was lost before further analysis due to technical problems with the Dictaphone.

Six RNs (including the TL) were invited for the FG interview.

Four RNs ultimately participated (see *Table 4* for their characteristics).

The TL was absent without notice, and the QT cancelled one RN's participation without consulting the researcher, because QT wanted to start the FG interview at an earlier hour.

The FG interview lasted 86 minutes.

Tables Demographic Data

Table 2.

Baseline Characteristics of the Total Ward's Population; Registered Nurses (N=31)

Table 3.

Characteristics of Registered Nurses, Semi-structured Interviews Sample (n=7)

Table 4.

Characteristics of Registered Nurses, Focus Group Interview Sample (n=4)

Findings of the Semi-structured Interviews

Five themes that outline RNs' experiences of the guideline and its implementation were identified: the guideline did not fit in daily practice, implementation of innovations in common, implementation of the guideline in 2014 was unsuccessful, necessary preconditions were missing and control was lacking. The quotes in *Table 5* demonstrate how the researcher achieved her findings.

1. The guideline does not fit in daily practice.

RNs main affects were a feeling of not using the guideline; it is too long, it looks poor. RNs also believe that the guideline does not contain the right kind of information. It should be adjusted to the acute phase after stroke. At this moment, it does not suit the needs of either the RNs or their patients. RNs feel left out from its development.

2. Implementation of innovations in common

The hospital wishes to be a knowledge-innovating centre. However, RNs miss the motivation to be part of this. Important factors they mentioned include not having enough time, having a high workload and not being heard by their TL. RNs only cooperate with an innovation when their work methods are checked by their TL. RNs are also willing to cooperate if they see that an innovation has benefits or an operational goal.

3. The implementation of the guideline in 2014 was unsuccessful

The implementation of the guideline in 2014 failed, as the study and guideline were not introduced properly and it felt like they came out of nowhere. RNs were not involved in the implementation process or asked how they felt about the guideline. The researchers were not easy to reach and hardly visible in the ward, which made it difficult for RNs to ask about the study's purpose.

4. The necessary preconditions were missing

Although RNs believe that high quality EB health education is important, they do not feel that the right preconditions are there for it to occur. RNs mention lack of time, high workload and a shortage of EB knowledge about health education as most important factors. They do not know what is most important for patients and their ICs in the acute phase after stroke. Furthermore, they do not have enough time for self-study and there are rarely clinical lessons in the ward about their own profession or nursing skills.

5. Control is lacking

RNs experience a lack of control and leadership on behalf of their TL. The TL is not visible in daily practice; they miss having a role model. The TL is not involved in daily care or implementation of any healthcare innovations. The RNs feel the TL is not supportive, stimulating or involved in any care process. They also feel that they do not get enough appreciation for their hard work. They experience that the TL is regularly absent, even during important meetings.

Table 5. Themes Identified From Qualitative Analysis of Semi-structured Interviews

Findings Focus Group Interview

During the FG, five themes were discussed and important factors about the organisation were identified in relation to successful implementation of the guideline.

Consensus was reached that the organisation has a ruled-oriented configuration (16,24), which is a configuration that is characterised by strong control on processes and development and the provision of internal guidance during implementation of a certain innovation (16). An organisation whose culture places a high value on stability is rule-oriented and bureaucratic in nature. The rule-oriented climate is based on established rules and procedures within an organisation.

Important factors mentioned by the RNs concerning leading and contributing to a ruled-oriented configuration are listed in *box 3*.

Box 3. Important Factors for Successful Implementation

5. Discussion

Main Findings

Five important findings were identified through the semi-structured interviews, namely: the guideline does not fit within daily practice, the implementation of innovations in common, the implementation of the guideline in 2014 was unsuccessful, preconditions are missing and TL control is lacking.

The RNs find that the guideline is too extensive and not workable in daily practice. This is mentioned as a main reason why RNs do not use the guideline; they want something that focuses on the acute phase after stroke. The fact that they were not involved at time of development and implementation of the guideline in 2014 is mentioned as being unpleasant. The reason for implementing the guideline also remained unclear for the RNs and was mentioned as a demotivating factor.

The RNs feel that preconditions for working with the guideline are missing. The main missing prerequisite is a lack of time, but when their daily routine is scrutinized, healthcare education can be planned for 11.00-11.30 AM or 3.00-4.00 PM.

The RNs miss having control, support and guidance from their TL. They feel the TL does not show enough involvement or concern towards the team, mainly due to the TL's frequent absence. The RNs miss having the TL as a coach and stimulating factor for developing their knowledge and working with innovations. Results show that the team particularly needs control in relation to the latter.

During the FG interview, RNs and the researcher determined that a ruled-oriented configuration would fit the characteristics of the organisation and the guideline.

In a ruled-oriented organisation, having a linear process is very important; thinking in short-term and long-term achievements, step-by-step (16,24).

These findings are confirmed by the results of the quantitative study of De Kort *et al.*, 2015, (unpublished) concerning the use of the IC-Model in implementation diagnostics. These outcomes stated that a ruled-oriented configuration best fits the organisation and innovation (16).

These qualitative and quantitative results enabled the development of a recommendation for a successful implementation strategy that also comprises a detailed description of how to adjust the guideline prior to implementation. The IC-Model was used as the theoretical framework for developing this strategy; see *Table 6*, while a form of ZonMw was used to structure it (43).

Table 6. *Tailor-made Implementation Strategy*

Literature Comparison

Other qualitative studies have considered the implementation of EB nursing guidelines (44-47). Their results were in line with the key findings of this study that leadership is missing, that RNs lack time or involvement and characteristics of the guideline. Furthermore, implementation strategies are only effective if they identify barriers to change (48). Their effectiveness also depends on the organisational context in which they are implemented (49). Guidelines that are easy to understand and do not require specific resources have a greater chance of successful implementation (50-53). In addition, characteristics of RNs' awareness of a guideline's existence and content affect implementation. Environmental characteristics influence guideline implementation; lack of support from the TL and insufficient time appear to be main concerns (52-54).

Gosling *et al.*, 2003, stated that have a clear purpose is effective for to teams associated with implementation of innovations (55). This is in line with this qualitative study.

The study of Chan *et al.*, 2001, also supports the results of this study: the presentation of a clear rationale by the TL helps RNs to focus. Coaching affects individual performance and can influence an organisation's capacity to execute. These behaviours constitute part of the process that clearly enables successful implementation of guidelines (56).

The study of Sachs *et al.*, 2006, confirms that when guidelines are developed by the target group itself, in this case RNs, the chance of successful implementation is enhanced (54).

The RNs in this study felt left out during development.

Holleman *et al.*, 2009, and Victor *et al.*, 1994, confirm the outcome of this study that coaching from the TLs enhances the durability of an innovation. These authors agree that teams thrive when a TL creates an environment that nurtures accomplishments. Leaders should be supportive and principled and should serve as coaches and facilitators (47,57). These findings were echoed by the RNs in this study; a lack of support and uncertainty about the intentions has a disastrous effect and overshadows attempts to encourage effective teamwork towards innovations. Coaching and motivating from the TL encourage RNs to speak about on-going innovative changes.

Strengths and Limitations

One strength is that face-to-face interviews led to better depth-of-meaning, which was important because the research was primarily focused on gaining insight and understanding (27,28). These interviews generated rich data (33,34,58,59). The semi-structured interviews and FG were used to analyse the context and demands of an innovation along four

dimensions (namely culture, structure, human resource and politics), which are also reflected in the implementation strategy.

Memberchecking was performed during research (32,38). None of the interviewees disagreed with the data.

The strong advantages of FG interview were collecting detailed information about personal and group feelings, perceptions and opinions. They provided the researcher with a broader range of information. During the FG, useful material and quotes were gathered in order to establish an appropriate implementation strategy.

The researcher undertook the FG with only four RNs, although six to ten participants are ideal (33,58,59). The FG interview was not transcribed verbatim; important findings were instead summarized, which can be a weakness (33,58).

Limitations concerning both types of interviews were lack of interest from the RNs, and poor planning and organising by the QT; as the QT was absent for two weeks, no RN interviews were arranged.

This qualitative research was part of a larger mixed-method study, which can be a strength. It was undertaken to see what improves implementation diagnostics for creating a more effectively tailored implementation strategy, which in turn makes implementation of the guideline more successful (16,21,60). By combining the results, the researcher was able to identify better implementation diagnostics and thus a more tailored implementation strategy. Another advantageous characteristics of conducting mixed-methods research is the possibility of triangulation (28,30,61).

The Consolidated Criteria for Reporting Qualitative Research is used as a guideline for transparent reporting (62).

Other Limitations

This study was conducted during a short period of time. Through analysing the data, the researcher discovered that the guideline that was meant for further implementation did not suit the RNs' needs. That is why this study started to focus more on implementation diagnostics. A tailor-made implementation strategy that comprises a description of how to adjust and implement the guideline was developed.

Another limitation is generalizability. This study focused on characteristics and experiences of RNs, all women, concerning the guideline, the implementation of the innovation in just one ward of one hospital. External validity and generalizability are therefore low, although generalization is not the main goal of qualitative research.

Implications

The IC-Model primarily focuses on quantitative aspects of an innovation and its implementation and has a very static way of tailoring an implementation strategy (16). It largely disregards the experiences/feelings of involved participants. The IC-Model assumes that an innovation is well constructed, but this is not always the case. As part of a larger mixed-method study, this qualitative study showed that certain adjustments of the guideline had to be made before an implementation strategy could be developed and the implementation process could start. This strongly indicates that qualitative research can be a valuable tool in the development of implementation diagnostics and an implementation strategy using the IC-Model.

Without these qualitative results, it would not be clear that the guideline was insufficient and that RNs experience the absence of their TL as a great burden. Qualitative research provided an opportunity to uncover the reasons behind the RNs' behaviours, motivations and attitudes. It revealed insights into in-depth details regarding experiences related to the guideline and its (former) implementation, which are impossible factors to find with only quantitative research.

A better fit between the innovation and its context can be accomplished by combining these qualitative and quantitative approaches, which would lead from better implementation diagnostics to a better-tailored implementation strategy and implementation outcome.

Conclusion

The experiences of RNs show that adjustment is necessary prior to implementation of the guideline. Their experiences confirm existing knowledge about successful implementation, for example the need to have the TL as a role model.

In this organisation, a rule-oriented configuration would best suit the innovative guideline. Qualitative research can be a valuable complement of the IC-Model during development of an implementation strategy; personal experiences of RNs have been extremely valuable. These findings, in combination with the results of the quantitative study, gave enough information for recommending a strategy that will lead to a successful implementation of the guideline.

Future Research

Further research should consist of a pilot study at the SU, using the results of the mixed-methods study, the adjusted guideline and the recommended implementation strategy. This study is necessary to determine if the tailored implementation strategy for the guideline is indeed effective. If implementation succeeds, the guideline can be implemented in the rest of the wards.

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Appendix; Figures, Boxes and Tables

Figures

Innovation Contingency Model

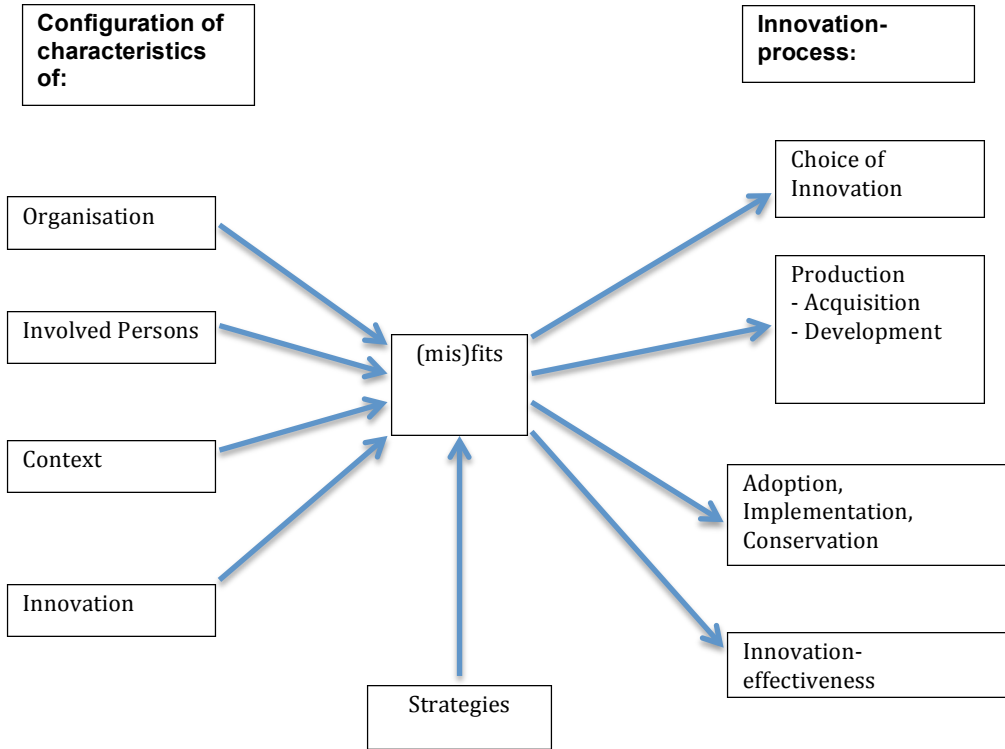


Figure 1. Innovation Contingency Model 'van Linge 2006' (16).

Four configurations in the IC-model (Van Linge, 2006)

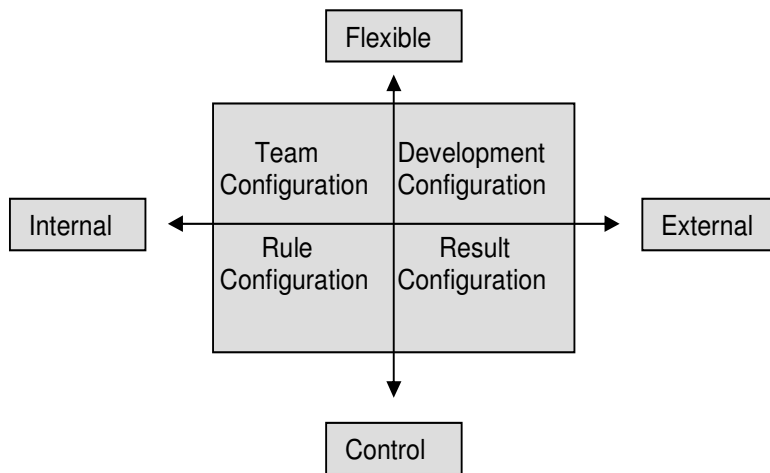


Figure 2. Four Configurations Model 'Van Linge, 2006' (16).

Boxes

Box 1. Topic Guide for the Semi-structured Interviews

Topic guide for the semi-structured interviews
<ul style="list-style-type: none">• Experiences, satisfaction and identifying aspects of implementation in general;
<ul style="list-style-type: none">• Coping with implementation of innovations in general;
<ul style="list-style-type: none">• Position/role of RN in the team;
<ul style="list-style-type: none">• Feelings, beliefs and experiences about the guideline and its former implementation;
<ul style="list-style-type: none">• History of implementation of the guideline.

Box 2. Topic Guide Focus Group

Topic guide for the focus group
<ul style="list-style-type: none">• History of the implementation of innovations;
<ul style="list-style-type: none">• The way the team deals with changes;
<ul style="list-style-type: none">• Experiences, satisfaction, identifying aspects of implementation;
<ul style="list-style-type: none">• Feelings, beliefs and experiences about the implementation of the guideline;
<ul style="list-style-type: none">• Different approaches for introducing the guideline;
<ul style="list-style-type: none">• Different strategies for implementing the guideline;
<ul style="list-style-type: none">• Ideal picture of implementation.

Box 3. Important Factors for Successful Implementation

Important Factors for Successful Implementation (Ruled-oriented configuration)
<ul style="list-style-type: none">• Clear daily structure and routine in the ward
<ul style="list-style-type: none">• Control by the TL
<ul style="list-style-type: none">• Coordination and guidance from the TL
<ul style="list-style-type: none">• RNs must see the benefits of using the guideline
<ul style="list-style-type: none">• Checklist/pop-up in EZIS
<ul style="list-style-type: none">• A project group has to be set up to teach RNs how to use the guideline
<ul style="list-style-type: none">• The guideline has to be adjusted for the acute phase of patients admitted at the SU by RNs
<ul style="list-style-type: none">• More follow-up after discharge from the SU
<ul style="list-style-type: none">• The guideline has to be part of a larger care-path for CVA patients
<ul style="list-style-type: none">• Training RNs in offering good qualitative health education to patients
<ul style="list-style-type: none">• Showing the advantage of good qualitative health education, using Evidence-Based literature
<ul style="list-style-type: none">• Enhancing knowledge
<ul style="list-style-type: none">• Presentations about the guideline

Tables

Table 1. Inclusion and Exclusion criteria for registered nurses

Inclusion and exclusion criteria for Registered Nurses	
Inclusion criteria	<ul style="list-style-type: none"> - Level 4 or 5, administered in the BIG-register (in Dutch: <i>Wet Beroepen in de Individuele Gezondheidszorg</i>). - Worked in the ward when the data was collected during the implementation of guideline in 2014 and still work there during the time of this study.
Exclusion criteria	<ul style="list-style-type: none"> - Have worked less than two months in the neurology ward, as they are not familiar enough with the ward. - Do not work on Fridays. - Students, flex workers, trainees.

Table 2.
Baseline Characteristics of the Total Ward's Population; Registered Nurses (N=31)

Characteristic	Team (n=31)	Stroke-Unit (SU) (n=10)	Learn-Work Place (LWP) (n=5)	Brain-Care Unit (BU) (n=16)
Gender				
Female	30 (96.8%)	10 (100%)	5 (100%)	15 (93.8%)
Age (in years)				
Mean (SD; range)	42.3 (9.9; 28-61)	45.7 (7; 36-60)	36.8 (11.1; 29-55)	41.8 (10.8; 28-61)
Educational level				
Bachelor's degree	19 (61.3%)	8 (80%)	3 (60%)	8 (50%)
Missing	8 (25.8%)			8 (50%)
Employment				
Part-time	30 (96.8%)	10 (100%)	5 (100%)	15 (93.8%)

Values are N (%), SD: standard deviation.

Table 3.
Characteristics of Registered Nurses, Semi-structured Interviews Sample (n=7)

Characteristic	I ₁	I ₂	I ₃	I ₄	I ₅	I ₆	I ₇
Gender	Female	Female	Female	Female	Female	Female	Female
Age (years)	48	42	30	29	28	26	26
Educational Level MBO: level 4 HBO: level 5	5	Old "in-service"*	5	5	4	4	5
Ward	BU	SU	LWP	BU	SU	LWP	LWP
Employment (years)	7	18	7	4	3	7	5

I₁-I₇: Interviewed Registered Nurse (RN) coded by number

**Comparative to level 4*

BC: Brain-Care Unit, SU: Stroke-Unit, LWP: Learn-Working-Place Unit

Table 4.
Characteristics of Registered Nurses, Focus Group Interview Sample (n=4)

Characteristic	F ₁	F ₂	F ₃	F ₄
Gender	Female	Female	Female	Female
Age (years)	38	35	32	25
Education Level MBO: level 4 HBO: level 5	5	5	5	4
Ward	SU	SU	LWP	BC
Employment (years)	15	5	9	5

F₁-F₄: Interviewed Registered Nurse (RN) coded by number

BC: Brain Care, SU: Stroke Unit, LWP: Learn-Working-Place

Table 5.

Themes Identified From Qualitative Analysis of Semi-structured Interviews

Themes	Important main findings	Quotes¹
1. Guideline does not fit in daily practice	No protocol of the guideline can be found at the ward	<p>“I was like, oke, I can’t even find the protocol, you refer to something that I cannot even get my hands on, let alone reading it”</p> <p>“I know what you mean, yes. But I don’t even recall if I have ever read it at all. I don’t know where to find ehm, no I’m not sure”</p>
	Guideline is too extensive	<p>“People are, ehm, we are an individual society. People are, ehm, they suffer from hemianopsy, the other one has a swallowing disorder. First you have to read a whole book about things you don’t have before you come to the part that is useful for yourself”</p> <p>“Ehm, well, that patients and their informal caregivers just get the information they need, suitable for them, adjusted to their personal situation”</p> <p>“It was too much, too extensive, too deep. People come here with real acute problems; their whole life is turned upside-down. The only thing they want at that moment, is that you tell them what is happening to them, and what is really necessary at this very moment. And in all honesty, they really don’t care about that they ehm will suffer from, pfff I don’t know, in three months”</p>
	Guideline looks poor	<p>“Well, just, you know, its looks so poor, in a clear plastic folder with some photocopies and a couple pieces of printed paper”</p> <p>“At least that one looked appropriate, you were able to put folders insight, and ehm, well, it looked more sophisticated instead of these poor leaflets, you know. Than you have something to give to the patients”</p>
	Guideline takes too much time to work with	<p>“It is such a weighty tome, and it makes you stop reading after page 2 ehm, it is ehm. That, that ehm it just doesn’t work that way. I’m not the kind of person who loves abstracts. I love abstracts, but short and brief”</p> <p>“But it is just like, you already have so much information to give. Then I believe, isn’t it possible to keep it short and simple, together as one”</p> <p>“So it must be, well it is actually very difficult, a little bit short and simple, and ehm if they ehm want more information, that we just ehm give them another leaflet or ehm</p>
2. Implementation of innovations in common	An innovation is only successful if it is “a must”	<p>“The most innovative things ehm, most innovations are a must. Yes, and then, yes, you know. The National Inspectorate wants something, the Main Board”</p> <p>“Most of the time, certain innovations, ehm, I really think they achieve the most in small steps, instead of bringing an innovation all at once”</p>

	An innovation has to contribute/add something; to quality of care, increasing patient satisfaction	<p>“And ehm, well you know, because it was opposed by the main board...ehm, well, ehm, you could tell that the whole team had their second thoughts, the team wasn't sure. But, ehm, when we saw positive results, well and ehm, we really saw benefits because of it.</p> <p>“What will it deliver to us, or in terms of healthcare towards the patient, if we decide to work according to ehm...what are the benefits if we decide to do so?”</p>
3. Implementation of the guideline in 2014 was not successful	Insufficient introduction of the study, researcher not visible	<p>“Then they tell about it during team-meetings, and the ones responsible also joined toe ehm, to talk tell us about it...but ehm. But afterwards, I never saw them again. So, ehm, only that introduction. Lets put it this way ehm I just didn't saw them very often”</p> <p>“We have ehm team-meetings. 25 nurses come together during that meeting. That's the right moment to give a good presentation. All 25 nurses lined up together, but instead ehm, they come here in an ad-hoc rush and they think they can give information in a split second. Well than I feel you do not take yourself or us seriously or take it the right way”</p>
	Insufficient provision of information about the study and the guideline	<p>“I know they explained certain things, one time after a long working day, but it was very short. I think it lasted around fifteen minutes, maybe half an hour. And then they told us: just work with it and ehm, just see”</p> <p>“What I thought about the implementation is that they ehm...they referred to certain literature that they wanted me to read myself. No way, that's not what I was planning to do”</p>
	Unclear purpose of the study	<p>“It was implemented and they told us: well, just work with it and that was just about it”</p> <p>“First of all, I don't have the right literature, because I have to hire it at the library, because the latest versions, I'm sorry, I don't buy every latest copy of a book. You cannot refer to a guideline that I cannot find on the internet myself. Plus, I really feel that you really have to tell right here right now what you extricate out of it</p>
	It felt the research was done “in spare-time”	<p>“What I read in those emails is that ehm I really pointed out some small things, that we choose for a certain time and that I really thought ehm: well, I cannot imagine that ehm that is the right way is”</p> <p>“They proposed for example, that it was easy, ehm, that we could talk to the patients between three and four PM and around eight o'clock in the evening. If you say those things, its clear that you did not work your way through an evening shift”</p>
4. Right preconditions are missing	Lack of time	<p>“That's not the right moment for an easy, relaxed and social talk with the family. The only thing that is on my min at that very moment is work my eyebrows off. Otherwise I'm not able to to finish my work on time, at half past ten! And, on the other hand, I really believe it is something for ehm, well during day time shift”</p> <p>“Sometimes there is just not enough time. You are on your won, and at that very moment I really believe that health reasons should take priority”</p>
	Insufficient knowledge	<p>“It is more a case of being uncomfortable with it, which make you think: Oh, what is about to come. Instead of thinking: I can't do it, or I just don't want it”</p>

		<p>“You know, of course, you’re looking for the most experienced colleague, for example ehm, when you’re not sure about something, like giving right information”</p> <p>“In that case, you should say that everybody should be retrained in order to give the right kind of information ehm we give to our patients”</p>
	High workload	<p>“It is all too much, too busy, to do pragmatic work”</p> <p>“I think that that is the biggest issue, you know. Unconsciously, everybody gives a lot of information toward patients, only nobody uses a checklist, and you don’t have the time to ask or check up what your colleagues already did, because they are busy as well”</p>
	No support from team leader	<p>“I think more involvement I guess, yes, I’m not sure about it anymore”</p> <p>“I don’t know how to say ehm, but not real visible like ehm I think it should be”</p>
5. There is no control	No checklist	<p>“Maybe some sort of checklist? That makes sure people give the right information? That you just have to check the box what is worth telling the patient, but I know that has been a struggle”</p>
	No registration option about the guideline	<p>In my view, most of the time, patients leave the stroke and get transferred to another ward and yes, you never know off course if a patient got the leaflets”</p> <p>“I don’t know how to do it. Yes well ehm, maybe if you write it down. I don’t know, in the section action plan or something: I handed the folder, gave some information. I discussed this and this”</p>
	No follow-up	<p>“Most of the time, family takes it home. Well in that case, it disappears and ehm nobody sees it anymore and well ehm, and than it is often forgotten”</p> <p>“You know how it is? I know that if I work at the Stroke and I got to do an admission, then ehm, I think I handed out the guideline maybe two or three times. And I know that when patients got transferred to the ward, they leave the stroke unit, it is important to work with the guideline as well. But you know, people just don’t think about it anymore”</p>
	No control, check or appreciation from team leader	<p>“Bring it under the attention and yes, I don’t know if it’s possible to pick two or three people who can really look after this instead of the team leader. And who addresses people: hey, did you give the leaflets?”</p> <p>“Than you see somebody’s bogged down in impossibilities. You’ve got tolerated but not accepted, there is no stimulance or what so-ever”</p>
	No compassion from team leader	<p>“Yes, sure, she sometimes says we cannot do anything about is, ehm, that it’s just like it is, and that we just have to do it”</p> <p>“Most of the time by people of project groups. Most of the time, they are the ones telling us. Or sometimes via email”</p> <p>“No, most of the time she is absent without any reason, you know, ehm, she had a hard time like three years ago”</p>

¹ Literarly translation of quotes done by researcher (AM); from Dutch to English; Great Britain

Table 6.

Tailor-made Implementation Strategy

Target Group: Registered nurses and team leader of the neurology ward of a general hospital in The Netherlands	
<p>A. Current situation at the ward. Look at the target group:</p> <ul style="list-style-type: none"> • What do you know about the target group right now? • How does the target group feel about changes, innovation and implementation? 	<p><u>Quantitative study</u>, (De Kort, 2015, unpublished)</p> <p>No perfect fit is found between organisation and innovation is during analysis of the quantitative questionnaires. The team seems to learn in subgroups and not as a whole. Overall, the team doesn't experience the guideline as a complex instrument. The RNs' working at the SU feel there were enough moments to practise the use of the guideline. The RNs' working at the LWP sees advantages in the use of the guideline and don't think its complex. RNs' rotating at different wards experience the guideline as low-complex. The organisation tends towards a ruled-configuration, but aspires to be a development-configuration; (because of the wish to be a knowledge-innovation-centre). There is, however, a difference between the reality and vision.</p> <p><u>Qualitative results:</u></p> <ul style="list-style-type: none"> • No advance in using the guideline • Guideline is too comprehensive • Guideline has a poor look • Guideline is nowhere to be found at the ward • No checklist • No link to Electronic Patient File (EPF), • No follow-up • No control from TL or higher management • Not enough time and effort was taken during former implementation • Study and guideline weren't introduced properly • Too little time to work with innovations • High workload • No appreciation from TL or higher management • Innovations only successful if they are obliged • Basic care takes precedence over health care education of patients and their informal caregivers
	<ul style="list-style-type: none"> • Health care education is directly connected to time, knowledge and workload • Only two male nurses (two of 36) • Clear division of two age groups in the team, however no influence on implementation-success • Innovations has to be imposed by the TL or higher management • An innovation has to contribute/add something to daily care, and it has to be measurable • Guideline is too extensive • Guideline makes RNs' more aware of health education • Guideline not usable in its current state • Resistance against innovations • Time-pressure, shortage of time • RNs' only work with the guideline if they're based at the SU • No follow-up after discharge of SU • Inadequate reports by RNs' • Purpose of former implementation remained unclear • Hospital aspires to become a knowledge and innovative centre is ridiculous and cannot be taken seriously • Shortage of RNs' and lack of time are obstructing factors in using the guideline • Guideline should be adjusted in form of a care-path • RNs' have to be involved in developing the guideline • RNs' have to be involved in implementing the guideline • Coffee-break is not the right time for the introduction of an

	<p>innovation</p> <ul style="list-style-type: none"> • There is a lack of right preconditions for an innovation (time) • Need of more control by TL • Right and clear introduction of the implementation of the guideline
<p>B. Ideal situation at the ward Look at the target group:</p> <ul style="list-style-type: none"> • What do they have to know? • What do they have to do? • What do they have to think? 	<p>The ideal situation consists of a short-term goal and a long-term goal. The short-term goal will be the adjustment of the current guideline towards the acute phase on the SU. After the adjustment has been made, a short pilot-study has to be runned at the SU in order to investigate if the guideline is suitable, workable and applicable and if it suits the needs of RNs, patients and their ICs. If not, further adjustments have to be made.</p> <p>When the guideline is complete and it contains all the important assets, and after a successful pilot-phase, the target group can start in using the guideline at other parts of the ward.</p>
<p>What is necessary to get the target group moving from point A to point B (obstructing and encouraging factors)?</p> <ul style="list-style-type: none"> - What is needed to achieve set goals? - Where do you have to look for? - What do you have to change? - Which factors play an excessive part / are important? <p>In order to answer these questions, the researcher has to look at the analysis</p>	<p>Relevant/important factors that weren't measured through qualitative or quantitative research are:</p> <ul style="list-style-type: none"> • The ambition in becoming or being a knowledge and innovation centre. At this point, the organisation is far apart from this ambition, because the implementation of innovations is not working as well as it ought to do. It does not go very smoothly. • Collaboration between Nursing Science, College of Utrecht and University Medical Centre Utrecht requires good clear coordination and communication between these institutes. • Exploring of Information and Communication Technology (ICT) possibilities to implement a checklist in the EPF. • The organisation of the hospital herself; the hospital has to create and facilitate the necessary preconditions to stimulate and promoting innovations and implementations. • At this very moment, there is no involvement or willingness of the workplace towards development of the knowledge and innovation centre.
<p>What is needed to achieve set goals?</p> <ul style="list-style-type: none"> - Where do you have to look for? - What do you have to change? - Which factors play an excessive part / are important? 	<ul style="list-style-type: none"> • Clear daily working structure. • Control coming from TL or higher management (HM). • Guidance by TL • RNs' has to see benefits about the use of the guideline. • Checklist or Pop-Up in EZIS/EPF so RNs' are reminded to use the guideline. • A project group has to be set-up in order to teach other RNs' how to work with the guideline. • Adjustment of the content of the guideline, so it's more applicable at the ward. • More follow-ups after discharge of SU. • The guideline should become a part of a care-path. • Underline importance of Evidence Based healthcare education with RN's. • Educate RNs' in giving good qualitative information towards patients. • Increasing knowledge about stroke, symptoms, etc. by organising clinical lessons, bedside-teaching.
<p>Chosen Strategy:</p> <p>Configuration-development strategy for a "ruled" ward and type of innovation.</p>	<p>Control is an important key factor in case of a ruled-configuration. It is important to make a clear distinction between the development of an innovation and implementation. Given the fact that the guideline in its current form and capacity is neither suitable nor workable at the ward, the team has to start by adjusting its contents.</p> <p>In a ruled-configuration, linearly way of thinking is an important factor; only after the guideline is adjusted and, because of that, becomes suitable and</p>

workable for the ward, only then the team can start to think about implementing it.

Preconditions adjusted guideline

- Focuses on acute phase after stroke.
- Content brief and clear.
- Appealing and comprehensive look.
- Simple information, no complicated texts, understandable for patients, informal caregivers and RNs'.
- Guideline consists of clear steps; not too much information at the same time

Evolving of the guideline

- HBO-V students have to perform a systematic search of evidence based literature in order to retrieve information about what Cerebral Vascular Accidents (CVA) patients believe is important concerning healthcare education in the acute phase after stroke (lack of knowledge, coping et cetera)
- Good guidance of the students during their search of useful literature is very important. Their supervisor checks the content of their search, together with a RN of the SU.
- The students will present their findings to a, not yet formed, project group. This project group has to reach consensus about the content of the guideline.
- The project group has to consist of minimal two RN's of the SU and the supervisor of the students.
In addition, the developer (TH) of the guideline has to be involved in this project group.
- After consensus is reached, the guideline will be adjusted towards the acute phase of stroke
TL and HM has to make time in order to let the project group function properly
- All the above steps should be repeated at the other units of the ward (Brain-Care Unit (BU) and Learn-Working-place (LWP)), but not adjusted to the acute phase.
- A two-weekly update has to be given to colleagues about the guideline. Various possibilities: email, newsletter or a clinical lesson, all aiming to create awareness about the guideline.
- The project group is easily reached by RNs' to answer any questions about the guideline. The project group has to give feedback to the TL.
- Once the guideline is adjusted, it has to be presented at the ward during a team meeting.
- Once a week the guideline is presented at clinical lessons to make colleagues more aware of the existence of the guideline.

Preconditions implementation

- Take culture, structure, human resource and political into account.
- Culture: Consists of values, basic assumptions and behaviour of the RNs'. Uniformity, predictability, promoting of important values by TL.
- Structure: characterizes organizing the work process, for example creating a fit between competencies and assignments of RNs'. Standardisation of processes, supervision and control by Main Board, specialization of tasks (vertically), functions and clear descriptions.
- Human resource: addresses human knowledge. Knowledge and way of learning, skills of individual RNs': procedural-learning skills, team competencies and management.
- Political: describing of power positions in the team.

Implementation of adjusted guideline

- A clear set date to start with the implementation of the guideline
- A list of fixed dates to evaluate its implementation, starting with weekly to monthly evaluations.
- Evaluations based on short-term implementation-outcomes

according to Proctor(21)

- Using the SU as a pilot-unit. The guideline should first be implemented at this part of the ward. Important part is evaluating the guideline with RNs', patients and informal caregivers; guideline sufficient enough, what should change et cetera.
- Control by TL on the (right) use of the guideline; Are leaflets handed out? Asking if RNs' thought about the guideline. Et cetera.
- Control by HM on the performance of the TL and use of the guideline.
- Approach ICT to creating a pop-up and extra tab in EPF designed for administration on behalf of the guideline. For example a checkbox whether RNs' used or did not use the guideline.
- RNs' should start to report about the use of the guideline; which information did they provided to the patient.
- To be able to present figures about how often the guideline is used, HM should collect precise numbers about the use of the guideline, so eventually, progress can be seen.
- Patient-satisfaction must be measured. Interviews/questionnaires. This allows RNs' to see if healthcare education influences patient-satisfaction.
- Using peer-review between RNs' about use of the guideline.
- Clear agreements; who does what, where, when during the implementation process. Each one should be responsible for a certain part of the implementation. This requires control by TL and HM.
- TL and HM have to play an active role during the implementation process. They need to motivate, stimulate and control RNs'. They can give some sort of reward if RN's making good progress during implementation of the guideline.
- The guideline has to become part of the daily routine. This can be achieved through stimulants: training, practising, discuss it during team meetings, evaluate with patients
- RNs' who are experienced in working with the guideline can perform bedside teaching to teach other nurses.

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