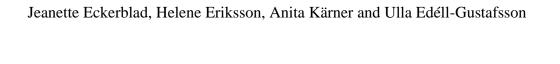
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Postprint available at: Linköping University Electronic Press http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-21204 Nurses' conceptions of facilitative strategies of weaning patients from mechanical ventilation – A phenomenographic study

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Summary

Background: Mechanical ventilator withdrawal can amount to up to 40% of total ventilator time. Being on a mechanical ventilator is associated with risk of anxiety, post-traumatic stress syndrome (PTSD), nosocomial pneumonia and premature mortality.

Purpose: The purpose of the present study was to describe different conceptions of nurses' facilitating decision-making strategies regarding weaning patients from mechanical ventilations cared for in intensive care unit (ICU).

Method: Semi-structured interviews were analysed within a phenomenographic framework. Twenty ICU nurses were interviewed.

Findings: The findings revealed three main categories of nurses' facilitating decision-making strategies: "The intuitive and interpretative strategy" featured nurses' pre-understandings. "The instrumental strategy" involved analysis and assessment of technological and physiological parameters. "The cooperative strategy" was characterised by interpersonal relationships in the work situation. Absence of a common strategy and lack of understanding of others' strategies were a source of frustration. The main goals were to end mechanical ventilator support, create a sense of security, and avoid further complications.

Conclusion: Although these findings need to be confirmed by further studies we suggest that nurses' variable use of individual strategies more likely complicate and efficient and safe weaning process of the patients from mechanical ventilation.

Keywords: Communication, Intensive care, Mechanical ventilator weaning, Nursing.

Introduction

Despite dramatic developments in mechanical ventilator technology and pharmacological treatment, the weaning process is still described as a stressful, frightening, hopeless, and frustrating period for patients (Burns and Chochesy, 1995; Cook et al., 2001; Macintyre, 2007; Schou and Egerod, 2008). The critical care nurse's decision-making strategy related to the process of mechanical ventilator weaning is probably of importance (Aitken, 2003; Taylor, 2006), as the risk of nosocomial pneumonia increases 8-fold and the risk of premature mortality 12-fold (Macintyre, 2001). Post-traumatic stress disorder symptoms occur in nearly 20% of critically ill patients who require mechanical ventilation (Girard et al., 2007). In addition, studies have shown that about 25% fail to recover sufficient spontaneous respiration, despite improved health (Blackwood et al., 2004). Patients with severe weaning problems may need a longer weaning period owing to the duration and/or discontinuation of mechanical ventilator support, insufficient respiratory muscles, mental health, and over-sedation (Macintyre, 2007; Girard et al., 2008).

Next of kin are an important link for development of care in a nursing environment (Engström and Söderberg, 2007; Engström, 2008; Schou and Egerod, 2008). They give the nurse an opportunity to get to know the patient as a person in his/her social context, which in turn results in a meaningful dimension of nursing (Kociszewski, 2004; Williams, 2005; Davies, 2007). Unsatisfactory communication is more likely to lead to increased stress and anxiety in the patient (Alasad and Ahmad, 2005). Davies (2007) found that patients' experience of a panic attack did not hinder the ventilator weaning process when nurses' communication with patients or the family was successful. By having knowledge about patients' physiological and psychological resources, nurses can create a balance between rest and work in the weaning process (Jenny and Logan, 1994). To achieve progress in the weaning process, nurses working in intensive care units (ICU) must be aware of patients' underlying emotional state (Davies, 2007).

Numerous studies have evaluated procedures for weaning from mechanical ventilation (Blackwood et al., 2004; Girard et al., 2008, Crocker and Kinnear, 2008). These studies have revealed contradictory results regarding the importance of such protocols. Use of a protocol may be unsatisfactory if it creates barriers for example, disagreement between nurses and physicians owing to their different conceptions of the weaning process (Mårtensson and Fridlund, 2002; Blackwood et al., 2004; Hansen and Severinsson, 2007). On the other hand, in order to achieve an efficient and safe weaning process, nurses have been conducting such procedures with the support

of protocols. Protocols have been shown to help nurses act more freely (Mårtensson and Fridlund, 2002; Hansen and Severinsson, 2007). However, an important factor for promoting an efficient ventilator weaning process is probably more related to the staff available in the ICU and management procedures rather than to actually having a protocol (Brochard, 2008). No previous studies have explored nurses' conceptions and understandings by focusing on their decision-making strategies regarding weaning ICU patients from mechanical ventilation. The aim of the present study was to describe different conceptions of nurses' facilitating decision-making strategies regarding weaning ICU patients from mechanical ventilation cared for in ICU.

Methods

In this qualitative study, dialogical interviews and a phenomenographic approach, based on Marton and Both (1997) and Sjöström and Dahlgren (2002), were chosen. Out of 74 nurses, 10 nurses at a general hospital ICU and 10 nurses at a university hospital ICU in the south-east of Sweden were selected using convenience sampling. To grasp a variation of different kinds of conceptions among nurses, two hospitals with a similar patient basis were chosen. Written and verbal information was given and informed consent was obtained. Nurses who had at least one year of clinical experience of weaning patients from a mechanic ventilator in the ICU were eligible for inclusion. Nurses included in this study were two men and 18 women, who had worked as an RN between three yrs and 37 yrs (Md 20.5 yrs) and in the ICU between 1.5 yrs and 33 yrs (Md 14 yrs). Altogether, 423 patients, with a total of 45,717 h (Swedish association of Anastasia and Intensive care, SFAI, 2005) of respiratory insufficiency of different aetiologies, were treated in a mechanical ventilator at the two hospitals, during the year of data collection. The mean duration of mechanic ventilator support was 108 h. None of the ICU wards included here had a standardised strategy or protocol for weaning patients from a mechanical ventilator.

Interview

The interviews were conducted by two of the first authors (J.E., H.E.) in an adjacent room at the two ICUs, respectively, at the end of the nurses' working shift. An interview guide (Sjöström and Dahlgren, 2002), developed for this study was used. The interviews began with a question such as: "How many years have you been working as a critical care registered nurse (CCRN)?" followed by supplementary questions about the phenomenon, such as: "Describe your experience as a nurse, of working with mechanical ventilator weaning", "Describe your interaction with the patient in the weaning process", "Describe how you facilitate the weaning process", "What can obstruct the process?" Supplementary questions such as what, how and can you develop this, were added in order to encourage the nurses to describe their experiences in more detail. The interviews varied in length between 15 and 45 minutes (Md 36 min). The interviews were tape-recorded and transcribed verbatim after all interviews had been performed by the two first authors (J.E., H.E.). Before the main study began, an interview guide was constructed by the authors and then tested on four CCNRs. In order to look at deeper dimensions of the phenomenon, the interview guide was reworked and two follow-up questions were added. Thereafter the interview guide was retested. The test interviews were not included in the present study.

Data Analysis

In order to describe the variation in the nurses' experiences and knowledge of the phenomenon, the data was analysed using a phenomenographic procedure according to Dahlgren and Fallsberg's (1991) seven steps, *Familiarisation, Condensation, Comparison, Grouping, Articulating, Labelling and Contrasting.* During analysis, similar conceptions from different narratives were gathered and described by the authors in an objective way (Dahlgren and Fallsberg, 1991) (Tables 1 and 2).

Ethical Approval

The study followed the ethical guidelines given in the Declaration of Helsinki. The head of the two ICU units (Chef executive officer) approved of the study, and representatives of the trade union were informed. The nurses were informed that their participation was completely voluntary and that they could terminate their participation at any time without any consequences. All the information and material collected in the study have been handled confidentially.

Pre understanding

Three of the present authors are critical care registered nurses (CCRN: J.E, H.E, U. E.-G.) with solid clinical experience of working in an ICU and of weaning patients from ventilators.

Credibility and validation of the study

The tape recordings of the interviews increased the credibility of the transcription process. The data analysis followed Dahlgren and Fallsberg's seven steps. Two of the authors (J.E., H.E.) independently transcribed the interviews and then analysed the transcriptions. Thereafter, they worked together with comparisons of the material searching for differences and similarities. Conceptions were dealt with in their own context. The conceptions were then decontextualized, and thereafter a systematic comparison of similarities and differences could be made. A coassessor (A.K.) read the preliminary categories and questioned the findings of the first authors. Carefully describing a qualitative method from design and data collection to analysis and interpretation strengthens the study's trustworthiness (Sjöström and Dahlgren, 2002). The descriptive categories in the findings are illustrated by quotations (Mays and Pope, 2000). Finally, phenomenographic researchers (U.E.-G., A.K.) read the analyses to further specify the descriptive categories.

Table 1. The phenomenographic analysis seven steps according to Dahlgren and Fallsberg (1991).

(1) Familiarisation	The interviews were transcribed verbatim. The what- aspect was identified as facilitate mechanical ventilator weaning and the how-aspect strategies nurses use
(2) Condensation	Prominent perceptions were selected with a focus on the how-aspect.
(3) Comparison	The essences of the selected statements were compared with each other. Similarities and differences emerged. The external horizon appears in the form of four description categories.
(4) Grouping	The material was sorted after the main content. Revisions were made to delineate differences between the description categories. This resulted in the description categories were reduced into three.
(5) Articulating	By highlighting the how-aspect in the various groups a deeper dimension started to emerge. An attempt was made to describe the essence of the answer who were similar.
(6) Labelling	The description categories were named after the essence of the content and the quotation was presented. Internal horizon in term of components made a clear variation within each category. The components were named along what was specific and symbolized the strategy.
(7) Contrasting	Phenomena of every descript category were valued and discussed with the supervisor.

Table 2 Different conceptions of nurses' facilitating decision-making strategies for weaning ICU patients from mechanical ventilation.

intuitive and interpretative way of being	The instrumental way of being	The cooperative way of being	
Autonomy, accommodation, distraction	Mechanical-technical, physiological evaluation	Teamwork, relationships	
 Instantaneous planning 	Protocol-driven planning	 Nursing plan 	
Intuitive acting	Medical knowledge	 Internal relations 	
Superior of the patient	Physical presence	 Inter personal approach 	
 Physically and emotionally present 	Emotionally distanced	 Dialogue 	
	• Information		

The findings

Three descriptive categories: *the intuitive and interpretative strategy, the instrumental strategy and the cooperative strategy* of the phenomenon nurses´ facilitating decision - making strategies regarding weaning ICU patients from mechanical ventilation were found.

The intuitive and interpretative strategy

This descriptive category was built on three distinctive components: *autonomy, accommodation* and *distraction*.

Autonomy

Some of the nurses expressed that autonomy is gained through nursing experience, while others felt it to be a personal quality. Nurses considered physicians' orders redundant and sometimes directly obstructive to ventilator weaning. Information regarding the patient was verbally communicated between staff members. Ventilator weaning protocols and nursing plans were a direct threat to efficient ventilator weaning progression. The nurses implied that a strategy that worked well in the morning did not work at all in the afternoon as the patients physical condition often change during the day. Nurses have an outstanding understanding of the patient because they worked so close to him/her. By acting autonomously, nurses facilitated ventilator weaning. Nurses read and appraised their patients' needs and capacity and simultaneously adjusted their strategies thereafter.

"It feels like nurses who do a bit more on their own authority or whatever you call it, who don't follow the physician's order word-for-word, their patients make faster progress. You base the weaning process a bit more on your feelings and watch the patient instead of just following a schedule" (No. 2)

Accommodation

By adjusting their strategies to each patient at every encounter, nurses could facilitate the ventilator weaning procedure. Achieving successful weaning was a challenge, and it felt like a personal defeat when complications occurred. Patience was of great importance in achieving progress in the weaning process, and it was described as a very sensitive part of ICU nursing. Ventilator weaning was facilitated through intuitive appraisal of the patient's physiological and psychological parameters. Physiological parameters can sometimes be of assistance but were inferior when it comes to adjusting the strategy. Through the clinical assessment based on clinical expediences of

weaning like facial expressions and bodily movements, the nurses decided when the patients needed the ventilator support back. Nurses described that patients who had spent a long time on ventilator support often had low self-esteem. Nurses described that the patients expressed by non-verbal communication their lack of capacity to start breathing on their own. By working with patient empowerment and choosing an encouraging strategy, nurses could facilitate weaning even in such patients. In some cases the nurses prevent the patients desire to wean in purpose to facilitate the weaning process. Such an accommodating strategy helped patients who desperately wanted to get off ventilator support but who did not know their own limited capacity.

"Some patients can push themselves over the edge if I let them decide how long they can breathe spontaneously, because they want to get rid of the mechanical ventilator as quickly as possible. And you know, that only leads to a backlash." (No. 11)

Distraction

Nurses describe distraction as a strategy to minimise patients' stress and anxiety in the ventilator weaning process. ICU nurses appraised if and when the patient should be informed of the weaning procedure. By analysing and evaluating decline in patients' body strength, observing their facial expressions and by communicating, nurses got an impression of patients' current physiological and psychological state. Taking that in consideration, nurses could adjust the level of distraction the individual patient needed. Nurses also reported that information may be a prerequisite for successful ventilator weaning. The distraction used could involve discussing a family picture, music, television or the patient receiving a visit from a family member. During such distractions, nurses could reduce ventilator support without the patient's knowledge.

"For some patients, the situation gets very stressful if you tell them that you're going to reduce the pressure support, that's why you reduce the pressure first and then tell them. Of course it's different from patient to patient, but you notice those things." (Nr 5)

The instrumental strategy

This descriptive category consisted of two sub-categories: the mechanical-technical strategy and the physiological of appraisal strategy.

Mechanical-technical strategy

According to nurses in this category, education and experience of the advanced technology used in the ICU leads to greater competence. Such knowledge enables nurses to assess and assess and evaluate several physiological parameters, and this information is vital to facilitating the weaning procedure. The nurses stated that experience of the mechanical ventilator weaning technique was a prerequisite for a positive outcome. Feeling insecure about various medical techniques is a great disadvantage in nursing care. In these critical situations, it is the nurse's competence that gives the patient security. The patient's weaning outcome is dependent on physiological and psychological parameters. The weaning procedure began with the nurses reducing the pressure support and reducing the positive end expiratory pressure, as required by the patient's physiological needs. In the end, it is quite easy to remove the ventilator and for the patient to start breathing spontaneously. The transition between controlled ventilator mode, pressure support mode and spontaneous breathing did not need to be as difficult as it once was, before the advanced mechanical ventilator was introduced. The nurses reported that the new, more technically developed mechanical ventilator that gives early indications of spontaneous breathing facilitates weaning. With such modern equipment, the patient is unaware of the need for ventilator support, which thus could be gradually removed. The nurses felt that weaning a patient from a mechanical ventilator was not a greater problem today than any other problem on the ICU, all thanks to the technological developments.

"It was different before, when you only had volume controlled breathing on the mechanical ventilator and they were weaning for ten minutes per hour, it was very hard work for the patient. Nowadays it's not so much work, they can be weaned now and then, and you can balance the support all the time, which makes things much easier." (No. 17)

Tracheotomy is used more frequently today, and therefore patients no longer have to be sedated to the same extent. A patient who is awake can follow instructions and is able to receive information. The nurses inform the patient of the plans and that everything is working.

"I facilitate weaning by setting a time for the patient, so he understands it concerns a certain amount of time" (No. 14)

Using a fenestrated inner cannula, which allows patients to speak, was a strategy that increased patients' will and motivation in the weaning process. When they could hear their own voice,

patients regarded it as having part of their personality back. It was a sign of recovery and increased their motivation.

"Many patients feel that they are on their way to recovery when they can talk and hear their own voice again - Yes finally." (No. 14)

Physiological evaluation strategy

The nurses stated that ventilator weaning based on a physician's order started when the medical condition had improved and the need for support had declined. It was important that the patient did not have a fever, was awake and that infection parameters had declined.

Expected arterial acid-base indicators in relation to the physiological parameters were modified based on the patient's basic condition and past illnesses. The strategy was appraised using respiratory rate, PO2 and PCO2. The current strategy could be re-evaluated if the arterial acid-base balances deteriorate, and thereby weaning could be facilitated.

"If the patient has an arterial catheter, you can analyse the blood and you can see if the carbon dioxide is progressing, then you can look at the saturation and the respiratory rate and how the patient looks. Then maybe you have to interrupt the weaning for a while, but if the value is good you try for a little while longer." (No 9)

The nurses described the lack of an evaluation tool as a barrier. Such a tool would allow them to confirm that the weaning process was proceeding as expected.

"There is nothing established telling you do this and then that, so you just don't know if you're doing it right "(No 3)

The cooperative strategy

In this category, two sub-categories were found: teamwork and relationships.

Teamwork

In order to facilitate weaning from the ventilator, good cooperation between several actors was required. The patient and next of kin are part of the team. The nurses reported that a strong emphasis on information, communication and a long-term nursing plan are a prerequisite. The team must pursue the same goals and have common strategies. A relapse occurs when the nursing

plan must be revised, which moves the process one or more steps backward. Relapses were perceived as a source of frustration in the teamwork.

"It's important that the staff and patient work towards the same goal. It's not necessary for many people to be involved, that can be messy and cause insecurity in the patient." (No 7)

Cooperation problems between co-workers within the co-workers within the team were described as a barrier to the weaning process. If the staffs showed uncertainty, this may create anxiety and insecurity in the patient, which obstructs the weaning process. A fully booked ICU is another barrier to following the nursing plan. Established goals may then have to be reviewed, and there is a risk for early extubation and premature transfer from the ICU ward. The nurses reported that early extubation and premature transfer from the ICU ward can cause a patient's condition to deteriorate, perhaps resulting in a return to the ICU.

Relationships

The continuity of nursing care in mechanical ventilator weaning was a prerequisite for creating a good relationship. Confidence was something nurses respect and cherished, and it took time to build. Weaning is facilitated when a nurse could care for the same patient over a number of weaning sessions, during which a relationship with the patient and next of kin can be established. Next of kin who were involved gave the patient a feeling of security and encouragement in the weaning process.

"I give the patient information, make sure they aren't suffering from pain or uncomfortable in bed. Then I explain what I'm doing and it's important to tell them that they can get the ventilator support back immediately when they want it. Some patients are worried about their own ability to breath, it's vital then to tell them that - you just do the best you can, and you'll get the mechanical ventilator when you want." (No 10)

Strategies for the next day were planned in relation to sleep, food, and mobility. On the contrary, other nurses' saw the downsides of nursing the same patient for a long period. Recurrent relapses that involved restarting the weaning process and slow recovery could have lead to frustration and powerlessness for the nurses in charge. Communication with the patient and next of kin was of the greatest importance to these nurses. A fenestrated inner cannula, a non-electronic communication board and different signs could facilitate

communication with these patients. All information was also distributed to the other members of the team. The nurses reported that it was of great importance that patients were motivated and had a desire to end ventilator support. Nurses using this strategy facilitated weaning by acknowledging the patient.

The nurses discussed their frustration over the gaps that existed regarding guidelines and goals. Weaning would be facilitated if guidelines and procedures were established. This was greater problem during holidays and weekends when additional physicians were involved and there was little continuity among the staff.

"There is a problem with the organization, no routines for weaning exist, everyone just follows his or her own mind" (No 18)

Contrast

The present study revealed a wide variety of conceptions regarding ICU nurses facilitating decision-making strategies when weaning patients from mechanical ventilators. All respondents indicated that the main objective of weaning was to free patients from ventilator support and avoiding backlashes.

Creating security for the patient was identified as an important component of successful ventilator weaning. Security was created in the *intuitive and interpretative strategy* by the nurse being physically and emotionally present. In the relation to the physicians and the patients the nurses considered themselves to be superior regarding clinical experiences in terms of understanding the patients' needs and capacity.

In the *instrumental strategy*, security was provided by nurses who were highly skilled at evaluating physiological parameters and managing medical techniques. The nurses' focus was based on the physicians' prescriptions and objective medical technological facts about the patients rather than the patients' subjective needs. In the *cooperative strategy*, security was created through interpersonal relationships. The ability to cooperate within the care team, with the patient and next of kin was a prerequisite for building security in the weaning process. Nurses using this strategy developed an interpersonal approach.

Discussion

The present study showed three different conceptions of decision-making strategies nurses used to facilitate mechanical ventilator weaning. The strategies were the intuitive and interpretative approach, the instrumental approach and the cooperative approach. Whether the nurses used predominately one or a mixture of these strategies remains unclear and may be answered in another study. These strategies have not been previously reported in literature. The objective of all nurses included in the study was to get the patient off the ventilator as soon as possible, to create a feeling of security and to prevent relapses, as described in previous studies (Macintyre, 2001, 2007; Girard et al., 2008). Depending on their choice of strategy, the nurses described different conceptions of factors that obstructed and facilitated the weaning process. In an attempt to draw attention to the different decision-making strategies prevailing on the ward, cooperation between nurses could be facilitated, hopefully creating a balance in the weaning process. Previous studies have described differences of opinion regarding mechanical ventilator weaning between nurses and physicians or between nurses and other professionals (Taylor, 2006; Hansenand and Severinsson, 2007; Brochard 2008).

The intuitive and interpretative strategy

The nurses read and intuitively interpreted patients' capacity instantaneously. Strategies were adapted to the individual patient's capacity, and the appraisal was based on the nurses' pre-understandings. The findings showed that the physiological parameters and the technology were used as a support in the choice, but were not of crucial importance. There was a risk of basing the decision on quantitative data only (Wikström and Larsson, 2004). The nurses felt that mechanical ventilator weaning was a very sensitive part of nursing, a finding also revealed in previous studies (Burns and Chochesy, 1995; Burns, 2003, Macintyre, 2007; Schou and Egerod, 2008). However, by knowing the patients well, the nurses were able to accommodate their nursing strategies. Reading and interpreting the patient's body language and facial expressions enable nurses to create a balance for the patient, thereby preventing a relapse, which Jenny and Logan (1994) also found. However, lack of time is a barrier to these nurses. Being close to the patient is a precondition for good nursing, and that is how these nurses created security and were able to make the right decision. Jenny and Logan (1997) revealed similar findings in their qualitative study;

patients expressed the importance of nurses´ physical presence and emotional support. Weaning protocols and nursing plans were considered as barriers to creating a balance and accommodating nursing care to patients' needs instantaneously. The findings correspond with Blackwood et al. (2004) study. The consequences might be that the nurses disregard the patient's clinical changes. The nurses in the present study who used an intuitive and interpretative strategy highly valued their clinical experience in contradiction to nurses who used the instrumentally strategy and highly valued quantitative physiological parameters. The nurses also considered physicians´ prescriptions superfluous and sometimes incorrect: Nurses know the patient best. In the present study, nurses reported that they only gave patients information if they could manage it, and sometimes distraction was necessary instead.

The instrumental strategy

Contrary to the *intuitive and interpretative strategy*, nurses greatly appreciated the technology and the physiological parameters. The fact that the nurses rely more on the physicians' orders and objective information about the patients rather than the patients' subjective needs might prove an emotional distance. Findings from Wiman and Wikblad (2003) study in an emergency ward showed similar behaviour and attitudes among nurses, who were labelled instrumental. Education in medical techniques, knowledge of physiological parameters and experience of the weaning process are necessary to facilitate weaning and avoid backlash. Appraisal and choice of strategy were made on the basis of quantitative data obtained via technology. Through the knowledge and security of medical techniques, nurses can create a safe nursing environment for the patient. Lack of competence in using these techniques makes the nursing unsafe. One barrier was a lack of quantitative evaluation protocols and variations in the patient's medical status. Hansen and Severinsson (2007) showed improvements in nurses' sense of security when they had a weaning protocol to rely on. The nurses were more goal-oriented and were able to act independently. Using a weaning guideline reduced time for weaning from the mechanical ventilator (Macintyre 2007). Concrete information was given to the patient. Contrary to nurses in the other categories, those in the cooperative category made all decisions and established goals in dialogue with the patient.

The cooperative strategy

Creating a good nursing environment and good collaboration within the work team was essential. Similar to nurses in the intuitive and interpretative strategy, these nurses had to be near their patients to create a feeling of security.

It was important to create a relationship with the patient and also his/her next of kin, which Travelbee (1971) described as the nursing internal dimension. In creating security, the nurse transforms his/her role and encounters the patient and the next of kin human to human. Eriksson (2000) stated that a relationship between the patient and the nurse is a precondition for excellent nursing. The factors of continuity, confidence, participation and dialogue emerge from the present findings as fundamental in creating a good relationship Next of kin are of great importance, and through them the nursing staff can get to know the patient as a person in a social context. This enables a meaningful dimension in nursing (Kociszewski, 2004; Williams, 2005; Davies 2007). Engström and Söderberg (2007) found that patients too, experienced the presence of their next of kin as essential to managing their difficult disease. Patients also saw their next of kin as the persons they could communicate with and the persons who best understood them (a. a). The nurses considered that one of the prerequisites of recovery is motivation, and communication is one way to increase motivation. A nursing plan based on teamwork was essential to achieve excellent nursing. These nurses felt that lack of engaged physicians and disharmony in the teamwork were barriers. In accordance with this notion, Hansen and Severinsson (2007) findings showed that nurses had to delay decisions due to absent physicians.

Clinical implications

By making visible these different conceptions of nurses' facilitating decision-making strategies regarding mechanical ventilator weaning, we may be able to initiate a debate and reflection on the matter, hopefully leading to better cooperation between professionals on ICU wards. Through knowledge and understanding of the various strategies, nurses can further develop their nursing competence.

Conclusions

Although these findings need to be confirmed by further studies we suggest that nurses' variable use of individual strategies more likely compllicate an efficient and safe weaning process of the patients from mechanical ventilation.

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