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# The Development of the MENTOR_D Nursing Intervention: Supporting Family Involvement in Delirium Management

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## ABSTRACT

**Background.** Although families are increasingly seen as allies to improve delirium management and reduce its consequences, their involvement in the post-cardiac surgery setting is challenging considering patients' critical state and short hospital stay. To our knowledge no theory-based nursing intervention exists that optimally supports the involvement of families in delirium management in the context of post-cardiac surgery. We aimed to develop MENTOR_D, a nursing intervention to support the involvement of families in delirium management.

**Methods.** MENTOR_D was developed based on Sidani and Braden's (2011) intervention development framework. Narrative literature reviews paired with the clinical experience of an expert committee were used to inform these three steps: (1) develop an understanding of the problem under study; (2) define the objectives of the intervention and identify a theoretical framework for highlighting strategies to be used in the intervention; (3) operationalize the intervention and identify its anticipated outcomes.

**Results.** As a result of the three steps the MENTOR_D nursing intervention relies on a caring-mentoring relationship between a nurse and the family. The aim of MENTOR_D is to increase the presence of the family at their relative's bedside and their involvement in delirium management. MENTOR_D's content is delivered over three phases which are organised around the visits of the family at the patient's bedside. During these phases, families used their knowledge of the patient to tailor the delirium management actions. These actions include orientation and reminiscence, and were aimed at diminishing anxiety and increasing sense of self-efficacy in families and diminishing delirium severity and improving recovery in patients.

**Conclusions.** A deep understanding of the underlying mechanisms of an intervention is key in its success to reach the targeted goals of effectiveness in practice. This understanding can be achieved through the careful development of a theory of the intervention before the operationalisation of its components and its testing. As delirium continues to be a major complication, this intervention is a promising solution to increase families' involvement in delirium management and highlights the support that nurses can offer to facilitate this involvement. With its use in future studies and practice it can be further refined. The proposed paper presents the theory of the MENTOR_D intervention; that is its conceptualization and proposed mechanisms of action.

**Keywords**. Nursing intervention, delirium, family caregivers, intervention development

## SUMMARY STATEMENT OF IMPLICATIONS FOR PRACTICE

**What does this research add to existing knowledge in gerontology?**

- In the context of delirium following cardiac surgery, families are a valuable resource. Their knowledge of the patient's needs, preferences and personality can provide key insights for tailoring non-pharmacological delirium management.
- Using Sidani and Braden's work, we developed MENTOR_D, a nursing intervention to support the involvement of families in the non-pharmacological management of post-cardiac surgery delirium.

**What are the implications of this new knowledge for nursing care with older people?**

- Nurses can use the MENTOR_D intervention to support families in using delirium management strategies such as orientation.
- The MENTOR_D intervention relies on a caring-mentoring relationship between a nurse and the family to increase the presence of the family at their relative's bedside and their use of delirium management strategies.

**How could the findings be used to influence policy or practice or research or education?**

- Nursing interventions are not well described in current literature, and this leads to issues related to the evaluation, replication and implementation of these interventions.
- This manuscript features the development of a nursing intervention and operationalizes Sidani and Braden's framework, offering a concrete example that is useful for nursing researchers.
- We proposed a theoretical framework with underpinnings that, to our knowledge, were never used before in complementarity and that may be transferable to nurse-family relationships in other contexts.

## INTRODUCTION

Delirium is a costly complication impeding patients' autonomy and increasing morbidity and mortality (Neupane, Arora, et Rudolph, 2016). Delirium is defined as an acute change in attention, awareness, and cognition that fluctuates throughout the day and cannot be explained by other preexisting neurocognitive disorders (American Psychiatric Association [APA], 2013). Post-cardiac surgery adults are among the most at risk for delirium due to the highly invasive procedure, and the intensive care unit stay (Marcantonio, 2017). About one third of post-cardiac surgery patients will experience delirium, which will result in a complicated recovery for them and anxiety for their families (Mailhot et al., 2017; Leigh et al 2018; Neupane et al., 2016).

A longer duration of delirium has been associated with worsened consequences of delirium (Girard et al., 2010; Han et al., 2017; van den Boogaard et al., 2012).The gold-standard in caring for patients with delirium is using non-pharmacological delirium management that is tailored to each patient's needs, preferences, and personality (American Geriatrics Society [AGS], 2015; APA, 2013; Registered Nurses Association of Ontario [RNAO], 2016). Non-pharmacological delirium management consists of measures taken to address the symptoms of delirium and maintain patient safety, for example, using orientation cues and cognitive stimulation, without employing pharmacologic interventions (AGS, 2015; APA, 2013; RNAO, 2016). The acute and short-term nature of post-cardiac surgery care precludes nurses from becoming sufficiently familiar with these patients to ensure optimal tailoring of non-pharmacological delirium management. In this context, families are a valuable resource. In the context of this article, a family member is defined as the primary informal caregiver assisting with the care of the patient. Their knowledge of the patient's needs, preferences and personality could provide key insights for tailoring non-pharmacological delirium management (Martins et al., 2014; Steis et al., 2012).

Moreover, a sense of familiarity to delirium care might improve patient outcomes (Carbone et Gugliucci, 2015). This sense of familiarity can be achieved by increasing not only the presence of families but more importantly, their direct involvement in delirium management. The involvement of families in delirium management can facilitate the tailoring of non-pharmacological interventions, in turn, improving care and patient outcomes

Families have reported high levels of distress towards delirium. However, they have also reported the need to learn how to support their relative with delirium (Cohen et al 2009). More importantly, supporting families and informing them on delirium and how they can help was highlighted as being a key factor in limiting the impact that delirium might have on them (Black, Boore, et Parahoo, 2011; Gagnon, Allard, Gagnon, Mérette, et Tardif, 2012; Rosenbloom-Brunton, Henneman, et Inouye, 2010; Steis et al., 2012). There is limited evidence on the impact of family involvement in critical care among patients with delirium (Martinez et al 2012). However, the involvement of families among patients with dementia suggested that a partnership between nurses and families helps support family involvement while having beneficial outcomes for both patients and families. These outcomes include a decrease in disturbing behavioral manifestations of patients as well as an improvement in the response of family caregivers to them (Brodaty et Arasaratnam, 2012). It is important to highlight that not all families show interest in being involved in delirium care and so interventions supporting their involvement should be suggested to families who want to be involved and never be imposed on someone (Archbold et al 1990; Haines et al 2017; Hetland et al 2017).

Involving families in delirium management comes with challenges that need to be addressed. First, as mentioned, families report distress as well as anxiety and powerlessness when they are exposed to their relatives experiencing delirium (Martins et al., 2018; Partridge, Martin,

Harari et Dhesi, 2013; Partridge et al., 2019). Second, the precarious state of patients and the environment of the intensive care units make it challenging for families to deliver tailored non-pharmacological delirium management. Therefore, support must be offered to families so that they can become allies in the care of patients with delirium. Unfortunately, no nursing intervention supporting the involvement of families in post-cardiac surgery delirium management was identified in the scientific literature. Multicomponent interventions and guidelines that promote the presence and participation of families in contexts of ICU delirium have recently been published. Interventions such as the ABCDEF (A2F) bundle or the Guidelines for Family-Centered Care in the Adult ICU provide general principles on how to communicate with families and highlights the importance of involving them in ICU care (Ely, 2017, Davidson et al 2017). However, the support that nurses can offer families to increase their involvement in non-pharmacological management of delirium is not well described in these interventions and guidelines. For this purpose, we developed MENTOR_D (*Mentoring of family caregivers concerning delirium management in post-cardiac surgery patients*), a nursing intervention supporting the involvement of families in non-pharmacological delirium management in the context of post-cardiac surgery. We would suggest that the MENTOR_D intervention complements the existing literature by suggesting actions that the nurse can put in place to enhance the involvement of families during delirium, while increasing the families' confidence in being involved. Moreover, other strengths of MENTOR_D include the fact that it is nursing driven and was designed to be much more prescriptive than existing interventions in terms of how to support families, diminish their anxiety, increase their confidence and involve them in non-pharmacological interventions.

Nursing interventions are not well described in current literature, as space constraints often do not allow the reporting of the results with an in-depth description (Sidani, Fox and El-Masri, 2020). This leads to issues related to the evaluation, replication and implementation of nursing interventions. In this context, experts in the field suggest that the development of nursing interventions be presented separately from the results to allow a full description of interventions' components and underpinnings (Sidani et al, 2020). Sidani et al suggest that a complete description of the development of the intervention must include the following elements: the health problem that needs to be addressed, the goal of the intervention to understand what exactly it was designed to achieve, the mechanisms of action that highlights the outcomes expected to result from the intervention and the factors hypothesized to influence the delivery of the intervention and its effectiveness (Sidani et al, 2020). The aim of this paper is to report on the development of the MENTOR_D intervention theory and the MENTOR_D intervention components, highlight what can be done by families at the bedside of their relative with delirium in the ICU, and present strategies that nurses can use to support families. MENTOR_D was preliminarily assessed in a randomized pilot study and deemed feasible and acceptable, while showing potential at increasing families' sense of self-efficacy, diminishing their anxiety and improving patient outcomes of recovery and length of stay (Mailhot et al., 2017). These preliminary results of this intervention are reported elsewhere (Mailhot et al., 2017).

## METHODS

### Sample and setting targeted by MENTOR_D

The sample and setting for this intervention were post-cardiac surgery patients and their family caregiver hospitalized in both the cardiac surgery ICU and the surgery unit. Delirium in the

cardiac surgery population onsets between one to three days following surgery, while patients are still hospitalised in the ICU. Once delirium has started and patients no longer require critical care, they may be transferred to the surgery unit. Therefore MENTOR_D was designed to be used both in the ICU and the surgery units. During the intervention, families and patients were accompanied during this transition by the research nurse who provided MENTOR_D.

Development of MENTOR_D

MENTOR_D was developed based on Sidani and Braden's (2011) intervention development framework. We completed the following three steps: (1) develop an understanding of the problem under study; (2) define the objectives of the intervention and identify a theoretical framework to outline the potential mechanisms of action of the intervention; (3) operationalize the intervention and identify its anticipated outcomes.

To support the development of the MENTOR_D intervention and complete all three steps, we performed two narrative reviews as per the definition suggested by Paré et al, 2015. The first review aimed to understand delirium and how families are involved in contexts of delirium and the second review aimed to highlight how our theoretical framework was already operationalized in previous intervention studies (for example: what concepts of Bandura's self-efficacy enhancement principles were used in previous studies). The detailed narrative summary of these reviews are presented in length in the thesis work relative to the pilot of MENTOR_D (Mailhot T, 2016). As this paper focusses on the development of MENTOR_D, we only mention key elements of the methods used to complete these two reviews.

***Step 1: develop an understanding of the problem under study***

To complete step 1 of developing an understanding of the problem we performed the first narrative review. This initial review increased our understanding of delirium risk factors, outcomes

and allowed the identification of targets for intervention in the context of delirium and interventions carried out with families in the context of delirium using keywords and thesaurus terms related to delirium, delirium management and family involvement. The following databases were searched: CINAHL (via EBSCO Host), EMBASE (via OVID SP), PsycINFO (via APA PsychNET), PubMed (via NCBI), and Web of Science (via ISI-Thomson Scientific) because they represented both databases with very wide coverage and database that were specialized. We considered all types of articles published in English or in French as we aimed to get a representative overview of the literature (Paré et al 2015). Best practice guidelines on delirium care were also retrieved from the following major healthcare association websites: National Institute for Health and Care Excellence [NICE], Trip Database, National Guideline Clearinghouse, American Psychiatric Association Practice Guidelines, and Registered Nurses' Association of Ontario. This search was performed by one researcher (TM) who was responsible for all steps of screening, selecting papers, extracting data and creating the narrative summary. As this was a narrative review, no quality appraisal was performed (Paré et al 2015).

To develop an understanding of the problem under study, Sidani and Braden (2011) suggest identifying the following information: the causative factors, nature, manifestations, and consequences of delirium. This information was extracted from papers included as a result of our search. This information then served to identify targets for the intervention. To achieve this, elements that were highlighted in previous studies as modifiable using non-pharmacological delirium management were listed and discussed with clinicians (a clinical nurse specialist, a nurse practitioner, a surgeon, and an intensivist) and intervention development experts (members of the research teams). In parallel, a master's student performed a research project to assess the needs of families of patients who presented delirium following cardiac surgery (Dufresne-Beauchamps,

2012). Lists of potential targets for the intervention were provided to the clinicians and expert panel, who would then comment on this list. The list was then further adjusted until all clinicians and experts agreed that they were appropriate targets for the intervention. Results of this are presented in the section below.

***Step 2: define the objectives of the intervention and identify a theoretical framework to outline the potential mechanisms of action of the intervention***

Step 1 resulted in an understanding of the problem and the identification of the targets of the intervention. This guided the definition the objectives to be used in the intervention (Sidani and Braden, 2011). For MENTOR_D, the objectives corresponded to the targets previously identified . These targets were discussed with the same group of clinicians and experts involved in step 1 and underwent several rounds of revision, until all clinicians and experts agreed, and no further comments were addressed.

Following this, we identified a theoretical framework to highlight the strategies to be used in the intervention that would increase its chances of reaching its intended objectives. For MENTOR_D, we focussed on finding a theoretical framework that could prescribe strategies to increase both the presence of the family at the bedside and their involvement in non-pharmacological delirium management. The theoretical framework was selected by reviewing nursing theories and searching the literature. This search is described in more details in the Thesis relative to this work (Mailhot T, 2016).

***Step 3: operationalize the intervention and identify its anticipated outcomes***

The last step of the development of this intervention was to operationalize the intervention and identify its anticipated outcomes. Operationalizing the intervention consists of defining how

the intervention strategies identified previously will be delivered and in what dosage in addition to the outcomes expected for intervention (Sidani and Braden, 2011). To achieve this, we performed a second narrative review of intervention studies in which the strategies previously identified had already been operationalized. Databases used in the initial narrative review were searched again using the same search strategy. Additionally, additional keywords were added to include any nursing intervention that used Bandura's principles to enhance self-efficacy among adult hospitalized patients (Mailhot, 2016). The clinical experience of our committee members served to ensure that the operationalization was transferable to the ICU context.

## RESULTS

**Develop an understanding of the problem under study.** Figure 1 illustrates the problem under study. In our understanding of the problem, we would argue that the observable manifestations of delirium should be targets for its management and should guide the choice of non-pharmacological interventions used to address these manifestations (Figure 1). In the following paragraphs, we detail each element suggested by Sidani and Braden to develop an understanding of the problem.

The causative factors of delirium include a combination of patient characteristics, and a combination of stressors related to the acute illness (Gosselt, Slooter, Boere, et Zaal, 2015; Inouye, 2006; Inouye, Westendorp, et Saczynski, 2014). Patients' characteristics that increase their vulnerability to delirium and that are more frequently reported among cardiac surgery or ICU populations include age, having comorbidities, such as dementia or impaired cognitive functioning, hypertension, cerebrovascular disease and psychiatric impairment (Gosselt et al., 2015; Zaal et al., 2015). Stressors related to the acute illness strongly associated with delirium among cardiac surgery and ICU populations include highly invasive cardiac surgical procedures

under general anesthesia, cardiopulmonary bypass circulation, positive liquid balance during and after surgery, low cerebral oximetry, mechanical ventilation, organ failure and metabolic acidosis and medications such as analgesics and anti-cholinergics (Mailhot et al., 2019; Mailhot, Cossette, Lambert, Cournoyer et Denault, 2016; Schoen et al., 2011; Zaal, Devlin, Peelen et Slooter, 2015). The ICU stay following cardiac surgery also increases the risk of developing delirium due to the involvement of additional stressors such as sensory overload, an unfamiliar and highly technological environment, postoperative pain, and multiple tubing, such as thoracic drains (Kanova, Sklienka, Roman, Burda et Janoutova, 2017; Zaal et al., 2015).

The manifestations of delirium, including confusion and agitation, are presented in Figure 1. Finally, the consequences of delirium for patients include reduced patient autonomy and recovery after surgery, and increased length of stay and mortality (Gosselt et al., 2015; Neupane, Arora, et Rudolph, 2016; Tse, Schwarz, Bowering, Moore, et Barr, 2015). Family caregivers who witness delirium report anxiety, distress and powerlessness (Martins et al., 2018; Partridge et al., 2013; Partridge et al., 2019). They express a need for increased involvement in delirium care (Abuatiq, 2015).

Current literature suggests that reducing the severity of the manifestations of delirium also reduces its consequences (Kiely, Jones, Bergmann et Marcantonio, 2007; Marcantonio, Ta, Duthie et Resnick, 2002). These targets for the intervention were presented in the form of a list to the clinicians and experts involved in our intervention development to be discussed. As a result of the evidence from the literature and discussions with the committee, the consequences of delirium for patients and families were identified as targets for the intervention. Non-pharmacological delirium management to reduce the severity of the manifestations of delirium and its consequences are

reported in best practice guidelines and systematic reviews (AGS, 2015; APA, 2013; Clegg, Siddiqi, Heaven, Young, et Holt, 2014; Siddiqi et al., 2016) (see Table 1).

Guidelines unanimously recommended that non-pharmacological delirium management be tailored to a patient's needs, preferences and personality (AGS, 2015; APA, 2013; RNAO, 2016). However, this is challenging in the context of the ICU. The tailoring of non-pharmacological delirium management can be achieved by the presence of families at the patient's bedside (on the unit, in the patient's hospital room) and their use of non-pharmacological delirium management that are adapted to the patient based on their knowledge of their relative with delirium.

The masters' student project on the assessment of the needs of families in context of delirium among the cardiovascular population concluded that families described a need for increased information on delirium and a need to be involved in delirium care (Dufresne-Beauchamp, 2012).

**Defining the objectives and strategies to be used in the intervention.** Three objectives were identified for MENTOR_D in coherence with specific aspects of the health problem identified which was delirium following cardiac surgery: (1) To decrease the severity of the manifestations of delirium; (2) To improve patient outcomes increase (decrease complications, length of stay and improve recovery); (3) To improve family outcomes (decrease anxiety, increase self-efficacy). We aimed to achieve these objectives by increasing the presence of families at the bedside and their involvement in tailored non-pharmacological delirium management.

Based on studies supporting the involvement of families among patients with conditions similar to delirium (e.g., dementia), learning a new role appeared central to make families comfortable enough to increase their presence at their relative bedside (Brodaty and Arasaratnam, 2013). Mentoring can support one's transition into a new role. Thus, we proposed that the new

role of families could be best supported through a mentorship between a nurse mentor and the family. To guide the nurse mentor in her interaction with the family, a novel framework was proposed and comprised of a combination (Figure 2) of three theories that were epistemologically and ontologically coherent and complemented one another. The first two theories were used to understand how to best facilitate the transition of families to a new active role which was thought to result in their increased presence at the bedside. The third theory explained how to increase the family's confidence in their ability to fulfill their new role in tailored non-pharmacological delirium management.

*Strategies to increase the presence of families.* To increase the presence of families, MENTOR_D included a nursing approach based on Watson's Human Caring Theory, which is anchored in a mentoring relationship as defined by Anderson and Shannon (Anderson et Shannon, 1988; Watson, 2008). In Human Caring Theory, Watson describes a *caring* relationship as an intersubjective human-to-human relationship which is susceptible to promote wholeness and healing of the family caregiver (Watson, 2008). Therefore, we hypothesized that a *caring* relationship would create a context that was favorable for families to learn their new role and increase their presence at the bedside. Watson suggests that a nursing practice guided by the ten caritas processes results in a *caring* relationship. These caritas processes were retained as strategies that could be used in MENTOR_D (Watson, 2008a). These strategies were expected to translate into a nurse mentor being highly interested in the family and patients' experience, while respectfully facilitating and encouraging the expression of feelings and thoughts from the family and patient. This was thought to create a context favorable to a supportive relationship between the family and the nurse mentor and thus leading to increased presence of the family at the bedside.

Although Watson's theory informs on how the nurse should interact with patients and families in a *caring* relationship, it does not provide guidance regarding the context of mentorship, a key element in facilitating transitions into a new role. A caring relationship can be developed within a mentorship (Wagner and Seymour, 2007). In fact, the underlying principles of a *caring* relationship as described in the Human Caring Theory were coherent with the functions of a mentor as described by Anderson and Shannon (Anderson and Shannon, 1988; Wagner and Seymour, 2007). Therefore, we theorized the caring relationship within a mentorship in which the mentor would have functions as described by Anderson and Shannon. According to Anderson and Shannon, mentorship is an interpersonal relationship between an experienced person, the nurse who becomes a nurse mentor, and a novice, the family. The functions are to teach, sponsor, encourage, counsel and befriend (Anderson and Shannon, 1988). The teaching function includes information transferred from the nurse mentor to the family on delirium and non-pharmacological delirium management. This function implies to facilitate questioning from families and to encourage their reflection, while acting as a role model. Sponsorship consists of three essential behaviors of the nurse mentor, to protect the family, by providing them with an environment that facilitates success, to support them in their preparation before intervening with their relative with delirium and, finally, to promote the family's expertise to other nurses. Encouraging includes highlighting the family's strengths and providing concrete examples of practice that will inspire them. The nurse-mentor can also propose challenges so that the families are involved in experiences that promote their development in their new role. To offer counsel is part of the problem-solving process and includes listening, clarifying concepts related to the new role, and suggesting solutions to problems. Finally, Anderson and Shannon propose to befriend the family and remain available for them (1988). The functions of a nurse mentor based on Anderson and

Shannon's model served as strategies of MENTOR_D to support the acquisition of a new role by the family and achieve objective 1 of increased family presence.

*Strategies to increase the involvement of families in tailored non-pharmacological delirium management.* Principles from Bandura's Socio-cognitive Theory (Bandura, 1982, 1997, 2001) served to explain how this caring mentorship between a nurse and family could increase the family's confidence in their ability to fulfill their new role in tailored non-pharmacological delirium management (Figure 2). Bandura elaborated the concept of self-efficacy which refers to a person's confidence in their ability to be successful in an action. Self-efficacy is a key determinant in a person's choice to initiate and repeat an action. Bandura highlights four sources of information on which a person relies to build their self-efficacy. These sources of information were selected as strategies of the intervention. They include other people's performance (vicarious experience), other people's feedback (verbal persuasion), personal experience (performance accomplishment) and emotional response.

Through vicarious experience, observation of other people's successful performance, especially those considered as role models, can reinforce one's self-efficacy. Observing that others succeeded because of sustained efforts can convince people that they too can be successful if they persist in adopting the new behavior (Bandura, 1997). The predictable and controllable characteristics of a situation can also be assessed from watching others perform a certain behavior. Observing others in difficult situations allows the observer to know the possible results and solutions to possible problems. This information may result in diminished anxiety. Hearing other people's feedback can also influence their perception of their self-efficacy. Finally, people who feel negative emotional reactions while adopting the behavior can perceive their performance as a

failure, which could in turn lead to doubts about their abilities, thus lowering their self-efficacy (Bandura, 1997).

**Operationalize the intervention and identification of its anticipated outcomes.** The final selection of strategies that were included in MENTOR_D is presented in Table 2. Our literature search did not reveal any structure or mode of delivery, except for interventions operationalizing the self-efficacy enhancement principles, all of which included at least one face-to-face meeting with the nurse (Mailhot, 2016). In terms of timing, authors generally opted for interventions with very early encounters in the health continuum. Because results from the literature search for the structure or mode of delivery were not informative, we looked at previous studies of nursing interventions with families involved with other populations with symptomatology like delirium, for example dementia (Brodaty and Arasaratnam, 2013). An initial structure that seemed feasible for post-cardiac surgery patients and for a context of caring mentorship between a nurse and family was presented to the expert committee.

The final structure extended over three phases: pre-bedside phase of 30 minutes, the bedside phase of 15 minutes, and the post-bedside phase of 15 minutes. This sequence was repeated twice daily for three consecutive days following the onset of delirium as this was deemed by the committee to be an intensity that was sufficient and feasible. The purpose of the pre-bedside phase was for the nurse mentor to guide the family in identifying and practicing appropriate tailored non-pharmacological delirium management that could be used during the bedside phase. The purpose of the bedside phase was for the nurse mentor to model the non-pharmacological delirium management and for the family to feel confident enough to tailor this non-pharmacological management. The purpose of the post-bedside phase was for the nurse mentor and family to reflect on the bedside phase, while offering feedback and preparing for the next visit.

*Anticipated Outcomes of MENTOR_D*

Family participation, in terms of increased presence and use of tailored non-pharmacological delirium management, was highlighted as an immediate outcome resulting from MENTOR_D. Outcomes among families included diminished anxiety and increased self-efficacy and, among patients, included diminished delirium severity, complications, length of stay and increased recovery.

## DISCUSSION

This paper presented the development of MENTOR_D, a nursing intervention to support the involvement of families in delivering tailored non-pharmacological delirium management in the context of post-cardiac surgery care. Nurses in post-cardiac surgery ICU or surgery unit are not in contact with the patient long enough to develop a knowledge of the baseline cognitive status and preferences of the patients. In fact, in this setting, nurses generally do not interact with the patient before the procedure, thereby limiting her knowledge of the patient. Therefore, increasing the presence of families and having them involved in non-pharmacological interventions has the potential to result in an optimal delirium management approach in which familiarity and tailoring of interventions are key.

Current literature is sparse on exactly how families should be involved in the management of delirium, specifically on what these families should do and how nurses can support them as allies in the management of delirium. The MENTOR_D intervention answers this need by suggesting how families can be supported and involved. This intervention has the potential to complement existing literature that suggests the involvement of families without being specific on how they should be supported and involved. Besides providing an example of the use of Sidani and Braden's framework for intervention development, two important contributions result from

the work presented in this paper. First, it highlights strategies that nurses can use to support family participation in non-pharmacological delirium management and what can be done by families at the bedside of their relative with delirium. Second, we proposed a theoretical framework with underpinnings that, to our knowledge, were never used before in complementarity and that may be transferable to nurse-family relationships in other contexts.

The MENTOR_D intervention shows promise in terms of clinical effectiveness. Results from the pilot study of MENTOR_D (#ISRCTN95736036) showed a potential of the intervention to decrease of the anxiety of families and an increase of their self-efficacy in participating in tailored non-pharmacological delirium management in the context of post-cardiac surgery care (Mailhot et al 2017). In terms of patient outcomes, MENTOR_D showed the potential to decrease length of stay and improve recovery (Mailhot et al., 2017).

While completing the pilot study of MENTOR_D, there was a need to adapt some of the planned strategies. One of the sources of information influencing self-efficacy—feedback on the family caregivers' performance—had to be adapted to the context of delirium. Because patients who experience delirium are often hypervigilant and suspicious of healthcare staff, the nurse mentor was often unable to offer feedback to the family during the bedside phase. However, we hypothesized that having the nurse-mentor offer positive feedback afterwards would still positively influence the caregiver's self-efficacy. Bandura highlights the fact that feedback has a greater impact on self-efficacy when it is formulated in terms of gains and offered by someone who is credible to the person; two characteristics of the feedback the nurse mentor offered the family (Bandura, 1997).

Although advanced practice nurses were involved in determining the structure of MENTOR_D, limitations of our work include the fact that we did not involve nurses in direct

clinical practice or families. Previous work from our team informed us on the family's experience and recommendations to increase their involvement in the context of cardiac surgery delirium (Dufresne-Beauchamp, 2012). Furthermore, current literature provided us with evidence on nurses and family experience in delirium contexts other than cardiac surgery; therefore, we chose not to include families in the development of MENTOR_D (Martins et al., 2018; Partridge et al., 2013; Partridge et al., 2019). For the preliminary testing of MENTOR_D, the same nurse mentor provided the intervention for all families. Thus, the feasibility of having MENTOR_D delivered by bedside nurses will have to be assessed. The applicability of our intervention is limited to patients who have family caregivers available. Other interventions strategies should be developed for patients who do not have families or friends available. We used literature among patient with conditions similar to delirium to understand how to support families in their involvement in delirium care. The literature search performed in the context of this intervention development also presents limitations. Only one researcher was involved in all steps of identifying, including and extracting from the literature and the quality of evidence was not assessed. Strengths of this work include the operationalization of Sidani and Braden's work on nursing intervention development and a rigorous intervention that is reproducible. The transferability of the nursing-mentoring approach developed for MENTOR_D to support families in contexts other than delirium, such as dementia, is another strength of this work. Finally, the fact that MENTOR_D was designed so that it could be provided by the bedside nurse during the potentially restrictive visiting hours of the ICU is another strength of this work.

***Implications for research, practice and policy***

The current COVID-19 pandemic stresses the need to review current policies and practices in terms of family involvement in care. While it is more important than ever to keep families

involved in care, the current pandemic context limits the access to families. New technologies in terms of video conference and the use of mobile devices at the patient's bedside could support the translation of the MENTOR_D intervention to a complete virtual or hybrid intervention. We would suggest the theoretical underpinnings of MENTOR_D are transferable to a virtual setting in which the nurse-mentor would interact virtually with the families and the families could engage virtually in non-pharmacological interventions with their hospitalized relative. Translating and piloting a completely virtual MENTOR_D intervention or a hybrid format should be the next step in terms of further development for this intervention.

Another important takeaway from our experience in developing this intervention is the need for acute care units to be welcoming to families. Acute care units that replicate models of care in dementia or pediatric settings, including health professionals willing to collaborate with families, is a prerequisite for the eventual transfer of interventions involving a family approach such as MENTOR_D.

## CONCLUSION

To our knowledge, studies examining family involvement in non-pharmacological delirium management in the ICU and the support needed to facilitate this involvement are lacking. This makes it challenging for families to become allies in delirium management in the ICU. There is a need to develop nursing interventions to support families' involvement and alleviate the consequences of delirium for both patients and families. MENTOR_D aims to fill that gap by providing clear guidance on strategies that can be used by nurses to offer support to families while highlighting several strategies that families can use at the bedside of a relative with delirium in the ICU. The refinement process of MENTOR_D is underway before moving on to a larger trial.

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## TABLES

**Table 1. Non-pharmacological interventions to support relatives with delirium that could be tailored and used by families.**

- Explain to their relative where he/she is and why
- Use simple and small sentences
- Use close-ended questions
- Stimulate their relative cognitively three times a day, for example by discussing current events, playing games with words, and using reminiscence
- Promote orientation to reality by leaving familiar objects in the room or discussing with their relative while he or she is hospitalized.
- Promote sleep by reducing noise on the unit of care, using ear plugs, or with soothing music
- Mobilize their relative three times a day, for example by helping him or her move from the bed to the chair for each meal, if possible
- Make sure their relative is wearing their visual and hearing aids, if he or she has any
- Encourage adequate hydration
- Split activities in small steps
- Provide clear and precise explanations before beginning any activity
- Promote the presence of the family by encouraging them to visit when possible and call when not possible to visit
- Provide family education on delirium (explain to other relatives who visit the patient in the hospital; remind other relative of the fluctuating nature of delirium)
- Develop and maintain an alliance with the family (or with nursing staff)
- Discuss delirium and associated memories

Note. Barr et al., 2013; Cook et APA, 2004; Inouye et al., 1999 ; AGS, 2014; CCSMH, 2014; NICE, 2012; RNAO, 2016; Bol, Edwards et Heuvelmans, 2003, Brown, 2014, NICE guidelines, 2012

1 **Table 2. Operationalized strategies for MENTOR_D.**

| Theory of the intervention for MENTOR_D | | | Operationalised MENTOR_D |
|---|---|---|---|
| **Carative Processes** [a] | **Functions of a mentor** [c] | **Information self-efficacy** [d] | **List of nurse actions** [b] |
| CP 1 Practice of loving-kindness/compassion and equanimity with self/other | Befriend | Emotional state | • Show interest towards the family caregiver and their relative's situation of delirium |
| | Befriend | Emotional state | • Show the family caregiver respect |
| | Befriend | Emotional state | • Avoid judgments |
| CP 2 Being authentically present; enabling belief system and subjective world self/other | Encourage | Verbal persuasion | • Emphasize the efforts of the family caregiver |
| CP 3 Cultivating own spiritual practices; beyond ego-self to authentic transpersonal presence | Sponsor | Emotional state | • Ask the family caregiver how he or she feels and validate his or her feelings |
| CP 4 Sustaining a loving, trusting, and caring relationship | Sponsor | Verbal persuasion | • Use active listening |
| | Teach | | • Present oneself |
| CP 5 Allowing for expression of feelings; authentically listening and "holding another person's story for them" | Sponsor | Verbal persuasion | • Encourage the expression of the family caregiver's thoughts and feelings |
| CP 6 Creative solution seeking through caring process, full use of self; all ways of knowing/doing/being; engage in artistry of human caring-healing practices and modalities | Sponsor | | • Help the family caregiver to choose realistic goals |
| | Counsel | Verbal persuasion | • Help the family caregiver to see the difficulties in using interventions |
| | Counsel | Verbal persuasion | • Help the family caregiver to find possible solutions to promote their success in the use of interventions |
| | | | • Provide feedback during the family caregiver's use of interventions |
| CP 7 Authentic teaching-learning within context of caring relationship; stay within other's frame of reference; shift toward a health-healing-wellness coaching model | Teach | Vicarious experience | • Share knowledge about delirium and provide specific information on interventions to use (give an example) |
| | Teach | | • Validate the family caregiver understanding of the proposed interventions and set a goal |
| | Teach | | • Assist the family caregiver in formulating questions about the use of delirium management interventions |
| | Teach | Performance accomplishment | • Suggest to the family caregiver to imagine themselves doing the interventions |
| | Teach | Performance accomplishment | • Suggest to the family caregiver to carry out the intervention with his or her relative |
| | | | • Raise an element that the family caregiver could improve at the next visit with a solution track |
| | | | • Highlight strengths of the family caregiver while he or she uses the interventions |
| | | | • Highlight the caregiver's strengths during difficult situations that could come up during the use of the interventions |
| | Teach | Vicarious experience | • Act as a role model: carry out the interventions with the patient in front of the family caregiver |

| | | | |
|---|---|---|---|
| CP 8 Creating healing environment at all levels; physical/nonphysical, subtle environment of energy, consciousness, wholeness, beauty, dignity, and peace are potentiated | Sponsor | Performance accomplishment | • Validate observations of the patient's condition with the care team to propose adequate interventions to be used by the family caregiver and share this information with the family caregiver |
| | Teach | Performance accomplishment | • Teach the family caregiver how to use adequate interventions in relation to the patient's current situation |
| | Teach | Performance accomplishment | • Offer teaching to the family caregiver in a quiet place |
| CP 9 Reverentially and respectfully assisting with basic needs, holding an intentional, caring consciousness of touching the embodied spirit of another as scared practice, working with life force/life energy/life mystery of another | Befriend | Emotional state | • Assist the family caregiver in his or her verbalization of his or her teaching and information needs |
| CP 10 Opening and attending to spiritual, mysterious, unknown, and existential dimensions of all the vicissitudes of life, death, suffering, pain, joy, transitions life change; "allowing for a miracle". All of this is presupposed by a knowledge base and clinical competence. | Befriend | Emotional state | • Offer encouragement |

B: operationalised from the literature *Note.* [a] Watson 2008a; Cara et O'Reilley, 2008 [b] Cara, 2003; Watson, 2008b, [c]Anderson et Shannon, 1988, [d] Bandura, 1997.

## FIGURE LEGEND

**Figure 1. Understanding the Problem**

Understanding the problem includes the causative factors of delirium, the nature of the problem, inaddition to the manifestations and consequences.

**Figure 2. Mentoring-Caring Relationship in MENTOR_D**

The Mentoring-Caring Relationship at the basis of the MENTOR_D intervention represents the intersect between the three theoretical components of the framework.