PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Shared Decision Making in the ICU from the perspective of physicians, nurses and patients: A Qualitative Interview study
AUTHORS	Wubben, Nina; van den Boogaard, Mark; van der Hoeven, J.G; Zegers, Marieke

VERSION 1 – REVIEW

REVIEWER	Forcino, Rachel Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice
REVIEW RETURNED	29-Mar-2021

GENERAL COMMENTS	This is an interesting and important study that explores patient/family, nurse, and physician participation in ICU decision making and highlights challenges to implementing SDM in the ICU setting. Main comments: Lines 155-157 (results): I hoped to find slightly more descriptive themes; as defined, they seem fairly limited to describing the participant groups. Were there any theme-level takeaways responsive to the aims statement in lines 82-86? “By elucidating the views of the three main SDM stakeholder groups in current ICU care, it is possible to elaborate on current ideas about when to incorporate patient and family preferences, when these preferences should be overridden by clinicians and how clinicians can improve their own interprofessional SDM (5, 24-26). Therefore, the aim of this study was to explore the views, experiences, and needs for SDM in the ICU according to ICU physicians, ICU nurses and former ICU patients and their close family members.” There seems to be overlap in the results between ideas identified by physicians and patients/families, for example, with regard to (1) information about long-term outcomes, and (2) patients’ desires for integrating the medical and human sides while physicians focus on the medical. This is even more interesting given ICU nurses’ role as liaisons advocating for patients’ social needs and translating physicians’ medical information! You could consider digging deeper into the presentation of themes to highlight where views, experiences, and needs converge and diverge across participant groups. Lines 243-249 (results): I like this summary. Suggest moving it toward the beginning of the results section to follow up on the description of participant characteristics, then organizing the

	themes by the most salient ideas that emerged rather than siloed by participant type. Other comments: The strengths and limitations list states, “A limitation is that clinician participants were recruited from two tertiary centers.” Could consider making explicit why this is a limitation and how it might have impacted results. Lines 67-68 (background): The discussion of SDM between physicians and nurses is interesting if expanded upon, but seems tangential here where the focus and definition have already been presented as SDM between clinicians and patients. Since the idea of interprofessional SDM returns in the study aims, it would be helpful to add more definition/background on interprofessional SDM to the current statement in lines 67-68. Lines 79-80 (background): The statement about SDM increasing the likelihood of patients forgoing aggressive care currently stands alone, but could be contextualized more. As written it seems to imply that it’s a good thing, but can be more nuanced in practice (as you identify in the results section with differences in opinion observed across participant groups). Line 108-114 (methods): I appreciate this attention to reflexivity. This could be even further enhanced by describing any clinical training the interviewers may have (or confirming none). Line 113 (methods): It’s not clear whether the advertisement/invitation made clear the study was about shared decision-making or if participants were told it was about ICU decision-making more broadly. Line 118 (methods): How (when, by whom, etc.) did you assess data saturation? Line 126 (methods): What did the supervision look like? Did it involve engagement with all the interview content or looser oversight? Line 147-150 (results): It looks like the family members and patients were interviewed together, accounting for a smaller number of interviews than participants - could consider confirming/clarifying this grouping in text. Line 152/Table 1 (results): Is the listed order the order in which interviews were conducted? If so, did you find any limitations of having completed all the clinician interviews before beginning the patient/family interviews? Lines 283-285 (discussion): I think this is interesting and worth mentioning that physician participants tended to focus on end of life decisions! Suggest presenting this in the results section - I was surprised to see this new information in the discussion. Same with the subsequent line about a variety of interpretations of what SDM in the ICU looked like. The physician focus on end of life (mentioned in lines 283-285) also highlights a potential limitation of the study, having included

	only family members of surviving patients (rather than also including some family members of deceased patients).

REVIEWER	Iapichino, Gaetano University of Milan
REVIEW RETURNED	05-May-2021

GENERAL COMMENTS	Shared Decision Making in the ICU from the perspective of physicians, nurses and patients: A Qualitative Interview study. Journal: Wubben, et al ID bmjopen-2021-050134 This qualitative interview study of 29 participants in two Dutch tertiary centers was performed to identify views, experiences, and needs for Shared Decision Making (SDM) in the ICU according to ICU physicians, ICU nurses, and former ICU patients and their close family members. Interviewees reported struggles, needs and an elucidation of their current and preferred role in the SDM process in the ICU. To further improve SDM implementation, the AAs suggest the need for: more continuous role of patients and family members in ICU decision-making specific outcome information about survival and quality of life in long-term patients more substantial role for the ICU nurse in decision-making process an improved communication between the three stakeholder groups, such as moral deliberation, interprofessional collaboration, and the involvement of the general practitioner. Comments I consider this topic of relevant importance to improve ICU staff atmosphere, whose responsibility lies within the leadership. Only when the leader can manage/negotiate team conflicts (1), SDM may also be effective and benefit from the inclusion of relatives. a) Struggles of ICU physicians are:" uncertainty about long-term health outcomes as one of the main struggles, these conflicts mainly arise dealing with complex, long-stay patients. While they sometimes were uncertain about continuing treatment themselves.....They expressed a need for more long-term data on survival and quality of life after ICU treatment". I agree that currently used outcome prediction systems validated at ICU admission day (SAPS, APACHE) are not reliable for prediction during stay of long-term patients. Anyway, daily SOFA can offer useful insights. However, the large collaborative

	European Union study EURICUS II Study shows that the trend of routinely (daily) gathered physiologic variables (systolic blood pressure, heart rate, oxygen saturation and urine output), can discriminate between survivors and non-survivors, increasing staff knowledge and understanding of the care effectiveness/evolution of severe ICU patients (2,3). b) Physicians show difficulty to discuss with relatives about long-term patient's quality of life, and to involve them in the treatment decision process. They seem afraid to accept relatives-nurses' participation in decision making, for a loss of leadership/responsibility in clinical decision. Again, the problem concerns modes of communication/Information to patient's relatives managed by physicians. Who gives clinical news to relatives? How many physicians provide information? only one/two doctors at most always for the entire ICU-LOS, or a different doctor each day? Are the news also given in the presence of the nurse in charge? Every doctor/nurse expresses roughly the same clinical concept but unfortunately in different personal ways and words. This creates disorientation, lack of confidence and lack a feeling of control in relatives. c) As regards nurse/physician's communication and ICUnurse' role, the manuscript considers the liaison between physicians and patients and families and preconizes a more substantial role for the ICU nurse in decision-making process. I agree completely, and I myself used exactly this statement "Nurse is eyes and ears of the physician" to make young colleagues understand the importance of the role of the nurse enhancing their clinical knowledge of patients by continuously engaging with them in their daily work. "Within this context they reported feeling not being taken seriously and feeling blindsided by decisions being made in multidisciplinary meetings dominated by physicians (Nurse doesn't feel welcome)". Moreover "Discrepancy of opinion between ICU physicians and nurses regarding end-of-life care for complicated cases; They felt frustrated with the returning nature of this type of conflict". "ICU nurse feels like they are not being taken seriously". Job dissatisfaction, emotional exhaustion, depersonalization and reduced personal accomplishment result in a high incidence of contagious burnout syndrome that may cross over from one nurse to another, as demonstrated by EURICUS I (5).

	The important managerial aspects concerns the interdependence of medical and nursing tasks. EURICUS-II demonstrated that improving collaborative practice in the ICU has beneficial effect on intermediate (physiologic derangement-titrated therapy) and final outcomes (mortality) of patients (2-3). How to increase the nurses' level of skill discretion regarding the most relevant nursing activity, and to increase the nurses' participation in decision making in the ICUs (4)? How to "tackle the communication struggles between the three stakeholder groups"? To take nurses seriously, physician-leader needs entrusting them at each daily round recognizing their "insights in the patient and family situation", but also and above all in day-by-day knowledge of current clinical situation: responsibility for evaluation of patient's sedation level, caloric intake and cumulative deficit, needs of invasive devices, mobilization & presence of decubitus. Nurses should be encouraged to report something suspicious or any even not-quantifiable/minimal clinical variations (ventilator de-synchronization, any initial appearance of fever-hyperglycemia, change in amount, color, smell of tracheal secretions, or agitation onset...) anticipating the overt appearance of complications. Furthermore, during the daily round, nurses should point-out the cumulative number of out-range physiological controls in comparison with previous days (2-3). This step is of crucial importance in decoding/understand the patient response to therapy, providing a solid interdisciplinary basis in collaborative joint decisions regarding end-of-life care for complicated cases. For the same day-round occasion nurses could prepare a pre-daily round goals checklist, then assuming the responsibility to monitor the implementation of goals collegially defined (7-8). In case of patient discharge to normal wards, nurses can also provide a planning details -patient stability checklist- to evaluate for appropriate/safe discharge. Scientific evidence indicates that collaborative practice and active involvement in decision-making process is possible, and it can improve both the clinical outcome as well as the commitment and satisfaction of health care professional (1-8). 1) Strack van Schijndel RJM, Burchardi H. Bench-to-bedside review: Leadership and conflict management in the intensive care unit. Critical Care 2007, 11:234

	2) Fidler V, Nap R, Reis Miranda D. The Effect of a Managerial-based Intervention on the Occurrence of Out-of-Range-Measurements and Mortality in Intensive Care Units. J Critical Care, 2004,19,130-4 3) Rivera-Fernandez R, Nap R, Vazquez-Mata G, Reis Miranda D. Analysis of physiologic alterations in intensive care unit patients and their relationship with mortality. J Critical Care 2007, 22, 120-8 4) E Azoulay et al. Prevalence and Factors of Intensive Care Unit Conflicts. The Conflicus Study 1. Am J Respir Crit Care Med 2009, 180, 853–60 5) Bakker AB, Le Blanc PM, Schaufeli WB. Burnout contagion among intensive care nurses. J A N, 2005, 51, 276–87 6) Le Blanc PM, Wilmar B. Schaufeli WB, Marisa Salanova M, Llorens S, Nap R. Efficacy beliefs predict collaborative practice among intensive care unit nurses. J A N 2010 66, 583–94 7) Provonost PJ, et al. Improving Communication in ICU Using Daily Goals. J Critical Care, 2003, 18, 71-5 8) Centofanti JE et al. Use of daily goals check list for monitoring ICU rounds. Crit Care Med 2014,42, 1797-803 Punto importante nel management ICU e staff Fidler One of the important managerial aspects concerns the interdependence of medical and nursing tasks. s EURICUS-II study was designed to test the hypothesis

	that improving collaborative practice in the ICU has beneficial effect on intermediate- (physiologic derangement) and final outcomes (mortality) of patients. . Its aim was to increase the nurses' level of skill discretion regarding the most relevant nursing activity, the reversion of physiologic derangement (titrated therapy) and to increase the nurses' participation in decision making in the ICUs. Rivera In conclusion, the predictive power of the studied physiologic alterations in relation to patient outcome suggests that their weight in daily care policy decisions may need to be revisited. The present study shows that routinely gathered information on physiologic variables in ICU patients can be summarized and used to discriminate between survivors and nonsurvivors. These data can also serve as a basis for the development of improved mortality prediction systems and instruments that increase our knowledge and understanding of the evolution of ICU patients. Concerning some of the activities, it will be noted that the overlap of responsibilities of different professionals may exist. When the overlap is critical because of its importance and/or its complexity, a protocol has to be devised for precising aspects such as: hierarchy, timing, and control of actions, and the respective moments (and content) of communication.

	Improving Communication in ICU Using Daily Goals. Journal of Critical Care, 2003, 18, 71-5 Peter Provonost, Sean Berenholtz, Todd Dorman, Palm A. Lipsett, Terry Simmonds, and Carol Haraden Journal of Critical Care, Vol 18, No 2 (June), 2003: pp 71-75 Provonost , organizzazione icu JAMA 1999, Justin B. Dimick, MD; Peter J. Pronovost, MD, PhD; Richard F. Heitmiller, MD; Pamela A. Lipsett, Intensive care unit physician staffing is associated with decreased length of stay, hospital cost, and complications after esophageal resection CRIT CARE MED 2001 Rothen INTENSIVE CARE MED 2007 le blanc p.m., schaufeli w.b., salanova m., llorens s. & nap r.e. (2010) Efficacy beliefs predict collaborative practice among intensive care unit nurses. Journal of Advanced Nursing66(3), 583–594. EURICUS II Burnout contagion among intensive care nurses A B. Bakker PhD Pascale M. Le Blanc PhD Wilmar B. Schaufeli PhD First published: 14 July 2005 JAN Volume51, Issue3 August 2005 Pages 276-287 https://doi.org/10.1111/j.1365-2648.2005.03494.x EURICUS I P M Le Blanc 1, J de Jonge, A E de Rijk, W B Schaufeli Well-being of intensive care nurses (WEBIC): a job analytic approach

	J Adv Nurs . 2001 Nov;36(3):460-70. doi: 10.1046/j.1365-2648.2001.01994.x DOI: 10.1046/j.1365-2648.2001.01994.x EURICUS I

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Rachel Forcino, Dartmouth College

Comments to the Author:
This is an interesting and important study that explores patient/family, nurse, and physician participation in ICU decision making and highlights challenges to implementing SDM in the ICU setting.

o We would like to thank Dr. Forcino for her compliments and extensive constructive comments.

Main comments:
Lines 155-157 (results): I hoped to find slightly more descriptive themes; as defined, they seem fairly limited to describing the participant groups. Were there any theme-level takeaways responsive to the aims statement in lines 82-86? “By elucidating the views of the three main SDM stakeholder groups in current ICU care, it is possible to elaborate on current ideas about when to incorporate patient and family preferences, when these preferences should be overridden by clinicians and how clinicians can improve their own interprofessional SDM (5, 24-26). Therefore, the aim of this study was to explore the views, experiences, and needs for SDM in the ICU according to ICU physicians, ICU nurses and former ICU patients and their close family members.”

o Thank you for this suggestion. We agree with the reviewer about the necessity of including overall theme-level takeaways based on the three themes discussed in the results section. We have added text pertaining to this to the Results section (page 17, line number 284-307).

Old section: “Overall, clinicians were focused on the struggles with implementing SDM in critical care practice. The cited the practical difficulties surrounding end-of-life decision making, the formal necessities for SDM and their role in it. Patients and their family members offered a different perspective on incorporating SDM. Their unmet needs were mainly focused on wanting a more holistic approach characterized by an open style of communication wherein they continuously feel part of the decision-making process, albeit not at the helm. Nurses spoke of their current role in the SDM process, and where they felt they could contribute more but where inconsistently listened to (Figure 1).”

New section: “(New section heading):
Similarities and differences between stakeholder groups
Overall, barriers to and struggles with implementing SDM in critical care practice were highlighted by both ICU physicians and ICU nurses. They shared a focus on end-of-life decision making as the main decision in which SDM should be executed. They cited the practical difficulties surrounding end-of-life decision making, the formal necessities for SDM and their role in it.
Clinicians differed when speaking about each other. ICU nurses were very focused on the mediating role and influence of the ICU physician and the level in which ICU nurses are invited and able to participate in the SDM process. ICU physicians spoke mostly about the responsibility they felt in imparting the correct information to patients and family members, and appeared to not view patients

and family members as equal partners in the SDM process.
Patients and their family members offered a different perspective on incorporating SDM. If they had unmet needs, these were mainly focused on wanting a more holistic approach characterized by an open style of communication wherein they continuously feel part of the decision-making process, albeit not at the helm (Figure 1).

There were several similarities shared across the three stakeholder groups. There is a shared need for more long-term outcome information that could guide both ICU decision-making and help manage future expectations. There was a desire for a more holistic integration of both medical information, as well as contextual information about the patient, such as their quality of life. This is interesting when considering ICU nurses' role as, translators, liaisons and advocates for patients' needs. Lastly, many of the needs surrounding SDM had a communicative nature."

We have added some text to the Discussion section about the findings that the three stakeholder groups had in common (page 18, line number 313-316):

Old section: "This qualitative interview study explored the views, experiences, and needs for SDM in the ICU experienced by ICU physicians, nurses and former patients and their family members. Interviewees reported struggles, needs and an elucidation of their current and preferred role in the SDM process in the ICU."

New section: "This qualitative interview study explored the views, experiences, and needs for SDM in the ICU experienced by ICU physicians, nurses and former patients and their family members. Interviewees reported struggles, needs and an elucidation of their current and preferred role in the SDM process in the ICU. The three stakeholder groups shared a need for more long-term outcome information, and a desire for an integration of medical information with contextual information, paired with a more holistic approach. Many of the needs around SDM in the ICU had a communicative nature."

There seems to be overlap in the results between ideas identified by physicians and patients/families, for example, with regard to (1) information about long-term outcomes, and (2) patients' desires for integrating the medical and human sides while physicians focus on the medical. This is even more interesting given ICU nurses' role as liaisons advocating for patients' social needs and translating physicians' medical information! You could consider digging deeper into the presentation of themes to highlight where views, experiences, and needs converge and diverge across participant groups.

o We agree, and have added more text highlighting the convergence and diverges of views and experiences across the participants groups to the Results section (page 17, line number 284-307). The amended text can be found as a response to the comment above.

Lines 243-249 (results): I like this summary. Suggest moving it toward the beginning of the results section to follow up on the description of participant characteristics, then organizing the themes by the most salient ideas that emerged rather than siloed by participant type.

o Thank you for this suggestion. As defined in our aim, we centered these different viewpoints from the beginning and have organized our analysis and findings according to stakeholder perspective throughout the research process to disentangle the struggles and unmet needs of the three stakeholder groups, who each have a uniquely different perspective. Therefore, we feel that it is better to first present the specific findings per stakeholder group, according to the aim of the study, and to then present the common findings across the three groups. We like the suggestion to summarize common findings in the three groups. Therefore, we have summarized these findings at the end of the Results section (page 17, line numbers: 302-307). The amended text can be found as a response to

the comment above.

Other comments:
The strengths and limitations list states, “A limitation is that clinician participants were recruited from two tertiary centers.” Could consider making explicit why this is a limitation and how it might have impacted results.

o Thank you. We have added the following text to our Limitations section to further specify our meaning (page 20, line number 387-388):
“Moreover, our focus on two tertiary centres as the main source of interviewed clinicians, may have skewed the results as decision-making culture may differ between ICUs (12). However, our findings are in accordance with literature as well as with the preparatory data collected from ICU clinicians and former patients and family members at the national patient organization symposium (Supplementary material 2).”

Lines 67-68 (background): The discussion of SDM between physicians and nurses is interesting if expanded upon, but seems tangential here where the focus and definition have already been presented as SDM between clinicians and patients. Since the idea of interprofessional SDM returns in the study aims, it would be helpful to add more definition/background on interprofessional SDM to the current statement in lines 67-68.

o Thank you. We agree with the reviewer that the current background on interprofessional SDM minimizes its importance. Therefore, we have amended the second paragraph of the Background section and have added more context deriving from literature (page 3, line number 66-70):

“Shared decision-making (SDM) has been endorsed as the most ethical and appropriate decision making approach (1, 2). SDM is defined as a cooperative process between clinicians, patients and, often in the Intensive Care Unit (ICU), surrogates, that enables a way of healthcare decision making that combines both the clinician’s expertise as well as the patient’s values and healthcare goals (3, 4). SDM in the ICU is recommended when defining the overall goals of care and when making major treatment decisions that are preference-sensitive (2). The SDM process should contain as its three main ingredients information exchange, a deliberation period and making an eventual treatment decision. SDM processes occurring between ICU physicians, ICU nurses and other members of the ICU team are defined as interprofessional SDM. It is recommended to occur before discussions with patients and family members take place, to enable the ICU team to speak as one (5). It is associated with more accurate prognoses, reduction of moral distress and a more resilient team (5-9). Research has shown that interprofessional SDM between physicians and nurses is associated with more accurate prognoses, reduction of moral distress and a more resilient team (5-9), Overall, ICU physicians, ICU nurses and signals a need for a defined space for nursing staff along with physicians and patients and surrogates can be viewed as the three pillars of ICU decision-making.”

Lines 79-80 (background): The statement about SDM increasing the likelihood of patients forgoing aggressive care currently stands alone, but could be contextualized more. As written it seems to imply that it’s a good thing, but can be more nuanced in practice (as you identify in the results section with differences in opinion observed across participant groups).

o We agree and have added the following sentence, with a reference from Ozdemir et al. to further contextualize this statement (page 3, line number 81-85):

“SDM also increases the likelihood of patients forgoing aggressive care if this is not in line with their care goals (22), though caution is warranted when decisions can be influenced by the manner in

which complex information about disease and treatment is provided by health care professionals, as well as cultural context (23)."

Line 108-114 (methods): I appreciate this attention to reflexivity. This could be even further enhanced by describing any clinical training the interviewers may have (or confirming none).

o Thank you. We have added the following text to the Methods section (page 5, line number 145) to clarify that neither of the analyzing researchers has clinical training:

"Both researchers are trained to conduct interviews and execute interview analysis. Neither of the researchers has clinical training."

Line 113 (methods): It's not clear whether the advertisement/invitation made clear the study was about shared decision-making or if participants were told it was about ICU decision-making more broadly.

o In the invitation text, the title and first paragraph invited participants to speak about their experiences with shared decision making in the ICU. At the end of the invitation we indicate that more questions around ICU decision-making would be asked for contextualization. We have amended the text to clarify this (page 6, line number 147-148):

"Interviewees were asked to take part in an interview about their experiences with ICU (shared) decision-making and ICU decision-making in general."

Line 118 (methods): How (when, by whom, etc.) did you assess data saturation?

o We deemed data saturation as having occurred after no new information emerged. We assessed this separately for the three stakeholder groups in discussions between the two primary analyzing researchers, which occurred throughout the data collection phase.

To clarify this in our manuscript, we have added the following sentence to our Methods section (page 6, line number 153-154) and have added a reference to 'Qualitative Research in Health Care' by Catherine Pope and Nicholas Mays:

"Data was collected until data saturation was reached, in other words, when no new information was identified in the interviews (35)."

Line 126 (methods): What did the supervision look like? Did it involve engagement with all the interview content or looser oversight?

o After a coding framework was agreed upon by the two researchers after four interviews had been coded independently, oversight was maintained for the analysis of the remainder of the interviews. Codes, categories and themes were discussed continuously throughout the analysis period as they emerged.
To clarify this in our manuscript, we have added the following sentence to our Methods section (page 6, line number 161):

“Two researchers (NW and MZ) coded four interviews independently, before discussing and agreeing upon a coding framework. NW then applied open coding to the remainder of the transcriptions under the general supervision of MZ.”

Line 147-150 (results): It looks like the family members and patients were interviewed together, accounting for a smaller number of interviews than participants - could consider confirming/clarifying this grouping in text.

o The Reviewer is correct: if a former patient brought (a) family member(s), they were interviewed together. To further clarify this, we have added the following statement to the Results section (page 7, line number 176-178):

“In total of 19 interviews were conducted with, 29 participants were interviewed: five ICU nurses, seven ICU physicians, nine former ICU patients and eight family members (Table 1). Former patients and their family members were interviewed together, making for a total of 19 separate interviews.”

Line 152/Table 1 (results): Is the listed order the order in which interviews were conducted? If so, did you find any limitations of having completed all the clinician interviews before beginning the patient/family interviews?

o The first column of Table 1 describes the order of the conducted interviews. Most of the clinician interviews were indeed completed before we spoke with the former patients and their family members. However, interview number 12, with an ICU physician, was performed after the first former patient and family member interview (#10 en 11), and the final two ICU physician interviews were finished after the last patients and family members were interviewed (interview 28 and 29). Though we felt, that, generally, the insights provided by the former patients and family members were discussed with the clinicians (for instance, the importance of smaller decision moments, decisions not pertaining to end-of-life), we agree with the reviewer that this order prevented us from asking the ICU nurses about any specific former patient and family member findings. Therefore, we have added a statement pertaining to this to our Limitations section.

For clarification, we have amended the text in the first column of Table 1 from ‘Order’ to ‘Interview order’ (page 7, line number 185).

The following text was added to the Discussion section (page 20, line number 382-386):
“Though our sample size may be regarded as small, the number of interviews in this study is more than the number suggested by Guest et al (65). Also, most of the interviews with ICU physicians and nurses were completed before the interviews with former patients and family members had taken place. Though patient interaction and involvement were discussed in the ICU nurse interviews, this order prevented discussions on more specific findings. However, as the ICU nurses predominantly focused heavily on ICU physicians in their interviews, the impact might be limited.”

Lines 283-285 (discussion): I think this is interesting and worth mentioning that physician participants tended to focus on end of life decisions! Suggest presenting this in the results section - I was surprised to see this new information in the discussion.

o Thank you for notifying us of this oversight. We have added text to our Result sections for both the ICU physicians and ICU nurses to reflect this finding, which is represented in the quotes in Table 1, also.

The following text was added to the Result section (page 8, line number 198-199):
“When asked about ICU decision-making and SDM, ICU physicians gravitated towards discussing examples of decisions about end-of-life and stopping treatment. ICU physicians described the uncertainty about long-term health outcomes as one of the main struggles they experienced.”

The following text was added to the Result section (page 14, line number 271-273):
“Conflicts arose in situations of complex patient cases being in the ICU for a prolonged period of time. The ICU nurse study participants, when asked about ICU decision-making and SDM, gravitated towards discussing these struggles, which predominantly centred around continuing or ending treatment, with physicians oftentimes advocating for the former, while nurses want the latter.”

Same with the subsequent line about a variety of interpretations of what SDM in the ICU looked like.

o We have added text to the Results section of both ICU physicians and ICU nurses to reflect this statement’s origin (the different SDM component execution between stakeholder groups and also among stakeholder groups (professional variation), and between former patients (some preferred being consulted for small decisions) (page 8, line number 207-214):

Old segment: “Consistently, there was a variety of interpretations regarding what SDM in the ICU looked like.”

New segment: “Physicians described variety among their colleagues about starting discussions around treatment wishes and patient needs, with some expressing doing so in the majority of patients, while others thought that doing this more sparingly was sufficient. Several barriers to explore the wishes and needs of patients were discussed. […] Also reported by clinicians and former patients and families was a varying degree of prioritization of medical facets in discussions by physicians leading to less attention for ‘softer’ topics, such as quality of life. Some physicians described that these factors often did not come into play unless the patient’s chances of recovery become low.”

The following text was added to the Result section (page 14, line number 265-266):
“They generally felt listened to, even if their more holistic points of view were not always incorporated in the eventual medical decision, depending on the ICU physician on call. However, in non-complex, everyday cases, they were generally not troubled by this. They noted difficulties in communication between their two professions depending wholly on the various types of physician and nurse. Assertive nurses made sure their voices were heard, but acknowledged that not all of their colleagues have this capability.”

The physician focus on end of life (mentioned in lines 283-285) also highlights a potential limitation of the study, having included only family members of surviving patients (rather than also including some family members of deceased patients).

o Thank you. Though this was a conscious choice – we have provided some more information and literature references regarding this sampling decision in the Methods section of our manuscript (page 5, line number 131-133) – after the results showed such a focus on end-of-life decisions, we agree with the Reviewer that this is an important limitation of our study and have added that the family members of deceased patients were not included in our study sample to the Limitations section of our manuscript (page 20, line number 378-382):

Participant sampling
Three groups of participants were interviewed: ICU physicians, ICU nurses and former ICU patients

and their close family members. Physicians and nurses were approached within the professional network of the authors (MvdB and MZ), and were sampled purposively to ensure a variety in demographic and professional characteristics. Former ICU patients and their family members were reached through appealing to patient association volunteers, as well as an advertisement on the ICU patient association website (www.fcic.nl). As the vast majority of ICU patients survive their stay, and many studies are focused on the end-of-life patient category (30), our patient and family member sampling focused on ICU survivors (31-34).

The following text was added to the Discussion section:
"Our study has several limitations. Firstly, despite our decision to focus on ICU survivors, the many struggles surrounding end-of life decisions indicate that this is an important ICU decision-making theme. It may therefore have been better to include family members of deceased ICU patients as well. Furthermore, though our sample size may be regarded as small, the number of interviews in this study is more than the number suggested by Guest et al (65)."

Reviewer 2
Dr. Gaetano Iapichino, University of Milan

Comments
I consider this topic of relevant importance to improve ICU staff atmosphere, whose responsibility lies within the leadership. Only when the leader can manage/negotiate team conflicts (1), SDM may also be effective and benefit from the inclusion of relatives.

o We thank the Reviewer for their thoughtful commentary and provision of literature.

a) Struggles of ICU physicians are:" uncertainty about long-term health outcomes as one of the main struggles, these conflicts mainly arise dealing with complex, long-stay patients. While they sometimes were uncertain about continuing treatment themselves.....They expressed a need for more long-term data on survival and quality of life after ICU treatment".
I agree that currently used outcome prediction systems validated at ICU admission day (SAPS, APACHE) are not reliable for prediction during stay of long-term patients. Anyway, daily SOFA can offer useful insights. However, the large collaborative European Union study EURICUS II Study shows
that the trend of routinely (daily) gathered physiologic variables (systolic blood pressure, heart rate, oxygen saturation and urine output), can discriminate between survivors and non-survivors, increasing staff knowledge and understanding of the care effectiveness/evolution of severe ICU patients (2,3).

o Thank you, we have added this, as well as the reference, to our Discussion section (page 19, line number 349-350):

The unavailability of long-term outcome information around survival and quality of life was important

to their hesitance in starting conversations around decision-making. Though long-term outcome data collection in the ICU has its challenges (46), there is an increase in big data initiatives to tackle the current gaps in knowledge (47). For instance, the collection of daily physiologic variable information has been shown to provide an increased understanding and knowledge about the likelihood of ICU survival (48, 49).

b) Physicians show difficulty to discuss with relatives about long-term patient's quality of life, and to involve them in the treatment decision process. They seem afraid to accept relatives-nurses' participation in decision making, for a loss of leadership/responsibility in clinical decision.
Again, the problem concerns modes of communication/Information to patient's relatives managed by physicians.
Who gives clinical news to relatives? How many physicians provide information? only one/two doctors at most always for the entire ICU-LOS, or a different doctor each day? Are the news also given in the presence of the nurse in charge?
Every doctor/nurse expresses roughly the same clinical concept but unfortunately in different personal ways and words. This creates disorientation, lack of confidence and lack a feeling of control in relatives.

o We understand the questions of the Reviewer In the ICU, most of the information is communicated to family members (and patients, whenever possible) during family conferences, which generally occur once a week or in case of major changes in treatment policy and in which the patient's condition, the treatment plan, prognosis and treatment goals are shared (ref). Patients or family members can also request family conferences. Information is also exchanged more informally during the bedside rounds. Some patients, who are in the ICU for a very short period of time, do not receive a family conference. Usually, one ICU physician is in charge of the ICU department during the week. Patients who are in the ICU for a long time therefore might see a few different ICU physicians during family conferences. Nurses are usually present during the family conferences, but not always. There are few 'rules' about their official role in the family conference.

We have added some of this contextual information to the Methods section of our manuscript (page 5, line 121-124):

Study design and setting
This is a qualitative interview study carried out between June 2019 and January 2020 in two tertiary centres. The Consolidated Criteria for Reporting Qualitative Studies guidelines for the design and analysis of this interview study were followed (28) (See: Supplementary material 1). Decision-making in the ICU between the three stakeholder groups roughly occurs in daily multidisciplinary meetings mainly attended by ICU physicians, in regular family conferences where the presence of the ICU nurse is preferred but not required (29), and, more informally, at the bedside.

c) As regards nurse/physician's communication and ICU nurse' role, the manuscript considers the liaison between physicians and patients and families and preconizes a more substantial role for the ICU nurse in decision-making process.

I agree completely, and I myself used exactly this statement "Nurse is eyes and ears of the physician" to make young colleagues understand the importance of the role of the nurse enhancing their clinical knowledge of patients by continuously engaging with them in their daily work.
"Within this context they reported feeling not being taken seriously and feeling blindsided by decisions being made in multidisciplinary meetings dominated by physicians (Nurse doesn't feel welcome)". Moreover "Discrepancy of opinion between ICU physicians and nurses regarding end-oflife
care for complicated cases; They felt frustrated with the returning nature of this type of conflict".

“ICU nurse feels like they are not being taken seriously”.
Job dissatisfaction, emotional exhaustion, depersonalization and reduced personal accomplishment result in a high incidence of contagious burnout syndrome that may cross over from one nurse to another, as demonstrated by EURICUS I (5).

o We have added this, and the reference, to our Discussion section (page 19, line number 352 - 356):

Nurses have been described to detect any type of ICU conflict quicker than physicians (52), and these conflicts can lead to augmented levels of stress in nurses (53), which may increase the incidence of burn-out among nurses (54). To keep nurses healthy and involved, there is This again signals an urgent need for training to improve interprofessional collaboration and communication, perhaps through more frequent moral deliberation meetings (55).

The important managerial aspects concerns the interdependence of medical and nursing tasks. EURICUS-II demonstrated that improving collaborative practice in the ICU has beneficial effect on intermediate (physiologic derangement-titrated therapy) and final outcomes (mortality) of patients (2-3).

How to increase the nurses’ level of skill discretion regarding the most relevant nursing activity, and to increase the nurses’ participation in decision making in the ICUs (4)?
How to “tackle the communication struggles between the three stakeholder groups”?
To take nurses seriously, physician-leader needs entrusting them at each daily round recognizing their “insights in the patient and family situation”, but also and above all in day-by-day knowledge of current clinical situation: responsibility for evaluation of patient’s sedation level, caloric intake and cumulative deficit, needs of invasive devices, mobilization & presence of decubitus. Nurses should be encouraged to report something suspicious or any even not-quantifiable/minimal clinical variations (ventilator de-synchronization, any initial appearance of fever-hyperglycemia, change in amount, color, smell of tracheal secretions, or agitation onset...) anticipating the overt appearance of complications.

Furthermore, during the daily round, nurses should point-out the cumulative number of out-range physiological controls in comparison with previous days (2-3). This step is of crucial importance in decoding/understand the patient response to therapy, providing a solid interdisciplinary basis in collaborative joint decisions regarding end-of-life care for complicated cases.
For the same day-round occasion nurses could prepare a pre-daily round goals checklist, then assuming the responsibility to monitor the implementation of goals collegially defined (7-8). In case of patient discharge to normal wards, nurses can also provide a planning details -patient stability checklist- to evaluate for appropriate/safe discharge.

Scientific evidence indicates that collaborative practice and active involvement in decision-making process is possible, and it can improve both the clinical outcome as well as the commitment and satisfaction of health care professional (1-8).

o We thank the reviewer for their thoughtful addition to the discussion. We have added their literature suggestions and information to the Discussion section (page 19, line number 363-366):

To equalize the instances of nurse involvement and provide nurses with a more consistent opportunity to provide their knowledge, it may be beneficial to increase and better define their role during decision-making moments, such as during patient handovers, bedside rounds and multidisciplinary meetings. Earlier literature has indicated that collaborative practice is possible, by, for instance, giving nurses responsibility for providing the physician with day-to-day specific information regarding the patient and signaling when physiological variables are cumulatively out of the normal range, and that

it can improve both the clinical outcome as well as the satisfaction levels of ICU clinicians (48, 49, 54, 58-61).

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Punto importante nel management ICU e staff
Fidler
One of the important managerial aspects
concerns the interdependence of medical and nursing
tasks.
s
EURICUS-II study was designed to test the hypothesis
that improving collaborative practice in
the ICU has beneficial effect on intermediate-
(physiologic derangement) and final outcomes
(mortality) of patients.
. Its aim was to increase the nurses' level of skill discretion regarding
the most relevant nursing activity, the reversion
of physiologic derangement (titrated therapy) and
to increase the nurses' participation in decision
making in the ICUs.
Rivera
In conclusion, the predictive power of the studied
physiologic alterations in relation to patient outcome
suggests that their weight in daily care policy decisions
may need to be revisited. The present study shows that
routinely gathered information on physiologic variables in
ICU patients can be summarized and used to discriminate
between survivors and nonsurvivors. These data can also

serve as a basis for the development of improved mortality prediction systems and instruments that increase our knowledge and understanding of the evolution of ICU patients.
Concerning some of the activities, it will be noted that the overlap of responsibilities of different professionals may exist. When the overlap is critical because of its importance and/or its complexity, a protocol has to be devised for precising aspects such as: hierarchy, timing, and control of actions, and the respective moments (and content) of communication.

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EURICUS II
Burnout contagion among intensive care nurses
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First published: 14 July 2005 JAN Volume51, Issue3 August 2005 Pages 276-287
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P M Le Blanc 1, J de Jonge, A E de Rijk, W B Schaufeli
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VERSION 2 – REVIEW

REVIEWER	Forcino, Rachel Dartmouth College, The Dartmouth Institute for Health Policy and Clinical Practice
REVIEW RETURNED	22-Jun-2021

GENERAL COMMENTS	The authors have adequately addressed prior reviewer comments in this revision.

REVIEWER	Iapichino, Gaetano University of Milan
REVIEW RETURNED	07-Jun-2021

GENERAL COMMENTS	The message is now more clear and easy to understand and to follow the main important messages.