

## **ADAPTATION AND VALIDATION OF A MULTIDISCIPLINARY CHECKLIST FOR ROUNDS IN THE INTENSIVE CARE UNIT**

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### **ABSTRACT**

**Objective:** to perform the adaptation, content validation and semantic analysis of a Multidisciplinary Checklist used in rounds in Intensive Care Units for adults.

**Method:** a methodological study, consisting of three stages: Adaptation of the checklist, performed by one of the authors; Content validation, performed by seven judges/health professionals from a public teaching hospital in Paraná; and Semantic analysis, performed in a philanthropic hospital in the same state. Agreement of the judges and of the target audience in the content validation and semantic analysis stages was calculated using the Content Validity Index and the Agreement Index, respectively, with a minimum acceptable value of 0.80.

**Results:** in the content validation stage, the checklist obtained a total agreement of 0.84. Of the 16 items included in the instrument, 11 (68.75%) were readjusted and four (25%) were excluded for not reaching the minimum agreement. The readjusted items referred to sedation; analgesia; nutrition; glycemic control; headboard elevation; gastric ulcer prophylaxis; prophylaxis for venous thromboembolism; indwelling urinary catheter, central venous catheter; protective mechanical ventilation and spontaneous breathing test. Regarding the items excluded, they referred to the cuff pressure of the orotracheal tube and to Nursing care measures such as taking the patient out of the bed, pressure injury prophylaxis, and ophthalmoprotection. In the semantic analysis, the final agreement of the instrument's items was 0.96.

**Conclusion:** after two evaluation rounds by the judges, testing in critically-ill patients and high inter-evaluator agreement index, the Multidisciplinary Checklist is found with validated content suitable for use in rounds in intensive care.

**DESCRIPTORS:** Validation study. Checklist. Intensive care units. Patient safety. Patient assistance team.

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# ADAPTAÇÃO E VALIDAÇÃO DE *CHECKLIST* MULTIDISCIPLINAR PARA *ROUNDS* EM UNIDADE DE TERAPIA INTENSIVA

## RESUMO

**Objetivo:** realizar a adaptação, validação de conteúdo e análise semântica de um *Checklist* Multidisciplinar utilizado em *rounds* em Unidade de Terapia Intensiva Adulto.

**Método:** estudo metodológico, composto de três etapas: Adaptação do *checklist*, realizada por uma das autoras; validação de conteúdo, realizado por sete juízes/profissionais de saúde de um hospital de ensino público do Paraná; e análise semântica, realizado em um hospital filantrópico do mesmo estado. A concordância dos juízes e do público-alvo nas etapas validação de conteúdo e análise semântica foi calculada pelo índice de validade de conteúdo e índice de concordância, respectivamente, com valor mínimo aceitável de 0,80.

**Resultados:** na etapa validação de conteúdo, o *checklist* obteve concordância total de 0,84. Dos 16 itens do instrumento, 11 (68,75%) foram readequados e quatro (25%) foram excluídos por não alcançarem a concordância mínima. Os itens readequados se referiam à sedação; analgesia; nutrição; controle glicêmico; elevação da cabeceira; profilaxia para úlcera gástrica; profilaxia para tromboembolismo venoso; sonda vesical de demora, cateter venoso central; ventilação mecânica protetora e teste de respiração espontânea. Já em relação aos itens excluídos, estes se referiam à pressão do balonete do tubo orotraqueal e cuidados de enfermagem, como: retirada do paciente do leito; profilaxia para lesão por pressão; e oftalmoproteção. Na análise semântica, a concordância final dos itens do instrumento foi 0,96.

**Conclusão:** o *Checklist* Multidisciplinar após duas rodadas de avaliação por juízes, teste em pacientes críticos e alto índice de concordância interavaliadores se apresenta com conteúdo validado e adequado para uso em *rounds* na assistência intensiva.

**DESCRITORES:** Estudo de validação. Lista de checagem. Unidades de terapia intensiva. Segurança do paciente. Equipe de assistência ao paciente.

# ADAPTACIÓN Y VALIDACIÓN DE UNA LISTA DE VERIFICACIÓN MULTIDISCIPLINARIA PARA RONDAS DE VISITAS MÉDICAS EN LA UNIDAD DE CUIDADOS INTENSIVOS

## RESUMEN

**Objetivo:** realizar los procesos de adaptación, validación de contenido y análisis semántico de una Lista de Verificación Multidisciplinaria utilizada en rondas de visitas médicas en una Unidad de Cuidados Intensivos para adultos.

**Método:** estudio metodológico, compuesto por tres etapas: Adaptación de la lista de verificación, realizada por una de las autoras; validación de contenido, a cargo de siete evaluadores/profesionales de la salud que trabajan en un hospital escuela público de Paraná; y análisis semántico, desarrollado en un hospital filantrópico del mismo estado. El nivel de concordancia entre los evaluadores y la población objetivo en las etapas de validación de contenido y análisis semántico se calculó por medio de Índice de Validez de Contenido y del Índice de Concordancia, respectivamente, con un valor mínimo aceptable de 0,80.

**Resultados:** en la etapa de validación de contenido, la lista de verificación obtuvo un valor de concordancia total de 0,84. De los 16 ítems del instrumento, 11 (68,75%) fueron readaptados y cuatro (25%) fueron excluidos por no alcanzar el nivel mínimo de concordancia. Los ítems readaptados se referían a la sedación; analgesia; nutrición; control glicémico; elevación de la cabecera de la cama; profilaxis para úlcera gástrica; profilaxis para tromboembolia venosa; sonda vesical de demora, catéter venoso central; ventilación mecánica protectora y prueba de respiración espontánea. En relación a los ítems excluidos, se refirieron a la presión del manguito del tubo orotraqueal y a la atención de Enfermería, por ejemplo: retirar al paciente de la cama; profilaxis para úlceras por presión; y oftalmoprotección. En el análisis semántico, el nivel de concordancia final de los ítems del instrumento fue de 0,96.

**Conclusión:** después de dos rondas de evaluación a cargo de especialistas, una prueba en pacientes y elevado índice de concordancia entre los evaluadores, la Lista de Verificación Multidisciplinaria se presenta como contenido validado y adecuado para ser empleado en rondas de visitas médicas en cuidados intensivos.

**DESCRIPTORES:** Estudio de validación. Lista de verificación. Unidades de Cuidados Intensivos. Seguridad del paciente. Equipo de asistencia al paciente.

## INTRODUCTION

The Checklist consists of a structured work tool, which includes a set of complex items or activities to be considered and/or performed, in order to confirm through systematic observation that the necessary actions and interventions are being operationalized while performing some activity<sup>1</sup>.

In the health area, using the checklist contributes to care management, as it qualifies the assistance provided and increases the safety of hospitalized patients. Nevertheless, checklists cannot solve all the safety problems, but maintenance of a culture focused on co-responsibility of all members of the work team and measures such as standardization of the instrument, simplification and double-checking the checklist provide opportunities for the provision of safe and reliable care<sup>2-3</sup>.

In Intensive Care Units (ICUs), daily use of a multidisciplinary checklist during the rounds (multi-professional bedside visit), contributes to increased adherence to evidence-based practices<sup>4-5</sup>. In this sense, in order to ensure that important actions are not forgotten in the daily routine of the intensive care services, Brazilian researchers<sup>6</sup> adapted the initials of the '*Fast Hug*'<sup>7</sup> checklist acrostic, proposed by a Belgian physician based on the mnemonic resource called 'Suspicion for good'. Thereby, mnemonic resources help to standardize procedures that unify the best assistance practices among the evaluators/health providers<sup>8</sup>.

Although adherence and compliance in carrying out the interventions listed in the checklist by all the professionals are essential, it is observed that instruments used in the clinical practice to assess health outcomes are not always properly validated<sup>9-10</sup>.

With regard to an instrument's validity, it consists in its ability to measure exactly what it is intended to measure by accurately representing the concept of interest, which can be ensured through content, criteria and/or construct validity<sup>10</sup>. Content validity of a Multidisciplinary Checklist was carried out in this study. According to the literature<sup>11</sup>, content validity is important because it checks whether each element of the instrument contemplates the theoretical dimension proposed, ensuring its quality and veracity.

In order to standardize multi-professional care, legitimize the quality of the instrument used during the rounds of an ICU, and ensure assistance based on the best practices in an intensive care unit, this study aimed at: Carrying out the adaptation, content validation and semantic analysis of a Multidisciplinary Checklist used in rounds in an ICU for adults.

## METHOD

A methodological study guided by Pasquali's methodological framework<sup>10</sup> and operationalized in three stages: Stage 1 – Adaptation of the Multidisciplinary Checklist; Stage 2 – Content validation of the Multidisciplinary Checklist; and Stage 3 – Semantic analysis of the Multidisciplinary Checklist.

Stage 1 was carried out in May 2019 by the researcher by proposing an adaptation in the checklist, based on a mnemonic resource with the 'Suspicion for good' acrostic, used by the multidisciplinary team working in the Intensive Care Unit for Adults (ICU-A) of a medium-sized hospital in the state of Paraná (Hospital A). This hospital was intentionally chosen due to the recent implementation of the round and use of the checklist; however, despite using the 'Suspicion for good' acrostic, the items in this instrument did not include guidelines that guided each intervention accurately. For example, the initial "S" referred to the term "bladder tube" ("*sonda vesical*" in Portuguese) without mentioning the possibility of removing this device.

Adaptation of the instrument was authorized by the institution, and the changes proposed were as follows: addition of declarative/affirmative or interrogative phrases, in order to indicate the care measures and/or interventions listed in each of the instrument's items; and insertion of a chart

to record priority goals to be achieved daily in relation to the care provided to the patient. Both forms of changes were based on other studies<sup>6,12</sup>.

Stage 2 was performed with seven judges/experts, who were members of the multi-professional team of the ICU-A of a Public Teaching Hospital in the state of Paraná (Hospital B) and were intentionally chosen for being health professionals working in an institution with extensive experience in the use of multidisciplinary checklists during the rounds. The eligibility criteria established for selection of the judges/experts were as follows: health professionals with at least one year of experience in the ICU; participating in the rounds with use of a checklist; and having experience in employing other checklist models. In turn, those professionals who were not present on the day established for data collection were excluded, either because they were on vacation, or due to leave/dismissal or even absence. The invitation to participate in the study was made in person, before initiation of data collection, at which time they were informed about the study objectives, the type of desired participation and the ethical aspects involving research with human beings.

Data collection for this stage was carried out on a single day in August 2020, after the daily multidisciplinary visit in the ICU-A. This day was previously agreed upon with the nurse coordinating the service, who was responsible for disclosing and scheduling with the members of the multi-professional team the date for carrying out the group activity.

As data collection took place during the COVID-19 pandemic period, the seven participants were divided into two groups, heterogeneous in terms of professional category. The participants of the first group were four professionals (a physician, two nurses, and a nutritionist) and there were three participants in the second group (a physician, a nurse and a pharmacist).

In the instrument's content validation process, an individual assessment was carried out, followed by a group discussion. In the first individual evaluation round, the judges evaluated each item of the checklist based on five criteria: relevance, clarity, objectivity, simplicity and precision<sup>10</sup>. This assessment was recorded in an instrument, with a view to obtaining data on semantic (grammatical and vocabulary) and conceptual (concept explored) equivalence, as recommended by Pasquali<sup>10</sup>. In this phase, the judges could include suggestions for improvements to the items.

The group discussion took place in the Study Room of ICU-A, using the brainstorming technique, which is considered an effective strategy to test understanding of an instrument's items<sup>10</sup>, as it allows presenting ideas, suggestions and debate between the experts. The suggestions for improvements to the original checklist items were considered during the brainstorming session and discussed until consensus was reached. The consensus version went through the second individual evaluation round, which took place similarly to the first. New evaluation rounds were not necessary according to the saturation criteria of the suggestions.

As they are two small groups, a single researcher conducted the brainstorming technique, acting as coordinator and reporter. In this process, there was an atmosphere of respect with exposition of ideas and suggestions for both groups. The suggestions were submitted by the participants themselves and recorded at that time by the reporter. The mean duration for the two groups in the first individual evaluation round with group discussion was 40 minutes. As for the second individual evaluation round, it was 20 minutes.

Stage 3, which aims at verifying the level of understanding of each of the instrument's items, was carried out with 30 health professionals from three multi-professional teams from ICU-A, the postoperative ICU and the COVID-19 ICU of a philanthropic Hospital in the state of Paraná (Hospital C), intentionally selected for being teams that carry out multidisciplinary visits. All the professionals who participated in the rounds were invited to apply the validated checklist in at least one hospitalized patient, which resulted in 30 instruments applied across the three sectors.

Due to the COVID-19 pandemic, Hospital C adapted the rounds to the briefing format (multidisciplinary visits with fewer professionals and in less time) and, given the limited time and restricted access of people to the ICU, the structured questionnaire, prepared by the researcher to collect data regarding application of the checklist to the patients admitted to the ICU was organized on the *Google Forms* electronic platform. The link generated on the digital platform was sent via a cell phone app to the coordinating physician in charge of the three ICUs, who was responsible for disseminating the study among the professionals and to the Continuing Education Service nurse, who, in turn, sent it to all the members registered in the “multi-professional team” *WhatsApp* group.

Data collection for this stage took place from October to December 2020, according to the availability of each professional to apply the checklist and fill in the questionnaire regarding the level of understanding of the instrument. During this period, the nurse from the Continuing Education Service of the institution encouraged participation of the professionals, reminding them about the importance of the study.

For data treatment and analysis in the checklist validation, calculation of the Content Validity Index (CVI) was applied, which initially allows analyzing each item individually and then the instrument as a whole<sup>10</sup>. In this study, the items were evaluated using a 4-point Likert-type scale, where: 1 - The item is not adequate; 2 - The item needs major review to be adequate; 3 - The item needs minor review to be adequate; and 4 - The item is adequate. The CVI formula that assesses each individual item is expressed by:  $CVI = \text{number of 3 or 4 answers} / \text{total number of answers}$ <sup>10</sup>.

The minimum acceptable agreement index among the committee of judges was 0.80, according to the framework adopted<sup>10</sup>. Through the CVI, it was possible to identify the agreement level among the judges in the five criteria proposed and, consequently, to implement the necessary changes until reaching at least 0.80 of agreement in all the items evaluated.

To analyze the understanding level of the items in the checklist, the Agreement Index (AI) was calculated, represented by the formula  $AI = NA / (NA + ND)$ , where NA means number of agreements and ND, number of disagreements. The calculation was based on the answers of the gradual scale alternatives in which: 1 (I fully understood) is considered NA; -1 (I didn't understand) and 0 (I hardly understood) refer to ND. The item was considered understandable when the AI reached 0.80, as established by the framework adopted in this study<sup>10</sup>.

All the ethical and legal precepts referring to research studies with human beings were fully complied with. The project was approved by the Committee of Ethics in Research with Human Beings of the signatory institution and authorized by the participating institutions through the Declaration of Permission for Data Collection. All the professionals signed the Free and Informed Consent Form and, to ensure anonymity, representation of the participants' names was expressed by the letter “J”, indicative of judges, and “PEM”, indicative of professional of the multidisciplinary team (*Profissional da Equipe Multidisciplinar* in Portuguese) followed by an Arabic number, referring to the participation order in the study.

## RESULTS

In stage 1, the researcher inserted affirmative and/or interrogative phrases in the 16 items of the checklist, where interventions based on the initials of the ‘Suspicion for good’ acrostic are included, as can be seen in Chart 1. This chart also presents data from the quantitative content assessment of the items in the checklist.

**Chart 1** – Quantitative content assessment of the items in the checklist, CVI of the 1<sup>st</sup> and 2<sup>nd</sup> rounds in relation to the analysis requirements, readjustment or suggestions of the instrument items and semantic analysis AI. Maringá, PR, Brazil.

| Instrument items  | Analysis requirements  | CVI*-1 <sup>st</sup> round | Readjustment (R) or Suggestion (S) of the Items   | CVI*-2 <sup>st</sup> round | AI*-semantic analysis |
|---|--|----------------------------|---|----------------------------|-----------------------|
| 1. Can SEDATION be reduced?   | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>R</b> – Is sedation adequate?  | >0.80                      | 0.96                  |
| 2. Gastric ULCER – prophylaxis:<br>( ) Proton pump inhibitor / ( ) H2 receptor antagonist                               | REL <sup>‡</sup> ; CLA <sup>§</sup>  | >0.80                      | <b>R</b> – Is the patient in use of gastric ulcer prophylaxis?  | >0.80                      | 0.96                  |
|   | OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup>                                       | < 0.80                     |   |                            |                       |
| 3. SUSPENSION of the headboard at 30 <sup>o</sup> or more   | REL <sup>‡</sup>   | >0.80                      | <b>R</b> – Is headboard elevation always 30 <sup>o</sup> or more?   | >0.80                      | 1.00                  |
|   | CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup>                    | < 0.80                     |   |                            |                       |
| 4. PERINEUM – Can the IUC can be removed?   | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>R</b> – Can the IUC be removed?  | >0.80                      | 1.00                  |
| 5. ESCHAR – pressure injury prophylaxis   | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>S</b> – Remove item from the checklist   | -                          | -                     |
| 6. CVC INFECTION – Can the CVC be removed?  | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>R</b> – Can the CVC be removed?  | >0.80                      | 1.00                  |
| 7. DVT – prophylaxis:<br>( ) Liqueimine /<br>( ) Enoxoparin /<br>( ) Elastic stocking                                   | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup>  | >0.80                      | <b>R</b> – Is the patient in use of VTE prophylaxis?  | >0.80                      | 0.86                  |
|   | SIM <sup>¶</sup> ; PRE <sup>**</sup>   | < 0.80                     |   |                            |                       |
| 8. FEEDING – is nutrition adequate?   | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>R</b> – Is nutrition adequate?<br>Did the patient achieve the caloric and protein goal?  | >0.80                      | 1,00;<br>0.93         |
| 9. AIRWAY PRESSURE – plateau < 30 cmH <sub>2</sub> O; distension pressure < 15 cmH <sub>2</sub> O; tidal volume 6 ml/kg | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>R</b> – Is Mechanical Ventilation protective? (plateau < 30 cmH <sub>2</sub> O; distension pressure < 15 cmH <sub>2</sub> O; tidal volume 6 mL/Kg) | >0.80                      | 0.83                  |
| 10. Is ANALGESIA adequate?  | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>S</b> – Maintain equal   | >0.80                      | 1.00                  |
| 11. TAKING THE PATIENT OUT OF THE BED – is it possible to put the patient in the armchair?                              | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>S</b> – Remove item from the checklist   | -                          | -                     |
| 12. ANTIBIOTIC:<br>( ) initiate / ( ) adjust / ( ) suspend  | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | >0.80                      | <b>R</b> – ANTIBIOTIC:<br>( ) initiate / ( ) adjust dose / ( ) suspend  | >0.80                      | 0.96                  |
| 13. OPHTALMOPROTECTION for sedated patients or with lowered level of consciousness                                      | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>S</b> – Remove item from the checklist   | -                          | -                     |

Chart 1 – Cont.

| Instrument items  | Analysis requirements  | CVI*-1 <sup>st</sup> round | Readjustment (R) or Suggestion (S) of the Items      | CVI*-2 <sup>st</sup> round | AI <sup>†</sup> -semantic analysis |
|---|--|----------------------------|--|----------------------------|------------------------------------|
| 14. BALLOON – does it maintain values between 25 and 30 mmHg? | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>S</b> – Remove item from the checklist            | -                          | -                                  |
| 15. EXTUBATION – is it possible to extubate or wean MV?       | REL <sup>‡</sup>   | >0.80                      | <b>R</b> – Perform Spontaneous Breathing Test (SBT)? | >0.80                      | 0.96                               |
|   | CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup>                    | < 0.80                     |  |                            |                                    |
| 16. METABOLIC – is glycemetic control necessary?              | REL <sup>‡</sup> ; CLA <sup>§</sup> ; OBJ <sup>  </sup> ; SIM <sup>¶</sup> ; PRE <sup>**</sup> | < 0.80                     | <b>R</b> – Is glycemetic control adequate?           | >0.80                      | 1.00                               |

\*CVI - Content Validity Index; <sup>†</sup>AI - Agreement Index; <sup>‡</sup>REL - Relevance; <sup>§</sup>CLA - Clarity; <sup>||</sup>OBJ - Objectivity; <sup>¶</sup>SIM - Simplicity; <sup>\*\*</sup>PRE - Precision.

Seven judges participated in stage 2, with a mean age of 39.7 ( $\pm 7.6$ ) years old; three were nurses, two were physicians, and there was a pharmacist and a nutritionist. Six of them were female, married and with four years or more of professional experience in the ICU. Three were masters, two were specialists, one was a PhD and the other was a graduate.

In the first evaluation round of in this stage, among the 16 items of the instrument, 11 (68.75%) were readjusted and four (25%) were removed, as shown in Chart 1.

In the general evaluation, the instrument obtained a total CVI of 0.84. In relation to the mean CVI values for the relevance, clarity, objectivity, simplicity and precision criteria, they were 0.93, 0.83, 0.82, 0.82 and 0.83, respectively. The relevance criterion achieved the best CVI score (1.00), while objectivity and simplicity had the lowest, both with 0.73. Most of the items (1,2,3,4,6,7,8,10, 12 and 15) reached a CVI of 1.00 for the relevance criterion in the first and second evaluation rounds.

Items 5,11, 13 and 14 were excluded from the instrument for not reaching the minimum acceptable CVI in the five analysis criteria in the first evaluation round. These items were considered by judges J2, J5, J6 and J7 as inadequate and useless for the checklist. From suppression of these items, permanence of the 'Suspicion for good' mnemonic resource in the instrument became impossible.

Although items 9 and 16 presented CVI values < 0.80 in all the analysis criteria in the first evaluation round, after discussion between the participants of the two groups and their readjustment, the items presented CVI values > 0.80 in the second round and, therefore, were maintained in the instrument.

Stage 3 was carried out with 30 professionals. Of the total, 16 (53.3%) were nurses, eight (26.7%) were physicians, four (13.3%) were physiotherapists, and there was one (3.3%) medical resident and one (3.3%) social worker; 22 (73.3%) were female and half (50%) of the participants were married. Eight (26.7%) professionals were graduates, 20 (66.7%) were specialists and two (6.7%) were masters.

The groups comprised by 30 professionals were divided into two strata of lower and higher skill levels, according to the framework's guidance<sup>10</sup>. For this study, skill corresponded to the years of experience/working in the ICU. Thus, half (50%) of the professionals with a history of more than three years of professional experience in the ICU were considered as more skilled, and the other half, who had three years or less, were considered as less skilled.

The participants' agreement regarding the level of understanding of the items in the checklist was classified as satisfactory. This is because, when applied to patients admitted to the three ICUs of Hospital C, the AI value was > 0.80 for all of the instrument's items. Six items obtained maximum AI (1.00); five had AI values between 0.93 and 0.96; and two items achieved AI values between 0.83 and 0.86. The final AI of the Multidisciplinary Checklist was 0.96.

The lowest AI obtained (0.83) referred to the item called "Is Mechanical Ventilation protective (plateau < 30 cmH<sub>2</sub>O; distension pressure < 15 cmH<sub>2</sub>O, tidal volume 6mL/Kg)?" The comments by PEM17 and PEM24 were aimed at the difficulty understanding the concept of plateau and values expressed in this item of the instrument. PEM13 mentioned using calculation of the PO<sub>2</sub>/FiO<sub>2</sub> perfusion ratio for the maintenance and/or achievement of pulmonary protective mechanical ventilation instead of the pre-established parameters in the checklist.

Figure 1 shows the final version of the validated Multidisciplinary Checklist.

## MULTIDISCIPLINARY CHECKLIST FOR ROUNDS IN THE ICU

Patient \_\_\_\_\_ Age \_\_\_\_\_ Bed \_\_\_\_\_ D.A. \_\_\_\_/\_\_\_\_/\_\_\_\_

| INTERVENTIONS  | STATUS                       |                             |                                | COURSE OF ACTION/OBSERVATION |
|--|------------------------------|-----------------------------|--------------------------------|------------------------------|
| Is sedation adequate?                                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is analgesia adequate?                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is nutrition adequate?                                   | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Did the patient achieve the caloric and protein goal?    | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is glycemic control adequate?                            | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is headboard elevation always 30° or more?               | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is the patient in use of gastric ulcer prophylaxis?      | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is the patient in use of VTE prophylaxis?                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Can the IUC be withdrawn?                                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Can the CVC be removed?                                  | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Is Mechanical Ventilation protective?                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| Perform Spontaneous Breathing Test (SBT)?                | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |
| ANTIBIOTIC: ( ) initiate / ( ) adjust dose / ( ) suspend | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> NA/CI |                              |

NA/CI: Not Applicable/Contraindicated; IUC: Indwelling Urinary Catheter; CVC: Central Venous Catheter; VTE: Venous Thromboembolism  
Source: CALDEIRA FILHO, M.; WESTPHAL, G. A., 2007; CAVALCANTI, A. B.; BOZZA, F. A.; MACHADO, F. R. et al., 2016; VINCENT, J. L., 2005.

| DAILY GOALS<br>(record daily goals and pending items of the checklist) | Observations or justifications |
|--|--------------------------------|
|  |                                |
|  |                                |
|  |                                |

Participants: ( ) intensive care physician ( ) infectologist ( ) ICU nurse ( ) CCIH nurse ( ) NSP nurse ( ) physiotherapist  
( ) pharmacist ( ) nutritionist ( ) resident physician ( ) social worker ( ) family ( ) others \_\_\_\_\_

Filled in by \_\_\_\_\_ / \_\_\_\_/\_\_\_\_

**Figure 1** – Final version of the Multidisciplinary Checklist validated for use in rounds in the ICU. Maringá, PR, Brazil.

## DISCUSSION

The profile of the judges, with extensive professional experience in the ICU, contributed to the readjustment of the Checklist under study, similarly to the study carried out with experts who evaluated an audit instrument of the Unified Health System<sup>13</sup>.

The meeting with the judges was moderated by the friendly atmosphere both in the first and in the second group. The debate was guided by the principle of respect for divergent opinions since, although each judge defended their position, consensus among them to readjust and exclude certain items from the instrument was confirmed by the congruent CVI values, presented in the analysis criteria. Cordiality and reflections/discussions during the brainstorming session were possible because they are already part of the same working group. However, studies with an analogous methodology<sup>13-14</sup>, carried out with actors inserted in different contexts, report tense debates with difficulty centralizing the discussion towards the objective proposed, and even lack of consensus.

Adjustments in most of the items to the format of interrogative and non-declarative/affirmative sentences were suggested by the judges. Respecting the individual opinions, all were unanimous when stating that the checklist must be concise, brief and with minimal information for the agility and dynamism of the multi-professional team during the rounds. From the perspective of preparing and organizing checklists, the researchers assert that they must be carefully planned, respecting the specificity of each service to improve patient control and safety<sup>15</sup>.

A mnemonic resource reduces omissions in the assistance provided and the incidence of complications in the ICU<sup>7</sup>. In this sense, a study<sup>5</sup> that applied the *Fast Hug* checklist in the ICU of a Brazilian hospital revealed that most of the participating nurses considered the mnemonic to be easy to memorize. In addition, they reported that this tool is relevant for the safe care of critically-ill patients, as it is composed of seven interventions related to feeding, analgesia, sedation, venous thrombosis prophylaxis, elevated headboard, stress ulcer prophylaxis and glycemic control<sup>7</sup>. It is noteworthy that these precautions are listed in the Multidisciplinary Checklist of this study, which corroborates the importance of the actions guided by the best practices in health.

Although positive effects of the mnemonic resources have been observed in checklists in the aforementioned studies<sup>5,7</sup>, in this research it was not possible to maintain this strategy with the 'Suspicion for good' acrostic, as stated in its original version, due to the exclusion of four items in the first content validation round. Therefore, the researchers decided to organize the validated version of the instrument devoid of mnemonic resources and to merely call it "Multidisciplinary Checklist for Rounds in the ICU". It is noteworthy that the "pressure injury prophylaxis", "taking the patient out of the bed", "ophthalmoprotection" and "cuff pressure" items were excluded from the instrument because most of the judges considered this care measures as part of the ICU routine.

Researchers of a randomized clinical trial<sup>12</sup> carried out in Brazilian ICUs had previously developed a protocol with a checklist to be used during the multidisciplinary rounds with the objective of assessing whether a multifaceted intervention (checklist; daily care goals; and warnings/clinical guidance) can improve hospital mortality in critically-ill patients and also the ICU safety culture. The items of the checklist proposed were included based on the level of evidence, strength of recommendation and clinically important outcomes applicable to ICU patients found in the literature. Analysis of the evidence resulted in the inclusion of 11 care measures in the checklist and all, with the exception of the "Does the patient have criteria for severe sepsis?" item, were included in the 'Suspicion for good' mnemonic resource.

Also regarding the aforementioned study<sup>12</sup>, the "Can sedation be reduced?" the item is similar to the one initially proposed in the 'Suspicion for good checklist'. However, in the first round of this

study, most of the judges suggested changing this excerpt to “Is sedation adequate?” justifying that the phrase induces a biased and unilateral action, since certain patients need to intensify sedation rather than reduce it. Despite this readjustment, sedation protocols and daily sedation interruptions seem to be equivalent in the use of strategies that aim at lighter sedation levels<sup>16</sup>.

Another readjustment implemented in the instrument under study is related to the term “Suspension of the headboard” (item 3), which was considered confusing, dubious and with a negative connotation of the phrase. According to the criteria analyzed by the judges, the statement, although lacking clarity, objectivity, simplicity and precision, as it is a relevant care measure and is found in other checklists<sup>5,7,12</sup>, should be replaced by “Headboard elevation”. This suggestion was promptly accepted.

It is noteworthy that readjustments and exclusions of items from the checklist based on the judges’ evaluation were similar to what happened during the validation of an instrument for the admission of older adults to long-term care institutions<sup>17</sup>. This is because, although the items in the checklist presented good relevance, pertinence and representativeness of the items that constituted it, suggestions regarding the inclusion, reformulation and exclusion of items were recommended by experts, for better clarity and understanding of the instrument. In this study, however, no suggestion to include new interventions and care measures in the checklist was offered.

With regard to the level of understanding of the items of the instrument validated by the target audience, it is noteworthy that, for AI < 1.00, there were no suggestions to change/readjust the items proposed in the checklist. There were only comments like the following: use of the PO<sub>2</sub>/FiO<sub>2</sub> perfusion ratio to maintain and/or achieve protective ventilation at the expense of the plateau values, distension pressure and tidal volume. Consequently, it was decided to suppress these parameters in order to allow the institution under study and other services to optimize the rounds, as long as they are anchored in the scientific literature. According to the literature<sup>18</sup>, adequate adjustments in ventilatory support are important and can reduce mortality, as they reduce the potential for lung injury induced by mechanical ventilation.

In order to elaborate, (re)adapt and implement checklists in the health area, assessment of the measuring instruments is an effective strategy to ensure the intended results. Using these instruments favors assessment of the interventions by the health professionals and, consequently, enables (re) organization of the care practice<sup>19</sup>. In this way, a number of researchers<sup>20</sup> argue that, by adopting paths that support decision-making sustained by evidence-based practice, the professionals aim at qualifying the care *praxis* guided by technical-scientific knowledge<sup>20</sup>, since scientific competence contributes to the critical, reflective and innovative conformation of the social and professional reality<sup>21</sup>.

Based on the evaluation made by the judges with experience using checklists in rounds, as well as in their application by the multi-professional team in patients admitted to the ICU, it is possible to assert that the final version of the instrument fits the criteria proposed by the framework adopted<sup>10</sup>, presenting relevance, clarity, objectivity, simplicity and precision in its items. Consequently, the ‘Multidisciplinary Checklist for rounds in the ICU’ can be considered validated, as it strictly followed the guidelines recommended in the literature<sup>10</sup> in order to validate the content of structured instruments, especially considering the minimum number of judges and the target audience, consisting of 7 and 30 participants, respectively.

As a limitation of this study, individual application of the ‘Multidisciplinary Checklist for rounds in the ICU’ is considered, and not through a clinical discussion about the patient by the multi-professional team. Despite that, by rigorously applying the method and the recommended techniques, the level of understanding of the instrument’s items established for the study was achieved.

## CONCLUSION

After the evaluation made by the judges, items from the checklist were excluded and readjusted for greater clarity, objectivity, simplicity and precision. Applicability of the instrument by the target audience allowed corroborating the relevance of the Multidisciplinary Checklist for Rounds in the ICU, as it proves to be practical, concise, understandable and with validated content. With this, it is concluded that the Checklist of this study is considered suitable for being used in multidisciplinary visits and in intensive care settings.

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## NOTES

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