

Remote continuing training for National Early Warning Score 2 acute care: Cross-cultural adaptation

RESUMO | Objetivo: Adaptar transculturalmente o módulo de cuidados agudos do National Early Warning Score 2 para o português brasileiro. Método: Estudo metodológico de adaptação transcultural, autorizado pelo Royal College of Physicians, realizado no período de julho de 2020 a julho de 2021. Aprovado por Comitê de Ética, sob nº 4.247.069 e registro na Plataforma Brasil nº 36540020.4.0000.5292. Juizes das cinco regiões brasileiras, enfermeiros, avaliaram as equivalências semântica, idiomática, cultural e conceitual entre o material original e as versões traduzidas. Enfermeiros atuantes em 30 hospitais brasileiros, realizaram o teste piloto, com a finalidade de assegurar que a versão adaptada preservava as equivalências em relação ao conteúdo da versão original. A análise qualitativa de adaptação cultural foi executada. Resultados: O módulo foi adaptado transculturalmente, sendo que 94% das avaliações dos juizes foram concordantes sobre a equivalência entre a versão original e a adaptação proposta. Conclusão: O módulo foi adaptado para o português brasileiro.

Descritores: Alerta precoce; Evolução clínica; Pacientes internados; Tradução; Educação continuada em enfermagem.

ABSTRACT | Objective: To cross-culturally adapt the acute care module of the National Early Warning Score 2 to Brazilian Portuguese. Method: Methodological study of cross-cultural adaptation, authorized by the Royal College of Physicians, carried out from July 2020 to July 2021. Approved by the Ethics Committee, under No. 4.247.069 and registered at Plataforma Brasil No. 36540020.4.0000.5292. Judges from the five Brazilian regions, nurses, evaluated the semantic, idiomatic, cultural, and conceptual equivalences between the original material and the translated versions. Nurses working in 30 Brazilian hospitals conducted the pilot test, with the purpose of ensuring that the adapted version preserved the equivalences in relation to the content of the original version. A qualitative analysis of cultural adaptation was performed. Results: The module was cross-culturally adapted, and 94% of the judges' assessments agreed on the equivalence between the original version and the proposed adaptation. Conclusion: The module was adapted to Brazilian Portuguese.

Keywords: Early Warning; Clinical Evolution; Inpatients; Translation; Continuing Nursing Education.

RESUMEN | Objetivo: Adaptar transculturalmente el módulo de cuidados agudos del National Early Warning Score 2 para el portugués brasileño. Método: Estudio metodológico de adaptación transcultural, autorizado por el Royal College of Physicians, realizado en el período de julio de 2020 a julio de 2021. Aprobado por el Comité de Ética, bajo n.º 4.247.069, y registro en la Plataforma Brasil n.º 36540020.4.0000.5292. Jueces de las cinco regiones brasileñas, enfermeros, evaluaron las equivalencias semántica, lingüística, cultural y conceptual entre el material original y las versiones traducidas. Enfermeros actuantes en 30 hospitales brasileños realizaron el examen piloto, con la finalidad de asegurar que la versión adaptada preservaba las equivalencias en relación con el contenido de la versión original. El análisis cualitativo de adaptación cultural fue efectuado. Resultados: El módulo fue adaptado transculturalmente, ya que 94% de las evaluaciones de los jueces fueron de acuerdo con la equivalencia entre la versión original y la adaptación propuesta. Conclusión: El módulo fue adaptado para el portugués brasileño.

Palabras claves: Alerta precoz; Evolución clínica; Pacientes internados; Traducción; Educación continua en Enfermería.

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INTRODUCTION

Hospitalized patients are subject to unexpected changes in their clinical status. The vulnerability presented by inmates in wards is, therefore, a major problem in health institutions. ¹ At the beginning of the 20th century, it was observed that people hospitalized in wards died and suffered unnecessary damage to their health status. Thus, in response to this problem, in 1997 the first EWS (Early Warning Scores) was created. ¹ Since then, the scores have been used internationally in diffe-

rent versions.²

Thus, the EWS are tools developed to assist in the early detection of the worsening of clinical conditions of patients at the bedside, alerting the health team to provide the necessary immediate assistance. To this end, the scores are based on the assumption that the disarray of some physiological parameters may indicate that the patient is at risk of deterioration in his health condition.² The National Early Warning Score (NEWS) outperformed 33 other EWS in detecting patients at risk of cardiac arrest, unplanned admission to an intensive care unit (ICU), or death within 24 hours of admission. Furthermore, a high NEWS score (≥ 5) is also a good predictor of sepsis in patients.³

NEWS was first published in 2012 by the Royal College of Physicians (RCP) and its most recent version, NEWS 2, dates from 2017.⁴ NEWS 2 has as main advantages the better identification of patients with sepsis, the safer use of oxygen supplementation in patients with hypercapnic respiratory failure, and the inclusion of confusion and delirium in the assessment of the level of consciousness.³

The implementation of NEWS 2 in hospitals in England received support from the National Health Service England (NHS) and the NHS Improvement and became the identification score for patients at risk of clinical deterioration, including patients with sepsis, and can be used in the prehospital period, at patient admission and during hospitalization.⁴ That said, as important as the updated design of the score is the training of teams for its use in clinical practice. Thus, in January 2019, the NHS in partnership with the NHS Improvement, Health Education England and RCP have published an English language course on NEWS 2 that provides support tools for its implementation and illustrates practical examples of how it is being implemented in England.⁵ The course has five modules, one for each of the following

areas: acute care, primary care, mental health, ambulance care and home care.⁵

Given the relevance and urgency in the standardization of early warning scores in the reality of hospitals in Brazil, the translation and cross-cultural adaptation of the mentioned module aims to



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facilitate the implementation of NEWS 2 in the Brazilian health system, as a goal for optimizing the early identification of patients at risk of clinical deterioration and the appropriate intervention for these people, reducing the incidence of unfavorable outcomes and positively impacting the health of the population. In addition, as an indirect outcome, it is expected that the implementation of

NEWS 2 can optimize the occupancy of intensive beds, with a decrease in hospital costs.

Thus, the research question was: is it possible to cross-culturally adapt the distance education course on the NEWS 2 early warning score to Brazilian Portuguese?

METHOD

This is a methodological study of translation and cross-cultural adaptation, from English to Brazilian Portuguese, of the Acute Care module of the NEWS 2 e-learning Program carried out from July 2020 to July 2021. This study was authorized for translation and cross-cultural adaptation of the acute care module of the NEWS 2 e-learning Program, by the coordinators of the RCP Quality and Patient Safety Improvement Program.

The NEWS 2 e-learning program contains 5 online modules, and module 01 Acute Care contains support texts on the implementation of NEWS 2 in acute care, reflection and fixation exercises at the end of each content studied and 5 case studies in acute treatment.⁵ It is noteworthy that module 01 of the NEWS 2 e-learning Program is not a psychometric instrument and was not found in the literature, a methodological reference that would cover the adaptation of this type of material. Therefore, it was decided to follow the steps proposed internationally⁶ which comprise: A. Translation from the source language to the target language by two professionals; B. Synthesis of translations; C. Evaluation of the synthesized translation by a group of judges; D. Back translation e. Pilot test.

The mentioned steps should be understood as guiding guidelines for a better quality of the translation and cross-cultural adaptation process.³ In view of this, it was decided not to carry out a back-translation of all the material, but only

of the passages suggested for changes, after the appreciation of the committee of judges and a pilot test. First, the material was translated into the target language, Portuguese, independently, by two sworn translators fluent in English, and one of the translators was not informed about the objectives and concepts of the material to be translated. The translation into Portuguese in the Brazilian context of the Acute Care module of the NEWS 2 e-learning Program resulted in Brazilian version 1 (V1 BR) and Brazilian version 2 (V2 BR). Such versions were compared by the translators, discussed and doubts resolved. Thus, the synthesis of the two versions was obtained, resulting in the Brazilian version 1.2 (V1.2 BR).

Based on the translated and synthesized version (V1,2 BR), this material was evaluated and compared with the original English version (OV ENG) by a committee of judges. These were guided by an instrument that contained the presentation of the research, its objectives and all the instructions on how to proceed with the evaluation of the material, in addition to the means of contacting the researchers, in case of doubts. The committee of judges was composed of one representative of the Nursing Management area per region (North, Northeast, Midwest, Southeast, South) of the Hospitals that are part of the network of the Brazilian Hospital Services Company (Ebserh). All participants were nurses and had knowledge about the subject and the English language. The main function of the panel of judges was to compare the original materials with the translated version, in order to assess the translation in terms of semantic, idiomatic, cultural and conceptual equivalence, that is, to adapt the course to the Brazilian context.⁷⁻⁸

The profile of the five judges participating in the study is one from 30 to 39 years old, three from 40 to 49 years old and one from 50 to 59 years old. Three had a specialization or residency, one had a master's degree and another

had a doctorate. The training time was four from 11 to 20 years and one from 21 to 30 years. After the expert committee agreed on the items, a compendium was created with all the consensual suggestions regarding the textual content, resulting in the Brazilian version 3 (V3 BR). In this V3 BR version, the part to be changed was highlighted, but without deleting the original, in order to facilitate the visualization of the suggestions, for the judgment of the translators as to whether or not to adhere to them. The two professionals who translated the module also back-translated the suggested passages. After appreciating the content and making relevant changes, the Brazilian version 4 (V4 BR) resulted, which was used in the pilot test stage, in Phase 2 of this research.

Phase 2 consisted of applying the material to a group of people, in order to ensure that the adapted version preserved the equivalences in relation to the content of the original version. In addition, it helped in the detection of errors and the presence of ambiguities and confirmed whether the contents were understandable. Twenty-eight nurses from the Ebserh Network from all regions of the country participated in the test of the version (V4 BR). Subsequently to the test of version 4, all the suggestions for modifying words and/or phrases of the items that they deemed necessary to undergo changes were gathered, resulting in version 5, Brazilian (V5 BR).

The profile of the 28 nurses participating in the pilot test is that one was between 20 and 29 years old, 15 between 30 and 39 years old, eight between 40 and 49 years old, four between 50 and 59 years old. Graduate, 18 had a specialization or residency, five had a master's degree and four had a doctorate, and one reported not having a graduate degree. The training time of five was from six to 10 years, 17 from 11 to 20 years and six from 21 to 30 years. The time working in health was one for less than one year, two for two to five years,

15 for 11 to 20 years and eight for 21 to 30 years. Subsequently, this version was sent to the translators for analysis and back-translation of the excerpts indicated in the pilot test, resulting in version 6, Brazilian (V6 BR), understood as the final version of module 01 of the NEWS 2 e-learning Program, translated and adapted to the Brazilian Portuguese language.

After completing the final version (V6 BR) of module 01 of the NEWS 2 e-learning Program translated and adapted to Brazilian Portuguese, was sent for production as a course in Distance Learning format in the Virtual Learning Environment of the Unified Health System (AVASUS) under the electronic address <https://avasus.ufrn.br>. In addition, the module will also be available on the Distance Education Platform of the Escola da Empresa Brasileira de Serviços Hospitalares (EBSERH) of Corporate Education - 3EC under the electronic address <https://3ec.ebserh.gov.br>. It is noteworthy that the ethical principles of Resolution No. 466/12, of the National Health Council, were respected, and the research was approved by the Ethics Committee, under No. 4,247,069 and registered in Plataforma Brasil No. 36540020.4.0000.5292. The guidelines for procedures in research with any stage in a virtual environment of the National Research Ethics Committee were respected.

RESULTS

As recommended, 6 the results of the translation and cross-cultural adaptation of the acute care module of the NEWS 2 e-learning Program into Brazilian Portuguese are presented considering the six steps described in Figure 1.

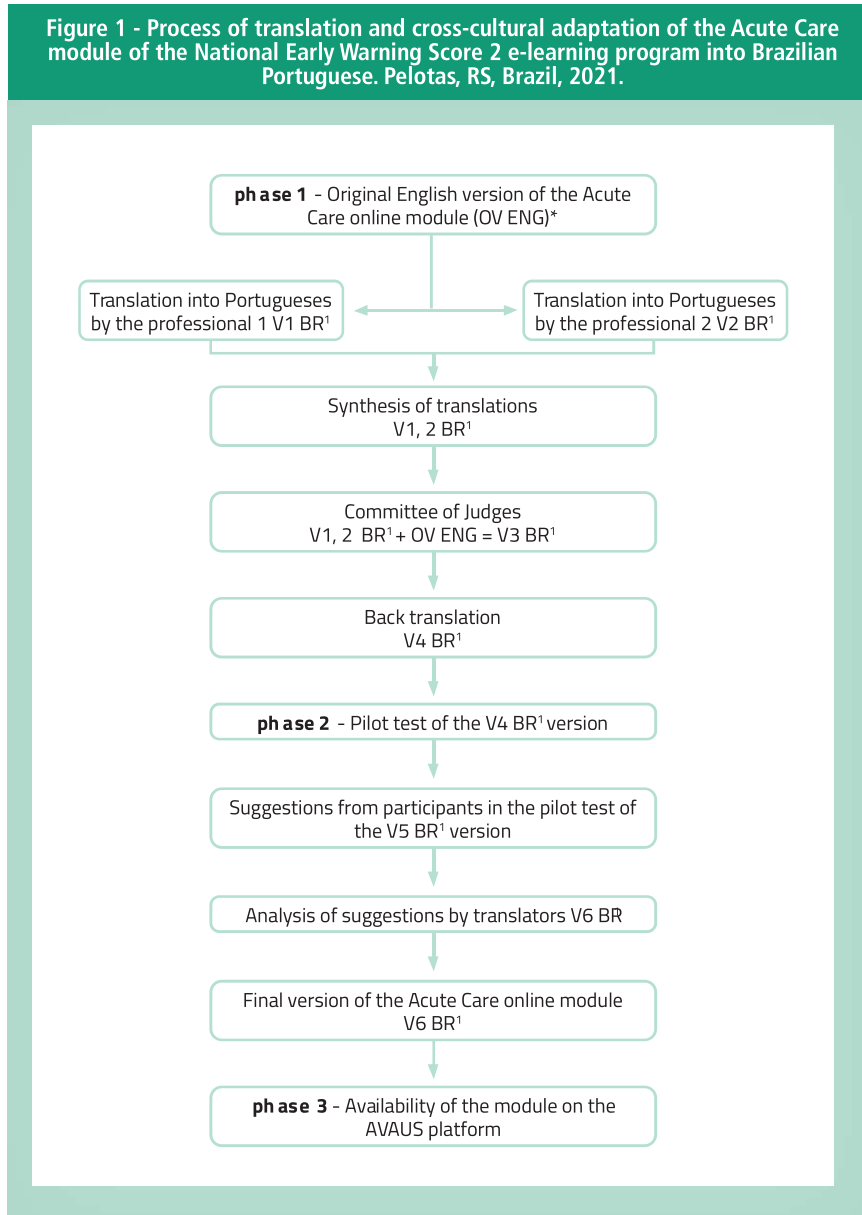
The professionals took about a month to return the module evaluated. In total, the judges suggested 19 words and/or phrases that should undergo changes in terms of textual equivalence, described in Chart 1. The pilot test participants

suggested two grammatical corrections, which, analyzed by the researcher, were transcribed, consisting of the Brazilian version 5 (V5 BR). Then, it was sent to the translators for consideration as to the relevance of the suggestions, which were accepted because they were verbal and/or nominal agreements, giving greater clarity to the sentences, resulting in the final Brazilian version 6 (V6 BR) of the acute care module of the NEWS 2 e-learning Program, translated and adapted to the Brazilian Portuguese language.

DISCUSSION

Early warning scores are tools with excellent predictive value for recognizing patients at risk of deteriorating their health status in the hospital environment.²⁻⁴ They stand out for their influence on clinical results, impact, uniformity of communication and the possibility of automating some processes.² The most important advantage of these scores is that they are easy to use and interpret and therefore provide a common language for healthcare professionals. However, inaccurate records or inappropriate reactions to abnormal scores can undermine the benefits of these systems.²

The universal language of early warning scores improves communication between healthcare professionals, but this is not always reflected in the scale response.²⁻⁵ Its importance is due to the fact that there is great heterogeneity in the training of health professionals responsible for the care of patients hospitalized in hospital wards, which makes it difficult to identify clinical worsening and increases the probability of serious adverse events. Thus, it is necessary to train the professionals involved for a standardization of care based on the protocol of the score to be used. This was the purpose of the present study, which may contribute to the continued formation of hospital health teams across the



Source: The author, 2021.*OV ENG: original version in English/ 1V no BR: version with its respective number, in Portuguese, in the Brazilian context.

country. As for the method adopted for its adaptation, it is noteworthy that the acute care module is not a psychometric instrument, but a teaching module for learning skills. With regard to NEWS 2, this process is unprecedented, and there are incipient data related to the cross-cultural adaptation of educational modules.⁹

Still, there are numerous strategies for the cross-cultural adaptation process, ranging from a simple translation by researchers to a more detailed method that encompasses and highlights the need for different nuances in the cross-cultural adaptation process, highlighting the importance of valuing the phases of this process, since by following them, the

veracity and quality of the information collected is guaranteed.⁷ The importance of this process is given in the search

for maximum equivalence between the original content and its translated version, not only semantically, through cor-

rect translation, but also cultural, with an adequate and coherent language for the dissemination of content in the target

Chart 1 - Presentation of the evolution, according to stages 1, 2, 3 and 4 of the cross-cultural adaptation of the Acute Care module of NEWS 2. Pelotas, RS, Brazil, 2021.

Item	Original version	Step II V1,2 BR	Step III V3 BR	Step IV V4 BR	Final Version Post-Committee of Judges	Equivalences
1	List the main ways in which NEWS2 is to be used	Listar as principais fórmulas em qual o NEWS2 deve ser usado	Replace the word "fórmulas" for "maneiras"	ways = maneiras	Listar as principais maneiras em qual o NEWS 2 deve ser usado	Idiomatic
2	Trigger: To provide a standardized platform for the initial assessment of acute illness severity wherever assessment occurs	Acionar: Fornecer uma plataforma padrão para a avaliação inicial de doenças agudas severas onde quer que ela ocorra	Correct the word "agidas" for "agudas"	acute = agudas	Acionar: Ao acionar o paciente, o NEWS2 fornece uma plataforma padrão para a avaliação inicial de doenças agudas severas onde quer que elas ocorram	Spelling corrected
3	Facilitates timely trial get to the most appropriate setting	Facilita a triagem oportuna para configurações mais adequadas	Replace the word "configurações" for "ambiente"	setting = cenário	Facilita a triagem oportuna para o cenário mais apropriado	Idiomatic
4	Aids recognition of clinical deterioration	Recursos para o reconhecimento de da deterioração clínica	Correct the word "deterioração"	deterioration = deterioração *The word "deteriorização" was correct. *Removed the preposition "de" from the sentence.	O NEWS2 possui recursos para o reconhecimento da deterioração clínica do paciente	Spelling corrected
5	Baseline physiological parameters differ in children and in pregnancy where the magnitude and character of the physiological response to acute illness also differ	Os parâmetros fisiológicos básicos diferem em crianças e na gravidez onde a magnitude e caráter da resposta fisiológica das doenças agudas também diferem.	Replace the word "caráter" for "característica"	character = característica	Os parâmetros fisiológicos básicos diferem em crianças e na gravidez, onde a magnitude e a característica da resposta fisiológica das doenças agudas também diferem	Semantics
6	Record the score for each of the 6 physiological parameters on the NEWS2 observation chart	Documentar a pontuação de cada um dos seis parâmetros fisiológicos no cartão de observação do NEWS2	Substituir a palavra "documentar" por "registrar"	Record = registro	No segundo passo, você deve registrar a pontuação de cada um dos seis parâmetros fisiológicos no cartão de observação do NEWS2	Cultural
7	The clinical competencies of the responder(s)	A competência clínica do respondente	Substituir a palavra "respondente" por "entrevistado"	The responder = respondente	A competência clínica do respondente	Sugestão não acatada

8	The frequency of clinical monitoring required	A frequência do monitoramento clínico necessário	Incluir a palavra "exigida"	The frequency of clinical monitoring required = A frequência do monitoramento clínico necessário *Palavra incluída por não alterar o sentido da frase.	A frequência exigida do monitoramento clínico	Semântica
9	The respiratory rate may also be elevated as a consequence of generalized pain and distress, sepsis remote from the lungs, CNS disturbance and metabolic disturbances such as metabolic acidosis	A frequência respiratória também pode estar elevada como consequência de dor e angústia generalizada, sepse removida dos pulmões, distúrbios no SNC (sistema nervoso central) e distúrbios metabólicos, tais como acidose metabólica	*Substituir a frase "sepse removida dos pulmões" por "sepse pulmonar" *Substituir a frase "sepse removida dos pulmões" por "sepse de foco pulmonar"	...sepsis remote from the lungs... = sepse de origem pulmonar	A frequência respiratória também pode estar elevada como consequência de dor e angústia generalizada, sepse de origem pulmonar, distúrbios no sistema nervoso central (SNC) e distúrbios metabólicos, tais como acidose metabólica	Cultural
9	Na elevated respiratory rate is a powerful sign of acute illness and distress in all patients	Uma frequência respiratória elevada é um sinal forte de doença aguda ou angústia em todos os pacientes	*Inserir a preposição de na frase é um sinal forte de doença aguda."	*Inserida a preposição "de" na frase.	Você verá que uma frequência respiratória elevada é um sinal forte de doença aguda ou geradora de angústia nos pacientes	Corrigida ortografia
10	For the majority of patients scale 1 should be used, with scale 2 be used for patients with hypercapnic respiratory failure	Para a maioria dos pacientes a Escala 1 deve ser usada, com a Escala 2 sendo usada para pacientes com insuficiência respiratória hipercápnica	Corrigir a palavra "hipercápnica"	hypercapnic = hipercápnica	A Escala 1 deve ser usada para a maioria dos pacientes, entretanto, para pacientes com insuficiência respiratória hipercápnica a Escala 2 deve ser usada	Sugestão não acatada
11	Click on the following buttons for more information	Clique nos botões a seguir para mais informações	Corrigir a palavra "botens" por "botões"	buttons = botões	Para prosseguir e ter mais informações sobre cada uma das escalas, clique nos botões abaixo:	Corrigida ortografia
12	During clinical assessment, the six NEWS2 physiological parameters should be recorded	Durante a avaliação clínica, os seis parâmetros fisiológicos do NEWS2 devem ser documentados	Substituir a palavra "documentados" por "registrados"	recorded = registrado	Durante a avaliação clínica, os seis parâmetros fisiológicos do NEWS2 devem ser registrados	Cultural
13	Click on the icons below to learn more about physiological parameters	Clique no ícone abaixo para aprender para aprender mais sobre Parâmetros Fisiológicos	Palavras repetidas "para aprender"	*As palavras repetidas foram retiradas	Clique em cada um dos ícones abaixo para aprender mais sobre os Parâmetros Fisiológicos que estruturam o NEWS2	Corrigida ortografia
14	The SPO2 scoring system that would apply to the majority of patients	O sistema de pontuação SpO2 que se aplica a maioria dos pacientes.	Sugiro retirar o pronome "que" da frase, pois da ideia de não conclusão da afirmação	*Foi retirado o pronome "que" da frase	O sistema de pontuação SpO2 se aplica a maioria dos pacientes	Corrigida ortografia

15	The non-invasive measurement of oxygen saturation by pulse oximetry is routinely used in clinical assessment in the acute setting	A medição da saturação de oxigênio não invasiva pela oximetria do pulso é rotineiramente usada em avaliações clínicas em quadros agudos	Substituir a frase "avaliações clínicas em quadros" por "avaliações clínicas nos quadros"	Substituída a frase "avaliações clínicas em quadros" por "avaliações clínicas nos quadros"	A medição não invasiva da saturação de oxigênio por oximetria de pulso é rotineiramente usada nas avaliações clínicas nos quadros agudos	Corrigida ortografia
16	It may also be due to cardiac arrhythmia, metabolic disturbance, e.g. hyperthyroidism, or drug intoxication, e.g. sympathomimetics or anticholinergic drugs	Também pode ser devido arritmia cardíaca, perturbação metabólica, por exemplo hipertireoidismo ou intoxicação por drogas, por exemplo, simpaticomiméticos ou drogas anticolinérgicas.	*Substituir a palavra "drogas" por "medicamentos" *Substituir a frase "perturbações metabólicas" por "distúrbios metabólicos"	*metabolic disturbance = distúrbio metabólico *drug = medicamento	Também pode ser devido a arritmia cardíaca ou distúrbio metabólico, como por exemplo, o hipertireoidismo ou por intoxicação de medicamentos simpaticomiméticos ou anticolinérgicos	Cultural
	Such patients will have spontaneous opening of the eyes, will respond to voice (although may be confused) and will have motor function	Esses pacientes terão abertura espontânea dos olhos respondem a voz (embora possa estar confuso) terá função motora.	*Corrigir para "... dos olhos, respondem." *Após os parênteses acrescentar a conjunção "e" terá função motora...	*Spontaneous opening of the eyes = abertura espontânea dos olhos *and will have motor function = e terá função motora	Esse paciente tem abertura ocular espontânea e responde à voz. Embora ele possa estar confuso, demonstra função motora	Corrigida ortografia
18	NEWS2 includes "new confusion" as part of the assessment of consciousness, hence the term ACVPU rather than AVPU to reflect this change	NEWS2 inclui uma "nova confusão" como parte da avaliação da consciência, daí o termo a CPV invés de AVP para refletir essa mudança	Sugerido substituir: "invés de" por "ao contrário de"	Rather than = ao invés de Sinônimo de "ao invés de" - "ao contrário de"	O NEWS2 inclui uma "nova confusão" como parte da avaliação da consciência, daí o termo ACVPU ao contrário de AVPU para refletir essa mudança	Semântica
19	Scale 2 is the scale to be used for patients with hypercapnic respiratory failure and a recommended oxygen saturation range of 88-92%	A escala 2 é a escala ser usada para pacientes com insuficiência respiratória hipercápnica e uma faixa de saturação de oxigênio recomendada de 88-92%	Corrigir a palavra "escala" por "escala"	scale = escala	A escala 2 é a escala a ser usada para pacientes com insuficiência respiratória hipercápnica e uma faixa de saturação de oxigênio recomendada de 88-92%	Corrigida ortografia

Source: Author himself, 2021

country, something pursued in the research method of this study, which collected data from judges and nurses from all regions of the country, which is an important advantage.⁸

The relatively low adherence of professionals to carry out the pilot test and the pandemic itself caused an important interference in the routine of workers participating in this research. It is also noteworthy that the offer of this remo-

te training to professionals from all over the country could bring about important changes in the care of inpatients, culminating in the improvement of the quality indices of care and hospital management in Brazil.

CONCLUSION

The process of translation and cross-cultural adaptation related to the acute

care module of the NEWS 2 e-learning Program was successfully completed, resulting in material suitable for the Brazilian Portuguese language, understandable and with content agreement.

This study makes an important contribution to the health area by providing a course in distance learning format, considering that open access to the AVASUS platform will enhance the training of health teams across the country. 🐦

References

- 1 Gerry S, Bonnici T, Birks J, Kirtley S, Virdee OS, Watkinson PJ, Collins GS. Early warning scores for detecting deterioration in adult hospital patients: systematic review and critical appraisal of methodology. *BMJ*. [Internet]. 2020 [citado em 10 de novembro de 2021]. Disponível em: <https://www.bmj.com/content/369/bmj.m1501>
- 2 Downey CL, Tahir W, Randell R, Brown JM, Jayne DG. Strengths and limitations of early warning scores: A systematic review and narrative synthesis. *Int J Nurs Stud*. [Internet]. 2017 [citado em 10 de novembro de 2021] Disponível em: <https://pubmed.ncbi.nlm.nih.gov/28950188/>
- 3 Mohammed M, Faisal M, Richardson D, Scally A, Howes R, Beatson K, Irwin S, Speed K. The inclusion of delirium in version 2 of the National Early Warning Score will substantially increase the alerts for escalating levels of care: findings from a retrospective database study of emergency medical admissions in two hospitals. *Clinical Medicine*. [Internet]. 2019 [citado em 10 de novembro de 2021] Disponível em: [10.7861/clinmedicine.19-2-104](https://doi.org/10.7861/clinmedicine.19-2-104).
- 4 Pimentel MAF, Redfern, OC, Gerry S, Collins GS, Malycha J, Prytherch D, Schmidt PE, Smith GB, Watkinson PJ. A comparison of the ability of the National Early Warning Score and the National Early Warning Score 2 to identify patients at risk of in-hospital mortality: a multi-centre database study. *Resuscitation*. [Internet]. 2019 [citado em 11 de novembro de 2021]. Disponível em: <https://pubmed.ncbi.nlm.nih.gov/30287355/>
- 5 Royal College of Physicians: National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS. Updated report of a working party: RCP. [Internet]. 2017 [citado em 11 de novembro de 2021]. Disponível em: <https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2>
- 6 Beaton D, Bombardier C, Guillemin F, Ferraz MB. Recommendations for the Cross-Cultural Adaptation of DASH & Quick DASH Outcome Measures. Institute for Work & Health. [Internet]. 2007 [citado em 10 de novembro 2021]. Disponível em: <http://www.dash.iwh.on.ca/assets/images/pdfs/X-CulturalAdaptation-2007.pdf>
- 7 Silva LA. Tradução e adaptação transcultural da Celiac Self-Efficacy Scale para a língua portuguesa do Brasil. 2020. 127 f. Dissertação (Mestrado em Enfermagem) - Faculdade de Farmácia, Odontologia e Enfermagem, Universidade Federal do Ceará, Fortaleza, 2020.
- 8 Prodosíssimo AF, Dias JPP, Iankilevich L, Souza JM. Validação, tradução e adaptação transcultural de instrumentos de pesquisa clínico-educacionais: uma revisão integrativa. *Espac. Saúde*. [Internet]. 2021 [citado em 15 de novembro de 2021]. Disponível em: [10.22421/1517-7130/es.2021v22.e736](https://doi.org/10.22421/1517-7130/es.2021v22.e736)
- 9 Borges TAP, Vannuchi MTO, Grosseman S, González AD. Adaptação transcultural para o Brasil do módulo on-line DocCom: comunicação para o trabalho em equipe. *Rev. Latino-Am. Enfermagem*. [Internet]. 2017 [citado em 10 de novembro de 2021]. Disponível em: <https://doi.org/10.1590/1518-8345.1554.2924>