French translation of the Johns Hopkins Adapted Cognitive Examination

Thomas Godet, Sophie Dufraisse, Matthieu Kurrek, Jean-Michel Constantin, Gerald Chanques

Thomas Godet[a,*], Sophie Dufraisse[b], Matthieu Kurrek[c,d]
Jean-Michel Constantin[e], Gérald Chanques[f]
[a]Centre Hospitalier Universitaire (CHU) Clermont-Ferrand, Département Anesthésie et Réanimation, F-63000 Clermont-Ferrand, France
[b]Centre Hospitalier de Rodez, Département d'Anesthésie, Hôpital Jacques Puel, Rodez, 12027 Cedex 9, France
[c]Department of Anaesthesia, University of Toronto, Toronto, Canada
[d]Centre Hospitaller Universitaire (CHU) Toulouse, Département Anesthésie-Réanimation, Hôpital Purpan, Toulouse, F-31000, France
[e]Sorbonne University, GRC 29, AP-HP, DMU DREAM, Department of Anaesthesiology and Critical Care, Pitié-Salpêtrière Hospital, Paris, France
[f]Centre Hospitalier Universitaire (CHU) Montpellier, Département Anesthésie-Réanimation B (DAR B), Hoôpital Saint-Eloi, and Inserm U-1046, F-34295 Montpellier, France

French translation of the Johns Hopkins Adapted Cognitive Examination

ARTICLE INFO

Keywords:
Intensive care unit
Critical care
Cognitive function

Introduction

Medicine has turned from paternalism to patient-centred decisions (principle of autonomy). Main prerequisite is patient's competence to fully understand relevant medical information, integrate it to properly evaluate decision's consequences, and finally render comprehensive willingness. Cognitive function must be evaluated prior to any decision-making process, such as legal right to consent or decline investigations, procedures, or treatments, and/or end-of-life directives.

This process necessitates patient's ability to appropriately communicate. Intensive care unit (ICU) patients are usually intubated –rendering oral communication mostly impossible- and get sedated with various medications [1]. Despite an apparently appropriate communication, some of them are confused [2]. Confusion is regularly under diagnosed and necessitates specific tools such as the confusion assessment method for the ICU (CAM-ICU) [3] and/or the intensive care delirium screening checklist (ICDSC) [4]. While not confused, a patient might remain incompetent, meaning despite obvious communication, more elaborated cognitive function and decision-making processes remain inappropriate. Alterations in cognition may occur from different sources or conditions (*e.g.*, inflammation, hypoxaemia, low cardiac output and oxygen delivery, glucose dysregulation...). The influences of sedation and analgesia drugs on cognitive function remain unknown to date. Detection of these cognitive abnormalities can be challenging and have to be evaluated with dedicated scores such as the Johns Hopkins adapted cognitive examination (ACE), which has been evaluated against the mini-mental state examination (MMSE) [5]. MMSE remains difficult to use in intubated patients since verbal responses are required. Bedside evaluation of neuro-cognitive function requires exploration of five domains: orientation, registration, attention and calculation, recall, and language, which are incorporated in Johns Hopkins ACE and MMSE. To be used in French speaking ICUs and serve both in the clinical and research settings, a validated translation in French of ACE is mandatory. We report herein the full translation process of Johns Hopkins ACE.

Material and methods

Translation was conducted following international guidelines on adaptation and translation of medical tools [6]. The translation from American English into French was conducted by an American teacher of French language, working as a translator, bilingual, living in the United States of America (Bend, Oregon), born in France, not familiar with the original method (PKO). Medical French speaking edits were made by two intensivists (JMC and SD). The second version was read by three independent anaesthesiologists and intensivists (GC and TG) to improve the editing. The third version of the questionnaire was back translated by a native English-French bilingual speaker, Canadian native, Professor of anaesthesiology from University of Toronto (MK). The English version was compared to the original one and discrepancies between versions were discussed before final version approval.

Fig. 1 shows whole process timeline. Johns Hopkins ACE French version is available in the Electronic Supplementary Material (ESM).

Results

The entire process took 6 months, between October 2016 and April 2017 (Fig. 1). The original score is composed of 5 items (orientation, language, registration, attention and calculation, and recall) with practical recommendations to properly conduct the test and methods to process results. This version also comprises two visual support cards each associated with a group of three words. Six hundred and thirteen words have been translated. Discrepancies have been found in nine words (1.5%) and two sentences between the back translated and the original English version. Table 1 shows the number and type of discrepancies, and final decision regarding changes: one simple mistake of translation has been corrected; two words have been modified to stick with geographic situation. These words were those proposed as answers to the question "Is the country we are in". "Canada" and "USA" have been respectively changed into "Belgium (*Belgique*)" and "France (*France*)". Two other translated words have been modified according to cultural aspects. "Kazoo" has not been translated into "*mirliton*" but into "*harmonica*", to be more easily understood. "Nursing home" has been translated into "*maison de retraite*". The four other words concerned with discrepancies have not conducted to any change of the French version, as they were mistakes in the back-translation (synonyms, confusion noun/verb). Concerning the two sentences, semantic mistakes conducting to non-sense were corrected following reformulations. Finally, 64% of discre-

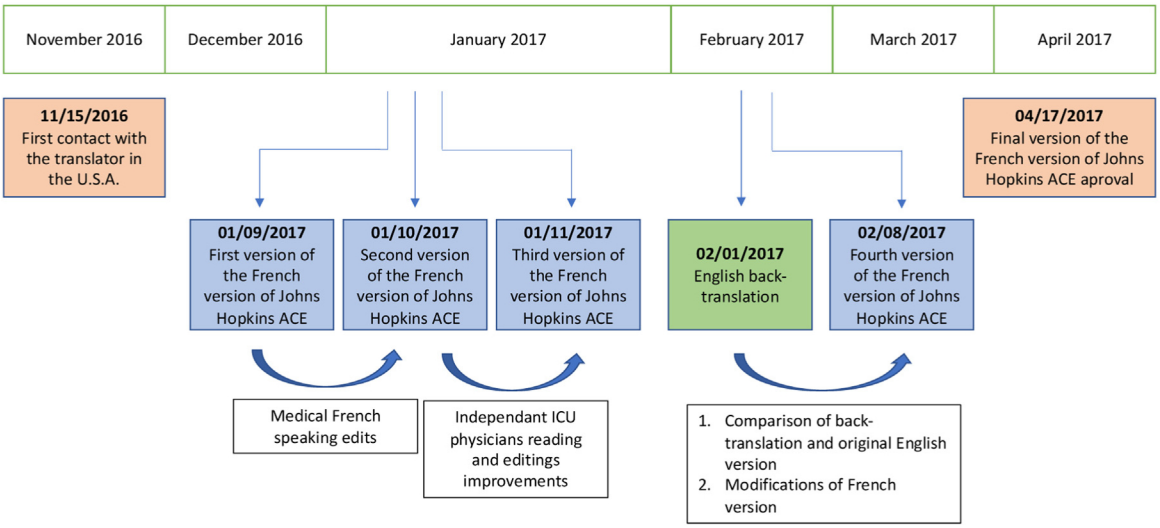

Fig. 1. Timeline of Johns Hopkins ACE translation process into French.

Table 1
Discrepancies between the back-translated and the original VERSIONS American English of the Johns Hopkins ACE.

Type of differences and number of differences between the back-translated and the English original versions of the Johns Hopkins ACE (n = 613 words)	Final change in the French version
A: Geographic (n = 2)	2 changes made. Geographic adaptations in accordance with French and American teams: "Canada" to "Belgium" (*Belgique*) "USA" to "France" (*France*)
B: Cultural (n = 2)	2 changes made: "Kazoo" to "*harmonica*" "Nursing home" to "*maison de retraite*"
C: 5 words (n = 5)	4 no change: errors in back-translation only 1 change made: simple translation error
Different meanings of sentences (n = 2)	2 changes made: semantic meanings. Mutual rephrasing accepted.
Summary, n = 11	No Change: n = 4 (36%) Change made: n = 7 (64%)

List of abbreviations: ACE: Adapted Cognitive Exam; USA: United States of America.

pancies lead to changes in the final French version. None of these discrepancies were considered as important changes.

Discussion

Cognitive function evaluation of ICU patients is a worldwide prerequisite in patient-centred medicine, usually based on subjective opinions of clinicians. Cognitive function and decision-making capacity might be poorly correlated to clinical opinions, rendering reliable scores mandatory.

The ACE is the first valid and reliable examination for the assessment and quantification of cognition in intubated and non-intubated ICU patients [5]. It provides a useful, objective tool that can be utilised by any member of the critical care team. ACE, a 100-point scale test, assesses cognition through five fields: orientation, language, registration, attention/calculation, and recall. This 10 min exam only rely on the ability to demonstrate responses as yes/no format or multiple choice questions and simple motor tasks without any verbal communication. The ACE has an excellent overall correlation with the MMSE and expert's assessments of cognitive impairment [5].

Many other factors might interfere with cognitive function and possibly decision-making capacity of ICU patients. Among those, the precise impact of sedatives and analgesics on cognitive function remains unknown to date and needs to be properly investigated.

Cognitive function is a highly complex multi-component process. Cognition has been linked to decision-making capacity in hospitalised patients. Johns Hopkins ACE score might become a surrogate of decision-making capacity in neurocognitive evaluations (similarly to MMSE [7]), but this postulate remains to be further investigated. Rigorous translation of Johns Hopkins ACE score into French might become useful to physicians interested in cognitive function evaluation of ICU patients.

Conclusion

The present Johns Hopkins ACE translation from American English into French follows recommended process through a collaborative approach between American, Canadian and French teams. Hopefully this rigorous French translation might become useful to French-speaking physicians interested in cognitive function of ICU patients and will help the conduct of large studies evaluating the impact of different conditions on cognitive function in ICU patients.

Human and animal rights

The authors declare that the work described has been carried out in accordance with the Declaration of Helsinki of the World Medical Association revised in 2013 for experiments involving humans as well as in accordance with the EU Directive 2010/63/EU for animal experiments.

Informed consent and patient details

The authors declare that this report does not contain any personal information that could lead to the identification of the patient(s).

Disclosure of interest

The authors declare that they have no known competing financial or personal relationships that could be viewed as influencing the work reported in this paper.

Funding

This work did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contributions

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship.

TG, SD, MK, JMC and GC designed the study.

TG, SD, MK, JMC and GC conducted translation work.

Acknowledgments

We are indebted to Pascaline Klein-Ocana, professional translator, for her translation from American English into French of Johns Hopkins ACE.

References

[1] Devlin JW, Skrobik Y, Gélinas C, Needham DM, Slooter AJC, Pandharipande PP, et al. Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. Crit Care Med 2018;46(9):e825–73. http://dx.doi.org/10.1097/CCM.0000000000003299. PubMed PMID: 30113379.

[2] Stollings JL, Kotfis K, Chanques G, Pun BT, Pandharipande PP, Ely EW. Delirium in critical illness: clinical manifestations, outcomes, and management. Intensive Care Med 2021;47(10):1089–103. http://dx.doi.org/10.1007/s00134-021-06503-1. Epub 20210816. PubMed PMID: 34401939; PubMed Central PMCID: PMCPMC8366492.

[3] Chanques G, Garnier O, Carr J, Conseil M, de Jong A, Rowan CM, et al. The CAM-ICU has now a French "official" version. The translation process of the 2014 updated Complete Training Manual of the Confusion Assessment Method for the Intensive Care Unit in French (CAM-ICU.fr). Anaesth Crit Care Pain Med 2017;36:297–300. http://dx.doi.org/10.1016/j.accpm.2017.02.003. PubMed PMID: 28365244.

[4] Bergeron N, Dubois MJ, Dumont M, Dial S, Skrobik Y. Intensive care delirium screening checklist: evaluation of a new screening tool. Intensive Care Med 2001;27(5):859–64. PubMed PMID: 11430542.

[5] Lewin 3rd JJ, LeDroux SN, Shermock KM, Thompson CB, Goodwin HE, Mirski EA, et al. Validity and reliability of The Johns Hopkins Adapted Cognitive Exam for critically ill patients. Crit Care Med 2012;40(1):139–44. http://dx.doi.org/10.1097/CCM.0b013e31822ef9fc. PubMed PMID: 21926576.

[6] Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, et al. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. Value Health 2005;8(2):94–104. http://dx.doi.org/10.1111/j.1524-4733.2005.04054.x. PubMed PMID: 15804318.

[7] Etchells E, Darzins P, Silberfeld M, Singer PA, McKenny J, Naglie G, et al. Assessment of patient capacity to consent to treatment. J Gen Intern Med 1999;14(1):27–34. http://dx.doi.org/10.1046/j.1525-1497.1999.00277.x. PubMed PMID: 9893088; PubMed Central PMCID: PMCPMC1496441.

Thomas Godet[a,*], Sophie Dufraisse[b], Matthieu Kurrek[c,d]
Jean-Michel Constantin[e], Gérald Chanques[f]

[a]*Centre Hospitalier Universitaire (CHU) Clermont-Ferrand, Département Anesthésie et Réanimation, F-63000 Clermont-Ferrand, France*

[b]*Centre Hospitalier de Rodez, Département d'Anesthésie, Hôpital Jacques Puel, Rodez, 12027 Cedex 9, France*

[c]*Department of Anaesthesia, University of Toronto, Toronto, Canada*

[d]*Centre Hospitaller Universitaire (CHU) Toulouse, Département Anesthésie-Réanimation, Hôpital Purpan, Toulouse, F-31000, France*

[e]*Sorbonne University, GRC 29, AP-HP, DMU DREAM, Department of Anaesthesiology and Critical Care, Pitié-Salpêtrière Hospital, Paris, France*

[f]*Centre Hospitalier Universitaire (CHU) Montpellier, Département Anesthésie-Réanimation B (DAR B), Hoôpital Saint-Eloi, and Inserm U-1046, F-34295 Montpellier, France*

[*]Corresponding author at: Centre Hospitalier Universitaire (CHU) de Clermont-Ferrand, Département Anesthésie Réanimation, Pôle de Médecine Périopératoire (MPO), Hôpital Estaing, 1 place Lucie et Raymond Aubrac, 63001 Clermont-Ferrand Cedex 1, France
E-mail address: tgodet@chu-clermontferrand.fr (T. Godet)