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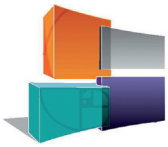

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Original article

A new process-centered description tool to initiate meta-reporting methodology in healthcare – 7CARECAT™. Feasibility study in a post-anesthesia care unit

Un nouvel outil, centré sur les procédés, destiné au développement d'une méthodologie de méta-analyse dans le domaine des soins – 7CARECAT™. Étude de faisabilité en salle de surveillance post-interventionnelle

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ABSTRACT

Background. – In the healthcare domain, different analytic tools focused on accidents appeared to be poorly adapted to sub-accidental issues. Improving local management and intra-institutional communication with simpler methods, allowing rapid and uncomplicated meta-reporting, could be an attractive alternative.
Methods. – A process-centered structure derived from the industrial domain - DEPOSE(E) - was selected and modified for its use in the healthcare domain. The seven exclusive meta-categories defined - Patient, Equipment, Process, Actor, Supplies, work Room and Organization- constitute 7CARECAT™. A collection of 536 "improvement" reports from a tertiary hospital Post anesthesia care unit (PACU) was used and four meta-categorization rules edited prior to the analysis. Both the relevance of the metacategories and of the rules were tested to build a meta-reporting methodology. The distribution of these categories was analyzed with a χ 2 test.
Results. – Five hundred and ninety independent facts were collected out of the 536 reports. The frequencies of the categories are: Organization 44%, Actor 37%, Patient 11%, Process 3%, work Room 3%, Equipment 1% and Supplies 1%, with a p-value < 0.005 (χ 2). During the analysis, three more rules were edited. The reproducibility, tested randomly on 200 reports, showed a $< 2\%$ error rate.
Conclusion. – This meta-reporting methodology, developed with the 7CARECAT™ structure and using a reduced number of operational rules, has successfully produced a stable and consistent classification of sub-accidental events voluntarily reported. This model represents a relevant tool to exchange meta-informations important for local and transversal communication in healthcare institutions. It could be used as a promising tool to improve quality and risk management.

RÉSUMÉ

Contexte. – Dans le domaine des soins, les différents outils dédiés à l'analyse des accidents apparaissent peu adaptés à la prise en charge des enjeux sous-accidentels. Pour améliorer le management local et la communication intra-institutionnelle, des méthodes plus simples, basées sur le méta-reportage, peuvent représenter une alternative attrayante.
Méthode. – Une structure méta-catégorielle issue du domaine industriel et centrée sur les procédés – DEPOSE(E) – a été choisie et adaptée pour un usage dans le domaine des soins. Sept méta-catégories – patient, équipement, procédé, acteur, consommables, local (de travail), organisation – constituent la

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structure 7CARECAT™. Un recueil de 536 bulletins « d'amélioration », provenant d'une salle de surveillance post-interventionnelle, a été utilisé et quatre règles de méta-catégorisation définies au préalable. À la fois la pertinence des méta-catégories ainsi que celle des règles ont été testées afin de construire une méthodologie de méta-reportage. La distribution des méta-catégories a été analysée par un test de χ^2.

Résultats. – Cinq cent quatre-vingt-dix faits essentiels ont été extraits des 536 fiches analysées et attribuées à une des sept méta-catégories : organisation 44 %, acteur 37 %, patient 11 %, procédé 3 %, local (de travail) 3 %, équipement 1 % et consommables 1 % ; $p < 0{,}005$ (χ^2). En cours d'étude, trois nouvelles règles ont été adoptées. Un test de reproductibilité de la méta-catégorisation, effectué de façon randomisée sur 200 fiches, a montré un taux d'erreur inférieur à 2 %.

Conclusion. – Cette méthodologie de méta-reportage, développée avec la structure 7CARECAT™ et nécessitant un nombre réduit de règles opérationnelles, a permis une classification stable des faits rapportés volontairement. Ce modèle constitue une méthode simple et reproductible pour présenter, tant localement que transversalement, les méta-informations nécessaires à la communication dans les institutions de soins. Elle pourrait être un outil prometteur pour améliorer le management de la qualité et des risques.

Incident analysis, properly understood, is not a retrospective search for root causes but an attempt to look to the future.

C.A. Vincent [1]

1. Introduction

The post-anesthesia care unit (PACU), because of its high-risk medical activities coming from the non-normal status of the patients recovering from anesthesia, their rapid turn-over, the multi-tasking delegation to one single actor – often the PACU nurse – or the complex role of this care unit interfacing numerous medical and nurse specialties, is a more than favorable location to induce a large variety of different managerial problems [2]. Different analytic tools – i.e. ALARM, RCA, OLA – are already used in the healthcare system. Based only on retrospective accidental elements, they are the most widely used ways to establish risk-reduction strategies. They may possess some particular advantages – extensive in-depth factual analysis, role of potential contributory factors, etc. – that are counterbalanced by so well identified pitfalls – extensive time and resource consumption, extreme focus upon a given accidental aspect for example. Such methods, specifically designed for in-depth accident or incident analysis, are not particularly designed to initiate and foster managerial or team work from the sub-accidental levels – like the very numerous problems voluntarily reported to the local managers by the actors invited to participate in risk-reduction approaches. Hence, in the healthcare domain as in other work organization, front-line actors and local managers may take advantage of a simpler tool designed to generate clear, easy-to-handle and consistent meta-reporting of the nature of the problems reported by a given work team.

Moreover, this descriptive tool would need to be transversal enough for the multidisciplinary team at task in every PACU – anesthesiologists, surgeons, nurse anesthetists, circulating nurses, administrative clerks, logistics workers, i.e. Indeed, local managers confronted to the building of a simple-to-use framing often start by using a vocabulary very specific to the local practices. They generate a rich catalogue of numerous attractive, and certainly pertinent locally sub-categories, having overall very poor intra-institutional portability [3]. To facilitate exchanges between the front-line actors and their local managers and to permit high intra-institutional portability, a process-centered meta-reporting based tool appeared as an attractive alternative for helping both in their common quest for improving care quality. This transversal approach using only a reduced number of pertinent process-centered items appeared quite attractive in developing a common trans-disciplinary quantitative communication approach helping to build a bottom-up culture of security [4]. The authors hypothesized that a feasibility study of a process-centered meta-reporting could be organized from a collection of "improvement" reports (Appendix A) filled in a tertiary hospital PACU [5]. These reports have been introduced in the PACU to mirror an institutional quality intervention leading to an ISO 9001 certification of the local Interventional Pain Program.

The first objective of this study was then to adapt [6], to the healthcare domain and to the sub-accident levels -including near-misses, incidents, problem explicitations – a previous accident process-centered analysis structure. This essential structure – DEPOSE(E) – (Table 1) was previously used and validated in major "industrial" accidents – civil aviation, civil nuclear power, chemical industry, sea traffic, dam building, i.e. The second objective is to validate a methodology using this new process-centered meta-categorization system in the healthcare domain [7].

Table 1
Essential structure – DEPOSE(E).

Abb	DEPOSE(E)	7CARECAT™	MCAT
	"Industrial" domain	Care domain	
D	Design (product elaborated or transformed)	Patient	1
E	Equipment	Equipment	2
P	Process (production, quality control)	Process	3
O	Operator (human contributor)	Actor	4
S	Supplies	Supplies	5
E	Local environment (production room)	Work room	6
(E)	General environment (organization)	Organization	7

DEPOSE(E): Structure for accident analysis described by C. Perrow in "*Normal Accidents – Living with High Risk Technologies*". 2nd ed. New Jersey: Princeton University Press; 1999.
Abb: abbreviations; MCAT: meta-categories.

2. Materials and methods

The validation process was conducted in four steps:

- to adapt the DEPOSE(E) structure to the healthcare domain;
- to elaborate rules to be used for conducting repetitive meta-categorization session;
- to select the meta-category characterizing the nature of the fact(s) described in an "improvement" report;
- to test the reproducibility of the meta-categorization performed.

2.1. Adapting DEPOSE(E) to the care domain

Among the systems used in the industry for analyzing accidents, DEPOSE(E) is the unique one designed essentially as a process-centered meta-categorization tool. It has been chosen only for its robust classification scheme, but not to conduct a deep