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The French military documentary system to anticipate health risk: content and information classification

Introduction

French armies must manage international crises in a constantly changing environment. They must also anticipate these crises and make quick decisions facing health events that may impact the forces in operation. It is to meet this objective that the Medical Intelligence service of the Center for Epidemiology and Public Health of the Armed Forces (CESPA) has been given the task of developing a medical intelligence system that collects information on health risks in military operation (Boutin 2004).

Objectives

This article aims to present the medical intelligence system developed to respond to the different needs of sanitary information of the forces and military decision-makers. It is a system fed by fresh health data via an automatic or semi-automatic process, whereby information is synthesized and organized in such a way that it is categorized and easily searchable.

Methodology

The system developed is powered by a documentary monitoring process in 6 steps with feedbacks: information content definition, automated collection on databases (e.g. MedLine, ToxLine, Web of Science, etc.), human and automated analysis of the information, classification and distribution in the system. The selection of documentary content is validated with users (physicians, health policy makers, etc.). The documents are classified according to the classification of the National Library of Medicine (NLM) and named according to a naming procedure (Tanti 2012). The selected and classified resources are capitalized in a documentary system which is based on four different information systems (IS) described in this article.

Results

The documentary system developed integrates access to multiple sources of information such as databases and hypertext. It is available on a secure Intranet. It is mainly based on four IS defined by Boulogne as “an organized unit, inter-connected procedures, methodologies, elements of organization, human resources, software and computer equipment allowing to collect, store, structure, insert, extract, move, control, post, exchange (transmit or receive) and to communicate the selected information in form of text, images, sound or coded data for the use of exploitation, and management
of an organization” (Boulogne 2004).

**Presentation**

The first IS is called BEDOUIN. It provides the military health service directorate, medical advisers of military commands as well as physicians, pharmacists, and veterinary surgeons at unit level with updated information on potential health risks for deployed French forces. The documents in the IS are indexed by keywords, in natural language and by using the Medical Subject Headings MeSH thesaurus. The consultation is done either by hypertext navigation starting from an index by country, (animal and human) diseases or toxicological risks or via a search engine. BEDOUIN provides 189 files relating to different countries. It also contains 893 scientific documents on 233 human diseases and 162 veterinary diseases and 1978 toxicological files.

Figure 1: BEDOUIN homepage

The second IS is called REDUVES, which contains Research and Development information. It is made up differently in terms of appearance and its content is complementary to that of BEDOUIN. It informs the Military Health Service directorate and medical advisers of military commands about the latest scientific publications on agents of medical importance, in particular biological agents and agents that can be used for the production of weapons of mass destructions, and corresponding research activities. It provides R&D files giving an overview on preventive measures, diagnostic procedures, therapeutic assets and reports on documentary awareness. As in BEDOUIN the consultation is done either by hypertext navigation starting from an index by risk and agent, or via a search engine. REDUVES currently contains 46 files on agents posing health risks, 26 R&D files, 26 reports on documentary awareness, 20 works and reviews as well as 2,955 scientific source documents.
BOUGAINVILLE aggregates rough scientific documents on agents of biological, natural and provoked risks, chemical substances, whether of industrial or military nature, and allows the permanent development of BEDOUIN and REDUVES. In terms of organizing and gathering information by topic, documents are classified by generic and specific terms, in folders and subfolders (classification by risks encountered outside the territory – biological, chemical and industrial – and by agents – smallpox, anthrax, etc.). Documents are indexed by keywords, in natural language and by using the MeSH thesaurus, by first author and by year. To enable the rapid location of documents, groups of documents or passages of text which answer specific questions, an electronic document management tool was installed. It allows the user to query the whole base, via simple or advanced search, by specific fields (title, summary, etc.), by free or controlled key words, and via boolean operators. BOUGAINVILLE, permanently evolving, contains 30,900 documents including 25,800 on biological risks, 2,070 on chemical risks, 280 on radiological risks, 610 on veterinary medicine related risks and 2,150 documents relating to different countries.

The last IS is IntraCespa, which deals with reports, notes, bulletins of epidemiological surveillance of the French forces and other internal documents relating
to epidemiology and public health issues of the French military. INTRACESPA documents are consultable by author, topic or type, in multi-criteria mode, simple or advanced search but also by arborescent navigation.

Figure 4: INTRACESPA homepage

Example of use

In the next Ebola epidemic, French military authorities and physicians at unit level regularly consulted the documentary system to receive real time information on the global evolution of the medical crisis. They also consulted scientific documents on the virus, research publications on its mechanisms of pathogenicity, as well as the daily progress in vaccine and treatment developments. Physicians were able to seek information and ministerial recommendations, in particular within the framework of epidemiological surveillance and aspects of protection campaigns of military and civilian populations (Chatelet 2015).

Conclusion

The system developed by the French military to monitor health risks in operation is regularly updated by a documentary monitoring process. The documents of the system are searchable for users, especially for preparing deployments on theaters of operations or to respond to health crises, such as during the recent outbreak of Ebola and Zika. In the near future, it will be consultable by satellite, under extreme conditions. It has proven its daily use and utility in crisis situations. It would now be interesting to qualitatively and quantitatively evaluate its effectiveness and efficiency.

References
