Characterization of the Knowledge Contained in Diagnostic Problem Oriented Clinical Practice Guidelines

Yaron Denekamp, M.D., M.Sc.¹ ² ³, Osama Nasreldeen, B.Sc.², Mor Peleg² ⁴, Ph.D.

¹Galil Center for Medical Informatics, ²Rappaport Faculty of Medicine, ³Department of Medicine, Carmel Medical Center, Technion - Israel Institute of Technology, ⁴Department of Management Information Systems, University of Haifa, Haifa, Israel

Abstract

Several data types (symptoms, signs, and tests) are gathered and used in the process of investigating a clinical problem. In this study, we aimed to quantitatively evaluate how often the knowledge contained in clinical practice guidelines refer to these data types, and to what extent evidence-based medical principles are applied to them. To this end, we analyzed the knowledge contained in diagnostic problem-oriented guidelines using a set of relevant characteristics that we developed. We believe that the results of this study may be helpful for developers of clinical decision-support systems.

Background

Presenting clinical manifestations, such as symptoms or abnormal lab tests, are the starting point for clinical investigations. During the diagnostic process, physicians collect and analyze several types of data, including subjective information acquired by questioning the patient (i.e., symptoms or medical history), objective findings obtained by performing physical examination (i.e., signs) and all sorts of laboratory and imaging data. At any point in this process, there are several diagnoses that might fit the data collected (i.e., differential diagnosis), whose number should decrease as the diagnostic process progresses. As has already been shown years ago, expert clinicians can make a diagnosis in the vast majority of patients using the history and physical examination and laboratory investigation in making medical diagnosis and management of medical outpatients. Relative contributions of history-taking, physical examination, and laboratory investigation to diagnosis and management of medical outpatients. Br Med J. 1975 May 31;2(5969):486-9.

Results

At the time at which the study was initiated, there were 1957 CPGs at the NGC website, of which 1182 were indexed by NGC in the diagnostic or evaluation category. By using the manual filtering mechanism, we ended up with 171 diagnostic problems-oriented CPGs. So far, we have characterized 25% of the CPGs. The preliminary data show a relatively low usage of medical history and physical data (average of 6 symptoms and 4 signs per problem) with little usage of EBM that utilizes their evoking strength for diagnosis.

Discussion

We believe that the results of this study may be helpful for developers of clinical decision-support systems in general and CPG modelers specifically, as it is interesting for them to know whether the number of diagnostic problems-oriented CPGs is large enough to warrant development of decision-support systems for this particular CPG category. In addition, understanding the knowledge component contained in this CPG category will help in using and designing appropriate knowledge representation and decision models for this specific CPG category.

References