

Deafening Silence: The Lack of Structured Patient Symptoms in Clinical Documentation of Angina

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Understanding patient symptoms is central to achieving the primary objective of health care: longer and better lives for our patients. In the words of William Osler, “Listen to your patient, he is telling you the diagnosis.”¹ The use of symptoms is not only central to formulating a diagnosis, it is also central in understanding patient response to a treatment plan or recurrence of disease that warrants further investigation and change in management. In the evaluation and management of patients with known disease states, we might rightfully expect the medical record to be robust with the identification and categorization of patient symptoms associated with the condition. In the setting of coronary disease and stable angina, at a very minimum we would expect a discussion and categorization of the symptoms of angina.

In the present study by Owlia et al² in this issue of the *Journal of the American Heart Association (JAHA)*, the authors sought to extract the anticipated rich data on patient symptoms in the electronic medical record to assess the association between symptom burden and outcome of stable angina in routine care. Within the Veterans Health Administration, nearly 300 000 patients with a diagnosis of stable angina were identified using *International Classification of Diseases (ICD)* codes. Natural language processing (NLP) was used to identify, extract, and categorize angina symptom severity in this population as determined by Canadian Cardiovascular Society classification schema. They identified 14 216 patients with documentation of angina by Canadian Cardiovascular Society classification, with a distribution of 28% of patients with class I angina, 39% with class II angina, 28% with class III, and 5% with class IV angina. Patients with

more severe angina were more likely to have diabetes mellitus, heart failure, and a higher index of comorbid conditions. Over a median follow-up of 3.4 years, angina severity was associated with a higher risk of all-cause mortality, hospitalization, and cost of care. These findings are similar to those of prior studies^{3,4} and reinforce the importance of understanding patient symptom burden. In fact, for aspects of coronary artery disease care, symptoms are the central measure of whether or not treatment has achieved the anticipated impact. For patients with stable ischemic heart disease, the clinical benefit of percutaneous coronary intervention is limited to symptom relief.⁵ Accordingly, emerging quality measures for elective percutaneous coronary intervention have focused on symptom burden as a key outcome of procedural success.⁶

Despite the importance of the primary findings of Owlia et al,² it was what the NLP tool did not (and could not) find that serves as a guidepost for future efforts. With increasing computational power, there is unabashed interest in leveraging “Big Data” that includes all aspects of clinical and nonclinical data for refined approaches to diagnosis, prognostication, and treatment.⁷ NLP is the often-proposed method of gleaning data from the unstructured text of clinical notes to identify the presence or absence of certain characteristics, such as symptoms, and the severity of those characteristics.⁸ In the study by Owlia et al,² NLP was applied to clinical documentation of patients with stable angina to capture and quantify symptom severity. This NLP tool was simply unable to identify angina presence and severity. Less than 5% of patients’ angina severity could be classified with this approach. This is not an error of NLP, but instead reflects the lack of structured symptom documentation in routine clinical care.

Some will see this problem as one of an intermediary: In the process of documenting the patient–physician interaction, there is inevitable data degradation that occurs because a busy practitioner is responsible for summarizing a detailed conversation in a few brief lines of text. One solution would be to extract data directly from the patient and provider conversation itself. By listening directly to the conversation between the provider and the patient, the data could be more robust. In fact, strategies that apply voice

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recognition are currently in development and early application to assist in clinical documentation, care delivery, and capture of structured data from the provider and patient interaction. However, in the capture of structured data on patient symptoms, this approach presumes the conversation between patient and provider is complete and standardized so that the presence and severity of symptoms can be identified and categorized in a reproducible manner across different patient and provider interactions. We know this not to be true.^{9,10}

The real answer to the lack of structured symptoms in the clinical record does involve removing the intermediary: Get the data directly from the patient by using health status surveys. Patient-reported health status surveys quantify symptom burden, functional status, and health-related quality of life in a standardized and reproducible fashion. These survey instruments capture measures of health as reported by the patient. Cardiovascular-specific health status surveys exist for patients with coronary artery disease and angina^{11–14} and have been developed to be reliable, responsive, and valid.¹⁵ Similar to the findings of Owlia et al,² studies have consistently demonstrated health status to be associated with subsequent patient outcomes.¹⁶ Patient health status surveys are now routinely used in randomized clinical trials to quantify treatment benefits.¹⁷ Finally, patient-reported health status measures overcome the discrepancy between provider-assessed and patient-reported health status by capturing these measures directly from the patient.¹⁸ Unfortunately, despite decades of experience with these tools, patient health status surveys remain underused in routine clinical care.^{10,19}

Ultimately, the article by Owlia et al highlights the deafening silence surrounding categorization of patient symptoms in the medical record. As NLP and additional Big Data methodologies continue to evolve for application in clinical medicine, we need to ask if we are capturing the right data for these endeavors. In the case of patient symptoms, an emphasis on greater documentation of physician-assessed and categorized symptoms is misplaced. Instead, the emphasis needs to be on removing the intermediary and going directly to the patient in the capture of health-status measures. Use of technology to engage patients in the capture of health status in an unobtrusive manner while integrating results in routine care is one promising path.²⁰ Ultimately, by incorporating patient-reported health status in clinical care, we can seek to improve our understanding of the impact of our care on patients and refine strategies that help our patients live longer and live well.

Disclosures

None.

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