Physician Perspective on Patient Complexity: Not Based Simply on Comorbidity

Study Overview

Objective. To identify complex patients from the primary care physician perspective, and to compare this characterization with comorbity-based algorithms for defining patient complexity.

Design. Cohort study.

Setting and participants. A convenience sample of 41 primary care physicians was recruited from the Massachusetts General Primary Care Practice-Based Research Network of 141 attending physicians from 4 community health centers, 1 hospital-based practice, and 7 private offices. Participants reviewed a list of 120 randomly selected patients from their panels who has been seen in the previous 3 years to identify patients they considered to be complex. Patient clinical data were obtained from electronic records. Census block group data were used to derive income and education levels on a neighborhood level. Main outcome measures: The main measure was physician characterization of a patient as being complex. Physicians were not given a definition of complexity but rather were asked to indicate "in their view" who they considered to be complex. For patients who were identified as complex, physicians were asked to indicate the factors influencing their designation from among 5 complexity domains: medical decision making, coordination of care, patient's personal characteristics, patient's diagnosed mental health issues, and patient's socioeconomic circumstance.

Physician-defined complexity was compared with 3 other methods of characterizing complexity: Charlson comorbidity scale [1] (a weighted algorithm using 16 comorbidities), Higashi score [2] (based on the use of 9 comorbidities), and a proprietary algorithm from the Center of Medicare and Medicaid Services (CMS) (based on comorbidities, patient's age and previously incurred costs). Characteristics of patients designated as complex by their physicians were compared with those of patients characterized as complex using the 3 algorithms. Characteristics of physicians with the highest proportion of complex patients were compared with those with lowest proportion. Agreement of complexity designation was examined. Predictors of physician defined complexity were identified using logistic regression.

Main results. 4302 patients of 40 physicians were included in the final sample. 26.2% of patients were characterized as complex by their physicians, with variation between physicians (SD 15.4%; range 1.7%–70%). Physicians with a higher proportion of complex patients were likely to be older, with more years since graduation, and from community health centers. Of the factors influencing the designation of complexity, physicians indicated that 62% were complex related to medical decision making, 54% to patient's personal characteristics, 40% to coordination of care, 34% to mental health issues, and 31% to socioeconomic status. Older patients were more likely to be complex related to medical decision making and coordination of care issues and less likely to be related to personal characteristics or mental health issues when compared with young patients. Patient characteristics associated with complexity included older age, female sex, on government insurance, lower household income, and lower rate of high school education. Complex patients also had more overall clinic visits, visits to primary care, higher number of medications, and more providers seen. Independent predictors of physician designated complexity include increased age, poorly controlled diabetes, a prescription of antipsychotics, alcohol-related diagnoses, and inadequate insurance.

Agreement between physician designation of complexity and comorbidity-based algorithms was modest, ranging from 70% to 76%. Concordance of the designation of complexity was low (26% to 56% depending on algorithm and complexity criteria used), whereas the designation of noncomplexity was higher (78% to 95%). Nearly half of the patients with higher Charlson comorbidity score (2 or greater) were not considered complex by their physicians, whereas 71% of patients considered complex by their physicians were not characterized as complex by the CMS algorithm.

Commentary

Measuring patient complexity has important implications for health care systems. As health care reform continues, there is a need to understand how to designate the complex patient in order to guide health care system redesign. This study brings attention to the challenges in understanding patient complexity.

Existing measures of complexity are largely based on the presence of significant comorbidities. How-ever, this method is limited. The study found that physicians largely did not agree with commonly used comorbidity criteria in designating which patients they considered to be complex.

A major purpose of the complexity definition is to identify complex patients ahead of time so as to improve management of these patients including care coordination [3]. It may also allow for improved resource allocation [4], redesigning the health care system to meet the changing health care needs of the population. Thus a major component in studies examining the designation of the complex patient should be the examination of health outcomes such as costs, morbidity, functional loss, or mortality prospectively over time [5]. The current study could be enhanced by a longitudinal examination of what happens to these patients who have been identified as complex, and comparing and contrasting the predictive ability of this designation with comorbidity based algorithms. Another issue is that this designation of complexity is at a certain time-point; patients may be considered complex at a certain time when significant illnesses arise and care coordination is needed, but may be considered non-complex at other times. Changes in how physicians perceive complexity in patients should be further explored.

Applications for Clinical Practice

Designation of complexity by primary care physicians is largely discordant with commonly used comorbidity-based algorithms. This may suggest that designation of complex patients should not be based only on the presence of comorbidities. Other factors such as socioeconomic status should be considered. Further studies are needed to understand how to better define patients with complex health care needs in a practical manner.

—Review by William Hung, MD, MPH

References

1. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis 1987;40:373–83.
2. Higashi T, Wenger NS, Adams JL, et al. Relationship between number of medical conditions and quality of care. N Engl J Med 2007;356:2496–504.
3. Schoen C, Osborn R, Squires D, et al. New 2011 survey of patients with complex care needs in eleven countries finds

that care is often poorly coordinated. Health Aff (Millwood) 2011;30:2437–48.

4. Cohen SB, Ezzati-Rice T, Yu W. The utility of extended longitudinal profiles in predicting future health care expenditures. Med Care 2006;44(5 Suppl):I45–53.

5. Cucciare MA, O'Donohue W. Predicting future healthcare costs: how well does risk-adjustment work? J Health Organ Manag 2006;20:150–62.