redirecting Mr. Crommet's creativity from dancing to painting can be seen in his artwork, which is shown in color on the *Annals* website.

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EDITORIAL

Chronic Illness, Comorbidities, and the Need for Medical Generalism

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It is said that when students enter medical school, they care about the whole person, and by the time they graduate, all they care about is the hole in the person. Current medical education inculcates many of the dominant values of modern medicine: reductionism, specialization, mechanistic models of disease, and faith in a definitive cure. As Fitzhugh Mullan observes,[1] these values in medicine are part of a wider societal march toward reductionism and specialization. These trends are apparent in the fractioning of automotive repair shops into engine, transmission, and exhaust system specialists, and the need to find 3 different lawyers to prepare a will, settle a property dispute, and incorporate a small business. Family medicine emphasizes a different world view, that of generalism. Mullan notes that "generalism as a phenomenon is not limited to medicine. To some extent, there is a competition in all human endeavor between the instinct to keep things whole, complete, and general, and the tendency to distinguish, sort, and reduce. …Generalism in human terms can be defined as a tendency to remain broadly focused, protean, and varied in world view and activity. The generalist is interested in the big picture with all of its nuances, connections, and complexities."[1] The whole, not just the holes.

Although a generalist perspective always has been important in health care, this broader view has become imperative in the face of the changing epidemiology of illness in industrial societies. Chronic conditions, not acute ailments, are now the most common problems in health care. The acute infection caused by a single microbe that can be definitively identified and eradi-

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cated – the epitome of the reductionistic, mechanistic model of disease – has given way to chronic illnesses such as diabetes, arthritis, and dementia. Even among children, chronic conditions such as asthma and neurodevelopmental problems have assumed greater prominence. For chronic, incurable conditions such as these, the goals of care are to enhance functional status, minimize distressing symptoms, cope with the psychosocial stresses of pain and disability, and prolong life through secondary prevention. In chronic illness, care of the whole person is paramount.

Of course, care for patients with chronic illness has also been subjected to efforts to impose a more reductionistic paradigm. For a time, disease-specific, "carve-out" programs and specialist-directed disease management models were in vogue.[2] Special intensive care programs were promoted for individual chronic conditions: a diabetes program, an asthma program, and so forth. These programs shared the view that patients would benefit from having a team of disease-specific specialists matched to the patient's particular chronic illness, rather than having a generalist-oriented primary care physician caring for these conditions.

The article by Starfield and colleagues[3] in this issue of the *Annals of Family Medicine* makes evident the virtue of generalism in the care of patients with chronic illness. Most patients with chronic illnesses do not have a single, predominant condition. Rather, most have comorbidity, the simultaneous presence of multiple chronic conditions. This will come as no surprise to practicing primary care clinicians, for whom the straightforward patient with diabetes and no other medical problem is the exception rather than the rule.

More typical is a patient with type 2 diabetes who is depressed and obese and has coronary heart disease and osteoarthritis. Starfield and colleagues' thorough study of ambulatory care visit patterns demonstrates that patients seek care for all of their comorbidities, not just for a solitary, defining, major condition. In fact, visits for comorbidities outnumber visits for any single indicator condition. Moreover, with the exception of patients with relatively uncommon conditions, the majority of visits for care of both an indicator condition and its associated comorbidities are made to primary care physicians, not specialists.

Starfield and colleagues' findings are enriched by the results of the study undertaken by Bayliss and colleagues[4] that also appears in this issue of the *Annals of Family Medicine*. Using qualitative interview methods, these investigators found that comorbidities interact to produce a complex and challenging clinical dynamic. Respiratory conditions and arthritis interfere with patients' ability to adhere to exercise programs for diabetes and obesity. Medications for one condition have adverse effects that aggravate another condition. And depression casts its dysphoric penumbra over many patients with chronic illness.

These studies demonstrate the futility of reductionistically carving up patients on the basis of individual conditions and sending them to the diabetes program on Monday, the cardiac program on Tuesday, the arthritis program on Wednesday, and the depression program on Thursday. What is needed is a model of care that addresses the whole person and integrates care for the person's entire constellation of comorbidities. This generalist approach does not deny the value of specialty care, which can offer expertise and unique services to the care of patients with chronic illness. But the generalist approach affirms a central role for the primary care clinician as the coordinator and integrator of specialty care and other referral services, working in partnership with the patient and other health care personnel to optimize overall physical functioning, mental health, and well-being.

The conceptual and pragmatic logic of a generalist approach to the care of patients with chronic illness is compelling. Fulfilling the promise of this approach, however, will test the resourcefulness of primary care clinicians and health care systems. Evidence indicates that primary care and specialist physicians are not yet performing anywhere near the optimum in caring for patients with chronic conditions. In the view of the Institute of Medicine,[5] a "chasm" separates the quality of care that is achievable and the quality that is manifested in most practice settings.

This chasm will not be closed if primary care advocates limit themselves to self-congratulatory rhetoric about the superiority of generalist models of care. Nothing short of a fundamental redesign of primary care systems is required.[6] Fortunately, blueprints exist for rebuilding the primary care home to accommodate high-quality care for patients with chronic illness. The Chronic Care Model is one such guide.[7] Central to the Chronic Care Model is the notion that a physician working in isolation cannot achieve optimal care. Collaborative teamwork, computer systems to inform clinical care, and an overall environment that supports quality improvement are required.

There are many examples of primary care practices that have used the Chronic Care Model to enhance care processes, from small medical offices to large, integrated groups.[8] However, it is important to note that even these exemplary practices have not completely resolved the issue of how best to address comorbidities. Despite a primary-care-centered model, many of these organizations have used a disease-specific approach to the Chronic Care Model.

Some organizations have attempted to integrate their chronic care teams for related conditions, such as a common program for the "metabolic-syndrome" conditions of diabetes, obesity, and hypertension. Other practices are exploring ecumenical models that teach patients self-management skills that can be applied to virtually any clinical condition.[9] In addition, although many Chronic Care Model programs are patient-centered, few are truly family-centered. Research has demonstrated that family members often play an integral (and sometimes predominant) role in the management of chronic illness.[10] Continued innovation and research are needed to develop and test chronic care models that incorporate a more family-centered approach to patients with comorbidities.

The issue of comorbidity highlights the intricacy of primary care and the complexity of providing holistic care. Another challenge to medical generalism is the difficulty of measuring health status and clinical outcomes at a "general" level – that is, at the level of the whole person rather than at the level of component diseases. Outcome measures traditionally have been disease-specific: measuring glycosylated hemoglobin levels to monitor outcomes in diabetes or using exercise tolerance tests to measure outcomes in patients with cardiac disease. The common presence of multiple comorbidities renders single-disease outcomes inadequate for evaluating the quality of a generalist-oriented model of care that simultaneously addresses all of the conditions affecting a patient's health.[11]

This situation creates one of the methodologic limitations of the increasing flurry of head-to-head comparisons of generalist and specialist physicians in the care of patients with specific diseases.[12] Specialty journals abound with studies concluding that specialists provide care of superior quality to that of generalists for the disease of the month, be it congestive heart failure, stroke, or asthma. These studies have been criticized for many reasons, including their tendency to focus on inpatient care, the failure of most observational research designs to adequately account for unmeasured factors associated with patients' selection of a generalist or specialist physician,[13] and the fact that generalists and specialists frequently co-manage patients in a collaborative manner that enhances patient outcomes.[14]

A more fundamental issue is that, when performance is viewed through the lens of individual, disease-focused outcome measurement, specialists should in fact be expected to perform better than generalists in their particular organ system of expertise. The virtue of generalism is not that it should compete with specialty care on a disease-by-disease basis, but rather that the overall quality of generalist care is more than simply the sum of atomized, disease-specific measures.

How best to measure the quality gestalt of the generalist approach remains elusive. Health status measures such as those developed by the Medical Outcomes Study investigators[15] have attempted to provide more global assessments of whole-person health and functional status. Although these measures offer important advantages as complements to disease-specific items, there is still a nagging sense among many primary care researchers that these measures are not fully capturing many meaningful aspects of generalist care. For example, a generalist approach might be especially sensitive to matching priorities for care with the patient's own hierarchy of preferences for symptom control, well-being, and dignity of life. This shared understanding of priorities might not be reflected adequately in global health status and satisfaction measures.

The mirror image of the challenges of measuring meaningful clinical outcomes is well described in the article by Rosen and colleagues[16] in this issue of the *Annals of Family Medicine*. Rosen and colleagues discuss the need for a new framework for risk-adjustment methods in primary care. Risk-adjustment involves measuring patients' health status, social factors, and health behaviors at the front end of the clinical process, rather than at the outcomes end. Nonetheless, the methodologies of measuring risk and outcomes share many features. As Rosen and colleagues make clear, special consideration is necessary in primary care to fully capture the complex, multifactorial nature of health at the holistic level of a patient in the context of family and community.

Generalism and the work of family medicine are essential. Among the many challenges to be faced in primary care, 2 are particularly compelling: innovation in practice design and organization to allow primary care to fulfill its potential, and advancement in research methods to better define and measure the relevant outcomes of generalist care. For the former challenge, the embarkation of family medicine organizations on the Future of Family Medicine Project represents a timely initiative "to transform and renew the specialty of family practice to meet the needs of people and society in a changing environment."[17] For the latter challenge, this debut issue of the *Annals of Family Medicine* denotes the arrival of an exciting new forum for scholarly exchange in primary care.

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