

Chronicity and complexity

Is what's good for the diseases always good for the patients?

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Mrs Smith is an 83-year-old woman living independently in the community. She has the following active medical problems: congestive heart failure secondary to ischemic heart disease, atrial fibrillation, osteoarthritis, osteoporosis, urinary incontinence, and depression. She is taking 11 prescribed medications on a regular basis. She is seen regularly in the clinic for management of her anticoagulation and multiple chronic conditions.

Mrs Smith is typical of the patients now frequenting family medicine clinics. The number of patients seen in primary care with constellations of chronic conditions is growing rapidly; Mrs Smith is by no means unique in this regard. According to a recent Health Council of Canada report, more than 9 million Canadians have at least 1 chronic condition, and one-third of those report 2 or more chronic conditions.¹ Not surprisingly, seniors comprise the most rapid growth within this increasing clinical population.²

The complexity of Mrs Smith's presentation points to the challenges facing primary care providers in managing complex chronic diseases in older adults. We acknowledge that Canada's health care system and philosophy of medical care are singularly unprepared to meet this pressing challenge. In this paper, we will explain the shortcomings of the current approaches to the primary care management of patients with multiple chronic diseases. Meeting the challenges will require changes in service delivery, necessitate the ongoing education of health care professionals, and demand a comprehensive research effort focused on solving the problems of managing complex chronic diseases.

Coincident disease, confluent morbidity

The case of Mrs Smith exemplifies the tension between optimal management of individual diseases and patient-focused symptom management. As the number of chronic conditions increases, so too do the number of health care encounters, the number of prescribing physicians involved, and the number of pharmacologic agents prescribed.

Multiple coexistent conditions can be given diagnostic labels that are easily counted and aggregated. This

is useful for epidemiologic purposes. Diseases can be regarded as discrete clinical entities for which treatment strategies can be tailored. In fact, this approach to disease is reflected in most clinical practice guidelines. The language here is of multimorbidity or disease with comorbidity.

Viewed from the perspective of the health care provider or the patient, however, this approach makes less sense as the number of conditions increases. The signs and symptoms associated with multiple chronic conditions and their treatments interact, and it is often difficult, on clinical grounds, to separate the effects of the diseases from the adverse effects of prescribed medications. Consider Mrs Smith's 6 chronic problems and 11 medications. Factor in the range of possible signs and symptoms associated with these conditions. Add to that the range of possible adverse effects associated with these medications as well as the range of potential interactions between conditions and medications. In essence, there is confluent morbidity.

Limitations and shortcomings

Current strategies taught in medical schools and acknowledged as best practices do not do justice to the challenges clinicians face in managing confluent morbidity. Physicians are expected to employ the techniques of evidence-based medicine, aided by clinical practice guidelines, to improve clinical outcomes. Evidence-based approaches work best in discrete conditions and have not yet, for the most part, focused on the integration of multiple chronic conditions within individuals.³ Clinical guidelines for diseases with comorbidities might not capture patients' perspectives of their health, and patients' priorities could be at variance with those of their health care providers.

Recent commentaries highlight this phenomenon. Tinetti and colleagues argue that clinical trials—from which the evidence base for clinical practice guidelines is derived—for the most part exclude older patients with complex chronic diseases.⁴ They question whether or not what is good for the disease is good for the patient and conclude that drug recommendations for patients with multiple conditions rarely rate interventions (in terms of priorities) and that outcomes related to quality of life are seldom mentioned. Similarly, Boyd et al have argued that clinical practice guidelines do not provide an appropriate foundation for the care of older adults as the



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single-disease focus of most guidelines does not address the complexities of multiple chronic conditions.⁵

Also problematic is the fact that clinical practice guidelines might conflict with each other within the same disease category as well as among diseases. Hence, adherence to single-disease guidelines for a patient with multiple chronic diseases results in infeasible regimens and a near-total medicalization of the patient's life. Studies in primary care have shown that primary care providers have insufficient time to adhere to clinical practice guidelines for the 10 most common chronic conditions when the conditions are stable. When the conditions are modeled as poorly controlled, the problems become almost intractable.⁶

Indeed, chronic disease management—which encompasses both preventive and curative elements—is often complex when treating a single disease, such as congestive heart failure or type 2 diabetes. When several diseases coexist in the same patient, management becomes substantially more complex.⁷ To further complicate matters, as care management becomes more complex, the ability to adhere to clinical practice guidelines decreases while the risk of iatrogenesis increases greatly.

The time factor

Complexity of care can be understood as increased time required to evaluate and treat health care conditions (in terms of patient behaviour and self regulation, involvement of family in care, office visits to physicians, visits for diagnostic tests, appointments to allied health care professionals, and filling prescriptions) and increased information that must be mastered in order to understand how to manage these conditions. How this complexity is navigated by patients, family caregivers, and health care providers is, at present, poorly understood.

The time demands of chronic disease management strain both providers and patients, and current paradigms of care only exacerbate this strain. Simply put, what constitutes optimal management is unknown. In order to develop more appropriate models of care it is essential to understand these issues better.

A new philosophy of care?

There are substantial limitations with the current approach to chronic disease management. Taking a complete history and doing a physical examination (to isolate a singular cause) and arranging a management strategy (which stands to be corrected with intervention) is not likely to be successful. The current model of clinical management needs to be rethought; it should focus more on understanding functional capacity and resolving issues with respect to functional status rather than looking for cures or eliminating reversible singular causes.

Management of patients with confluent morbidity bears resemblance to palliative medicine, with the exception that one cannot estimate or expect death within a specific time frame. Many people with terminal conditions would not be considered eligible for certain interventions, such as aortic valve replacement, whereas individuals with confluent morbidity might benefit from such an invasive procedure. The type of management here would likely need to draw on elements of patient-centred care and theories of concordance.^{8,9} It would emphasize identifying priorities that individuals and their family caregivers have for managing functional status and would also require an explicit solicitation of end-of-life preferences and degrees of aggressiveness in management.

Deliberation and dialogue, with the goal of understanding a patient's "equilibrium," might be a promising model.¹⁰ *Deliberation* entails taking the time to evaluate alternatives and acknowledging the breadth of uncertainty associated with the evidence base for decision making in these contexts. These individuals are the most likely to be excluded from clinical trials, yet are paradoxically the most likely to receive multiple medications. This contradiction has not received sufficient attention. *Dialogue* entails a full and frank discussion and articulation of complexities and uncertainties associated with multiple chronic conditions. *Equilibrium* entails establishing the most acceptable functional status amenable to the patient, then considering the use of powerful modalities of diagnosis and treatment only when there is agreement that the equilibrium has been sufficiently disturbed. The patient and health care providers proceed only when mindful of the harm-to-benefit uncertainty. This is what the recent Health Council of Canada report indicates patients value most—discussion of individual treatment goals, explanations of medication effects, and empowerment with respect to the management of chronic disease.¹

Teaching and education

The problems associated with confluent morbidity are difficult to manage clinically, which poses an extremely difficult task for teaching in an ambulatory care environment. As the issues are not amenable to easy mitigation, residents and medical students often find managing confluent morbidity difficult, frustrating, and incongruous with what they envision a doctor's task to be. This is an issue that must be addressed urgently, especially given the recent well-documented problem with attracting medical students into both family medicine and general internal medicine and the growing concern over who will care for the patients with the highest level of complexity.¹¹⁻¹³

Delivery of service

There is a need for innovation in interprofessional service delivery and education. With the move in primary care

reform toward integrated health teams, a perfect opportunity exists to create interprofessional and interdisciplinary care models that draw upon community resources and different health care professionals. Medical trainees need experience working in interprofessional teams. There is a societal need to develop a cadre of highly skilled primary care providers to work in ambulatory care settings. In the Sunnybrook Family Practice Unit in Toronto, Ont, we have started the IMPACT clinic (Interprofessional Model of Practice for Aging and Complex Treatments), which brings together a pharmacist, social worker, nurse, occupational therapist, and physiotherapist with residents and staff physicians to try to understand the dynamics of working in a team to solve complex patient problems in a teaching environment.

Research agenda

In addition to new models of clinical assessment and clinical teaching, there must be a research agenda. The clinical phenomenology associated with the interaction of conditions such as white matter disease, osteoarthritis, and cardiovascular disease has yet to be ascertained. Teaching materials and textbooks in clinical medicine still draw upon single-disease model presentations with pathognomonic signs and symptoms as exemplars of disease in humans. Often a full functional status assessment and review of systems results in multiple positive responses. Given that, close attention to the language and narrative of confluence and its physical manifestations has merits. It is perhaps time for a neo-Oslerian turn, with greater attention to close clinical observation and correlation with function given equal status to clinical trials.¹⁴ Valid rapid assessment tools for functional status that are sensitive to meaningful changes in condition and that can be used longitudinally for the purposes of understanding the determinants of change over time need to be developed. We are researching simple clinical assessment tools to measure both complexity and equilibrium in patients.


Family physicians can participate in global efforts to harness front-line experiences and develop best practices in chronic disease management. For example, the Observatory of Innovative Practices on Chronic Disease Management is an initiative by the Andalusian Ministry of Health in Spain. It is a virtual space to which clinicians around the world can contribute, to participate in knowledge exchange and help build a taxonomy of observations of chronic disease experiences and management.

There is a pressing need to better understand the determinants of medication prescription and adherence.¹⁵ As medications seem to be the primary mode of health intervention in this population, and with attendant concerns about iatrogenesis and safety, there is a need to clearly understand which medications are required, or not, for the management and preservation of functional status. Although beneficial in terms of statistical risk

reduction, mitigation of future events might require better balance in terms of less complicated drug regimens. This is particularly the case in preventive care, in which the trade-offs are most stark. Evidence in post-myocardial infarction care indicates that there are benefits to mortality reduction from the aggressive use of secondary prevention modalities; however, this has never been assessed holistically in terms of patient preferences and the trade-offs that they might wish to make in terms of longevity versus quality of life.¹⁶ Strategies that incorporate primary care providers, patients, pharmacists, and home caregivers are likely to result in a more useful and sensitive approach to this patient population; however, no robust studies have been reported to date.

How would this work for Mrs Smith? Individuals with confluent morbidity can achieve states of relative well-being. When her heart failure is stable, pain from her osteoarthritis controlled, incontinence manageable, international normalized ratio in range, and her mood good she is not cured by any means but is, for all intents and purposes, in optimal condition or in equilibrium. Equilibrium entails the balance of medical management of multiple chronic conditions, independence in activities of daily living, and a set functional capacity. Any changes in status would require an open dialogue and deliberation with the patient and his or her family about how aggressively to pursue diagnosis and therapy, particularly for such soft signs as fatigue. This is a delicate balance, but one which exemplifies the art of medicine.

Conclusion

Family physicians are ideally suited to be at the forefront of innovation and discovery in chronic disease management. It is a challenge we should willingly embrace, as success can be achieved and care can be rewarding. There are insufficient human resources in geriatrics to manage the needs of the aging population, and it is expected that the vast majority of management will fall upon the primary care system. There is still time to prepare the primary care system for this future demand; however, timely and strategic action is required in order to realign our service provision models, reorient our training curricula, and refocus our research agendas. As Louis Pasteur noted, fortune favours the prepared mind. 

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Competing interests

None declared

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