Managing Multimorbidity in Primary Care

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INTRODUCTION

Patients with multiple chronic conditions are prevalent in family practice and have unique needs that can present challenges for both patients and physicians. Managing multiple conditions and treatments requires a different approach from care that is focused on single issues. Prioritizing care and optimizing treatment is essential for meeting the needs of patients with multimorbidity.

OBJECTIVES

This module will enable clinicians to:

- Engage in shared decision-making with patients with multimorbidity to define and develop specific approaches to meet their goals of care.
- Balance multiple practice guidelines and best evidence with goals of care and clinical prognosis in order to enhance patient well-being and functional status.
- Organize community-based care (office, home) and systems to support patients with multimorbidity.

See Related Modules (available at https://members.fmpe.org)

- Doing Less and Doing It Wisely (August 2015)
- Explaining Evidence to Patients for Decision-Making (February 2015)
- Drugs and the Elderly (August 2012)

CONTENTS

CASES

Case 1: Laura, female, age 82

Laura lives with her wife Sue, age 77, in a subsidized apartment. She has a history of dementia diagnosed three years ago, hypertension, chronic obstructive pulmonary disease with frequent episodes of pneumonia, gastroesophageal reflux disease, chronic back pain for 40 years from a work-related injury, osteoporosis (moderate fracture risk), hypercholesterolemia and type 2 diabetes. Sue is Laura's substitute decision-maker.

Laura has multiple specialists including neurology, respirology, memory clinic and ophthalmology. She has frequent falls and ER visits. On each ER visit her falls are investigated with multiple tests (which are unremarkable) and she is discharged home.

Many of the ER visits result in further testing. In the last six months, the following investigations have been recommended: a 48-hour Holter monitor, an EEG, a stress test, a swallowing study, a geriatric medicine assessment and an MRI angiogram. She often misses these tests. You spend a great deal of your time coordinating her care. In fact, the other day you remarked to your receptionist, when receiving yet another message about her, that caring for her could be your full-time job.

You spend most visits sorting out which tests or specialty appointments have been missed. You often fall behind in your day after you see her but are reluctant to book her a longer appointment as sometimes she does not show up, usually when Sue cannot convince her to come. She is often squeezed in for follow-up after an ER visit or a brief hospital admission. She is a heavy smoker with no desire to quit. She tells you "I love it, doc."

Laura and her wife have come in to renew her medications. Today her wife looks haggard. She says she is exhausted as it took her hours just to convince Laura to come and see you. Getting her showered, dressed and out the door took even more time. Sue complains that she has no life as she is either taking Laura to her appointments,

administering a medication or a puffer, testing her blood sugar or trying to make healthy food for her. They have no children or other family. Laura looks happy and seems her usual self. She tells you she just wants to go home. She also says "I'm sick of tests and doctors… except of course you" and smiles.

Her medications include:
Donepezil 10 mg po once daily
Risedronate 35 mg po once weekly (45 min before food) x 8 years
Tiotropium 1 puff daily
Ventolin 2 puffs qid
Omeprazole 20 mg po before dinner
Hydromorphone 2 mg po qid
Ramipril 5 mg po once daily
Acetylsalicylic acid (ASA) 81 mg po once daily
Atorvastatin 40 mg po after dinner
Trazodone 25 mg po at bedtime
Gliclazide MR 60 mg po once daily
Metformin 500 mg po tid

Labs:
HbA1c 0.068
LDL 1.6
eGFR 50
Other labs are within normal limits

In order for Sue to follow all of the instructions on the vials, she is giving Laura medications at seven different times of day, not to mention her puffers. You realize that this model of caring for Laura is meeting neither her nor her wife's needs and is taking up a great deal of your time, without necessarily resulting in better outcomes for your patient. You think that focusing on improving well-being may be a better approach to Laura's care. To help with decision-making, you calculate her long-term prognosis with an online calculator that you heard about through your practice based small group (https://eprognosis.ucsf.edu/index.php). You choose the US calculator (i.e., answer "yes" to the question "is your patient in the United States?") as it was derived from a population similar to your practice. You ask the questions from the calculator and learn that given her comorbities and her functional limitiations, her estimated 5-year mortality is 63 to 70%.

What would you do to help elicit Laura's goals of care?

Part Two

You discuss goals of care with Laura and her wife. They tell you that they dread going to appointments because it usually means more testing, which then leads to more appointments. Her wife feels obligated to follow up every test because that's what they are told to do. Their days are filled with doctor's appointments, tests and ER visits. It often takes them several days to recover from the emotional and physical toll of an ER visit. They value having a good quality of life. They want to be able to spend time together watching TV, eating and visiting with friends and neighbours. Laura also wants to be able to smoke. Laura tells you she knows she has problems but she feels ok. Sue tells you they have told the doctors on many hospital admissions that they would not want aggressive measures such as CPR, intubation or feeding tubes.

How could you simplify Laura's care so it would meet her needs? Which medications would you address?

What changes might you make in your practice and how can you involve other health care professionals to facilitate Laura's care?

Case 2: Don, male, age 59

Don is an IT professional working for a small environmental consulting group. You have called him into the office because his pharmacy sent a prescription renewal request, and you realized upon looking at his chart that he was overdue for some testing.

His problem list includes type 2 diabetes, hypertension, atrial fibrillation, hypothyroidism, major depressive disorder, generalized anxiety disorder, panic disorder, obstructive sleep apnea and gout.

His medications from your patient profile are as follows:
Levothyroxine 100 mcg po once daily
Sitagliptin 100 mg po once daily
Metformin 500 mg po bid
Bupropion XL 450 mg po once daily
Citalopram 20 mg po at bedtime
Hydrochlorothiazide 25 mg once daily
Allopurinol 300 mg once daily
Atenolol 50 mg once daily
Quetiapine 100 mg po at bedtime
Atorvastatin 20 mg po at bedtime
Ramipril 10 mg po once daily
Warfarin 5 mg daily but adjusted based on monthly INR

On closer review of the request from the pharmacy, you note that the pharmacy has sent a request for all his medications except for atenolol and bupropion.

Labs (from three months ago):
HbA1c 0.092
Cr 137
eGFR 45
ALT 21
Lipids: LDL 1.21, HDL 0.82, TG 4.37
TSH 6.9 (normal range 0.4-5.0 mU/L)
Albumin/creatinine ratio 3.1
Urinalysis normal except high glucose

INR two months ago was 3.4. You notice a reminder on the chart from your nurse that she has been trying to reach him to advise him of the result.

What might you want to discuss with Don when he comes for his appointment?

Part Two

Don presents to the office for his appointment and starts off by letting you know that he and his third wife Sandra have decided to part ways. Don has no children. He admits that he has not been taking his medications regularly as Sandra was the one who filled his dosette. Although you had wanted to discuss his abnormal lab results, Don goes on to state that his mood has been quite low and he has been having a hard time getting out of bed. He is still working but finds that his concentration and motivation are poor. He drinks socially, does not use other substances and is not suicidal. He's been having aches all over and he's wondering if it's due to his cholesterol medication; he would like to try stopping it. In addition to this, a review of the chart reveals that his INR has often been out of therapeutic range in the past.

What might be your next steps?

Part Three: Three weeks later

Don felt validated and motivated by your discussion a few weeks ago and returns to the office for a more detailed assessment. His mood seems to have improved a bit and he was able to get an initial appointment with a counsellor through his Employee Assistance Program.

He reports that since his last appointment, he saw his cardiologist in follow-up. The cardiologist was "surprised" that you stopped his statin. Don reports that the cardiologist recommended he start again. He notes that for the two weeks he was off the medication, he thought maybe his muscle aches got a bit better. This seemed to give him more energy and he was able to do some regular exercise. His current priority is day-to-day functioning.

How might you handle this situation?

INFORMATION SECTION

1. Multimorbidity is defined as the presence of two or more chronic medical conditions. A chronic medical condition may be:
   - A physical condition.
   - A mental health condition.
   - A symptom complex (e.g., frailty, risk of falls, chronic pain).
   - A sensory impairment (e.g., vision or hearing loss).
   - A substance use disorder.[1]

2. A study using data from Canada's Chronic Disease Surveillance System (CCDSS) reported that 26.5% of adults over age 40 had ≥ 2 conditions and 10.2% had ≥ 3 conditions.[2] However, these estimates are likely low as only five conditions (cardiovascular disease, respiratory disease, mental illness, hypertension and diabetes) were included.
   - In another study (n=105,416), the odds of having multimorbidity were higher for adults 65 years and older (35x) and for adults with lower socioeconomic status (3.7x).[3] Multimorbidity developed earlier (i.e., in middle age) in adults with lower socioeconomic status.[3]
   - Approximately one-quarter of older adults (≥ 65 years) report being diagnosed with three or more conditions; these older adults had almost three times more health care visits compared to those without chronic conditions.[4]

3. The prevalence of multimorbidity is much higher in a primary care setting than in the general population. A secondary analysis of a Quebec cohort study compared patients from primary-care clinics with individuals from the general population in terms of the prevalence of 21 conditions.[5] As a result of an increase in the number of conditions being included, estimates of multimorbidity prevalence were higher than those from CCDSS. Multimorbidity prevalence was approximately 10% higher in the primary-care clinic patients than in the general community participants (see Table 1).

Table 1. Prevalence of multimorbidity in primary care vs the general population (Canada)

	PRIMARY CARE	GENERAL POPULATION
≥ 2 conditions	69.5%	59.4%
≥ 3 conditions	54.5%	43.7%

IMPACT OF MULTIMORBIDITY

4. The ability of patients to cope with multiple chronic conditions depends on a balance between the *workload* of demands placed on them by their disease and their treatments, and their *capacity* (i.e., abilities, resources, readiness) to address those demands. A high workload in relation to capacity may lead to disruptions in care, self-care and possibly poor health outcomes.[6]

Patient Workload

5. Patient workload encompasses the demands patients face on a daily basis, including managing their chronic conditions, job, family, caregiving, travelling to appointments and taking medications.

6. Health care providers may contribute to the *burden of treatment* which leads to increased workload for patients. This burden would include:
   - The effects of multiple appointments with primary and consultant health care providers (e.g., the time and scheduling involved).
   - Multiple prescriptions with varying instructions for how medications should be taken (e.g., time of day, with or without food).[7]
   - Difficult medication packaging (e.g., hard to open pill containers, tiny pills, unable to tell whether a pill has been taken).
   - Non-pharmacological treatment burden (e.g., restrictive diets, exercise programmes, smoking cessation programs).[8]

   Treatment burden may affect the patient's ability to follow a treatment plan. Intensifying treatment can actually increase problems rather than solve them.[9]

Patient Capacity

7. Patient capacity refers to the ability of patients to handle their workload. It can be reduced by a *burden of illness,* which refers to troublesome symptoms (e.g., fatigue, stress, depression) related to a chronic condition. Having multiple chronic conditions is associated with increased anxiety and depression, which reduces a patient's capacity to cope with their conditions.[10-12] Physical disabilities and limitations (e.g., pain, fatigue, inability to exercise, medication side effects) can also affect a patient's ability to manage their care.[13]

8. Patients report other barriers that reduce their capacity to manage their health effectively: financial constraints, difficulty accessing and communicating with health care providers, inadequate family and social support, logistical challenges (e.g., inadequate transportation), and lack of knowledge about available resources.[13]

APPROACH TO CARE OF PATIENTS WITH MULTIMORBIDITY

9. A multimorbidity approach focuses on reducing a patient's workload and increasing their capacity in an attempt to enhance their well-being and possibly improve outcomes (see Appendix 1).[6]
   - Reducing workload includes stopping those treatments that have limited benefit or a higher risk of adverse events; using non-pharmacological interventions when appropriate; considering which specialists are absolutely necessary; and rearranging care to optimize appointments.[8]
   - Increasing capacity may involve addressing physical and mental health concerns, arranging social supports and facilitating transportation.[6]

10. A multimorbidity approach is particularly important in patients who have the following characteristics:
    - Difficulty managing their treatments or daily activities.
    - Receiving care from multiple services.
    - Frequent unplanned or emergency care.
    - Multiple prescriptions for regular medications (≥ 15 medications, or 10–14 medications and at risk of adverse events).

    [NICE guideline, Low to Moderate quality evidence][1,8]

Promote Patient Centred Care and Shared Decision-Making

11. Shared decision-making is defined as "an approach where clinicians and patients share the best available evidence when faced with the task of making decisions, and where patients are supported to consider options to achieve informed preferences."[14] Research shows shared decision-making is associated with a number of positive outcomes including patient satisfaction with care, self-confidence and self-care skills.[15]

12. A recent model has been proposed to give clinicians a framework for shared decision-making.[14] This framework involves three steps:
    a) Choice talk – making sure patients know which reasonable options are available
    b) Option talk – providing more detailed information about options
    c) Decision talk – supporting the work of considering preferences and deciding which is best.

13. Asking patients at the outset of a visit "What matters most to you?", "What is bothering you most?" or "What would you like to focus on today?" can help establish priorities. The health care provider can engage in shared decision-making around the issues most important to the patient.

14. Particularly in patients with chronic progressive illnesses, it is important to discuss their personal goals, values and priorities. Patients may wish to maintain independence, participate in meaningful activities, prevent specific adverse outcomes (e.g., stroke), reduce adverse effects of medications, decrease treatment burden or live longer.[1] The discussion should include questions about family involvement in their care, and also to what degree the family can support the patient. Table 2 summarizes some examples of questions to ask to facilitate this discussion.

Table 2. Conversation Guide for Establishing What is Important and Setting Goals of Care[16,17]

For information on:	Example questions:
Understanding of condition/prognosis	• What is your understanding of where you are with your condition(s)? • In general, do you find knowing numbers or statistics about your condition helpful?
Values/priorities	• What is important to you as you think about the future?
Goals	• If your health situation worsens, what are your most important goals? • What are your hopes and personal goals for living with your condition(s)?
Fears/worries	• What do you fear or worry about the most for the future?
Function	• What abilities are so important to you that you can't imagine living without them?
Trade-offs	• If any of your conditions worsened, how much are you willing to go through for the possibility of gaining more function or time *(or whatever else the patient values)*?
Family	• Are there family members you would like to have involved in your care? • How much does your family know about your priorities and wishes? • How much help can your family provide?

15. It is important to recognize when a patient is facing a "preference-sensitive" decision (i.e., a decision that may be based significantly in patient preference). Preference-sensitive decisions include:
    - Therapy that may improve one condition but make another worse.
    - Therapy that may confer long-term benefits but cause short-term harm.
    - Medications or therapeutic approaches with both benefits and harms.[18]

    Establishing goals of care with a patient will allow these decisions in particular to be made more easily.

16. Capacity to consent can be an issue when discussing goals of care and making decisions with patients about their treatments. Generally, as for consent to any health care intervention, "[t]here is a legal presumption that a patient is capable of consenting to investigation and treatment unless there is reason to believe otherwise."[19] Capacity can vary over time and is specific to a particular decision, in that a patient can be capable of making one decision but not another. Capacity to consent laws vary by jurisdiction. If capacity to consent is a concern, the Aid to Capacity Evaluation (ACE) tool can be used to systematically evaluate capacity (available at http://www.jcb.utoronto.ca/ tools/documents/ace.pdf).

17. Discussions about goals of care and treatment benefits/harms may lead to the topic of advanced care planning. Speak Up Canada is a resource for patients and families to assist with this conversation. A workbook for creating a plan can be downloaded or completed online (available at http://www.advancecareplanning.ca).

Develop an Individualized Management Plan

18. After discussing the patient's goals of care and determining their workload and capacity, an individualized management plan can be developed in agreement with the patient.[8] Appendix 2 includes a plan template. The plan may include:
    - A summary of the goals of care.
    - A list of medications and/or non-pharmacological treatments to start, stop or change.
    - Health care appointments that will take priority.
    - A list of care providers on the patient's care team (including family members the patient wishes to involve in his or her care).
    - Assignment of responsibility to one provider as coordinator of care (typically the family physician).
    - Actions or comments the patient wishes to include.
    - Follow-up time frame to review decisions and effects of changes on patient.

19. Record the individualized management plan in the patient's electronic health record. A copy can be given to the patient (and family members as appropriate). Send a copy to other providers on the care team to facilitate communication and coordination of care.

20. Consider sending the plan to consultants. When patients have multiple consultants involved in their care, family physicians may be challenged by less than optimal communication around the rationale for treatment.[7,20] This fragmentation of care can cause logistical difficulties and additional unnecessary patient visits.[21] For appropriate elderly patients, a geriatric assessment, if available, may be helpful to support the family physician in developing a coordinated management plan; however, the evidence for benefit is mixed.[22]

CHALLENGES WHEN PROVIDING CARE TO PATIENTS WITH MULTIMORBIDITY

Reviewer comment:
In general, caring for patients with multimorbidity involves accepting heterogeneity in management strategies. In most cases, multiple options would be considered acceptable and they need to be individualized for each patient. This approach will have implications for policy-makers and administrators, especially regarding pay-for-performance systems to follow treatment guidelines.

Interpreting Guidelines and Evidence

21. Guideline recommendations are typically based on evidence from studies of single conditions. Patients in these trials are not usually representative of patients with multimorbidity (who are often excluded from trials), requiring significant clinical judgement to determine individual applicability.[21] Patients with multimorbidity may experience less clinical benefit than patients with single conditions; they may also be at greater risk of adverse effects because of interactions between medications and conditions.[8] Rather than following guideline recommendations for single diseases, a promising approach involves focusing interventions on:
    - Particular risk factors shared across comorbid conditions (e.g., suggest smoking cessation)
    - General functional difficulties experienced by patients (e.g., suggest physiotherapy).[1,7]

22. A key role in caring for patients with multimorbidity is being able to effectively interpret and apply the evidence. The 2015 module on Explaining Evidence to Patients (available at https://members.fmpe.org) provides guidance on how to interpret evidence and speak with patients about the risks and benefits of a treatment. Although clinicians may feel only certain adverse effects outweigh expected benefits, patients often consider them all to be highly significant.[23] Appendix 3 provides information on risks and benefits of some medications used in conditions commonly seen in patients with multimorbidity.

23. It is important to consider if the trial outcomes are important to the patient. Clinical trials often look at surrogate endpoints (e.g., BMD or scores on a cognitive test) as opposed to outcomes that are patient-oriented (e.g., hip fracture or admission to a long-term care facility).

24. The *time to benefit* (TTB) is a measure of "the time it takes for a population to realize the intended benefit of the treatment" and may be more relevant to a patient with multimorbidity than the magnitude of treatment effect (e.g., number needed to treat [NNT]). It is important to remember that TTB can vary depending on the baseline risk, and can also be found to be longer if trials are smaller.[24]

- Evaluate TTB (and time to harm) in relation to the patient's estimated life expectancy when reviewing treatments. For example, the TTB for tight glycemic control in diabetes mellitus is at least 8 years. Choosing Wisely Canada and the Canadian Diabetic Society recommend a target HbA1c of 7.0 to 7.5% for healthy elderly patients but 8.0 to 8.5% for patients with multiple morbidities and a life expectancy less than five years.[25,26] Similarly, preventive interventions (e.g., mammography, colonoscopy) may have a longer TTB than the patient's remaining life expectancy and will merely add to the patient's treatment burden.

Assessing Prognosis

25. Incorporating prognosis into decision-making can help prioritize the items in a care plan and inform treatment decisions.[18] However, determining prognosis and trajectory of an illness is difficult. Clinicians should keep in mind that every patient is an individual and many factors beyond those used in these indices may influence a patient's prognosis. There are several tools that may be clinically useful:
    - E-prognosis (https://eprognosis.ucsf.edu/index.php) is a repository of published tools where clinicians can obtain evidence-based information on prognosis for older adults who do not have a dominant terminal illness, as well as cancer screening recommendations based on patient characteristics.
    - The Gold Standards Framework prognostic indicator helps to identify patients nearing the end of life (http://www.goldstandardsframework.org.uk/PIG).[27]
    - Frailty can also impact prognosis in patients with multimorbidity. This can be assessed using the Clinical Frailty Scale (see the 2015 module Doing Less and Doing It Wise available at https://members.fmpe.org). As patients score higher on the scale, their medium-term risk of death increases.[28]

26. For patients with a dominant terminal illness, such as advanced dementia, cancer or heart failure, prognostic indices specifically designed for those purposes should be used (see links in E-prognosis).

Deprescribing Medications

27. Deprescribing is the planned and supervised process of reducing doses or stopping medications that may no longer be providing benefit or are causing harm. Deprescribing can also include switching to another drug.[29] In Canada, older adults who have three or more conditions take on average six prescription medications. The use of ≥ 5 prescription medications is associated with having more side effects requiring medical attention (13% for ≥ 5 medications vs. 6% for 1–2 medications).[4] See Table 3 for several deprescribing resources that can help to inform individualized, patient-centred plans to optimize medications.

28. Medication reviews and deprescribing should be considered when certain events occur:[30]
    - Falls
    - Immobility
    - Confusion
    - Functional decline

29. To optimize treatment, discuss with the patient how their treatments may be helping or harming them. Treatments that are not relieving symptoms or are causing harm can be the first to be stopped or reduced. It is also important to consider treatments that may be beneficial and could be started.[8] Consider prescribing or switching to medications with consistent regimens and convenient packaging. If combination pills or inhalers are available, consider using these to streamline treatments. Discuss options for easing medication management (e.g.,reminder systems) and increasing adherence with the patient.[18]

Talking Tip:
Consider using positive framing when discussing stopping medications. For example, say "this medication will not help you live longer" versus "you may not live long enough to benefit from this medication."

30. Family physicians identified barriers to deprescribing in a qualititative study from New Zealand. Some of these included:
    - A medical culture and patient expectation of prescribing medication to fix problems.
    - Appearing neglectful to colleagues (e.g., the patient who has a heart attack after being appropriately deprescribed a statin).
    - Appearing uncaring by patients (e.g., a patient feeling written off because of their age).
    - Organizational factors: time constraints, lack of information flow between prescribers, multiple guidelines, lack of access to non-pharmaceutical options.

    The duty to "do what is right for the patient" was the only identified incentive to deprescribing.[31]

31. Suggestions from the same study that were felt to support deprescribing included:
    - Targeted funding for annual medication reviews.
    - Computer alerts to remind prescribers to consider deprescribing.
    - Easy access to expert advice on medication management and guidelines for managing common comorbidities.
    - Tools to communicate risks to patients.
    - Patient handouts on the benefits of deprescribing.[31]

32. Some studies have compared the effects of discontinuing vs. continuing medications:
    a) *Antihypertensive treatment:* In patients with mild hypertension (defined as diastolic BP between 90–109 mmHg) who stopped treatment compared with those who continued, no significant differences were seen for nonfatal MI in one RCT[32] [Low Evidence] or cardiovascular mortality in two RCTs[32,33] [Low Evidence]. Return to hypertension occurred more often in the discontinuation group [two RCTs[32,33]; Moderate evidence]. The National Institute for Health and Care Excellence (NICE) states that the evidence is not sufficient to make a specific recommendation around stopping antihypertensive medication.[8]
    b) *Statins:* The evidence on stopping statins is limited to one RCT (n=189) with short follow-up (mean 18 weeks) in patients with advanced life-limiting disease.[34] In this study, stopping statins was associated with improved quality of life. NICE states that clinicians should use their judgement and consider the nature and severity of the patient's cardiovascular disease when considering discontinuing statins.[8] There is limited evidence for the use of statins as primary prevention in the elderly.[35-37]
    c) *Bisphosphonates:* Two RCTs (n=1099, n=1233) in postmenopausal women suggest that, after between 3 and 5 years of treatment, discontinuing bisphosphonates may not increase *non-vertebral* fracture risk after an additional 3 to 5 years of follow-up (see module on Osteoporosis Challenges in Management May 2017 [available at https://members.fmpe.org]).[38,40] Patients who are high-risk and/or who have a history of fragility fracture are generally not considered candidates for bisphosphonate holidays;[43,44] however, there is evidence from a recent cohort study that suggests clinical fracture risk increases after 10 years of continuous bisphosphonate therapy (HR 1.29, 95% CI 1.07–1.57) in older women.[45] Consider patient choice, fracture risk, and life expectancy in the discussion on stopping treatment.[43]
    d) *PPIs:* The Canadian Deprescribing Network recommends deprescribing PPIs (i.e., decrease the daily dose, stop, change to on-demand use, or switch to an H_2RA) in adults with upper GI symptoms who have completed a minimum four-week course resulting in resolution of upper GI symptoms (Strong recommendation, Low Evidence).[29] This recommendation does not apply to patients with Barrett esophagus, severe esophagitis, or documented history of bleeding gastrointestinal ulcers.
        - The use of PPIs has been associated with harms, including increased risk of fracture,[46] pneumonia[47] and *Clostridium difficile* infection.[48]
        - Symptom relapse occurred more often in patients using PPIs on demand (RR 1.71, 95% CI 1.31–2.21, number needed to harm [NNH] 14 at six months) and in patients switched to an H_2RA (RR 1.92, 95% CI 1.44–2.58, NNH 5 at six months) than in patients using PPIs continuously.[29,49]
        - An information pamphlet and a conversation with a pharmacist has been shown to aid in this process.[50]

33. A 2016 systematic review (4 RCTS, n=1925) found that the use of the deprescribing tool STOPP/START reduced the prescription of potentially inappropriate medications.[51] Clinical outcomes varied across studies. In single RCTs, use of the STOPP/START tool (https://academic.oup.com/ageing/article/44/2/213/2812233#cited-by) led to fewer falls, ER visits and delirium episodes. One RCT reported a shorter hospital stay when the STOPP/START tool was used, but another reported no difference. No effect was seen on quality of life, hospital readmission and mortality.[51]

34. After any changes to treatment are made, it is important to follow up with the patient and assess the impact on the patient's well-being before deciding to make any further changes. Decisions for further changes may include stopping, switching or restarting medications.[8]

Table 3. Tools for Deprescribing

Tool	Description	URL
Canadian Deprescribing Network (CDN)	• Evidence-based guidelines/ algorithms for deprescribing PPIs, antihyperglycemics, benzodiazepines and antipsychotics	http://deprescribing.org/
Patient resource for deprescribing (from Canadian Deprescribing Network)	• Fact sheet on deprescribing • Patient handouts on discontinuing specific medications • Guide to starting conversation with doctor about medications	http://www.deprescribingnetwork.ca/
MEDSTOPPER	• Interactive website where health care provider enters patient's medications • Lists NNTs, risk of harm; notes from STOPP/START or Beers criteria • Lists medications according to priority for stopping • Provides specialized guidance for frail elderly	http://medstopper.com
National Institute for Health and Care Excellence (NICE) Database of treatment effects	• Includes medications for 11 common conditions that are often co-morbid • Provides baseline risk, relative risk, NNT, absolute risk change, effect per 1,000 patients treated, details about trial populations	https://www.nice.org.uk/guidance/ng56/resources Click on "Database of Treatment Effects" (requires spreadsheet application such as Excel)
Doing Less and Doing It Wisely (Aug 2015 module)	• Appendices on ○ Stepwide approach to regular medication review ○ Sample list of STOPP medications	Available at https://members.fmpe.org

Organizing Practice Flow

35. Very little research has assessed the optimal approach to organizing primary care for patients with multimorbidity. A few studies have evaluated the use of telemonitoring (i.e., remote measurement of weight and vital signs) but the evidence is insufficient to make any recommendations.[8]

36. Primary care providers play an important role in ensuring continuity of care for patients with multimorbidity. Typical 10- to 15-minute consultations designed to address a single issue constrain the provider's ability to address multiple chronic conditions.[7] Internationally, family physicians have highlighted a lack of time as a barrier to care for this population,[52] which can lead to the health care provider feeling overwhelmed and inadequate in clinical practice.[20]
    - Booking longer appointments at the end of a clinic half-day can alleviate time pressures.
    - Standing appointments allow regular follow-up with the health care provider to address issues as they arise in an ongoing way.
    - Making home visits is another option for providing care.
    - Primary care reform models (with a move away from fee-for-service remuneration) allow physicians to dedicate more time to care for patients with multimorbidity.

37. Involving other team members can help make the most efficient use of physician time. Medication reviews, measurement of vital signs and assessment of functional status can be done by community pharmacists, practice nurses and community occupational therapists, as appropriate.[7]

THE BOTTOM LINE

- Establish values, priorities, goals and prognosis in the patient with multimorbidity and use this information to guide shared decision-making and discussions.
- Focus on reducing patient workload (by addressing frequency of appointments, number of care providers, medication number and schedules) and improving capacity (by addressing mental health, physical function, transportation, finances)
- Develop, record and share a care plan with the patient and team members that includes a timeline for follow-up.

CASE COMMENTARIES

Case 1: Laura, female, age 82

What would you do to help elicit Laura's goals of care?

You could initiate a conversation about goals of care by asking Laura what is important to her and to Sue at this point in their lives (Info points 12, 13). Some simple questions can open the discussion (see Table 2): What does Laura want? What is she hoping for? What makes life meaningful for her? It is important to learn what Laura values and wishes to make a priority in her care (e.g., length of life, quality of life, daily function, maintaining independence). What trade-offs is she willing to make? It will be important to also get a sense of Laura's wife's feelings and abilities, as she is an important part of her care and her substitute decision-maker (Info point 14).

Part Two

How could you simplify Laura's care so it would meet her needs? Which medications would you address?

Laura and Sue may feel they need permission to say no to some of the tests and specialist appointments that have been recommended. You could give the couple information about advance care planning and follow up on this at your next visit (Info point 17). You could consider which specialists are necessary (Info points 9, 18). Given the stability of her conditions and her goals of care, you may suggest that her ophthalmologist is the only consultant she should continue to see.

Sue can be reassured that she does not need to do glucometer testing and can liberalize Laura's diet, given her age, comorbidities and goals of care (Info points 6, 9).
Medications: Start the deprescribing process with the medications that are either causing obvious harm or that will be easy to stop (Info point 29). For Laura, you may consider the following approaches:

- Gliclazide: Given her tight HbA1c and her frequent falls, she may be having hypoglycemic episodes that she is not aware of. This medication likely can be stopped (Info point 24).
- Atorvastatin: This can be stopped due to the lack of evidence for the use of statins in primary prevention in the elderly (Info point 32b).
- Risedronate: Given the length of time she has been on this medication (8 years) and the fact she has had no fractures, she can likely stop risedronate (Info point 32c). However, this should be discussed with the couple as Laura is still at risk of fractures due to her frequent falls.

Laura should be assessed once she has discontinued these treatments before moving to deprescribing any others (Info point 34). The donepezil, omeprazole, hydromorphone, ASA and trazodone could all be gradually reevaluated. In addition, it may be worth examining the timing of Laura's medications. Putting her medications in blister packages and minimizing the administration times could also reduce treatment burden (Info points 6, 29).

What changes might you make in your practice and how can you involve other health care professionals to facilitate Laura's care?

You could change the time of her appointments (i.e. see her at the end of a half-day) so that you can give her the care she needs without creating a backlog. You could also consider having monthly standing appointments, some of which can take place in Laura's home (Info point 36). Certain aspects of her care (e.g., medication review, vital signs, blood sugar check) can be done before you see her by other care providers if available (practice nurses, community pharmacists). You could also arrange for an occupational therapy assessment at home to look at home safety and falls risk (Info point 37).

Case 2: Don, male, age 59

What might you want to discuss with Don when he comes for his appointment?

You could explore whether Don is taking his prescriptions as directed, as the pharmacy did not ask for renewals on all of his medication. If this is the case, you could discuss his patient workload and capacity, including any barriers to medication adherence and monitoring of his INR (Info points 4, 6). Would a blister package be helpful (Info points 6, 29)? Are there side effects to the medications? You may also want to discuss his abnormal lab findings (i.e., increased INR, elevated A1c, elevated TSH).

Part Two

What might be your next steps?

Don's mental health will likely need to be your main focus of concern at this visit, even though he is dealing with several issues. Addressing his mood and simplifying his medications may help with compliance (by increasing capacity and decreasing workload, respectively), which may then help to improve his INR, A1c, and TSH (Info point 9). He is on several high-dose psychiatric drugs, and these may need to be re-evaluated. You could initiate a referral to a psychiatrist, recognizing that there could be a long wait. Consider booking a separate longer appointment for a detailed mental health assessment (Info point 36), including an exploration of mental health resources that he could contact such as an Employee Assistance Program.

At this visit, it would help to discuss Don's goals of care and what he is looking for right now so that you can prioritize his medications with respect to risks and benefits (Info points 13, 14, 29). Don is very bothered by his musculoskeletal complaints. Information from a website such as www.medstopper.com can give you information that can help with this conversation. For primary prevention of heart disease in a high-risk population, the NNT with statins (over 5 years) is 60 and the NNH for causing any kind of myopathy (including myalgias, myositis and rhabdomyolysis) is only 10. As Don is symptomatic, it might be reasonable to stop the statin to see if this eases his aches and pains. Increasing his dose of levothyroxine may help improve his mood; however as he has not been taking his medications as prescribed, a discussion around how to make this easier for him (such as the use of a blister pack) would be the first step.

For a future visit, you could also consider combining his antihyperglycemic medications into a long-acting pill (sitagliptin/metformin XR 100 mg/1000 mg once daily) (Info point 29). Although you do not want to overwhelm Don at this visit, he has not had an INR in two months and testing should be encouraged. A switch from warfarin to a direct oral anticoagulant (DOAC) for stroke prevention could be discussed at future visits (Appendix 3).

Quetiapine may also be a poor drug choice for him given his diabetes (risk of metabolic side effects) and it is not recommended as a sleep aid. A taper could also be discussed over time. Consider implementing an office protocol for your nurse to review all medications with patients at the beginning of their appointment (Info point 37).

Part Three: Three weeks later

How might you handle this situation?

Review Don's care priorities. It may be helpful to review the evidence for statins in patients with diabetes and hypertension and the risk of side effects (Appendix 3). The myalgias are impacting his sleep and ability to sit for long periods at his desk at work. Although the Canadian Cardiovascular Society recommends that statins be considered for most patients with diabetes, a multimorbidity approach entails balancing the evidence with patient values and preferences (Info points 11, 21). The options you could discuss are (1) staying off the statin, (2) trying the statin again (N of 1 trial) — perhaps his aches and pains have nothing to do with the medication, (3) using the same statin at a lower dose or (4) trying another statin (Info point 27). As Don is beginning to feel better in general, he may prefer to wait until his mood improves before taking a statin again. You make a follow-up appointment to reassess his mood and revisit this decision (Info point 34). A copy of Don's individual management plan could be placed in his electronic health record and one sent to the cardiologist (Info points 19, 20).

We always welcome your input. If you would like to provide feedback on this module, the following link will take you to an electronic survey: **http://members.fmpe.org/modulefeedback**

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While every care has been taken in compiling the information contained in this module, the Program cannot guarantee its applicability in specific clinical situations or with individual patients. Physicians and others should exercise their own independent judgment concerning patient care and treatment, based on the special circumstances of each case.

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LEVELS OF EVIDENCE

Evidence Level	Type of Evidence Included
High	• Systematic reviews/meta-analyses that include a wide range of well-designed studies (few limitations/risk of bias, directly applicable to target population); summary estimate has a narrow confidence interval. • Large, well designed RCTs. Study conclusions are unlikely to be strongly affected by information from future studies.
Moderate	• Systematic reviews/meta-analyses of studies with more limitations/risk of bias (less well designed RCTs, cohort, case control studies), or when the summary estimate has a wide confidence interval. • Single, moderate sized, well-designed RCTs. • Well-designed, consistent, controlled but not randomized trials. • Large cohort studies. Study conclusions could change with additional information from future studies.
Low	• Small RCTs with a high risk of bias. • Controlled or cohort studies with significant limitations/risk of bias or significant variation between study results. Evidence from well-designed studies in representative populations is lacking or insufficient.
Very Low	• Expert Opinion • Individual case reports or series

Sources:

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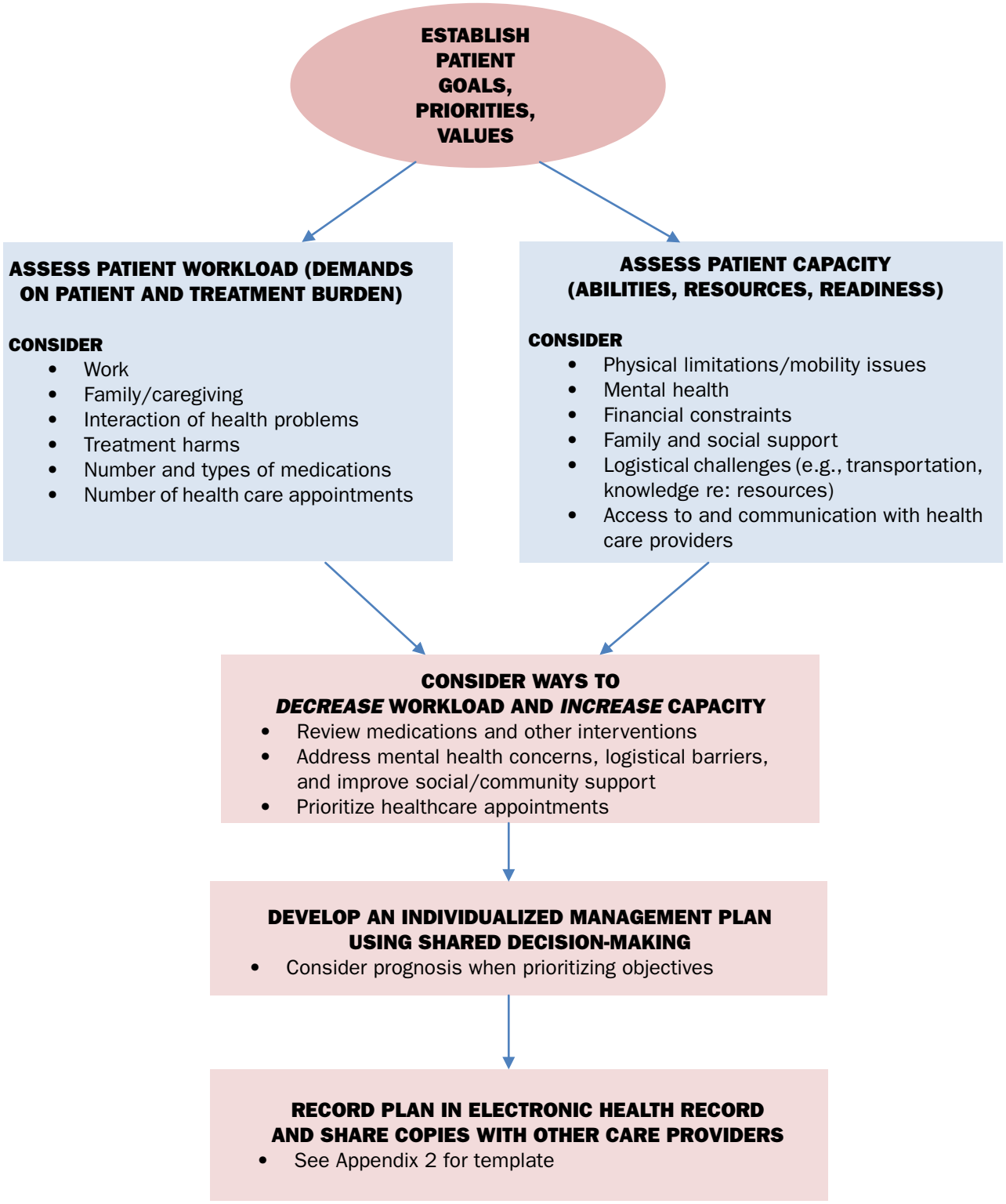
APPENDIX 1. Approach to Evaluation and Management of Patients with Multimorbidity



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APPENDIX 2. Template for Individualized Patient Care Plan

Date:
Demographics:

Family/caregivers Contact info	**Members of care team** Coordinator: Other members:	**Medical conditions** **Allergies**	**Medications** **Pharmacy**
Social factors (e.g., living situation, financial, other supports, etc.)		**Non-pharmacological interventions**	
What is important to patient (e.g., summary of goals, priorities, advance directives)			

Objective	**Plan** (Include any medication changes, appointment modifications, medication reviews by other providers, etc.)	**Follow-up date**	**Notes** (Include any actions to be done at follow-up, comments patients wish to include, etc.)

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APPENDIX 3. Evidence of Effectiveness of Medications in Common Conditions*

*NNT and harms data come from studies that do not include people with multimorbidity. Consider the risk profile of individual patients when assessing the potential for benefit and harm.

Medication (vs. placebo unless otherwise noted)	Condition	Outcomes	Annualized baseline risk	Absolute difference per 1,000 patients treated per year	Study follow-up	NNT (95% CI) to prevent one adverse event	Harms
Anticoagulant (direct oral or vitamin K antagonist)	Atrial fibrillation	All-ischemic stroke	3.7%	25 fewer strokes	1 year	40 (34 to 58)	Over 1.5 years: • 1 in 25 bleeding (for warfarin) • 1 in 384 intracranial hemorrhage (for warfarin)
		All-cause death	4.99%	11 fewer deaths	2 years	46 (26 to 502)	
Direct anticoagulants (compared with warfarin)	Atrial fibrillation	All-cause death	Not reported	Not reported	Median range 16–24 months	145	Trend toward less major bleeding for direct anticoagulants (RR 0.83, 95% CI 0.69–1.002)
		Stroke/systemic embolism	Not reported	Not reported		200	
Aspirin	Angina	All-cause death	2.48%	5 fewer deaths (NS)	4.2 years	46 (NS)	Over 4.2 years: • 1 in 91 bleeding (NS)
		Non-fatal MI	1.74%	15 fewer MIs	4.6 years	15 (14 to 17)	
Statins	CVD primary prevention	All-cause death	1.53%	2 fewer deaths	3.8 years	186 (120 to 510)	Over 4 years: • 1 in 250 develop diabetes Over 5 years: • 1 in 10 myalgia
		Non-fatal MI	0.53%	2 fewer MIs	3.4 years	142 (113 to 206)	
		Stroke	0.49%	1 fewer strokes	3.7 years	265 (179 to 556)	
	CVD secondary prevention	All-cause death	3.0%	4 fewer deaths	3.8 years	67 (52 to 97)	Over 4 years: • 1 in 250 diabetes Over 5 years: • 1 in 10 myalgia
		Non-fatal MI	1.97%	6 fewer MIs	3.7 years	46 (40 to 55)	
		Stroke	1.63%	3 fewer strokes	3.2 years	87 (69 to 120)	

APPENDIX 3. Evidence of Effectiveness of Medications in Common Conditions* cont'd

Medication (vs. placebo unless otherwise noted)	Condition	Outcomes	Annualized baseline risk	Absolute difference per 1,000 patients treated per year	Study follow-up	NNT (95% CI) to prevent one adverse event	Harms
Statins for patients with diabetes	Primary prevention	Composite cardiovascular outcome	Not reported	9 fewer events (NS)	3.5 years	32 (NS)	Not reported
	Secondary prevention		8.3%	7 fewer events (standard dose) 12 fewer events (intensive dose)	5 years	27 (standard dose) 17 (intensive dose)	
Bisphosphonates	Osteoporosis treatment	Vertebral fracture (primary and secondary prevention)	0.24%–2.2%†	22 fewer fractures	3 years	15	Over 4 years Upper GI adverse effects most frequently reported (RR 1.03, 95% CI 0.98–1.08; NS) Rare associations Osteonecrosis of the jaw: 1 case/100,000 person years Atypical subtrochanteric and diaphyseal femur fracture: 2–78 cases/100,000 person years
		Hip fracture (secondary prevention)	0.08%–1.7%†	4 fewer fractures	3 years	91	

†Range is for Fracture Index Score 1 to Fracture Index Score 13.

CI = confidence interval; NS = difference from placebo group is not significant; NNT = number needed to treat; RR = relative risk.

Sources: 1) National Institute for Health and Care Excellence's "Database of treatment effects." Available at https://www.nice.org.uk/guidance/ng56/resources; **2)** Medstopper. Available at: http://medstopper.com; **3)** FMPE module on Osteoporosis Challenges in Management (May 2017; available at https://members.fmpe.org); **4)** Wells GA, Cranney A, Peterson J, et al. Alendronate for the primary and secondary prevention of osteoporotic fractures in postmenopausal women. *Cochrane Database Syst Rev.* 2008:CD001155; **5)** Sattar N, Preiss D, Murray HM, et al. Statins and risk of incident diabetes: a collaborative meta-analysis of randomised statin trials. *Lancet.* 2010;375:735-42; **6)** Brown JP, Morin S, Leslie W, et al. Bisphosphonates for treatment of osteoporosis: expected benefits, potential harms, and drug holidays. *Can Fam Physician.* 2014;60:324-33; **7)** Chou R, Dana T, Blazina I, Daeges M, Jeanne TL. Statins for prevention of cardiovascular disease in adults: evidence report and systematic review for the US Preventive Services Task Force. *JAMA.* 2016;316:2008-24; **8**) Dogliotti A, Paolasso E, Giugliano RP. Novel oral anticoagulants in atrial fibrillation: a meta-analysis of large, randomized, controlled trials vs warfarin. *Clin Cardiol.* 2013;36:61-7; **9)** de Vries FM, Kolthof J, Postma MJ, Denig P, Hak E. Efficacy of standard and intensive statin treatment for the secondary prevention of cardiovascular and cerebrovascular events in diabetes patients: a meta-analysis. *PLoS One.* 2014;9:e111247.