Dalla Lana
School of Public Health

A Framework for Resource Stewardship in Health Care

Choosing Wisely Canada STARS Leadership Summit

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Image from Keith Haring Foundation https://www.haring.com/

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Learning Objectives

By the end of this session, participants will be able to:

1. List key harms of unnecessary tests and treatments
2. Reflect on the intersection between medical education and resource stewardship
3. Describe strategies that medical students could employ to advance resource stewardship

What does ‘resource stewardship’ mean to you?

- I trust you not to go to Google/use AI
- Write 3 words to describe what resource stewardship in health care **YOU**
- **https://www.menti.com/blbpzik6sm93**
- **Code 9211 9112**

Join at menti.com | use code 9211 9112

Mentimeter

What does resource stewardship mean to you?

25

Resource Stewardship … Defined by the Experts

Less is More: Integration of Resource Stewardship in Medical Education

Anand Lakhani (University of Toronto)

Elliot Lass (University of Toronto)

William Silverstein (University of Toronto)

Background:

There is increasing awareness of the important role that physicians play in health care resource stewardship. Resource stewardship is based on the idea of parsimonious medicine, which is care that uses the most efficient means to effectively diagnose a condition and treat patients. It respects the need to use resources wisely, and ensures that resources are equitably available and used judiciously.[1] Importantly, parsimonious medicine is not rationing medicine: it is health care professionals providing care that is necessary to improve patients' health. The primary goal is to improve the quality of patient care—and not reducing the use of resources.

CFMS Canadian Federation of Medical Students

FEMC Fédération des étudiants et des étudiantes en médecine du Canada

https://www.cfms.org/files/position-papers/2016_integration%20of%20resource%20stewardship%20in%20medical%20education.pdf

How does resource stewardship relate to Choosing Wisely Canada?

https://www.mutualart.com/Artwork/STAR-MAN/CAF1BC53939C32F2

Choosing Wisely Canada

STARS

Students & Trainees Advocating for Resource Stewardship

Case - Mrs. Alda Ritis

- 65F is seen at Orthopedic pre –assessment clinic for knee osteoarthritis causing pain and limiting mobility.
- Past medical history: HTN (hypertension).
- Physical exam: alert and oriented. BP 138/72, HR 94, RR 16, T 36.8, SPO_2 96 per cent on room air. BMI 28. Severe crepitus (joint popping sounds) and pain on knee joint examination with limited range of motion .
- Orthopedic surgeon recommends right total knee arthroplasty to manage severe osteoarthritis.

Case – Mrs. Alda Ritis

- Mrs. Ritis is assessed by the Anesthesia resident in the Pre-operative Clinic.
- Mrs. Ritis has no history of any medical conditions aside from HTN; she has had no prior surgery.
- She is a lifelong non-smoker and consumes alcohol socially.
- She swims laps four times/week for one hour each time.
- The Anesthesia resident orders baseline lab work including a CBC, chemistry panel, coagulation factors, HbA1C; an electrocardiogram (EKG); and a chest radiograph (CXR).

Case - Mrs. Alda Ritis

- The CXR shows a small nodule at right lung apex.
- The surgeon delays her knee replacement to refer her to Respirology for workup. The Respirology resident assesses the patient, ordering a chest CT, which shows a 1.2 cm calcified lung nodule with no high-risk features.
- For "thoroughness", the Respirology resident orders a CT-guided lung biopsy.

Investigation	Result
Hemoglobin	126 (120-160 g/L)
WBC	9.8 (4-10 x 10^9/L)
Platelets	205 (150-140 10E9/L)
Sodium	135 (135-145 mmol/L)
Potassium	4.6 (3.5-5 mmol/L)
Creatinine	80 (50-90 µmol/L)
INR	1.1 (0.9-1.2)
PTT	32 (20-40 sec)
HbA1C	5.8 (4.0-6.0 per cent)

Case – Mrs. Alda Ritis: Harm from Care

- After four months of investigation and follow-up appointments, her nodule is determined to be benign based on pathology results.
- She is booked for her knee surgery three months later.
- She undergoes the operation without complications.

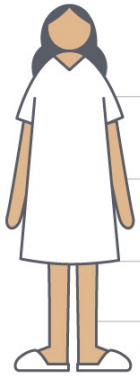
What were the harms to Mrs. Alda Ritis?

What were the harms to the health care system?

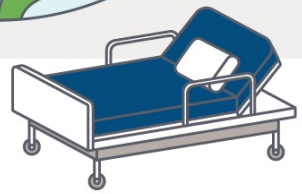
PLANET EARTH

THE HARMS OF OVERUSE IN HEALTH CARE

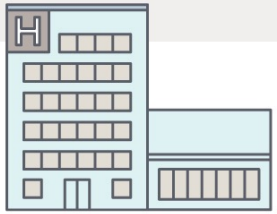
It is estimated that up to 30% of all health care offers no clinical value to patients.



INDIVIDUALS



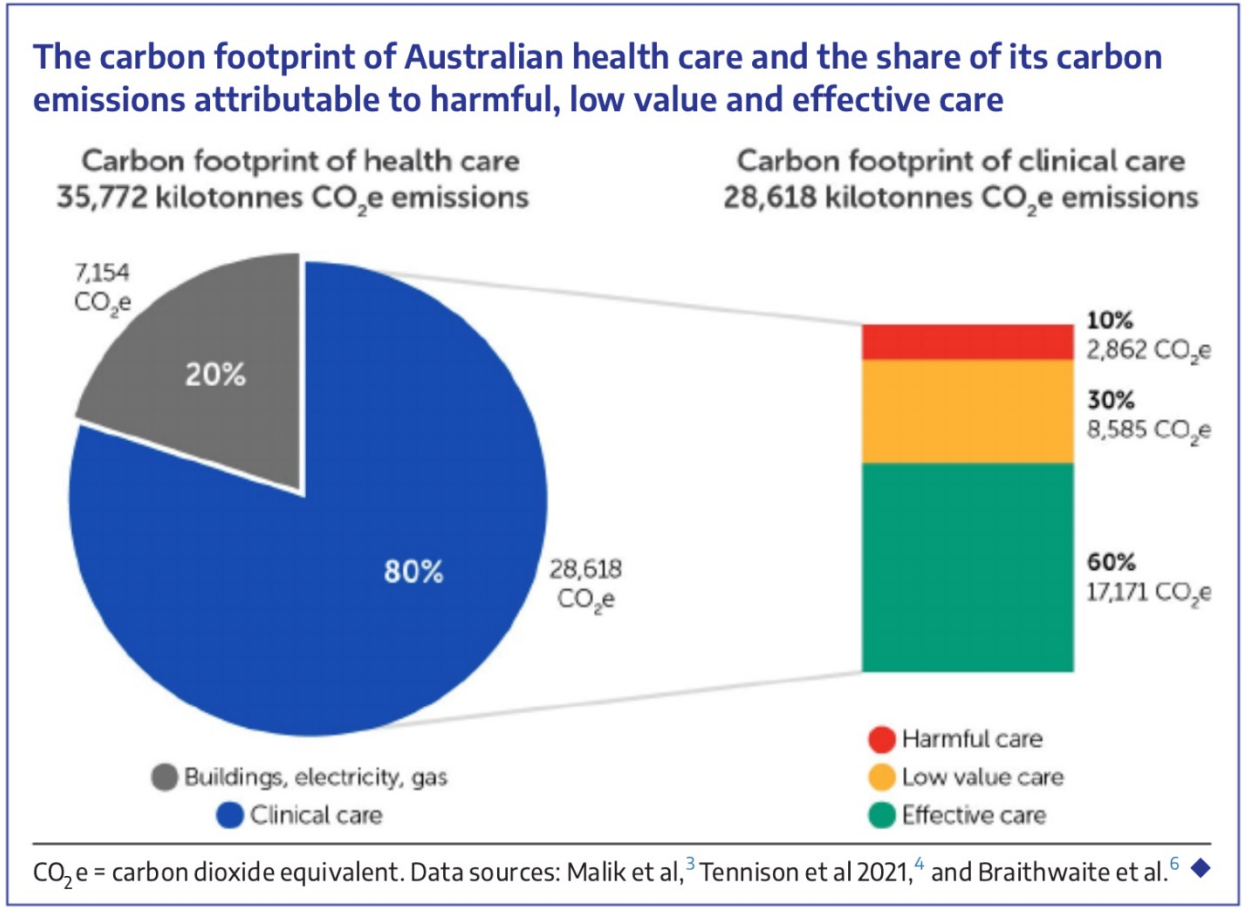
PROVIDERS & ORGANIZATIONS



HEALTH CARE SYSTEMS

Data: Choosing Wisely Canada, *Unnecessary Care in Canada* (CWC, Apr. 2017); and "The Surprising Dangers of CT Scans and X-rays," *Consumer Reports*, Jan. 27, 2015.

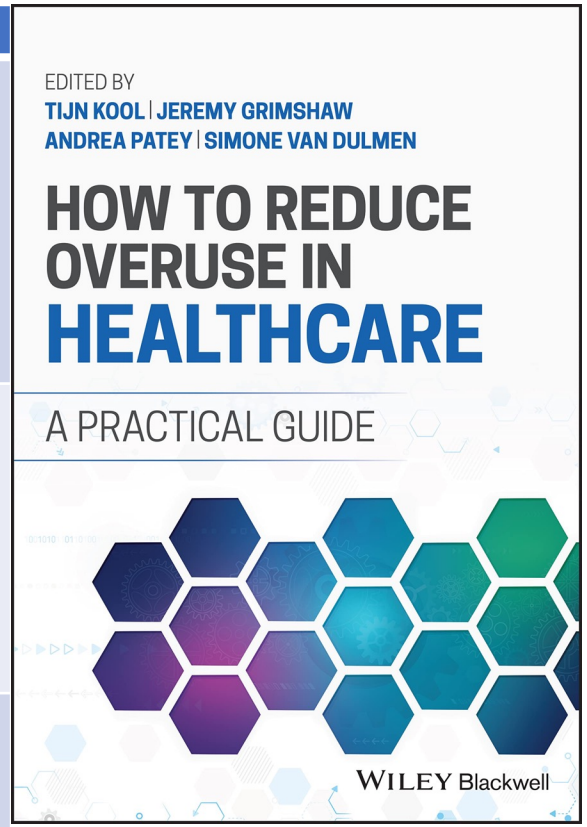
Health Care's Carbon Footprint & Waste



Barratt et al. (2021), High value health care is low carbon health care. Med J Aust.

A couple more key resource stewardship terms and more reading

Category	Common terms	Application	Example
Processes of care which are not cost effective	Unnecessary care Low-value care Waste Inappropriate care	Processes of care that are not cost-effective, delivery marginal clinical value or benefit to patients, and where harms outweigh benefits clinically	
Overuse of a test, treatment of procedure	Overuse Overprescribing Overdiagnosis Overtreatment	Variation in a practice across settings with additional use not delivering benefit	
Treatments which are no longer beneficial	Obsolete Outdated technologies/care	A treatment which was once perceived to be beneficial but has been replaced with a better process of care, or now has strong evidence showing it does not work	



https://www.amazon.ca/How-Reduce-Overuse-Healthcare-Practical/dp/1119862728

Resource stewardship and medical education

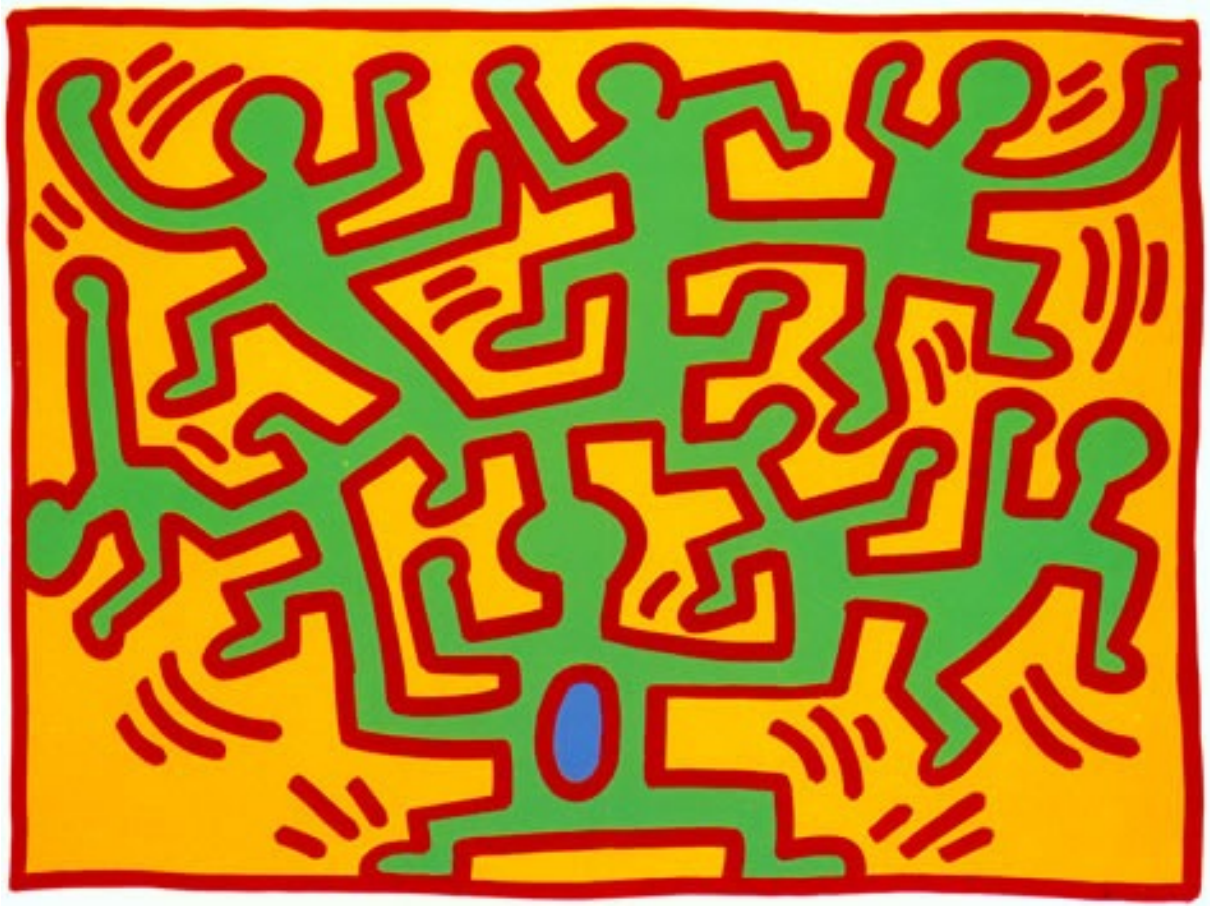


Image from Keith Haring Foundation https://www.haring.com/

Physicians are stewards of (limited) health care resources …

- Physicians determine:
  - Which patients are seen and how frequently
  - Which patients are hospitalized
  - Which tests, procedures, surgical operations are performed
  - Which technologies are used
  - Which medications are prescribed

Emanuel & Fuchs. JAMA 2008

The Perfect Storm of Overutilization

Ezekiel J. Emanuel, MD, PhD
Victor R. Fuchs, PhD

A "PERFECT STORM" OCCURS WHEN A CONFLUENCE OF many factors or events—no one of which alone is particularly devastating—creates a catastrophic force. Such confluence is rare and devastating. Over time and through disconnected events, US health care has evolved into a "perfect storm" that drives overutilization and increases the cost of health care.

Higher Costs in the United States

The United States spends substantially more per person on health care than any other country, and yet US health outcomes are the same as or worse than those in other coutries.[1,2] In 2005, the last year for which comparative statistics are available, the United States spent $6401 per person, whereas the next highest spending was in Norway and Switzerland, $4364 and $4177, respectively (TABLE).[3,4] Overall, US health care expenditures are 2.4 times the average of those of all developed countries ($2759 per person), yet health outcomes for US patients, whether measured by life expectancy, disease-specific mortality rates, or other variables, are unimpressive (Table).[1,3,4]

There are many explanations for the higher costs of US health care. Because health insurance must be underwritten and sold to individual employers and self-insured individuals, administrative costs exceed $145 billion. This does not include employers' costs for purchasing and managing employees' health insurance. One estimate suggests that the private employer insurance market wastes more than $50 billion in administrative costs.[5]

A second factor is higher prices in the United States for important inputs to health care, such as physicians' services, prescription drugs, and diagnostic testing. US physicians earn double the income of their peers in other industrialized countries (Table). Similarly, prices to the public for drugs in the United States are 10% to 30% higher than in other developed countries.[6] Disparities in prices of inputs to health care account for at least $100 billion annually of higher spending in the United States.[5]

A third contributor to US costs is the abundance of amenities. Hospital rooms in the United States offer more privacy, comfort, and auxiliary services than do hospital rooms in most other countries. US physicians' offices are typically more conveniently located and have parking nearby and more attractive waiting rooms.

Overutilization of Health Care

The most important contributor to the high cost of US health care, however, is overutilization. Overutilization can take 2 forms: higher volumes, such as more office visits, hospitalizations, tests, procedures, and prescriptions than are appropriate or more costly specialists, tests, procedures, and prescriptions than are appropriate.

It is more costly care, rather than high volume, that accounts for higher expenditures in the United States. The volume of services is not extreme. A hospitalization rate of 121 per 1000 US patients is higher than that of Japan (106) but considerably lower than the rate in Switzerland (157), Norway (173), and France (268) and lower than the Organisation for Economic Co-operation and Development (OECD) average (163) (Table).[3,4] The US hospitalization rate is 21st of 30 OECD countries. Similarly, US patients have 3.8 physician visits annually per capita, fewer than the OECD average of 6.8.[3,4,6]

In contrast with volume, in which the United States is not the leader, there are almost 3 times as many magnetic resonance imaging scanners in the United States as the OECD average, higher only in Japan.[3,4] US patients receive considerably more cardiac revascularization procedures (579 per 100 000 population)—coronary artery bypass grafts, angioplasties, and stents—45% more than patients in Norway, the country with the next highest number (Table).[3,4] The United States has the fourth highest per capita consumption of pharmaceuticals.[6] US patients utilize many more "new drugs"—those on the market 5 years or fewer—than patients in other countries.[6] For instance, ezetimibe, which decreases low-density lipoprotein cholesterol level and was approved in October 2002, is not recommended by major guidelines[7] as first-line therapy. Nevertheless, the use of ezetimibe in the United States is about 5 times higher than it is in Canada, constituting more than 15% of prescriptions for lipid-lowering agents.[8] Greater use of new, more expensive pharmaceuticals, as well as higher prices both for older and newer drugs, helps explain why the United States spent $752 per capita (2005) on drugs, whereas France, with the next highest expenditure, spent $559 and Japan just $425.[3,4,6]

The Ingredients of the Perfect Health Care Storm

At least 7 factors drive overuse, 4 related to physicians and 3 related to patients. First, there is the matter of physician cul-

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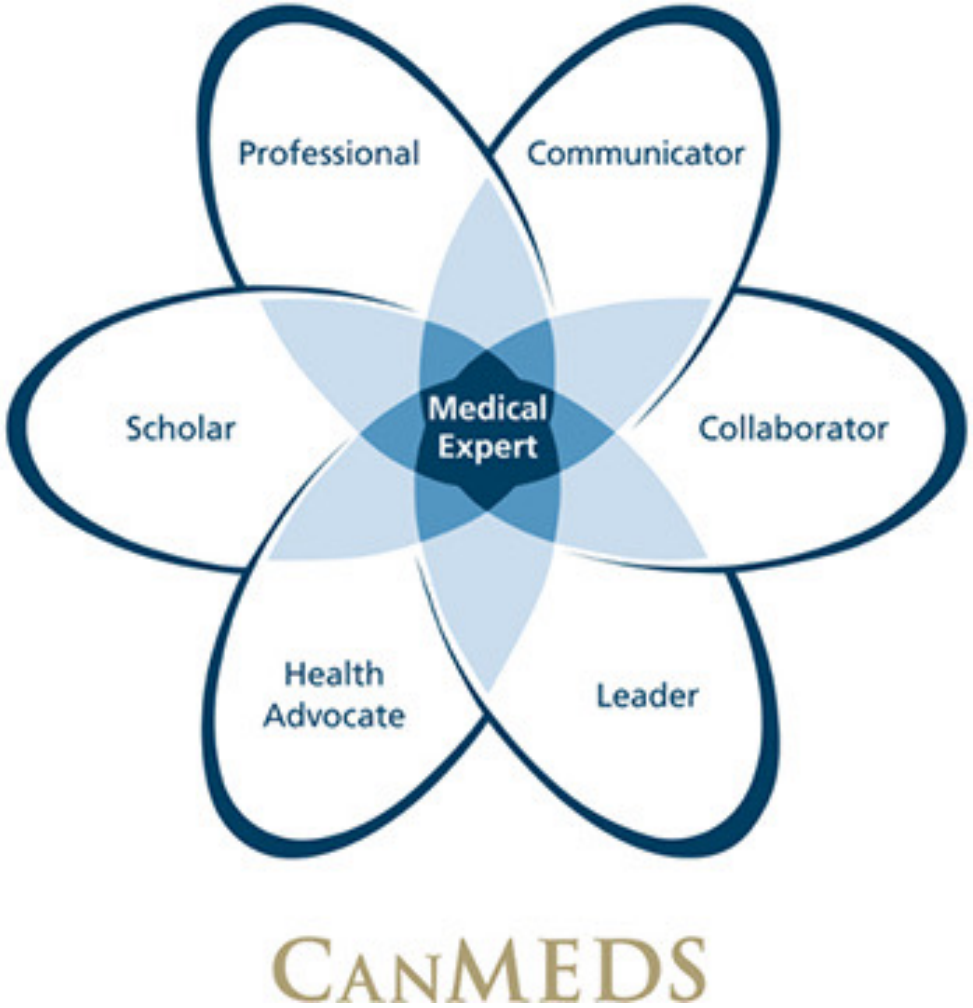
Corresponding Author: Ezekiel J. Emanuel, MD, PhD, Department of Bioethics, Bldg 10, Room 1C118, National Institutes of Health, Bethesda, MD 20892-1156 (eemanuel@nih.gov).

First, there is the matter of **physician culture**. Medical school education and postgraduate training **emphasize thoroughness**. When evaluating a patient, students, interns, and residents are trained to identify and praised for and graded on enumerating all possible diagnoses and tests that would confirm or exclude them. The thought is that the **more thorough the evaluation, the more intelligent the student** or house officer. Trainees who ignore the improbable "zebra" diagnoses are not deemed insightful. **In medical training, meticulousness, not effectiveness, is rewarded**. This mentality carries over into practice. Peer recognition goes to the most thorough and aggressive physicians. The prudent physician is not deemed particularly competent, but rather inadequate. This culture is further reinforced by a unique understanding of professional obligations, specifically, the Hippocratic Oath's admonition to "use my power to help the sick to the best of my ability and judgment" as an **imperative to do everything for the patient regardless of cost or effect on others.**

Resource Stewardship & CanMEDS



CanMEDS

- About CanMEDS
- CanMEDS 2025
- CanMEDS Framework
- CanMEDS Role: Medical Expert
- CanMEDS Role: Communicator
- CanMEDS Role: Collaborator
- CanMEDS Role: Leader
- CanMEDS Role Health Advocate
- CanMEDS Role: Scholar
- CanMEDS Role: Professional
- CanMEDS handover
- Patient safety and quality improvement
- CanMEDS Leader Role Resources
- Physician Wellness
- New Program Directors Invitational Workshop
- KeyLIME podcasts
- CanMEDS and faculty development resources
- Clinician educator program
- Resource stewardship
- Leadership eBook
- Resident as Role Model Workshop

Home > CanMEDS > CanMEDS Framework > CanMEDS Role: Leader

Leader

Definition

As Leaders, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

Description

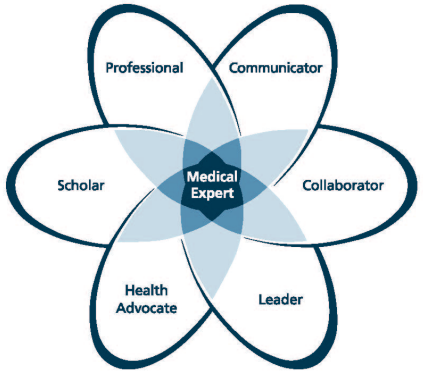
The CanMEDS Leader Role describes the engagement of all physicians in shared decision making for the operation and ongoing evolution of the health care system. As a societal expectation, physicians demonstrate collaborative leadership and management within the health care system. At a system level, physicians contribute to the development and delivery of continuously improving health care and engage with others in working toward this goal. Physicians integrate their personal lives with their clinical, administrative, scholarly, and teaching responsibilities. They function as individual care providers, as members of teams, and as participants and leaders in the health care system locally, regionally, nationally, and globally.

KEY CONCEPTS

- Administration: 4.1, 4.2
- Career development: 4.2
- Complexity of systems: 1.1
- Consideration of justice, efficiency, and effectiveness in the allocation of health care resources: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2
- Effective committee participation: 3.2
- Health human resources: 2.1, 4.2
- Information technology for health care: 1.4
- Leading change: 1.1, 1.2, 1.3, 1.4, 2.2, 3.2
- Management of personnel: 4.2
- Negotiation: 3.1
- Organizing, structuring, budgeting, and financing: 2.1, 2.2, 4.1, 4.2, 4.3
- Personal leadership skills: 3.1, 4.1
- Physician remuneration: 4.2
- Physician roles and responsibilities in the health care system: 1.1, 1.2, 1.3, 1.4, 2.2, 3.2
- Physicians as active participant-architects within the health care system: 1.1, 1.2, 1.3, 1.4, 3.2
- Practice management to maintain a sustainable practice and physician health: 4.1, 4.2, 4.3
- Priority-setting: 2.1, 3.2, 4.1
- Quality improvement: 1.1, 1.2, 1.3, 1.4, 2.2, 3.2, 4.3
- Stewardship: 2.1, 2.2
- Supervising others: 4.2
- Systems thinking: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2
- Time management: 4.1, 4.2

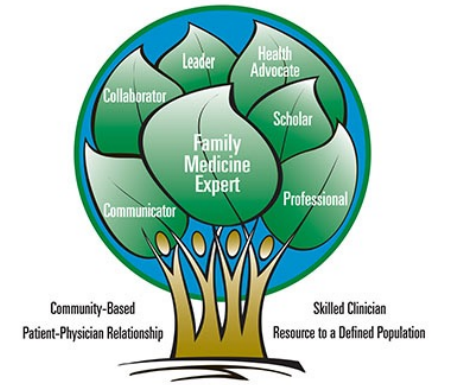
https://www.royalcollege.ca/ca/en/canmeds/canmeds-framework/canmeds-role-leader.html

An Expected Physician Competency



CanMEDS 2015

2. Engage in the stewardship of health care resources	2.1 Allocate health care resources for optimal patient care 2.2 Apply evidence and management processes to achieve cost-appropriate care



CanMEDS-Family Medicine

2. Engage in the stewardship of health care resources

2.1 Allocates health care resources for optimal patient care

2.2 Combines evidence and best practices with individual patient needs to achieve cost appropriate care

2.3 Manages health care resources judiciously, including access to referral sources and the ordering of tests and treatments.

CanMEDS 2015
CanMEDS-FM 2017

Why is it so difficult as a medical student to ‘choose wisely’?

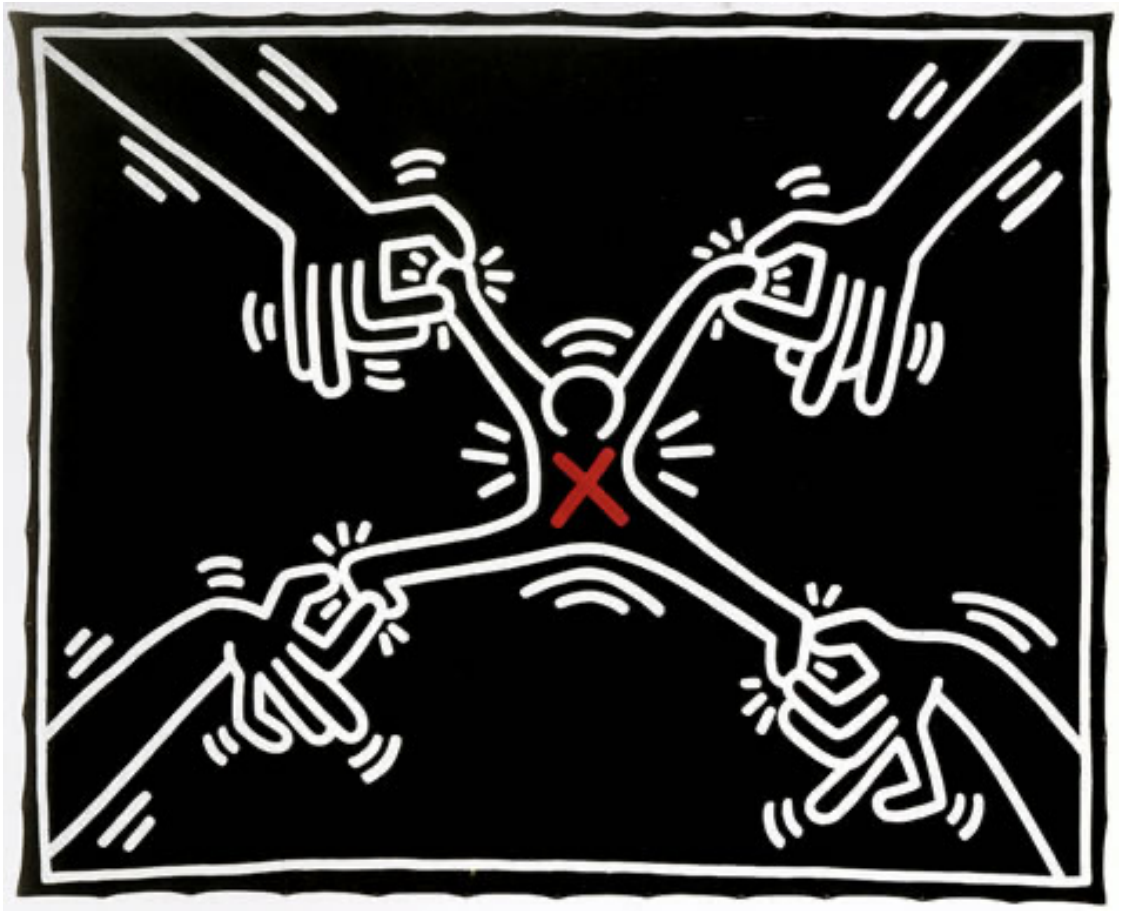


Image from Keith Haring Foundation https://www.haring.com/


How we are taught
The patient wants it
Preemptive ordering
New tests are good
Lack of feedback
Better to do something than nothing
Demonstrate thoroughness

Resource Stewardship Competencies to Develop

Stewardship in Practice	Specific Competency
Decide if ordering a test will alter how you provide care for a patient	• Knowledge of test characteristics (pre-test vs post-test probability)
Determine whether to prescribe a specific treatment to a patient	• Balancing risks and benefits (differentiating between absolute and relative risk and benefit)
Avoid ordering unnecessary routine tests	• Understanding of systems • Apply quality improvement
Discuss unnecessary testing with patients and families	• Patient-centered communication • Engage in shared decision making

Familiarize Yourself with the Lists of Recommendations

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In partnership with the Canadian Medical Association

Canadian Cardiovascular Society
Société canadienne de cardiologie

Five Things Physicians and Patients Should Question

1. **Don't perform stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present.**
   Asymptomatic, low-risk patients account for up to 45 percent of unnecessary "screening". Testing should be performed only when the following findings are present: diabetes in patients older than 40-years-old; peripheral arterial disease; or greater than 2 percent yearly risk for coronary heart disease events.
2. **Don't perform annual stress cardiac imaging or advanced non-invasive imaging as part of routine follow-up in asymptomatic patients.**
   Performing stress cardiac imaging or advanced non-invasive imaging in patients without symptoms on a serial or scheduled pattern (e.g., every one to two years or at a heart procedure anniversary) rarely results in any meaningful change in patient management. This practice may, in fact, lead to unnecessary invasive procedures and excess radiation exposure without any proven impact on patients' outcomes. An exception to this rule would be for patients more than five years after a bypass operation.
3. **Don't perform stress cardiac imaging or advanced non-invasive imaging as a pre-operative assessment in patients scheduled to undergo low-risk non-cardiac surgery.**
   Non-invasive testing is not useful for patients undergoing low-risk non-cardiac surgery (e.g., cataract removal). These types of tests do not change the patient's clinical management or outcomes.
4. **Don't perform echocardiography as routine follow-up for mild, asymptomatic native valve disease in adult patients with no change in signs or symptoms.**
   Patients with native valve disease usually have years without symptoms before the onset of deterioration. An echocardiogram is not recommended yearly unless there is a change in clinical status.
5. **Don't order annual electrocardiograms (ECGs) for low-risk patients without symptoms.**
   Don't obtain screening electrocardiogram testing in individuals who are asymptomatic and at low risk for coronary heart disease. In asymptomatic individuals at low risk for coronary heart disease (10-year risk <10%), screening for coronary heart disease with electrocardiography does not improve patient outcomes.

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CSEM SCEM

Five Things Physicians and Patients Should Question

1. **Don't recommend routine or multiple daily self-glucose monitoring in adults with stable type 2 diabetes on agents that do not cause hypoglycemia.**
   Once target control is achieved and the results of self-monitoring become quite predictable, there is little gained in most individuals from repeatedly confirming this state. There are many exceptions, such as acute illness, when new medications are added, when weight fluctuates significantly, when A1c targets drift off course and in individuals who need monitoring to maintain targets. Self-monitoring is beneficial as long as one is learning and adjusting therapy based on the result of the monitoring.
2. **Don't routinely order a thyroid ultrasound in patients with abnormal thyroid function tests unless there is a palpable abnormality of the thyroid gland.**
   Thyroid ultrasound is used to identify and characterize thyroid nodules, and is not part of the routine evaluation of abnormal thyroid function tests (over- or underactive thyroid function) unless the patient also has a large goiter or a lumpy thyroid. Incidentally discovered thyroid nodules are common. Overzealous use of ultrasound will frequently identify nodules, which are unrelated to the abnormal thyroid function, and may divert the clinical evaluation to assess the nodules, rather than the thyroid dysfunction. Imaging may be needed in thyrotoxic patients; when needed, a thyroid scan, not an ultrasound, is used to assess the etiology of the thyrotoxicosis and the possibility of focal autonomy in a thyroid nodule.
3. **Don't use Free T4 or T3 to screen for hypothyroidism or to monitor and adjust levothyroxine (T4) dose in patients with known primary hypothyroidism.**
   T4 is converted into T3 at the cellular level in virtually all organs. Intracellular T3 levels regulate pituitary secretion and blood levels of TSH, as well as the effects of thyroid hormone in multiple organs. Therefore, in most people a normal TSH indicates either normal endogenous thyroid function or an adequate T4 replacement dose. TSH only becomes unreliable in patients with suspected or known pituitary or hypothalamic disease when TSH cannot respond physiologically to altered levels of T4 or T3.
4. **Don't prescribe testosterone therapy unless there is biochemical evidence of testosterone deficiency.**
   Many of the symptoms attributed to male hypogonadism are commonly seen in normal male aging or in the presence of comorbid conditions. Testosterone therapy has the potential for serious side effects and represents a significant expense. It is therefore important to confirm the clinical suspicion of hypogonadism with biochemical testing. Current guidelines recommend the use of a total testosterone level obtained in the morning. A low level should be confirmed on a different day, again measuring the total testosterone. In some situations, a free or bioavailable testosterone may be of additional value.
5. **Don't routinely test for Anti-Thyroid Peroxidase Antibodies (anti – TPO).**
   Positive anti-TPO titres are not unusual in the 'normal' population. Their presence in the context of thyroid disease only assists in indicating that the pathogenesis is probably autoimmune. As thyroid autoimmunity is a chronic condition, once diagnosed there is rarely a need to re-measure anti-TPO titres. In euthyroid pregnant patients deemed at high risk of developing thyroid disease, anti-TPO antibodies may influence the frequency of surveillance for hypothyroidism during the pregnancy. It is uncommon that measurement of anti-TPO antibodies influences patient management.

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CGS SCG
Canadian Geriatrics Society

Five Things Physicians and Patients Should Question

1. **Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.**
   Cohort studies have found no adverse outcomes for older men or women associated with asymptomatic bacteriuria. Antimicrobial treatment studies for asymptomatic bacteriuria in older adults demonstrate no benefits and show increased adverse antimicrobial effects. Consensus criteria has been developed to characterize the specific clinical symptoms that, when associated with bacteriuria, define urinary tract infection. Screening for and treatment of asymptomatic bacteriuria is recommended before urologic procedures for which mucosal bleeding is anticipated.
2. **Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation or delirium.**
   Large scale studies consistently show that the risk of motor vehicle accidents, falls and hip fractures leading to hospitalization and death can more than double in older adults taking benzodiazepines and other sedative-hypnotics. The number needed to treat with a sedative-hypnotic for improved sleep is 13, whereas the number needed to harm is only 6. Older patients, their caregivers and their health care providers should recognize these potential harms when considering treatment strategies for insomnia, agitation or delirium. Use of benzodiazepines should be reserved for alcohol withdrawal symptoms/delirium tremens or severe generalized anxiety disorder unresponsive to other therapies. Prescribing or discontinuing sedative-hypnotics in hospital can have substantial impact on long-term use. Cognitive behavioural therapy, brief behavioural interventions and benzodiazepine-tapering protocols have proven benefit in sedative-hypnotic discontinuation. These non-pharmacologic interventions are also beneficial in improving sleep.
3. **Don't recommend percutaneous feeding tubes in patients with advanced dementia; instead offer oral feeding.**
   Careful hand-feeding for patients with severe dementia is at least as good as tube-feeding for the outcomes of death, aspiration pneumonia, functional status and patient comfort. Food is the preferred nutrient. Use of oral nutritional supplements may be beneficial. Tube-feeding is associated with agitation, increased use of physical and chemical restraints and worsening pressure ulcers.
4. **Don't use antipsychotics as first choice to treat behavioural and psychological symptoms of dementia.**
   People with dementia often exhibit aggression, resistance to care and other challenging or disruptive behaviours. In such instances, antipsychotic medicines are often prescribed, but they provide limited benefit and can cause serious harm, including premature death. Use of these drugs should be limited to cases where non-pharmacologic measures have failed and patients pose an imminent threat to themselves or others. Identifying and addressing causes of behaviour change can make drug treatment unnecessary.
5. **Avoid using medications known to cause hypoglycemia to achieve hemoglobin A1c <7.5% in many adults age 65 and older; moderate control is generally better.**
   There is no evidence that using medications to achieve intense glycemic control in older adults with type 2 diabetes is beneficial (A1c under 7.0%). Among non-older adults, except for long-term reductions in myocardial infarction and mortality with metformin, using medications to achieve glycated haemoglobin levels less than 6 % is associated with harms, including higher mortality rates. Intense control has been consistently shown to produce higher rates of hypoglycemia in older adults. Given the long timeframe (approximately 8 years) to achieve theorized benefits of intense control, glycemic targets should reflect patient goals, health status, and life expectancy. Reasonable glycemic targets would be 7.0 – 7.5% in healthy older adults with long life expectancy, 7.5 – 8.0% in those with moderate comorbidity and a life expectancy < 10 years, and 8.0 – 8.5% in those with multiple morbidities and shorter life expectancy.

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CSIM

Five Things Physicians and Patients Should Question

1. **Don't routinely obtain neuro-imaging studies (CT, MRI, or carotid dopplers) in the evaluation of simple syncope in patients with a normal neurological examination.**
   Although an uncommon cause for syncope, providers must consider a neurological cause in every patient presenting with transient loss of consciousness. In the absence of signs or symptoms concerning for neurological causes of syncope (such as but not limited to focal neurological deficits), the utility of neuro-imaging studies are of limited benefit. Despite a lack of evidence for the diagnostic utility of neuroimaging in patients presenting with true syncope, providers continue to perform brain computed tomographic (CT) scans. Thus, inappropriate use of this diagnostic imaging modality carries high costs and subject patients to the risks of radiation exposure.
2. **Don't place, or leave in place, urinary catheters without an acceptable indication (such as critical illness, obstruction, palliative care).**
   Use of urinary catheters without an acceptable indication of use increases the likelihood of infection leading to greater morbidity and health care costs. Catheter-associated bacteriuria often leads to inappropriate antimicrobial use and secondary complications including emergence of antimicrobial-resistant organisms and infection with clostridium difficile. A previous study showed that physicians are often unaware of urinary catheterization among their patients. Use of urinary catheters has found to be inappropriate in up to 50% of cases, with urinary incontinence listed as the most common reason for inappropriate and continued placement of urinary catheters. Clinical practice guidelines support the removal or avoidance of unnecessary urinary catheters in order to reduce the risk of catheter-associated urinary tract infections (CAUTIs).
3. **Don't transfuse red blood cells for arbitrary hemoglobin or hematocrit thresholds in the absence of symptoms, active coronary disease, heart failure or stroke.**
   Indications for blood transfusion depend on clinical assessment and are also guided by the etiology of the anemia. No single laboratory measurement or physiologic parameter can predict the need for blood transfusion. Transfusions are associated with increased morbidity and mortality in high-risk hospitalized inpatients. Adverse events range from mild to severe, including allergic reactions, acute hemolytic reactions, anaphylaxis, transfusion related acute lung injury, transfusion associated circulatory overload, and sepsis. Studies of transfusion strategies among multiple patient populations suggest that a restrictive approach is associated with improved outcomes.
4. **In the inpatient setting, don't order repeated CBC and chemistry testing in the face of clinical and lab stability.**
   Repetitive inpatient blood testing occurs frequently and is associated with adverse consequences for the hospitalized patient such as iatrogenic anemia, and pain. A Canadian study showed significant hemoglobin reductions as a result of phlebotomy. Given that anemia in hospital patients is associated with increased length of stay, readmission rates and transfusion requirements, reducing unnecessary testing may improve outcomes. Studies support the safe reduction of repetitive laboratory testing without negative effects on adverse events, readmission rates, critical care utilization or mortality. Laboratory reduction interventions have also reported significant cost savings.
5. **Don't routinely perform preoperative testing (such as chest X-rays, echocardiograms, or cardiac stress tests) for patients undergoing low risk surgeries.**
   Routine preoperative tests for low risk surgeries results in unnecessary delays, potential distress for patients and significant cost for the health care system. Numerous studies and guidelines outline lack of evidence for benefit in routine preoperative testing (e.g., chest X-ray, echocardiogram) in low risk surgical patients. Economic analyses suggest significant potential cost savings from implementation of guidelines.

https://choosingwiselycanada.org/recommendations/

Dalla Lana School of Public Health

Institute of Health Policy, Management and Evaluation
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Recognize common overuse problems

Choosing Wisely Canada

Canadian Institute for Health Information
Institut canadien d'information sur la santé

Hospital Care

- Caesarian sections for low-risk deliveries
- Unnecessary red blood cell transfusion in hospitalized patients
- Preoperative tests for low-risk surgery (eg. Cataract)

Community Care

- Imaging for uncomplicated low-back pain
- Screening for low risk groups
- Antibiotics for viral infections
- Overprescribing of benzodiazepines
- Physical restraints and antipsychotics in long-term care

Emergency Care

- Chest x-ray for asthma and bronchiolitis in children
- Diagnostic imaging (CT) for minor head trauma

https://choosingwiselycanada.org/cihi-cwc-2022/

Medical Education: Students

Six Things Medical Students and Trainees Should Question

by
Canadian Federation of Medical Students
Fédération médicale étudiante du Québec

Last updated: August 2022

Choosing Wisely Canada
In partnership with the Canadian Medical Association

CFMS FEMC
Canadian Federation of Medical Students
Fédération des étudiants et des étudiantes en médecine du Canada

FMEQ
Fédération médicale étudiante du Québec

1 Don't suggest ordering the most invasive test or treatment before considering other less invasive options.

There are often diagnostic approaches and treatment options that result in the same clinical outcome but are less invasive. Examples include the use of ultrasound instead of computed tomography (CT) scanning to diagnose acute appendicitis in children, or the use of an oral antibiotic that has similar oral bioavailability as its intravenous counterpart. Taking time to consider the diagnostic sensitivity and specificity of less invasive tests or the therapeutic effectiveness of less invasive treatments can minimize unnecessary patient exposure to harmful side effects of more invasive tests or treatments.

2 Don't suggest a test, treatment, or procedure that will not change the patient's clinical course.

When ordering tests, it is important to always consider the diagnostic characteristics such as sensitivity, specificity and predictive value in light of the patient's pre-test probability. Patients who are at very low baseline risk often do not require an additional test to rule out the diagnosis. Furthermore, evidence suggests that in such low-risk patients, diagnostic tests do not reassure patients, decrease their anxiety, or resolve their symptoms. Examples include the use of computed tomography (CT) scanning in low-risk patients to rule out pulmonary embolism, or pre-operative cardiac testing for patients prior to low risk surgery. Evaluation of baseline risk and the use of decision tools wherever possible, along with a 'how will this change my management' approach, can help to avoid unnecessary 'rule out' testing in patients.

3 Don't miss the opportunity to initiate conversations with patients about whether a test, treatment or procedure is necessary.

Patient requests sometimes drive overuse. For example, a parent might request antibiotics for his or her child who likely has viral sinusitis, or a patient might request magnetic resonance imaging (MRI) for low-back pain. Often patients are unaware of the benefits, side-effects and risks of tests and treatments. Taking time to explore a patient's concerns, and counseling them about the relative benefits and risks of tests or treatments represents a patient-centered approach to ensuring the appropriate use of resources.

4 Don't hesitate to ask for clarification on tests, treatments, or procedures that you believe are unnecessary.

Unfortunately, in some learning environments, a hierarchy exists between supervisors and students that makes it difficult for students to feel comfortable speaking up. As a result, students might observe unnecessary care, but avoid saying anything for fear of potential consequences. Supervisors need to encourage students to feel free to question whether tests or treatments are truly necessary without fear of repercussion. The clinical training environment should be one where students feel safe to ask questions.

5 Don't suggest ordering tests or performing procedures for the sole purpose of gaining personal clinical experience.

The clinical training years in medical school represent an important opportunity for students to translate what was learned in the classroom to the bedside. This can be a challenging time of great uncertainty for students. Students may order tests excessively due to a lack of clinical experience, or recommend investigations in order to build upon their personal experience.

6 Don't suggest ordering tests or treatments pre-emptively for the sole purpose of anticipating what your supervisor would want.

A "hidden curriculum" pervasive in the academic environment encourages medical students to search for zebras through extensive (and often unnecessary) diagnostic workups. Because restraint is often discouraged, students adopt the belief that faculty expect an exhaustive diagnostic approach, and feel that they need to demonstrate their knowledge, thoroughness and curiosity through test ordering. Students can overcome this practice by articulating why they chose not to order a specific test. This, combined with a shift towards 'celebrating restraint' by faculty can help to combat this pervasive practice in medical training.

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Medical Education: Residents

Five Things Residents and Patients Should Question
by
Resident Doctors of Canada
Last updated: January 2020

Choosing Wisely Canada
In partnership with the Canadian Medical Association

Resident Doctors of Canada / Médecins résidents du Canada

1. **Don't order investigations that will not change your patient's management plan.**
Investigations may not change your patient's management plan for several reasons. In some cases, the patient's pre-test probability for a condition is low, and further testing is not necessary (e.g., screening for breast cancer in younger women with low risk of breast cancer). Another example is unnecessary preoperative testing before a low-risk surgical procedure where the risk of complications is low. On the other hand, high-risk patients may warrant treatment irrespective of the test result; thus, testing in these patients would not influence the ultimate decision to treat (e.g., thrombophilia testing in patients with an unprovoked pulmonary embolism at high risk for recurrence is not helpful, since these patients should receive indefinite anticoagulation). Where possible, residents can refer to evidence-based clinical decision rules to guide appropriate testing or treatment – examples include the Well's criteria or pulmonary embolism rule-out criteria (PERC) for pulmonary embolism, the Canadian CT Head Rule for CT scan of the head in a trauma patient, or the Centor criteria for likelihood of bacterial infection in adult patients with a sore throat.

2. **Don't order repeat laboratory investigations on inpatients who are clinically stable.**
Daily laboratory investigations can persist despite clinical stability for a variety of reasons (e.g., daily order without a stop date, not reassessing whether investigations are still needed). Observational studies suggest that resident physicians order routine daily CBC (complete blood count) and electrolyte panels more frequently than attending physicians. Daily phlebotomy contributes to patient discomfort and iatrogenic anemia. Studies support the safe reduction of repetitive laboratory investigations when patients are clinically stable without a negative impact on patient outcomes, including readmission rates, critical care utilization, adverse events, or mortality. Laboratory investigations should be ordered with a specific purpose which directly links to a specific management plan for patients.

3. **Don't order intravenous (IV) when an oral (PO) option is appropriate and tolerated.**
Patients are often ordered intravenous (IV) medications when oral (PO) options are available, appropriate, and equally bioavailable. Common examples include antibiotics that are highly orally bioavailable (e.g., fluoroquinolones), oral potassium replacement (which is more effective than IV replacement), proton pump inhibitors (PPI) including in the setting of many cases of acute gastrointestinal bleeding, and oral vitamin B12 replacement (as opposed to intramuscular injections, including in the context of pernicious anemia). Peripheral catheters increase the risk of complications, including extravasation, infections, and thrombophlebitis. Furthermore, IV medication administration is often significantly costlier, decreases patient mobility, and increases length of hospital stay and pharmacist and nursing workload.

4. **Don't order non-urgent investigations or procedures that will delay discharge of hospital inpatients.**
Discharges are commonly delayed for investigations that will not change acute management. Examples include biopsies, imaging to further investigate incidental findings, assessment by a specialist that is non-urgent, waiting for bloodwork results as part of a non-urgent diagnostic work-up, or echocardiography for patients with mild heart failure. Delayed discharges contribute to hospital over-crowding and negatively impact care efficiency. Crucially, longer lengths of stay is a risk factor for nosocomial infections, venous thromboembolism, pressures injuries, immobility, malnutrition, and deconditioning. Consider outpatient investigations when possible, if good follow-up can be assured.

5. **Don't order invasive studies if less invasive options are available and as effective.**
When considering diagnosis or screening investigations, consider all available tests. It is prudent to consider the least invasive option that will have similar sensitivity and specificity to guide clinical decision making to minimize the potential for harm to the patient. For example, when diagnosing acute appendicitis in children, ultrasound should be considered before computed tomography (CT) scanning. Not only is ultrasound radiation- and contrast-free, but it has been shown to be equivalent to CT scanning in the diagnosis and management of acute appendicitis across several clinically-relevant endpoints, including time to antibiotic delivery, time to appendectomy, negative appendectomy rate, perforation rate, or length of stay. Another example is conducting a non-invasive urea breath test rather than invasive endoscopy to prove H. pylori eradication. The sensitivity and specificity of the urea breath test are superior compared to other diagnostic tests and the risk of patient harm is minimal compared to endoscopy.

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Use Decision Aids/Engage in Shared Decision-Making

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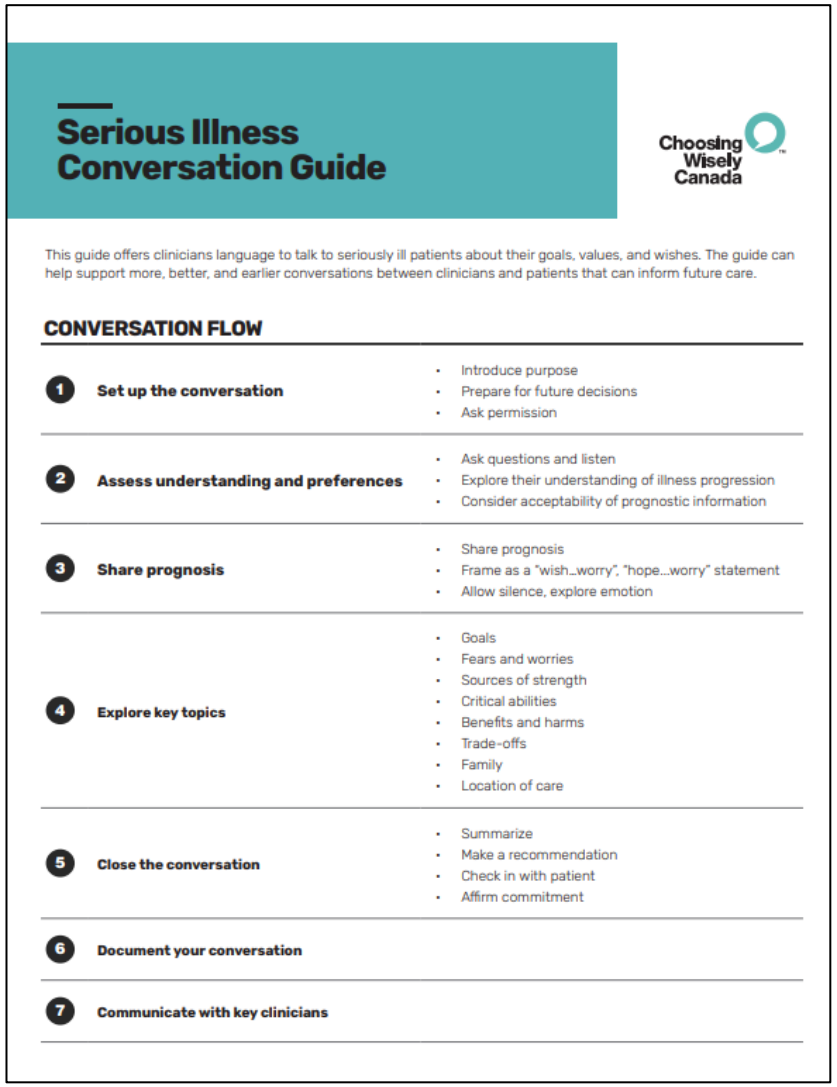

Serious Illness Conversation Guide

Choosing Wisely Canada

This guide offers clinicians language to talk to seriously ill patients about their goals, values, and wishes. The guide can help support more, better, and earlier conversations between clinicians and patients that can inform future care.

CONVERSATION FLOW

1 **Set up the conversation**	• Introduce purpose • Prepare for future decisions • Ask permission
2 **Assess understanding and preferences**	• Ask questions and listen • Explore their understanding of illness progression • Consider acceptability of prognostic information
3 **Share prognosis**	• Share prognosis • Frame as a "wish…worry", "hope…worry" statement • Allow silence, explore emotion
4 **Explore key topics**	• Goals • Fears and worries • Sources of strength • Critical abilities • Benefits and harms • Trade-offs • Family • Location of care
5 **Close the conversation**	• Summarize • Make a recommendation • Check in with patient • Affirm commitment
6 **Document your conversation**	
7 **Communicate with key clinicians**	

https://choosingwiselycanada.org/patient-resources/

Advance your Resource Stewardship Competencies

Introduction

FOUNDATIONS OF RESOURCE STEWARDSHIP

- What is resource stewardship?
- Quality and safety issues related to resource stewardship
- Addressing the harms of overuse
- Barriers to resource stewardship

COMMUNICATING ABOUT OVERUSE

- How to talk to patients and their families

https://canmeds.royalcollege.ca/en/tools

Learning Objectives

By the end of this session, participants will be able to:

1. List key harms of unnecessary tests and treatments
2. Reflect on the intersection between medical education and resource stewardship
3. Describe strategies that medical students could employ to advance resource stewardship

Thank you & welcome to STARS!

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https://www.linkedin.com/in/karen-born-ihpme/

https://ihpme.utoronto.ca/faculty-profile/karen-born/

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