

Less is More: Integration of Resource Stewardship in Medical Education

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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.

Too much medicine has been shown to have a deleterious effect on patient health.^{2,3} Unnecessary tests can reveal false positives, provoking further testing, patient anxiety, and needless treatments.² Unnecessary medical interventions are also associated with adverse side effects, ranging from a single complication or harm associated with tests, treatments, and procedures, to cumulative radiation exposure from imaging.^{4,5} Thus, it is crucial for health care providers to practice parsimonious medicine to attenuate the risk associated with unnecessary, and potentially harmful, care.

There is still much debate around whether it is patient demand, physician practice or other system factors that are driving unnecessary care. Physicians perceive litigation, hospitals and health care systems, poor system-wide information sharing, pharmaceutical and device manufacturers, and patients as major drivers of unnecessary care.^{2,6} For the most part, they disregard the notion that their clinical practices and habits drive unnecessary care.⁶ Interestingly, a study of cancer patients in the United States found that patients rarely requested clinically inappropriate care.⁷ Thus, the unnecessary care pandemic appears to be rooted in physician practice, habits and behaviors. As such, there are many who highlight that to curb medical overuse and unnecessary care, physician attitudes and practice need to shift towards an adage of “less is more”.

In the past five years, there has been a growing recognition among physicians around the pervasiveness of unnecessary care, and there has been a groundswell of physician leadership to curtail it. One such physician-led, grassroots initiative is the Choosing Wisely Canada (CWC) campaign. Modeled after the Choosing Wisely campaign in the United States, CWC is designed to help clinicians and patients engage in conversations about unnecessary tests, treatments, and procedures.³ CWC supports physician-led efforts to help patients make smart and effective choices to ensure high-quality care. CWC has

engaged with federal, provincial, and territorial medical associations, medical and surgical specialty societies, patient and community groups, and government to develop specialty-specific lists of recommendations of ‘Things Physicians and Patients Should Question’ (<http://www.choosingwiselycanada.org/recommendations/>).

CWC is also targeting medical students in an effort to foster awareness and knowledge of resource stewardship early in medical training. In this vein, CWC developed the *STARS* (*Students and Trainees Advocating for Resource Stewardship*) Campaign. As part of this campaign, CWC partnered with the CFMS and Fédération médicale étudiante du Québec (FMEQ) to release a list of “Six Things Medical Students & Trainees Should Question”. CWC also hosted a medical student leadership summit on November 14, 2015, where medical students from each of Canada’s 17 medical schools were brought to Toronto and given training on leadership, communication, and advocacy skills, with the aim of using these new skills to launch local CWC campaigns at their respective schools. It is time for medical students to seize this opportunity and partake in this grassroots effort, to reduce unnecessary care and lead a culture shift in the practice of medicine around resource stewardship.

Context and Concerns:

Need for Action

Medical overuse, defined as providing unnecessary treatment when the “risk of harm exceeds its potential benefit”, is a threat to patient safety, quality of care and the sustainability of health care systems. A number of studies have highlighted the prevalence of medical overuse in Canada, which include the following findings:

- 28% of lumbar spine MRIs were inappropriate and another 27% were of uncertain value (AB, ON)⁸
- 30% of patients in long term care homes are on antipsychotic drugs without a diagnosis of psychosis (CAN)⁹
- 31% of patients undergoing low-risk surgical procedures received pre-operative ECGs (ON)¹⁰
- 32% of transfusions are inappropriate (ON)¹¹

Unnecessary care has been seen as a cause of preventable patient harm and poor quality of care.¹² Medical overuse can be associated with decreased patient satisfaction and poor clinical outcomes, including higher mortality.¹³ A systematic survey of patients in seven countries revealed that 10-20% of patients believed that their physicians had provided treatment of little or no value in the past two years.¹⁴

Although, improving quality of care is the primary motive behind reducing unnecessary care, it is also important to consider the sustainability of our health care system. Studies have highlighted the financial strain of medical overuse. As an example, an analysis conducted by the Institute of Medicine found that up to 30% of American health care spending is care that offers no clinical value to patients^{15,16} A Canadian study reached a similar figure; in 2013, Canada spent 30% of its \$211 billion health care budget on unnecessary care.^{8,10} Extrapolating from studies on medical overuse in Canada and around the world, it is estimated that between \$32 billion and \$86 billion of annual Canadian health care spending is on unnecessary care.

Given that physicians control 80% of health care costs, the responsibility of making informed decisions about resource allocation rests on physicians' shoulders.¹⁷ As the future physicians of Canada, it is imperative that medical students start learning and practicing resource stewardship, to ensure both optimal patient care and sustainability of our health care system.

Need for Integration of Resource Stewardship into Medical Education

The Draft 2015 CanMEDS Framework identifies 'Leadership' as one of seven essential physician competencies, noting that medical professionals are expected to "engage in the stewardship of health care resources", particularly to "allocate health care resources for optimal patient care", and "to apply evidence and management processes to achieve cost-appropriate care".¹⁸ However, current medical school accreditation standards in Canada do not list stewardship as required content. This represents a missed opportunity to introduce these concepts during the earliest and formative phases of physician training. Furthermore, there is a lag time between the introduction and implementation of CanMEDS roles in medical school curricula. Similarly, in the United States, the Alliance For Academic Internal Medicine, American Board of Internal Medicine (ABIM), ABIM Foundation and American College of Physicians have stated a commitment to make the practice of resource stewardship a required competency by 2017.¹⁹

This lag time, in concert with the harms to patients and system costs of medical overuse, make the case for medical student leadership in advocating for further resource stewardship education in their training. Experts strongly endorse the need to integrate content around resource stewardship into medical education.^{2,20,21} Evidence further suggests that habits learned in training have a formative, long-lasting effect on the ability of physicians to make appropriate decisions on test and treatment ordering.²² Thus, to promote a culture where future physicians have resource stewardship knowledge and skills, and can avoid unnecessary care, it is imperative that medical schools integrate resource stewardship content into formal and informal curricula. This is especially important given that medical education traditionally emphasizes thoroughness of care and

penalizes restraint.² This is in part due to students being trained in an environment with ease of access to advanced healthcare technologies and subspecialists.² Given how influential medical training is in shaping practices of future physicians, a shift needs to manifest in medical curricula to a model that “celebrates restraint” and encourages students to think twice before ordering tests or treatments, in order to curb unnecessary care.²

Medical students have successfully spearheaded campaigns to shift medical culture in order to promote patient safety in the past.²³ It is now time for us to do the same with respect to resource stewardship. Teaching resource stewardship in Canadian medical schools will foster a culture change where we adopt a “think twice” attitude and understand that sometimes in medicine less is more.

Action to date:

Thus far, efforts to integrate resource stewardship into curriculum have been primarily concentrated at the University of Toronto, where medical students working with CWC have been effective at influencing peers, faculty and medical school leadership. Their efforts have been multipronged. CWC content has been integrated throughout all four years of the medical school curriculum. There is a general consensus around the increased awareness of CWC, with numerous anecdotes from faculty and students describing how CWC recommendations are frequently cited during teaching in the classroom and at the bedside. Students have also applied their knowledge of resource stewardship towards other efforts, including launching the Students for Antimicrobial Stewardship Society (SASS), Canada.²⁴ The movement was started in May 2015 and the SASS group developed a CFMS Position Paper on antimicrobial stewardship, which was approved by the CFMS General Assembly in April 2015.²⁵

Although there has been great success at the University of Toronto, there still remains a tremendous opportunity for other Canadian medical schools to become engaged in this movement to reduce use of unnecessary care. In this vein, CWC launched the *STARS* campaign in November, 2015, as discussed previously

Student efforts to promote resource stewardship to their peers have also had an international impact. Medical students working with CWC developed a module for the Institute for Health Care Improvement (IHI) Open School entitled “QCV 100: An Introduction to Quality, Value, and Cost in Health Care”.²⁶ This course was the first student-developed module at the IHI, and has become the most used non-mandatory module. Since its introduction in August 2014, more than 8000 learners have used the module to enhance their learning about resource stewardship.

Grassroots initiatives in the United States have successfully advocated for incorporating resource stewardship principles into medical education. Leading examples include ‘Costs of Care’ and ‘The Do No Harm Project’. ‘Costs of Care’ has generated awareness around resource stewardship through engaging trainees to reflect on unnecessary care through means such as essay contests, receiving hundreds of entries since its launch in 2010.²⁷ There is an opportunity for Canadian medical students to join physician campaigns driving culture change to curb unnecessary care and lead this effort in medical education. In Canada, resource stewardship has only engaged physicians through the ‘McMaster University’s Stewardship Curriculum and Audit for Residents to Cultivate Efficiency (SCARCE)’, ‘Less is More Medicine’, and CWC. It is now our time to lead the way in having resource stewardship integrated across undergraduate medical education curricula.

Principles

1. Medical overuse, defined as providing unnecessary treatment when the risk of harm exceeds its potential benefit, has become a worldwide public health concern of great relevance to the CFMS membership, practicing physicians, health care professionals, patients and the Canadian public.
2. Provision of unnecessary tests, treatments and procedures due to inadequate resource stewardship poses an unacceptable risk to the safety of patients and to the sustainability of the health care system.
3. Physicians are the primary gatekeepers of health care resources, controlling 80% of health care expenditures. As the next generation of physicians, medical students should undertake the responsibility of learning and practicing high-value care.
4. Medical education must include relevant training that prepares students to practice high-value care by curbing wasteful, inappropriate care. Formal curriculum changes may include integrating principles of parsimonious medicine and CWC recommendations into relevant lectures. Activities such as initiating resource stewardship interest groups could serve to promote resource stewardship and high value care through the informal curriculum.
5. CFMS members should be supported in their advocacy efforts to promote resource stewardship and high value care, provided that the principles promoted are informed by evidence and do not compromise public health and patient safety.
6. CFMS members must be supported in their training to practice with the values of resource stewardship, and should be commended for practicing restraint rather than being penalized for it.

7. Multiple stakeholders, including patients, medical students, physicians, other health care professionals and trainees, and government must be engaged to successfully foster a shift in culture whereby they adopt a “think twice attitude” and understand when less is more.

Recommendations

Our recommendations highlight important issues that arise in medical school training, which may affect student behaviour with respect to resource stewardship. We are asking the CFMS to endorse these recommendations, which suggest behavioural changes rather than specific tests and procedures to avoid, with the long-term goal of catalyzing a shift in medical culture. These recommendations were developed in consultation with CFMS and FMEQ general membership, and represent “Six Things Medical Students & Trainees Should Question” during their training:

- 1. Do not suggest ordering the most invasive test before considering less invasive options also available.**

When multiple tests can be conducted to answer a clinical question, the more invasive option often has a higher chance of subjecting patients to harm by provoking unnecessary anxiety, and exposing patients to radiation, infection, false positives, further unnecessary procedures, and other detrimental outcomes.² For example, patients with suspected pulmonary embolism may not need a computed tomography angiogram (CTA) as a first-line treatment; rather, students could instead consider the less invasive D-dimer or a radionuclide lung study (“VQ study”).²⁸ CTA exposes patients to a much larger radiation dose without a significant difference in clinical certainty.²⁹ Another situation where this recommendation could be implemented would be to suggest ultrasound before CT scanning for the evaluation of suspected appendicitis, or suggesting neuro-imaging studies (such as CT, MRI or carotid Doppler ultrasonography) only after red flags are present from a history and neurological exam in the evaluation of simple syncope.^{30,31}

- 2. Do not suggest a test, treatment, or procedure that will not change the patient’s clinical course.**

It is best to consider pre-test probabilities before ordering diagnostic tests and procedures. A common reason for ordering diagnostic tests for patients with a low pre-test probability of disease is to reassure patients and avoid unnecessary anxiety.³² However, evidence suggests that in such low-risk patients, diagnostic tests do not reassure patients, decrease their anxiety, or resolve their symptoms.³² These unnecessary tests may in turn do more harm than good by increasing chances of infection and false positives, contributing to further unnecessary treatment. For example, when students are seeing patients with low back pain, it is important to ascertain if there are any red flags present, prior to ordering

diagnostic imaging.³³ In fact, studies show that early imaging does not provide improve patient outcomes and does not change their clinical course, thus causing more harm than good in the long run.³⁴

3. Do not hesitate to ask for clarification on tests, treatments, or procedures you believe may be ordered inappropriately.

There will be times during students' medical education when they may see practices which conflict with something they have read or learned prior. At these times, it is important to ask supervisors who are ordering the test, treatment or procedure what their rationale was when evaluating its appropriateness. There may be an exception or red flag present indicating that the test should be ordered; if not, students may have saved the patient from an unnecessary investigation by merely asking for clarification.³⁵ Value is an important qualifier for ordering most tests in medicine, which includes three questions that students can ask themselves or their supervisor³⁶:

- a. Before choosing an intervention, have I considered whether the result would change management?
- b. Have I incorporated the patient's goals and values, and considered the potential harm of the intervention compared to alternatives?
- c. What is the known and potential cost of the intervention, both immediate and downstream?

4. Do not miss the opportunity to initiate conversations with patients about whether a test, treatment or procedure is necessary.

It is a medical student's clinical responsibility to initiate conversations with patients to ensure that patients receive the high value care they need.³ Evidence shows that physicians must lead this conversation, as they are the gatekeepers to determining the appropriate usage of resources.³⁷ Patient education and empowerment may be an effective mediator in allowing patients to make appropriate health care choices and to avoid medication overuse, and may facilitate a conversation between healthcare providers and patients.³⁸ As future physicians, it is the medical student's role to lead the conversations around unnecessary care, whether it is initiating the conversation directly or indirectly, thereby fostering an environment, which facilitates high-value care.

5. Do not suggest conducting treatments or procedures for the sole purpose of building upon personal clinical experience.

As a medical student, it is important to gain valuable clinical experiences by building on personal learning objectives, such as auscultating a patient with mitral regurgitation to hear for systolic murmurs for the first time. However, educational objectives should not be attained at the expense of patient safety. For instance, medical students may wish to perform an arterial blood gas for the experience performing and interpreting one, rather than because it was clinically indicated.³⁹ This procedure is invasive and exposes patients to unnecessary harm in inappropriate circumstances. There are many other cases when this can occur during medical students' education, and it is important to always put patients' goals and safety above that of medical students. Instead of "practicing" on a patient, there are multiple different patient simulators available that provide clinical opportunities, which can have a measurable impact. In fact, studies show simulators are as effective as the real scenario in helping students achieve their educational objectives.⁴⁰

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

High-value care has become a strategic priority of hospitals across the country, and supervisors may appreciate students practicing resource stewardship and conducting tests that are supported by evidence rather than by cultural practice.⁴¹ As medical trainees, it is important to acknowledge our discomfort with uncertainty and fear of making mistakes, but it is also important to acknowledge the risks of over-diagnosing and exposing patients to harm in the pursuit of clinical certainty. When presenting to their supervisors, students may find it useful to explain their rationale for not making certain orders, such as not ordering imaging due to a low pre-test probability.

Conclusion

As a whole, we believe that resource stewardship is an essential competency for medical students who represent the physicians of tomorrow. It is our hope that CFMS takes a position to integrate and advocate for the inclusion of resource stewardship both formally and informally into medical education.

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