The CanMEDS 2015 Expert Working Groups

Since its origins in the 1990s, the CanMEDS Project has been a grand collaborative effort of hundreds if not thousands of educators, Royal College Fellows, family physicians, and other experts. Its development has involved countless hours devoted to literature reviews, stakeholder surveys, focus groups, interviews, consultations, consensus-building, debate, and educational design. As a result, CanMEDS has been heralded worldwide for its utility as a framework to anchor physician competence in the service of patients.

In early 2013, the Royal College, along with key partners, assembled a series of Expert Working Groups (EWGs) organized around the seven core CanMEDS domains. As of January 2014, more than 100 people were involved in updating one or more CanMEDS 2015 subdomains. Each EWG is composed of medical educators and practising physicians from a range of specialties and locations. All participants have contributed their expertise to develop a first draft of the revised framework. Their role is to:

- review the CanMEDS 2005 Framework to identify potential concepts requiring clarification or modification, as well as any gaps or redundancies in the existing CanMEDS competencies
- incorporate new themes such as patient safety and intraprofessionalism into the framework
- develop the draft milestones within each existing CanMEDS Role (for release in April 2014)
- ensure that the framework is practical and useful for education across the continuum
- act on feedback from consultation and integrate relevant content into the revised CanMEDS Framework

This report is meant to complement the current working draft of the CanMEDS 2015 Framework—the Series I draft—and to provide information and context for readers who may wish to delve into the rationale and work of the Scholar EWG. The report is organized into three sections. The first section summarizes our methods and principles. The second section provides context for the revisions represented in the Series I draft and highlights differences from the 2005 Framework. Finally, the third section presents the newly drafted Scholar Role for 2015 in a side-by-side comparison with the 2005 version.

The Scholar Role review: objectives, principles, and methods

The CanMEDS 2015 Scholar EWG members adopted the following principles as foundational to their work:

- The process is one of revision and renewal: improvement, not reinvention, is the goal.
- The primary target audience is the users of the framework: trainees, front-line teachers, program directors, and Clinician Educators who design programs.
- The constructs of the Scholar Role need to be grounded in theory and best practices, while their presentation should be practical and related to the daily practice of any physician.
- Generic competencies within the Scholar Role should be articulated for all specialties.
- Concepts that are relevant to multiple Roles should be articulated in the Role where they are the most prominent. Although redundancy and overlap...
are accepted, and even expected, in practice, the framework itself should avoid repetition while ensuring the appropriate integration of Roles.

Our report was developed by means of the following activities and approaches:

- a review of recent literature (2005–2013)
- a review of the “Emerging Concepts” consultation document
- recruitment of working-group members with wide geographical and discipline-specific (including family medicine) representation and with recognized contributions to, and scholarship in, different aspects of teaching and learning and across the continuum of learning (UME, PGME, and CPD)
- specific recruitment of participants (learners and faculty) as ePanel members, to achieve further breadth in consultation
- integration of recommendations from the eHealth and Patient Safety and Quality Improvement working groups
- review of formal stakeholder consultation (including the CanMEDS 2013 survey and the ICRE 2013 Town Hall)

What’s new in the draft 2015 Scholar Role

Major content changes

As part of the CanMEDS 2015 review and update process, the Royal College decided to convene four separate expert working groups (EWGs) to review the different components of the 2005 CanMEDS Scholar Role: lifelong learning; structured clinical appraisal; teaching; and scholarship. The feeling was that these competencies were sufficiently distinct to provide a good rationale for subject-matter experts to focus on their areas of expertise during the review and development process. The resulting framework reintegrates these components once again under the Scholar Role. However, the following description of key revisions highlights each of the four sub-roles.

Lifelong learning

- In the proposed competencies for Scholar, we intended to capture the concept that lifelong learning is an endeavour that supports continuous improvement and enhancement of professional practice. The enabling competencies were reorganized into three enabling competencies—rather than nine, as in the 2005 Framework. These three enabling competencies reflect both planned and opportunistic learning as well as the need to integrate learning into daily work, to use data from a variety of sources to guide learning, and to learn as an active part of a community of practice.
- In the revised framework, professional work should be viewed as an ongoing learning laboratory with unending opportunities for quality improvement and professional growth—a personal learning environment.
- The importance of reflection in supporting lifelong learning is expressed in enabling competency 1.2.
- Lifelong learners need to reflect “capability”—the ability to adapt to change—in order to align their learning needs with new or emerging evidence to inform practice and support continuous improvement in professional performance.
- All physicians should have their own learning plan, formulated with intention and in a systematic, prospective way and grounded in their professional roles and responsibilities.
- All physicians must seek and leverage data and feedback about their performance from multiple sources to identify needs and inform their future learning. These data must be interpreted and assimilated into practice: in other words, one must analyze and reflect on the feedback data collected and use it to inform practice performance.
• Lifelong learning should not be conceptualized as solely an individual activity. Physicians work as part of a complex health system, and there is evidence to suggest that individually based quality improvement has little impact. The emergence of collaborative practice raises the need for physicians to be able to engage in collaborative learning—that is, to learn with, from, and for others.

• Further, the Lifelong Learning Working Group contributors felt that the development of a learning management system (infrastructure) should not be an individual undertaking but, rather, a centralized role of the Royal College. However, storing and accessing learning resources (using technology or not), devising organizing strategies and mechanisms, and tracking or documenting learning are all components of managing an individualized learning plan. The management system needs to allow personalization: the ability to add the resources and data sources used in practice.

Teacher

The following major content-related revisions are proposed in the draft 2015 CanMEDS Framework. Many of these changes are intended to better reflect the scope of practice of teachers and educators.

• an increased focus on teaching of medical as well as other health-profession trainees and practitioners

• a shift of competency in teaching patients and families to the Communicator Role

• expansion and clarification of assessment versus evaluation; in this context, “assessment” pertains to learners, while “evaluation” pertains to rotations, programs, and faculty

• refinement and rewording of the broader concept of “ethics” to convey more explicit, teaching-specific ethical concepts, including (1) a safe environment for learners and teachers; (2) the “hidden curriculum” and “power differentials”; and (3) maintaining patient safety in teaching

• expansion of teaching strategies beyond lectures and presentations to a broader variety of teaching strategies in clinical and non-clinical settings

• expansion of feedback to include seeking as well as providing feedback

• increased emphasis on the feedback process being based on observation as well as on other sources is also needed

• explicit mention of the “hidden curriculum”

Rationale

• We have shifted the teaching of patients and families to the Communicator Role to reduce redundancy and allow expansion within that role with respect to conducting discussions with individual patients and providing explanations of diseases and their management.

• We have shifted the emphasis on the concept of “learning styles” to “learning needs” and matching teaching strategies to learning goals.

Structured critical appraisal

In 2005 the critical appraisal competency of the Scholar Role was defined as the ability to “critically evaluate information and its sources, and apply this appropriately to practice decisions.” In the 2005 framework, this competency was enabled through the following skills and activities:

• Describe the principles of critical appraisal

• Critically appraise retrieved evidence in order to address a clinical question

• Integrate critical appraisal conclusions into clinical care

Opportunities for clarity and improved focus

The Structured Clinical Appraisal EWG identified the following limitations to—and hence opportunities to revise and improve—the critical appraisal competency as presented in 2005.

• Critical appraisal, which we defined as the evaluation of research evidence using principles of clinical epidemiology and/or evidence-based medicine, is only one of the skills that health care providers in 2015 require to achieve useful mastery of the biomedical literature and information resources.
• Critical appraisal skills are most useful when they are preceded by the ability to recognize important uncertainty in health care scenarios, or gaps in health care systems, and to translate these concerns into information needs and/or answerable questions.

• Health care providers in 2015 should be knowledgeable about evidence hierarchies and biomedical search engines so that the best available evidence can be brought to bear on the questions they have derived from uncertainty. Specifically, providers should be skilled in searching knowledge resources and efficient at acquiring evidence to address their questions.

• It is important to recognize that the sheer magnitude of the biomedical literature makes it difficult, if not impossible, to apply critical appraisal to most of the uncertainty faced in day-to-day practical decision-making. To that end, health care providers must be familiar with pre-appraised resources. Largely non-existent before 2005, these resources summarize evidence from primary studies and systematic reviews for practical application. High-quality practice guidelines can also serve this purpose.

• Although using pre-appraised resources will address the uncertainty in most encounters, the ability to conduct an in-depth assessment of the risk of bias and to discern threats to generalizability are also important skills. The evaluation of research activity is an essential prerequisite to scholarly activities, including research, teaching, and topic mastery, and the skill set that this requires is complementary to that needed in daily decision-making and in addressing unanswered practical questions.

• Given the plethora of study designs and research methodologies now in use, the critical appraisal of evidence is becoming increasingly daunting. The most effective way to mitigate this problem is to adopt a structured approach informed by the many design-specific evaluative frameworks that can be found in the literature.

• Appropriately applying the information derived from critical appraisal to practical decisions can also be a daunting task. At the level of the patient encounter, shared decision-making can be facilitated by a mutual understanding of the risks and benefits associated with a specific course of action and an appreciation of the quality of available evidence and, hence, its limitations. At the organizational level, an appreciation of the principles of implementation science or knowledge translation is required.

• The use of evidence-based alerting services tailored to one’s discipline is essential to continuing learning; this key approach can alert practitioners to what they don’t know or what is new in their discipline.

Summary of major changes

Critical appraisal and applying evidence in practice as separate competencies. In general terms, we believe that the skills and competencies housed in the critical appraisal competency are actually multi-faceted and cross into other domains of the CanMEDS Framework, and thus merit integration in CanMEDS 2015. Most importantly, we believe a distinction needs to be made between the use of evidence summaries from reliable resources to inform medical decision-making and the important scholarly skill of conducting a structured analysis and critical appraisal of research literature. Thus, these two skill sets have been presented in the 2015 revision of the Scholar Role as separate key competencies.

Evidence-informed decision-making. We have added the more specific and descriptive term, “evidence-informed decision-making,” which we loosely define as “the ability to recognize a need for information, and to identify, locate, evaluate, and effectively apply evidence summaries to the issue or problem at hand.” The new key and enabling competencies relate to question formulation, with an emphasis on searching pre-appraised resources. The importance of searching pre-appraised resources is also emphasized within the lifelong learning domain of the Scholar Role.

Structured critical appraisal. We have replaced the term “critical appraisal” with “structured critical appraisal.” This change reflects the importance of using established criteria to define the risk of bias in biomedical research, whether quantitative or qualitative, and to identify limitations in external validity. Enabling competencies include the ability to define an appropriate evaluative framework and effectively understand its intent so as to apply it to an evaluation of a study.
**CanMEDS 2015—Scholar EWG report**

<table>
<thead>
<tr>
<th>Role</th>
<th>Definition 2005</th>
<th>Description 2005</th>
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<tbody>
<tr>
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<td>Physicians engage in a lifelong pursuit of mastering their domain of expertise. As learners, they recognize the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the creation, dissemination, application and translation of medical knowledge. As teachers, they facilitate the education of their students, patients, colleagues, and others.</td>
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<td><strong>Scholar</strong></td>
<td>As Scholars, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning, the teaching of others, the evaluation of evidence and other resources, and contributions to scholarship.</td>
<td>Physicians pursue excellence by continually evaluating the processes and outcomes of their daily work, sharing and comparing their work with that of others, and actively seeking feedback in the interest of quality and patient safety. Using multiple ways of learning, they strive to meet the needs of individual patients and of the health care system. Physicians strive to master their domains of expertise and to share their knowledge. As lifelong learners, they implement a planned approach to learning in order to achieve improvement in each CanMEDS Role. They recognize the need to continually learn and to model the practice of lifelong learning for others. As teachers they facilitate, both individually and through teams, the education and learning of students and residents, colleagues, co-workers, the public, and others.</td>
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**Comparison of 2005 and 2015 frameworks**

**Definition 2005**
As scholars, physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

**Description 2005**
Physicians engage in a lifelong pursuit of mastering their domain of expertise. As learners, they recognize the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the creation, dissemination, application and translation of medical knowledge. As teachers, they facilitate the education of their students, patients, colleagues, and others.

**Definition 2015**
As Scholars, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning, the teaching of others, the evaluation of evidence and other resources, and contributions to scholarship.

**Description 2015**
Physicians pursue excellence by continually evaluating the processes and outcomes of their daily work, sharing and comparing their work with that of others, and actively seeking feedback in the interest of quality and patient safety. Using multiple ways of learning, they strive to meet the needs of individual patients and of the health care system.

Physicians strive to master their domains of expertise and to share their knowledge. As lifelong learners, they implement a planned approach to learning in order to achieve improvement in each CanMEDS Role. They recognize the need to continually learn and to model the practice of lifelong learning for others. As teachers they facilitate, both individually and through teams, the education and learning of students and residents, colleagues, co-workers, the public, and others.

**Researcher**

**Recommendations**
Although the proposed revisions set out in this document are essentially consistent with the CanMEDS 2005 Framework, our working group felt that the addition of greater specificity to the Research competency of the Scholar Role would benefit this aspect of the Role and make it more readily understood.

One key change arose from the group’s assertion that the “creation” of medical knowledge (i.e., having actively participated in a research project) should not be specified as a requirement for all physicians but, rather, should be represented as an option. The goal—although probably still through participation in research—is to produce informed research consumers for practice, recognizing that, likely with advanced training, some will choose the option of pursuing roles as clinical investigators or clinician scientists (researchers).

Although the wording of the 2005 competencies was revised to enhance meaning and clarity, none of those listed in the 2005 Framework was moved, altered, or deleted. At the same time, three new competencies were added to make, as noted above, the expected research competencies more specific and more clear. These additions concern research project conduct and management, interpretation, and translation. Finally, there was a broadening of some language to widen the definition of research to include scholarship in a variety of domains.
Physicians are able to identify pertinent evidence, evaluate it using specific criteria, and apply it in their scholarly activities and practice. Through their engagement in evidence-informed and shared decision-making, they recognize uncertainty in practice and formulate questions to address knowledge gaps. Using skills in navigating information resources, they identify evidence syntheses that are relevant to these questions and arrive at clinical decisions that are informed by evidence while taking patient values and preferences into account.

Through their scholarly activities, physicians also contribute to the application, dissemination, translation, and creation of knowledge and practices applicable to health.

**Elements 2005**

- Lifelong learning
- Moral and professional obligation to maintain competence and be accountable
- Reflection on all aspects of practice
- Self-assessment
- Identifying gaps in knowledge
- Asking effective learning questions
- Accessing information for practice
- Critical appraisal of evidence
- Evidence-based medicine
- Translating knowledge (evidence) into practice
- Translating knowledge into professional competence
- Enhancing professional competence
- Using a variety of learning methodologies
- Principles of learning
- Role modeling
- Assessing learners
- Giving feedback
- Mentoring
- Teacher-student ethics, power issues, confidentiality, boundaries
- Learning together
- Communities of practice

**Key concepts 2015**

**Lifelong learning**

- Collaborative learning
- Communities of practice
- Patient safety
- Performance assessment
- Personal learning plan
- Quality improvement
- Reflection on practice
- Self-improvement

**Teacher**

- Faculty, rotation, and program evaluation
- Formal and informal curricula
- Hidden curriculum
- Learner assessment
- Learning outcomes
- Mentoring
- Needs assessment
- Optimization of the learning environment
- Principles of assessment
- Role-modelling
- Seeking and providing feedback
- Supervision and graded responsibility
- Teaching and learning
• Research / scientific inquiry
• Research ethics, disclosure, conflicts of interest, human subjects and industry relations

Evidence-informed decision-making
• Evidence syntheses
• Information literacy
• Knowledge gaps
• Uncertainty in practice

Structured critical appraisal
• Effect size
• Evidence-based medicine
• External validity
• Generalizability
• Internal validity
• Knowledge translation
• Risk of bias

Research
• Clinical innovation
• Confidentiality
• Conflict of interest
• Informed consent
• Research ethics, disclosure, conflicts of interest, human subjects and industry relations
• Scholarly inquiry
• Scholarship

Key competencies 2005
Physicians are able to...
1. Maintain and enhance professional activities through ongoing learning
2. Critically evaluate information and its sources, and apply this appropriately to practice decisions
3. Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others as appropriate.
4. Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices.

Key competencies 2015
Physicians are able to...
1. Engage in the continuous improvement and enhancement of their professional activities through ongoing learning
2. Facilitate the learning of students, residents, other health care professionals, the public, and other stakeholders
3. Integrate best available evidence, contextualized to specific situations, and integrate it into real-time decision-making
4. Critically evaluate the integrity, reliability, and applicability of health-related research and literature
5. Contribute to the dissemination and/or creation of knowledge and practices applicable to health
Enabling competencies 2005

Physicians are able to...

1. Maintain and enhance professional activities through ongoing learning

1.1. Describe the principles of maintenance of competence
1.2. Describe the principles and strategies for implementing a personal knowledge management system
1.3. Recognize and reflect learning issues in practice
1.4. Conduct a personal practice audit
1.5. Pose an appropriate learning question
1.6. Access and interpret relevant evidence
1.7. Integrate new learning into practice
1.8. Evaluate the impact of any change in practice
1.9. Document the learning process

2. Critically evaluate information and its sources, and apply this appropriately to practice decisions

2.1. Describe the principles of critical appraisal
2.2. Critically appraise retrieved evidence in order to address a clinical question
2.3. Integrate critical appraisal conclusions into clinical care

3. Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others as appropriate

3.1. Describe principles of learning relevant to medical education
3.2. Collaboratively identify the learning needs and desired learning outcomes of others

Enabling competencies 2015

Physicians are able to...

1. Engage in the continuous improvement and enhancement of their professional activities through ongoing learning

1.1. Develop, monitor, and revise a personal learning plan to enhance professional practice
1.2. Regularly analyze their performance, using various data and other sources to identify opportunities for learning and improvement
1.3. Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice

2. Facilitate the learning of students, residents, other health care professionals, the public, and other stakeholders

2.1. Recognize the power of role-modelling and the impact of the hidden curriculum on learners
2.2. Promote a safe learning environment
2.3. Ensure that patient safety is maintained when learners are involved
2.4. Collaboratively identify the learning needs of others and prioritize learning outcomes
2.5. Demonstrate effective teaching to facilitate learning
2.6. Seek and provide meaningful feedback
2.7. Use assessment tools and practices that are appropriate to a given learning context

3. Integrate best available evidence, contextualized to specific situations, and integrate it into real-time decision-making

3.1. Recognize uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them
3.3. Select effective teaching strategies and content to facilitate others’ learning
3.4. Demonstrate an effective lecture or presentation
3.5. Assess and reflect on a teaching encounter
3.6. Provide effective feedback
3.7. Describe the principles of ethics with respect to teaching

4. Contribute to the creation, dissemination, application and translation of new knowledge and practices
4.1. Describe the principles of research and scholarly inquiry
4.2. Describe the principles of research ethics
4.3. Pose a scholarly question
4.4. Conduct a systematic search for evidence
4.5. Select and apply appropriate methods to address the question
4.6. Appropriately disseminate the findings of a study

3.2 Demonstrate proficiency in identifying, selecting, and navigating pre-appraised resources
3.3 Integrate evidence into decision-making

4 Critically evaluate the integrity, reliability, and applicability of health-related research and literature
4.1 For a given professional scenario, formulate scholarly questions using a structure that encompasses the patient or population, intervention, comparison, and outcome (PICO)
4.2 Identify one or more studies or scholarly sources that shed light on a given professional question
4.3 Interpret study findings, including a discussion and critique of their relevance to professional practice
4.4 Determine the validity and risk of bias in a wide range of scholarly sources
4.5 Describe study results in both quantitative and qualitative terms
4.6 Evaluate the applicability (external validity or generalizability) of evidence from a wide range of biomedical research products
4.7 Translate and apply the findings of studies into professional practice, and discuss the barriers and facilitators to achieving this
4.8 Identify and use automatic information-delivery services that highlight new evidence appropriate to their scope of professional practice

5 Contribute to the dissemination and/or creation of knowledge and practices applicable to health
5.1 Describe the principles of research and scholarly inquiry and their role in contemporary health care
5.2 Discuss and interpret the ethical principles applicable to health-related research
5.3 Discuss the roles and responsibilities of researchers, both principal investigators and research collaborators, and how they differ
from clinical and other practice roles and responsibilities

5.4 Pose medically and scientifically relevant, appropriately constructed questions that are amenable to scholarly investigation

5.5 Discuss and critique the possible methods of addressing a given scholarly question

5.6 Summarize and communicate to professional and lay audiences, including patients and their families* the findings of applicable studies and reports

* Throughout the Series I draft of the CanMEDS 2015 Framework, the phrase “patient and their families” is intended to include all those who are personally significant to the patient and are concerned with his or her care, including, according to the patient’s circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

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Chair: Denyse Richardson

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