



**Skills for the new millennium: report of the
societal needs working group**

CanMEDS 2000 Project

**The Royal College of Physicians and Surgeons of Canada's
Canadian Medical Education Directions for Specialists 2000 Project**

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Can MEDS 2000 Project

SOCIETAL NEEDS WORKING GROUP

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Preamble

Skills for the new millennium delineates a competency framework that will assist future specialists in responding to innumerable challenges as health-care providers – challenges that will require them to function in a health-care system in a constant state of flux and facing increasing fiscal constraints – while providing the best specialty care. This roles framework has been accepted by The Royal College of Physicians and Surgeons of Canada's Council as the desired future direction of postgraduate medical education (PGME) in Canada, thus changing the face of specialty care in the next millennium.

It is recognized that learning opportunities already exist in the faculties of medicine for many elements of the competencies described in the report. The goal of the *CanMEDS* project is to make these objectives and strategies for learning more explicit by consolidating and organizing them into a uniform framework that can be modelled nationally, across the medical specialty curricula. This framework is intended to represent the generic competencies common to all specialists, and so may not adequately explore the necessary skills of the surgical specialties.

The role of *medical expert/clinical decision-maker* may seem distinct from the other six roles of *communicator, collaborator, manager, health advocate, scholar* and *professional*. However, it is increasingly recognized from both the public and leaders in medical education that competency in these latter roles is essential to success as a medical expert. While all of the competencies within the defined seven roles are necessary for all specialists, there will be variation in the degree of expertise within these competencies between specialists. By the end of residency training, all specialists should have a grounding in each role and have the background to develop expertise as needed any time in their future careers.

Broad consultations across Canada with key stakeholders, including allied health-care providers, have yielded constructive criticism and helped shape this report. Within the Royal College, collaborative work with the Credentials, Evaluations and Accreditation committees has begun, in order that the *CanMEDS Roles Framework* be formally incorporated into all PGME programs.

All 16 faculties of medicine have accepted to be partners in making theory a reality by participating in implementation pilots. The *CanMEDS societal needs working group*, in co-operation with the pilots, is developing tools to assist in learning, teaching, evaluating and developing faculty. Change has already begun.

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I NTRODUCTION

Medicine has a solemn covenant to serve society. The mission of the Royal College, which includes promoting "the highest possible standard of specialist medical care for the people of Canada," reflects its commitment to uphold this covenant. In this regard, the *CanMEDS 2000* project was commissioned to examine Canadian societal health care needs and to assess their implications for postgraduate specialty training programs.

As an initiative of the Health and Public Policy Committee of the Royal College of Physicians and Surgeons of Canada, the *CanMEDS 2000* project was established in 1993 under the chair of Dr. John Wade. The overall goal of this project, currently chaired by Dr. John Seely, has been to ensure that postgraduate specialty training programs are fully responsive to societal needs. The project thus embodies two fundamental concepts: 1) changing the focus of specialty training from the interests and abilities of providers (supply) to the needs of society (demand), and 2) orienting these programs to consider the needs of individual patients in context of the population at large. These are two relatively simple and widely accepted concepts, yet profound in their implications for change.

At the outset, the project was divided into two streams, each with their own task force. The *Societal Needs Working Group* (SNWG), headed by Dr. Peter Tugwell, was asked to identify societal health care needs and, based on these, to define a profile of competencies essential to practising specialist physicians in Canada. Within this mandate, the SNWG was given the task of outlining the objectives and the educational and evaluation strategies for the various competencies, and making recommendations for implementation including the implications for accreditation of postgraduate programs and certification of residents. The second task force, the *Specialty Physician Resources Working Group* (SPRWG), headed by Dr. Hugh E. Scully, was charged with developing strategies regarding the number and mix of specialists in light of identified societal needs and to recommend strategies for needs-based rationalization of the specialty physician workforce and for ongoing needs-based planning

within the Royal College. This report will describe only the work of the SNWG.

The initial concept of identifying the various tasks or behaviours required of physicians, and then organizing these into distinct roles, came from the work of the EFPO (Educating Future Physicians for Ontario) project whose goal has been to make medical education in Ontario more responsive to the evolving health needs of that province. As EFPO's focus was on Ontarians and all physicians providing health care for that population, it was necessary to reexamine these issues to make them more germane to the tasks required of specialist physicians serving patients across the country. This process began with extensive reviews of the relevant published and unpublished literature, including consumer surveys and focus groups. From this information, general competencies of specialists were extracted and these were clustered into seven major roles. These physician roles include the following: *medical expert/clinical decision-maker, communicator, collaborator, manager, health advocate, scholar, and professional.*

Over the course of several months, participation was sought from key stakeholders and leaders in medical education who added further breadth, depth and reality to the existing framework. Working in task groups, each of the seven roles was explicitly defined and the key competencies for each were determined. With a view to implementation of the framework, specific educational objectives, relevant learning and evaluation methods, and pertinent faculty development issues were also described for each role. The Roles Framework of the *CanMEDS 2000* project is therefore the product of many months' work involving medical education experts across Canada and reflects overlapping clusters of the generic knowledge, attitudes, and skill set required of all specialists.

In order to validate this framework, the SNWG conducted major surveys involving two cohorts of RCPSC Fellows and all Canadian specialty program directors. Respondents were asked to rate each of the competencies from two perspectives: first, how important each is to their practice and second, how well they felt they were prepared for each during their training programs. Survey analysis demonstrates that not only do the roles make sense to program directors and new Fellows, but substantial gaps have also been

identified within each of the roles. That is, while many of the competencies were rated as important, preparation for them was relatively poor, as perceived by the Fellows and observed by the program directors.

This document is organized as follows: first, the key competencies within each group are summarized in Table 1. This list is not all-inclusive but is intended to reflect the essence of each role. Following this, each role is described further in terms of a definition, key competencies, and specific objectives. Methods for teaching and learning and evaluation are discussed in later sections. Finally, relevant issues in the development of faculty necessary for this curricular reform are discussed.

Collaboration has begun with other organizations including the College of Family Physicians of Canada, provincial colleges and licensing authorities, the regional advisory committees of the Royal College, the Canadian Association of Internes and Residents, and the Fédération des médecins résidents du Québec. Equally important will be collaboration with nursing and allied health organizations and representatives of the public at large. Recognizing that health care needs and opportunities will continue to evolve, mechanisms for ongoing surveillance of these change will also be necessary to maintain relevance and societal-responsiveness of specialty medical education. Excellence in specialty care is a covenant we must pursue.

Table 1: Essential Roles and Key Competencies of Specialist Physicians

Roles	Key Competencies
	The specialist must be able to ...
Medical Expert	<ul style="list-style-type: none"> • demonstrate diagnostic and therapeutic skills for ethical and effective patient care • access and apply relevant information to clinical practice • demonstrate effective consultation services with respect to patient care, education and legal opinions
Communicator	<ul style="list-style-type: none"> • establish therapeutic relationship with patients/families • obtain and synthesize relevant history from patients/families/communities listen effectively • discuss appropriate information with patients/families and the health care team
Collaborator	<ul style="list-style-type: none"> • consult effectively with other physicians and health care professionals • contribute effectively to other interdisciplinary team activities
Manager	<ul style="list-style-type: none"> • utilize resources effectively to balance patient care, learning needs, and outside activities • allocate finite health care resources wisely • work effectively and efficiently in a health care organization • utilize information technology to optimize patient care, life-long learning and other activities
Health Advocate	<ul style="list-style-type: none"> • identify the important determinants of health affecting patients • contribute effectively to improved health of patients and communities • recognize and respond to those issues where advocacy is appropriate
Scholar	<ul style="list-style-type: none"> • develop, implement and monitor a personal continuing education strategy • critically appraise sources of medical information • facilitate learning of patients, house staff/students and other health professionals • contribute to development of new knowledge
Professional	<ul style="list-style-type: none"> • deliver highest quality care with integrity, honesty and compassion • exhibit appropriate personal and interpersonal professional behaviours • practise medicine ethically consistent with obligations of a physician

MEDICAL EXPERT/CLINICAL DECISION-MAKER

Definition: Specialists possess a defined body of knowledge and procedural skills which are used to collect and interpret data, make appropriate clinical decisions, and carry out diagnostic and therapeutic procedures within the boundaries of their discipline and expertise. Their care is characterized by up-to-date, ethical, and cost-effective clinical practice and effective communication in partnership with patients, other health care providers, and the community. The role of *medical expert/clinical decision-maker* is central to the function of specialist physicians, and draws on the competencies included in the roles of *scholar, communicator, health advocate, manager, collaborator, and professional*.

Competencies: The specialist is able to...

1. *Demonstrate diagnostic and therapeutic skills to effectively and ethically manage a spectrum of patient care problems within the boundaries of his/her specialty.* This includes the ability to: elicit a relevant, concise, and accurate history and efficiently conduct an effective physical examination; carry out relevant procedures to collect, analyse, and interpret data; reach a diagnosis and perform appropriate therapeutic procedures to help resolve a patient's problem.
2. *Access and apply relevant information and therapeutic options to clinical practice.* This includes the ability to: pose an appropriate patient-related question, execute a systematic search for evidence, and critically evaluate medical literature and other evidence in order to optimize clinical decision-making.
3. *Demonstrate medical expertise in situations other than in direct patient care.* This includes the ability to provide testimony as an expert medical witness and to give presentations.
4. *Recognize personal limits of expertise.* This includes the ability to decide if and when other professionals are needed to contribute to a patient's care, and the ability to implement a

personal program to maintain and upgrade professional medical competence.

5. *Demonstrate effective consultation skills.* This includes presenting well-documented patient assessments and recommendations in both written and verbal form, in response to a request from another health professional.

Specific Objectives: Upon completion of the specialty program, the resident will be able to...

1. Elicit a history that is relevant, concise, accurate and appropriate to the patient's problem(s).
2. Perform physical examination that is relevant, sufficiently elaborate, appropriate and meets specialty specific standards and, if necessary, exceeds these standards.
3. Select medically appropriate investigative tools in a cost-effective, ethical and useful manner.
4. While collecting data by the three above means, demonstrate cognitive and process skills toward solving the individual patient's problem(s).
5. Demonstrate effective consultation skills in presenting well documented assessments and recommendations in written and/or verbal form in response to a request from another health care provider.
6. Apply knowledge and expertise to performance of technical skills relevant to his/her specialty.
7. Demonstrate the attitudes and the skills necessary to retrieve and implement the information necessary to provide health care services to patients in meeting the needs and expectations of the community.
8. Access, retrieve, assist and apply relevant information of all kinds to problem-solving and introduce new therapeutic options to clinical practice.
9. Demonstrate medical expertise in situations other than those involving direct patient care (eg. presentations, medico-legal cases, etc.).
10. Demonstrate insight into his/her own limitations of expertise by self-assessment.

COMMUNICATOR

Definition: To provide humane, high-quality care, specialists establish effective relationships with patients, other physicians, and other health professionals. Communication skills are essential for the functioning of a specialist, and are necessary for obtaining information from, and conveying information to patients and their families. Furthermore, these abilities are critical in eliciting patients' beliefs, concerns, and expectations about their illnesses, and for assessing key factors impacting on patients' health.

Competencies: The specialist is able to...

1. *Establish a therapeutic relationship with patients.* This includes the ability to establish and maintain rapport and fostering an environment characterized by understanding, trust, empathy, and confidentiality.
2. *Elicit and synthesize relevant information from the patient, their family, and/or community about his/her problems.* This implies the ability to explore patient's beliefs, concerns, and expectations about the origin, nature, and management of his/her illness. Specialists need to be able to assess the impact of such factors as age, gender, ethnocultural background, social support, and emotional influences on a patient's illness.
3. *Discuss appropriate information with the patient, his/her family, and other health care providers that facilitates optimal health care of the patient.* This implies an ability to inform and counsel a patient in a sensitive and respectful manner while fostering understanding, discussion, and the patient's active participation in decisions about their care. This includes the ability to listen to the patient and to communicate effectively with other health providers, to ensure optimal and consistent care of the patient and his/her family. This also implies the ability to maintain clear, accurate, and appropriate records.

Specific Objectives: Upon completion of the specialty program the resident will be able to...

1. Recognize that being a good communicator is an essential function of a physician, and understand that effective patient-physician communication can foster patient satisfaction and compliance as well as influence the manifestations and outcome of a patient's illness.
2. Establish relationships with the patient that are characterized by understanding, trust, respect, empathy and confidentiality.
3. Gather information not only about the disease but also about the patient's beliefs, concerns and expectations about the illness, while considering the influence of factors such as the patient's age, gender, ethnic, cultural and socioeconomic background, and spiritual values on that illness.
4. Deliver information to the patient and family in a humane manner and in such a way that it is understandable, encourages discussion and promotes patient's participation in decision-making to the degree that they wish.
5. Understand and demonstrate the importance of cooperation and communication among health professionals involved in the care of individual patients such that the roles of these professionals are delineated and consistent messages are delivered to patients and their families.
6. Demonstrate skills in working with others who present significant communication challenges such as anger or confusion, or an ethno-cultural background different from the physician's own.
7. Effectively provide information to the general public and media about areas of local concern.

COLLABORATOR

Definition: Specialists work in partnership with others who are appropriately involved in the care of individuals or specific groups of patients. It is therefore essential for specialists to be able to collaborate effectively with patients and a multidisciplinary team of expert health professionals for provision of optimal patient care, education, and research.

Competencies: The specialist is able to...

1. *Effectively consult with other physicians and health care professionals.* This implies the ability to develop investigations, treatment, and continuing care plans in partnership with the patient and other care providers. This collaborative approach includes the ability to: recognize the limits of personal expertise, understand the roles and expertise of the other individuals involved, inform and involve the patient and his/her family in decision-making, and explicitly integrate the opinions of the patient and caregivers into management plans.
2. *Contribute effectively to other interdisciplinary team activities.* This includes activities in hospitals, practice settings, and other institutions, such as committee work, research, teaching, and learning. It implies the ability to: recognize team members' areas of expertise, respect the opinions and roles of individual team members, contribute to healthy team development and conflict resolution, and contribute his/her own expertise to the team's task.

Specific Objectives: Upon completion of the specialty program, the resident will be able to...

1. Identify and describe the role, expertise and limitations of all members of an interdisciplinary team required to optimally achieve a goal related to patient care, a research problem, an educational task, or an administrative responsibility.
2. Develop a care plan for a patient they have assessed, including investigation, treatment and continuing care, in collaboration with the members of the interdisciplinary team.
3. Participate in an interdisciplinary team meeting, demonstrating the ability to accept, consider and respect the opinions of other team members, while contributing specialty-specific expertise him/herself.
4. Describe how health care governance influences patient care, research and educational activities at a local, provincial, regional, and national level.
5. Effectively communicate with the members of an interdisciplinary team in the resolution of conflicts, provision of feedback, and where appropriate, be able to assume a leadership role.

MANAGER

Definition: Specialists function as managers when they make everyday practice decisions involving resources, co-workers, tasks, policies, and their personal lives. They do this in the settings of individual patient care, practice organizations, and in the broader context of the health care system. Thus, specialists require the abilities to prioritize and effectively execute tasks through teamwork with colleagues, and make systematic decisions when allocating finite health care resources. As managers, specialists take on positions of leadership within the context of professional organizations and the dynamic Canadian health care system.

Competencies: The specialist is able to...

1. *Utilize time and resources effectively in order to balance patient care, earning needs, outside activities, and personal life.* This implies the ability to employ effective time management and self-assessment skills to formulate realistic expectations and a balanced lifestyle.
2. *Allocate finite health care and health education resources effectively.* While acting in the best interest of the patient, this implies the ability to make sound judgements on resource allocation based on evidence of the benefit to individual patients and the population served.
3. *Work effectively and efficiently in a health care organization.* This involves the ability to understand: the roles and responsibilities of specialists in Canada, the organization and function of the Canadian Health Care system, and the forces of change. This includes the ability to: work effectively within teams of colleagues, manage a practice and function within broader organizational management systems (eg. hospital committees).
4. *Effectively utilize information technology to optimize patient care, continued self-learning, and other activities.* This implies the ability to: use patient-related databases, access computer-based information, and understand the fundamentals of medical informatics.

Specific Objectives: Upon completion of the specialty program, the resident will be able to...

1. Understand how to function effectively in health care organizations, ranging from an individual clinical practice to organizations at the local, regional and national level.
2. Understand the structure, financing, and operation of the Canadian health system and its facilities, function effectively within it and be capable of playing an active role in its change.
3. Have an ability to access and apply a broad base of information to the care of patients in ambulatory care, hospitals and other health care settings.
4. Make clinical decisions and judgments based on sound evidence for the benefit of individual patients and the population served. This allows for an advocacy role primarily for the individual but in the context of societal needs when monitoring and allocating needed resources.
5. Be open to working effectively as a member of a team or a partnership and to accomplish tasks whether one is a team leader or a team member.
6. Understand population-based approaches to health care services and their implication for medical practice.
7. Participate in planning, budgeting, evaluation and outcome of a patient care program.

HEALTH ADVOCATE

Definition: Specialists recognize the importance of *advocacy* activities in responding to the challenges represented by those social, environmental, and biological factors that determine the health of patients and society. They recognize advocacy as an essential and fundamental component of health promotion that occurs at the level of the individual patient, the practice population, and the broader community. Health advocacy is appropriately expressed both by the individual and collective responses of specialist physicians in influencing public health and policy.

Competencies: The specialist is able to...

1. *Identify the determinants of health that affect a patient, so as to be able to effectively contribute to improving individual and societal health in Canada.* This includes the ability to recognize, assess, and respond to the psychosocial, economic, and biologic factors influencing the health of those served. The specialist incorporates information on the health determinants into his/her practice behaviours both with individual patients and their community. At the doctor-patient level, this involves adapting patient management and education so as to promote health, enhance understanding, foster coping abilities, and enhance active participation in informed decision-making.
2. *Recognize and respond to those issues, settings, circumstances, or situations in which advocacy on behalf of patients, professions, or society is appropriate.* This involves the ability to: identify populations at risk, identify current policies that affect health, and recognize the fundamental role of epidemiological research in informing practice. At a broader level, this includes the ability to describe how public policy is developed and employ methods of influencing the development of health and social policy.

Specific Objectives: Upon completion of the specialty program, the resident will be able to...

1. Demonstrate an understanding of the following:

- a) Determinants of health by identifying the most important determinants of health (i.e., poverty, unemployment, early childhood education, social support systems), being familiar with the underlying research evidence, and applying this understanding to common problems and conditions in the resident's specialty.
 - b) Public policy for health by describing how public policy is developed; identifying current policies that affect health, either positively or negatively (i.e., communicable diseases, tobacco, substance abuse); and citing examples of how policy was changed as a result of actions by physicians.
2. Demonstrate an understanding of these concepts as applied to the following three levels:
 - a) In the management of *individual patients* by identifying the patient's status with respect to one or more of the determinants of health (i.e., unemployment); adapting the assessment and management accordingly (i.e., the medical history to the patient's social circumstances); and assessing the patient's ability to access various services in the health and social system.
 - b) In the analysis of a specialist's *practice population* work with specialty society and other associations in identifying current "at risk" groups within a given specialty practice and applying the available knowledge about prevention to "at risk" groups within the practice; and contributing "group data" for better understanding of health problems within the population.
 - c) In relation to the *general population* by describing, in broad terms, the key issues currently under debate regarding changes in the Canadian health care system, indicating how these changes might affect societal health outcomes and advocating to decrease the burden of illness (at a community or societal level) of a condition or problem relevant to his/her specialty through a relevant specialty society, community-based advocacy group, other public education bodies, or private organizations.

Definition: Specialists engage in a lifelong pursuit of mastery of their domain of professional expertise. They recognize the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the appraisal, collection, and understanding of health care knowledge, and facilitate the education of their students, patients, and others.

Competencies: The specialist is able to...

1. *Develop, implement, and document a personal continuing education strategy.* This implies the acceptance of responsibility for determining personal learning needs. It includes: the ability to assess personal learning needs, select an appropriate learning method, and evaluate the outcome of learning for optimal practice.
2. *Apply the principles of critical appraisal to sources of medical information.* This involves incorporating a spirit of scientific enquiry and use of evidence into clinical decision making. As in the role of *medical expert/clinical decision-maker*, it includes the ability to: select an appropriate question, efficiently search for and assess the quality of evidence in literature and to keep up to date with the evidence-based standard of care for the conditions most commonly seen in his/her practice.
3. *Facilitate the learning of patients, students, residents, and other health professionals.* This includes the ability to: help others define learning needs and directions for development, provide constructive feedback, and apply the principles of adult learning in interactions with patients, students, residents, colleagues, and others.
4. *Contribute to the development of new knowledge.* While not all specialists will engage in active research, they should have the skills to participate in collaborative research projects, quality assurance, or guidelines development relevant to the practice of the specialist.

Specific Objectives: Upon completion of the specialty program, the resident will be able in each of the following areas to...

1. Clinical:
 - a) pose a clinical question;
 - a) recognize and identify gaps in knowledge and expertise around the clinical question;
 - c) formulate a plan to fill the gap:
 - i) conduct an appropriate literature search based on the clinical question;
 - ii) assimilate and appraise the literature;
 - iii) develop a system to store and retrieve relevant literature;
 - iv) consult others (physicians and other health professionals) in a collegial manner;
 - d) propose a solution to the clinical question;
 - e) implement the solution in practice. Evaluate the outcome and reassess the solution (re-enter the loop at c i) or c ii);
 - f) identify practice areas for research.
2. Research:
 - a) pose a research question (clinical, basic or population health);
 - b) develop a proposal to solve the research question:
 - i) conduct an appropriate literature search based on the research question;
 - ii) identify, consult and collaborate with appropriate content experts to conduct the research;
 - iii) propose a methodological approach to solve the question;
 - c) carry out the research outlined in the proposal;
 - d) defend and disseminate the results of the research;
 - e) identify areas for further research that flow from the results.
3. Education:
 - a) demonstrate an understanding of, and the ability to apply, the principles of adult learning, with respect to oneself and others;
 - b) demonstrate an understanding of preferred learning methods in dealing with students, residents, and colleagues.

PROFESSIONAL

Definition: Specialists have a unique societal role as professionals with a distinct body of knowledge, skills, and attitudes dedicated to improving the health and well-being of others. Specialists are committed to the highest standards of excellence in clinical care and ethical conduct, and to continually perfecting mastery of their discipline.

Competencies: The specialist is able to...

1. *Deliver the highest quality care with integrity, honesty, and compassion.* This implies: an awareness of racial, cultural, and societal issues that impact on the delivery of care and an ability to maintain and enhance appropriate knowledge, skills and professional behaviours.
2. *Exhibit appropriate personal and interpersonal professional behaviours.* This implies: being accountable for personal actions, having a high degree of self-awareness, maintaining an appropriate balance between personal and professional roles, and addressing interpersonal differences in professional relations.
3. *Practice medicine in an ethically responsible manner that respects the medical, legal and professional obligations of belonging to a self-regulating body.* This implies: an understanding of and adherence to legal and ethical codes of practice, the recognition of ethical dilemmas and the need for help to resolve them when necessary and the ability to recognize and respond to unprofessional behaviours in clinical practice, taking into account local and provincial regulations.

Specific Objectives: Upon completion of the training program the resident will be able in each of the following objectives to...

1. Discipline - Based Objectives:
 - a) display attitudes commonly accepted as essential to professionalism;
 - b) use appropriate strategies to maintain and advance professional competence;
 - c) continually evaluate one's abilities, knowledge and skills and know one's limitations of professional competence.
2. Personal/Professional Boundary Objectives:
 - a) adopt specific strategies to heighten personal and professional awareness and explore and resolve interpersonal difficulties in professional relationships;
 - b) consciously strive to balance personal and professional roles and responsibilities and to demonstrate ways of attempting to resolve conflicts and role strain.
3. Objectives Related to Ethics and Professional Bodies:
 - a) know and understand the professional, legal and ethical codes to which physicians are bound;
 - b) recognize, analyse and attempt to resolve in clinical practice ethical issues such as truth-telling, consent, advanced directives, confidentiality, end-of-life care, conflict of interest, resource allocation, research ethics, etc.;
 - c) understand and be able to apply relevant legislation that relates to the health care system in order to guide one's clinical practice;
 - d) recognize, analyse and know how to deal with unprofessional behaviours in clinical practice, taking into account local and provincial regulations.

DIRECTIONS FOR LEARNING IN RESIDENCY

In order to ensure that our future graduates have the necessary competencies that underlie the roles identified through the *CanMEDS 2000* project, changes in our existing teaching/learning strategies will be necessary. These roles challenge the Royal College and postgraduate programs to consider new opportunities, methods, and sites for learning. Clearly identified specialty specific objectives that pertain to these roles and the content of that specific discipline will be required to direct learning activities^{1 2 3 4}. While the competencies within the roles framework will be emphasized differently between specialties, they are all important at least at a basic level in all specialties.

Programs must be flexible, taking into consideration individual differences of the learners such as prior background, needs and individual progress. There are several important general principles which are common to the educational strategies underlying each of these roles. These include the following:

What to Teach: The roles identified highlight the necessity of essential skills such as continued learning, self-assessment, ethical decision making, information management, communication and interpersonal, as well as technical and clinical decision making skills. The competencies described must be taught in an integrated and progressive fashion in keeping with overall residency objectives. Level specific objectives must be identified upon which residents can develop additional skills as they progress through training. All programs must promote these skills, but obviously certain programs will give more attention to specific competencies depending upon that specialty.

How to Promote Learning: Learning methods must mimic as closely as possible the actual practice circumstance (contextual learning)^{5 6}. New sites and methods for learning will be required, particularly for some of the newer competencies proposed. If a skill or competency will ultimately be utilized in a community setting it should be learned in that setting^{7 8}.

Experiential learning is an essential and powerful mode of learning for residency. However, effective education strategies must take advantage of multiple educational methods. These not only include books, articles, journal clubs, ward rounds, seminars and role modelling but also more progressive learning strategies such as problem based learning, computer assisted education, and clinical reasoning sessions.

Where residents do not have an opportunity to see a predictable and diverse patient group or practice, technical procedures standardized simulations will be necessary. The closer to real life that these simulations can be the more valuable will be the learning experience.

Educational programs should strive for an integrated experience. For example, instead of a course in ethics, it is preferable that graduates learn to deal with ethical issues such as: problems of truth telling, consent, advanced directives, confidentiality, end of life care, conflict of interest, resource allocation and research ethics in the context of their day to day encounters with patients⁹.

Where to Learn: In keeping with the principle of contextual learning the optimal site of training for many of these competencies will be in the setting closest to where they will ultimately be practised. Without overburdening community physicians, quality experiences in community practice and ambulatory care locations will be required in addition to tertiary hospital-based teaching settings^{5 6}.

Who Should Teach: For many of the roles identified, education must occur on a day to day informal basis in the context of medical practice. Faculty development, effective role models and the utilization of colleagues and other health professionals will be essential for learning. Patients must provide increasing input into the educational process as they can provide formative information pertaining to roles such as the health advocate, communicator and professional.

Implications:

- a) Clear specialty specific and level specific objectives outlining these roles will be necessary.
- b) Faculty development programs will be essential to this initiative.
- c) There must be a shift in learning sites, educators and methods commensurate with the roles identified.
- d) Allied health professionals, patients and physicians in community settings should also be considered as essential faculty for training programs.
- e) Programs need to be more centrally administered through postgraduate training offices and this will require a new relationship between specialties, program directors and faculty postgraduate training offices.
- f) Interdisciplinary programs and distance education will be an important part of future specialty education.

Conclusion: In developing learning strategies for the roles identified through the *CanMEDS 2000* project, there is a need to develop and assess innovative teaching strategies. This will require a renewed interest in research and development in an effort to develop complimentary educational initiatives to those programs which are already established and highly successful. In the long run, however, many of the necessary knowledge, skills and attitudes for competency in these roles will only be accomplished through learning by doing with self-assessment and feedback from a supportive role model.

Table 2: Overview of Educational Strategies for Implementation of Roles

Roles	Learning Environment	Beside Teaching	Structure: Cognitive Instruction (eg case discussions, half days rounds)	Workshops
Medical Expert	<ul style="list-style-type: none"> • self-directed learning • individual mentorship 	<ul style="list-style-type: none"> • apprenticeship model 	<ul style="list-style-type: none"> • problem-based learning • clinical reasoning 	<ul style="list-style-type: none"> • effective consultations • presentation skills • evidence-based medicine • information access/retrieval • bioethics
Communicator	<ul style="list-style-type: none"> • empathy, respect (reflects how patient be treated) • individual & group reflection of experiences 	<ul style="list-style-type: none"> • role modelling • effective patient and family communications 	<ul style="list-style-type: none"> • conceptual framework of patient-MD communication • communication skills, special topics (eg racial, cultural issues, bad news) 	<ul style="list-style-type: none"> • communication skills with constructive feedback • role playing, +/- videotape
Collaborator	<ul style="list-style-type: none"> • interdisciplinary organization/staffing • seamless health care delivery unit (inpatient/ambulatory) 	<ul style="list-style-type: none"> • role modelling 	<ul style="list-style-type: none"> • relevant governance structures • interdisciplinary teaching sessions 	<ul style="list-style-type: none"> • team building exercises
Manager	<ul style="list-style-type: none"> • role modelling, managing time & resources between different priorities 		<ul style="list-style-type: none"> • allocation of health care resources 	<ul style="list-style-type: none"> • practice management • leadership skills
Health Advocate	<ul style="list-style-type: none"> • individual & patient population and advocacy issues 		<ul style="list-style-type: none"> • relevant governance structures • interdisciplinary teaching sessions 	<ul style="list-style-type: none"> • effective intervention, assistance in patient and population problem
Scholar	<ul style="list-style-type: none"> • self-directed learning • evidence-based practice • life long learning • practice reflection 	<ul style="list-style-type: none"> • learning from clinical problems 	<ul style="list-style-type: none"> • clinical standard setting • quality assurance/management • health economics 	<ul style="list-style-type: none"> • reflection on practice • critical appraisal skills
Professional	<ul style="list-style-type: none"> • direct observation and feedback • learner prescriptions 	<ul style="list-style-type: none"> • role modelling of professional attitudes and behaviours 	<ul style="list-style-type: none"> • case-based discussions • medico-legal rounds • medical ethics rounds 	<ul style="list-style-type: none"> • awareness of professional responsibilities

EVALUATION STRATEGIES

Evaluation strategies are critical in the implementation of any educational initiative. While resident evaluation permits the assessment of competency, it also plays an essential role in motivating and directing the learning process, and in providing feedback to program directors for program evaluation. It is important that with the development of new roles and objectives there be consideration of corresponding strategies capable of evaluating these objectives. Any evaluation system developed must demonstrate accountability to the Royal College directly and indirectly to the community within which future specialists will practice.

These evaluation strategies must be judged in terms of accountability, validity, reliability and feasibility. Testing methods must be accountable to those involved, and decisions must be defensible. A valid assessment tool measures that domain or competency that it is designed to test. Reliability in testing formats is a measure of reproducibility that is achieved through the reduction of testing error. Finally, an accountable, reliable and valid testing scheme will not be implementable if it is not feasible in terms of its cost in human and physical resources.

The evaluation strategies proposed for the roles and competencies identified through the *CanMEDS 2000* project will be measured against these four criteria. In almost all circumstances, there will be no single assessment strategy that meets all of these criteria and multiple assessment strategies and compromises in terms of strengths and weaknesses will have to be necessary.

Methods of Evaluation: There are numerous methods for the testing of resident clinical competency which vary in terms of their psychometric qualities and utility, depending upon the circumstance.

Direct observation at the time of an oral exam, objective structured clinical examination (OSCE) or during in-training assessment can assess a resident's performance in dealing with a clinical encounter. For this component of assessment to be useful, objective evaluation of performance utilizing preset standards

is necessary. The following is a brief description of the different evaluation strategies that will be referred to in each of the roles identified:

1. *In-training Evaluation.* Many competencies cannot be assessed at the time of one brief encounter at the end of residency training. In-training evaluation by supervisors assesses performance throughout the residency program and must become an important tool to measure many of these essential competencies. Unfortunately, reliable assessment methods are not currently in place, and in-training evaluation has been unsuccessful in discriminating between candidates. If correctly implemented using objective assessments from multiple observers, in-training evaluation has the potential to evaluate trainees in a valid and reliable fashion in many areas of competency that are not easily assessed through more objective testing techniques.¹⁰
2. *Multiple Choice Questions (MCQ).* The MCQ are reliable for the assessment of knowledge and standard setting. Criterion referencing and psychometric analysis are well developed with this testing method. Unfortunately, most MCQ test at a low cognitive level, mainly factual recall, even though they are not limited to this. The MCQ are not capable of testing many of the identified competencies identified as essential for practice.
3. *Multiple Option Matching.* This method is similar to that of the MCQ. However, rather than five possible answers there are a series of potential responses, minimizing guessing and stimulated recall that occurs with the MCQ. This method enjoys all of the same advantages of the MCQ but also has difficulties in terms of validity as it pertains to many of the other essential competencies for practice.
4. *Short Answer Question (SAQ).* The SAQ requires a clinically relevant stem whose response requires the integration and application of basic and clinical science knowledge. Brief answers are written in text format with the advantage being improved testing of higher level, cognitive performance without stimulated recall. The disadvantage, however, is that subjectivity is now introduced in the marking scheme and reliability is sacrificed for the sake of validity.

5. *Short and Long Essay Questions.* Once again these methods allow a student to deal with a specific written problem, and formulate his or her thoughts in an organized manner. While capable of assessing clinical reasoning and scientific thought, the broad sampling of objectives is limited by the small number of questions that can be asked in a given testing time. These test methods are therefore psychometrically unacceptable for high stake examinations. However, they may be very useful for other purposes of assessment such as giving and receiving feedback, ongoing in-training evaluation and the assessment of creative writing skills and scientific reasoning.
6. *Objective Structured Clinical Examination.* The OSCE is a testing format which allows for multiple, short (5-30 minutes) observations of clinical scenarios using real or standardized patients. Standardized checklists are utilized to document observed behaviours and may be utilized to assess many clinical skills such as technical, ethical decision making, communication, problem solving and history/physical examination skills. While a high reliability may be obtained, typically a large number of cases (15-20) and prolonged testing time (3-6 hours) is required due to the problem of case specificity. Face content and construct validity is generally high, however the logistical difficulties of cost, test development, administration and testing time may limit the feasibility of this method.
7. *Structured Oral Examination.* The structured oral examination is commonly used within the Royal College for assessment. This assessment method is attractive because it closely simulates future performance. However, concerns have been raised in view of its reliability for the purpose of certification. While costly in terms of human and physical resources, this method does send a strong message to training programs pertaining to the importance of clinical assessment.
8. *Chart Stimulated Recall/Chart Review.* The review and subsequent discussion of a case utilizing the patient chart as a focus for discussion has promise. Concerns have been raised as to whether standardized and reliable methods can be

developed that would allow this to be done in a reproducible fashion. While this process may allow an evaluator to assess many essential components of clinical performance, it is dependent upon the quality of charting and the standardization of the assessor.

A summary of these evaluation strategies as applied to the *CanMEDS 2000 Roles* is found in Table 3.

Pitfalls in Evaluation: In developing these evaluation strategies, it is important to remember :

- i) complementary evaluation methods are necessary to assess the essential competencies of specialists,
- ii) good evaluation systems are dependent on sound objectives,
- iii) evaluation takes time and resources,
- iv) regular review of evaluation systems are necessary to ensure their relevance and purpose,
- v) clarity of purpose is necessary for any evaluation method, as some strategies serve goals other than resident assessment^{11 12}.

Implications:

1. While we have developed useful assessment strategies that are valid, reliable, accountable and feasible, there is a great deal of work that has to be done in implementing useful systems for the assessment of many components of these new roles and the competencies they embrace.
2. In-training assessment requires further research and development and there is opportunity for complementarity using computerized testing.
3. A greater use of peer and self assessment should be incorporated, and multiple methods of assessment will have to be developed, with the right method being utilized for the right circumstance.
4. Faculty development will be an essential part of any proposed new evaluation strategy for this to be a success.

Table 3: Application of Evaluation Strategies to the CanMEDS Roles

Evaluation Tools Roles	In-Training Evaluation	Stimulated Chart Recall	Objective Written Examinations (MCQs, SAQs, Essay Questions)	Objective Structured Clinical Examination (OSCE)	Structured Oral Examination
Medical Expert	<ul style="list-style-type: none"> consultation skills self-assessment ability (further development required) 	<ul style="list-style-type: none"> review of medical records review of written consultation skills 	<ul style="list-style-type: none"> assessment strategies well-developed for testing most objectives 		<ul style="list-style-type: none"> assessment strategies well-developed for testing most objectives
Communicator	<ul style="list-style-type: none"> observed behaviours best source for assessing communication skills and attitudes (further development required) 	<ul style="list-style-type: none"> assessment of information gathering and medical communication 		<ul style="list-style-type: none"> with appropriate design, could provide valid assessment of knowledge, skills and attitudes 	
Collaborator	<ul style="list-style-type: none"> direct observation during training is the primary source of assessment specific input from allied health professional essential (further development re: attitudinal scales, non-quantitative methods required) 		<ul style="list-style-type: none"> some aspects measurable with objective examinations 		
Manager	<ul style="list-style-type: none"> observed behaviours necessary to assess performance during training 	<ul style="list-style-type: none"> may be promising, requires much development 	<ul style="list-style-type: none"> assessment of organizational aspects of practice and the health care system 	<ul style="list-style-type: none"> may be promising, requires much development 	
Health Advocate	<ul style="list-style-type: none"> assessment of attitudinal aspects and performance of these competencies 		evaluation re: <ul style="list-style-type: none"> determinants of health clinical epidemiology health & social policy procedures 		
Scholar	<ul style="list-style-type: none"> assessment of much of the competencies may be possible with observed clinical performance 		<ul style="list-style-type: none"> may be useful if made more reliable and valid through further development 		
Professional	<ul style="list-style-type: none"> observations during residency provide rich source for assessment of these competencies 	<ul style="list-style-type: none"> very helpful evaluation tool, with further development 	<ul style="list-style-type: none"> not sufficiently valid 		<ul style="list-style-type: none"> possible to evaluate knowledge and concepts in the setting of professional behaviours

DIRECTIONS FOR FACULTY DEVELOPMENT

Effective faculty are one of the key ingredients in the success of any educational program. This involves faculty members who are knowledgeable, supportive and have the necessary skills required to design, implement and evaluate a course of studies, and to assess their students' learning and their own effectiveness as teachers. Faculty development is extremely important in the process of curriculum change. It is all the more important in a project such as *CanMEDS 2000* given that professional attitudes, behaviours and patterns of practice are more firmly established during postgraduate training than at any other time in the medical life cycle.

In this section of the report, we wish to emphasize the importance of faculty development as a structured long-term commitment to educational reform, and to place faculty development in the context of continuing educational and career development for members of the faculty.

Clinical teachers influence students in multiple ways. The most important of these influences is that of "role modelling", wherein students implicitly model themselves after their mentors, incorporating in themselves similar concepts, approaches and attitudes, as well as specific knowledge and skills. It is often through the implicit influences of such role models that students determine their values, priorities and behaviours. Faculty must not only be knowledgeable about the *CanMEDS* roles framework of competencies but they must also exemplify the very behaviours that we are trying to instill in our students and actively support and promote their application. When the competencies are not exemplified by Faculty, trainees are likely to attach more importance to the implicit or unstated message. This often leads to cynicism where students do not take the competencies seriously. As Jean Jaurès, a French educator, has written, "On n'enseigne pas ce que l'on sait; on enseigne ce que l'on est". In other words, we do not teach what we know, but what we are^{13 14 15}.

Support mechanisms, including appropriate rewards and recognition, are necessary to help faculty achieve their goals of being better teachers and to ensure clear departmental and priorities. Fair and consistent evaluation methods are required for effectiveness of teaching and behavioural role-modelling by faculty,

and these measures must play a significant role in career advancement and financial rewards for faculty¹⁶. Widespread support is essential within the faculty and particularly among its leaders for the goals, objectives and values of the postgraduate curriculum.

Faculty development should be regarded as part of the Faculty's contribution to the continuing education programs of their members as a means of enhancing career goals and job satisfaction for members of the faculty^{17 18}. Faculty development programs must therefore help make clinical teachers more conscious and more reflective of how they exemplify the various competencies that they are trying to teach.

Faculty development programs require sustained, coordinated effort involving the senior leadership of the faculty, the dean, department heads and undergraduate and postgraduate deans. It cannot be a one-shot effort. Such programs are likely to fail, especially if there is not commitment from the top. Ongoing programs involving review of important topics and repeated exposure for achievement of higher levels of performance and understanding are needed to sustain faculty teaching skills.

To ensure that faculty members' behaviours are consistent with those proposed in the framework, it is incumbent on faculties and departments that unacceptable behaviours will not be rewarded or tolerated and similarly that exemplary performance will be recognized. This will require more explicit recognition of the competencies included in the various roles in the evaluation of clinical teachers, to ensure that such behaviours are addressed and, if necessary, remediation undertaken if a faculty member is to continue to act as a clinical teacher.¹⁹

Potential strategies for faculty development are multiple, reflecting the different levels of responsibility, the diverse needs of faculty members and the circumstances of particular disciplines. The strategies to be employed must be tailored to the particular competency being addressed. Thus certain methods that work very well for dissemination of information such as printed materials or lectures, are inappropriate to the learning of new skills. The latter is likely to require situations in which there is an opportunity to practise under supervision, with, for instance, the assistance of simulated patients or use of role play and where immediate feedback is available. The ability to influence attitudes and values is more difficult and is likely to profit most from small or large-group

discussions with peers as in Balint groups and exposure to respected role models. A number of vehicles can be used to trigger discussion such as case material, selected videos, films or articles from literature, or actual patient feedback.²⁰

Some strategies useful at the institutional level include workshops, retreats, mentor programs, group discussion, provision of educational articles and other sources of information, fellowship programs and formal course work. There are specific strategies available to assist faculty members in their personal development as teachers. Irby²¹ has described a number of individual initiatives such as teaching scripts, self-directed learning projects and the use of peers as coaches, educational consultants or to provide formal evaluation. By developing greater powers of reflection and a greater self-awareness around teaching and learning, clinical teachers can better profit from their own experiences and enhance their effectiveness as teachers.

In many cases, faculty development programs will need to be targeted at the specific skill sets required of certain roles. In other instances, faculty development efforts may be directed at the generic skill sets which cross a number of roles. The *CanMEDS 2000* project has stimulated a variety of pilot projects carried out within individual faculties and specialties. In this process, various models of facilitating faculty development for clinical teachers will be tried, evaluated and shared with colleagues across the country. These pilots will lead to a growing database documenting both successful and unsuccessful techniques.

Implications:

1. The SNWG has concluded that an effective, co-operative, and concerted faculty development effort is essential for successful implementation of the competencies identified in the Roles Framework.
2. The Royal College has a critical role to play in the domain of faculty development. The Royal College has the responsibility to set overall educational objectives for the program, outline educational strategies and determine the standards for program accreditation, certification and in-training evaluation. However, the College also has an obligation to help create faculty development programs aimed particularly at postgraduate deans and program directors, not only so that they are fully aware of the national standards and program objectives, but also so that they will have an opportunity for sharing faculty development activities going on across the country with each other.
3. There is a need for the Royal College, in collaboration with accredited programs and faculties of medicine, to support the advancement of new and expanded faculty development programs to address the teaching and learning of the *CanMEDS Roles*. We believe that the *CanMEDS 2000* project will further stimulate various pilot projects carried out within individual faculties and specialties and that in this way different models of facilitating faculty development for clinical teachers will be tried, evaluated and shared with colleagues across the country.

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*See also the related publication, The CanMEDS 2000 Bibliography, for a more extensive list of references used in the development of this report.

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