



Oncology education in Canadian undergraduate and postgraduate medical programs: a survey of educators and learners

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ABSTRACT

Background

The oncology education framework currently in use in Canadian medical training programs is unknown, and the needs of learners have not been fully assessed to determine whether they are adequately prepared to manage patients with cancer.

Methods

To assess the oncology education framework currently in use at Canadian medical schools and residency training programs for family (FM) and internal medicine (IM), and to evaluate opinions about the content and utility of standard oncology education objectives, a Web survey was designed and sent to educators and learners. The survey recipients included undergraduate medical education curriculum committee members (UMECCMS), directors of FM and IM programs, oncologists, medical students, and FM and IM residents.

Results

Survey responses were received from 677 educators and learners. Oncology education was felt to be inadequate in their respective programs by 58% of UMECCMS, 57% of FM program directors, and 50% of IM program directors. For learners, oncology education was thought to be inadequate by 67% of medical students, 86% of FM residents, and 63% of IM residents. When comparing teaching of medical subspecialty-related diseases, all groups agreed that their trainees were least prepared to manage patients with cancer. A standard set of oncology objectives was thought to be possibly or definitely useful for undergraduate learners by 59% of respondents overall and by 61% of postgraduate learners.

Conclusions

Oncology education in Canadian undergraduate and postgraduate FM and IM training programs are currently thought to be inadequate by a majority of educators and learners. Developing a standard set of oncology objectives might address the needs of learners.

KEY WORDS

Oncology education, Canada, undergraduate medical programs, postgraduate medical programs

1. INTRODUCTION

Cancer is now the leading cause of death in Canada, and it is estimated that 40% of Canadians will develop cancer in their lifetime¹. As a consequence, most physicians will be involved in the management of patients with problems related to cancer or its treatment. Medical students who go on to pursue careers in family medicine (FM) or internal medicine (IM) will frequently be involved in the screening, diagnosis, and follow-up of cancer patients². Despite those likely responsibilities, there is a deficiency of focused oncology teaching during medical school and FM and IM training³. As a result, many medical students and residents have been found to lack the proper knowledge to assist patients in basic cancer prevention and detection even after completion of their training⁴.

The purpose of the present study was to determine the opinions of educators and learners about the oncology education framework currently used in Canadian medical training programs and to assess their views about the educational needs of medical students and of FM and IM residents in preparation for their future involvement in the care of cancer patients.

2. METHODS

Our study was approved by the Sunnybrook Health Sciences Centre Research Ethics Board, the University of Calgary Conjoint Health Research Ethics Board, and the University of British Columbia Behavioural Research Ethics Board. Data collection was completed in 2011.

2.1 Survey and Data Collection

The survey instrument was developed by reviewing oncology-related learning objectives from the Medical Council of Canada⁵, the College of Family Physicians of Canada⁶, the Royal College of Physicians and Surgeons of Canada (Internal Medicine)⁷, and also the Cancer Council of Australia Ideal Oncology Curriculum for Medical Schools⁸. The first section of the survey contained questions dealing with the current state of oncology education in the respondent's training program, including whether a formal oncology curriculum exists and whether objectives are provided. The second section of the survey focused on oncology topics currently taught in the training program and asked respondents to rate the importance of including various oncology topics in a set of standard objectives for their program. Five separate surveys were developed (Appendix A), each with small modifications for a target group: medical students, undergraduate medical education curriculum committee members (UMECCMS), FM and IM program directors, FM and IM residents, and oncologists. All surveys were available in both English and French.

The surveys were assessed for face and content validity by a group of 10 educators (8 medical and 2 radiation oncologists, including 2 who were also UMECCMS) and 10 learners (2 medical students and 2 FM and 6 IM residents). Surveys were amended based on the feedback received.

The associate deans at all 17 Canadian medical schools were contacted by e-mail and asked to forward the survey to their UMECCMS and final-year medical students. All Canadian FM and IM program directors were also contacted by e-mail and asked both to complete the survey and to distribute it to their final-year residents. Surveys were distributed to medical and radiation oncologists by, respectively, the Canadian Association of Medical Oncologists and the Canadian Association of Radiation Oncology. Contacts who distributed the survey were asked to indicate the total of number of individuals who would receive the survey.

2.2 Statistical Analysis

The Web site <http://www.surveymonkey.com> was used to conduct the survey. Statistical analysis was performed using the SAS software application

(version 9.2: SAS Institute, Cary, NC, U.S.A.), and descriptive statistics were calculated.

3. RESULTS

Table 1 shows characteristics of the educators and learners who participated in the survey. Surveys were sent to 961 educators and 1966 learners. Responses were received from 677 individuals, for an overall response rate of 23% [159 educators (17% response rate), 518 learners (26% response rate)]. Figure 1 shows the distribution of survey responses from across Canada by group surveyed.

3.1 Oncology Education in Undergraduate Medical Schools

We received responses from 12 associate deans among the 17 Canadian medical schools contacted; 8 agreed to distribute the survey. Survey responses were received from 19 of 175 UMECCMS and 342 of 1005 medical students (11% and 34% response rates respectively). Responses were received from educators and learners in all regions except Atlantic Canada.

Table 2 summarizes the state of oncology education at each Canadian medical school as reported by survey respondents. Programs with a small number of respondents (fewer than 5) or for which inconsistent responses were received were excluded if an accurate summary of current oncology teaching could not be determined. Of the 8 undergraduate medical programs, 4 had a separate block or rotation dedicated to oncology, and 5 had oncology objectives. Only 2 medical schools recommended an oncology textbook to their medical students, but students were aware of the recommended textbook at only 1 of the 2 schools.

Undergraduate oncology education at their medical school was thought to be inadequate by 58% of UMECCMS and 67% of medical students. The UMECCMS and medical students both agreed that oncology is the worst-taught medical subspecialty (Table 3). Most of the survey's suggested oncology topics are taught to more than 80% of Canadian medical students. The oncology topics that medical students believed were not taught as often included principles of radiation therapy (taught to 67% of medical students) and principles of systemic therapy (taught to 72%; full results in Appendix A).

A standard set of oncology objectives for medical students across Canada was supported by 95% of UMECCMS and 91% of medical students (Table 4). A textbook or Web book based on those objectives was supported by 89% of UMECCMS and medical students. An online-only educational resource was preferred by 58% of UMECCMS and 36% of medical students, but 42% of UMECCMS and 55% of medical students supported the availability of both a printed textbook and an online Web book. A voluntary oncology summer school course was less popular: just 16% of medical

ONCOLOGY EDUCATION IN CANADIAN MEDICAL PROGRAMS

TABLE 1 Characteristics of educators and learners surveyed

Characteristic	Surveyed group [n (%)]			
	Undergraduate medical program	Family medicine training program	Internal medicine training program	Oncologists
Total responses	361	102	91	123
Sex				
Men	133 (37)	27 (26)	55 (60)	79 (64)
Women	227 (63)	74 (73)	36 (40)	43 (35)
Not answered	1 (0)	1 (1)	0 (0)	1 (1)
Educational role or training level				
UMECCM	19 (5)	—	—	—
Medical student	342 (95)	—	—	—
Family medicine program director	—	7 (7)	—	—
Family medicine resident	—	95 (93)	—	—
Internal medicine program director	—	—	10 (11)	—
Internal medicine resident	—	—	81 (89)	—
Medical oncologist	—	—	—	54 (44)
Radiation oncologist	—	—	—	67 (54)
Hematologic oncologist	—	—	—	2 (2)
Learners planning to pursue a career in oncology	342	95	81	—
Yes	28 (8)	4 (4)	14 (17)	—
No	231 (68)	81 (85)	62 (77)	—
Unsure	83 (24)	10 (11)	5 (6)	—

UMECCM = undergraduate medical education curriculum committee member.

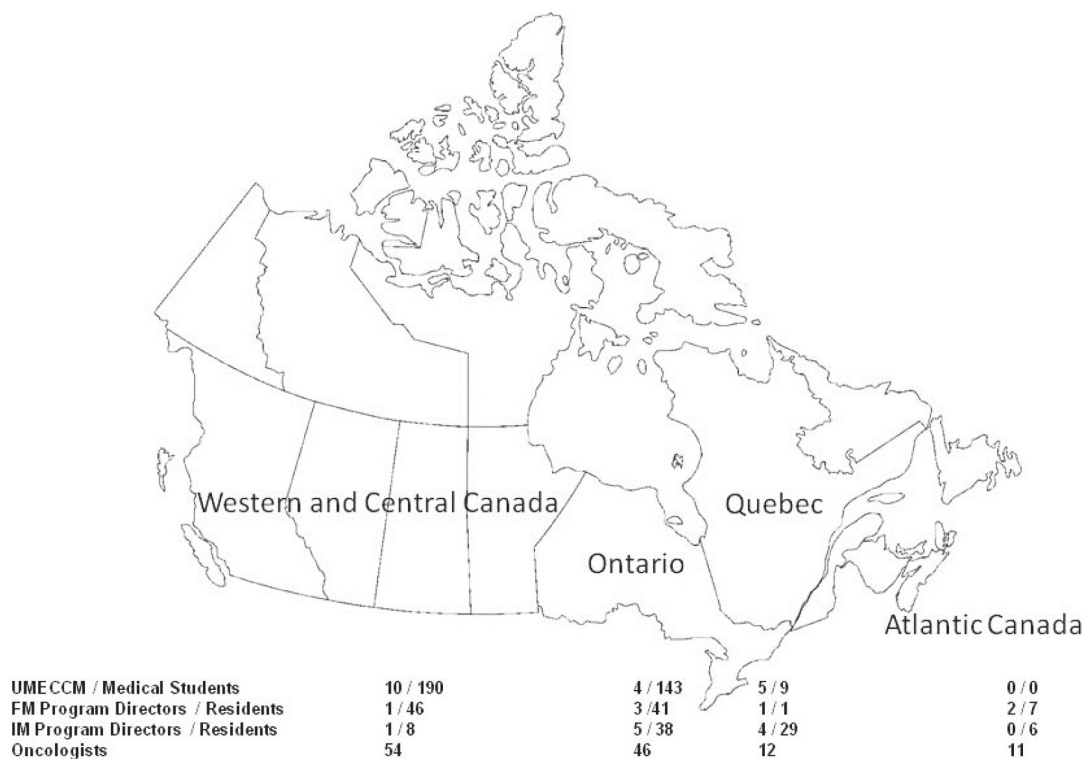


FIGURE 1 Survey responses by region and group surveyed. UMECCM = undergraduate medical education curriculum committee members; FM = family medicine; IM = internal medicine.

TABLE II Oncology education in Canadian medical schools

University	Separate block or rotation?	Oncology		Textbook or reference resource
		Objectives	Curriculum	
British Columbia	No	Yes	Yes	<i>Essentials of Clinical Oncology</i> ⁹
Calgary	No	No	No	None
Alberta	Yes	Yes	Yes	None
Saskatchewan	No	No	No	None
McMaster	Yes	Yes	Yes	None
Toronto	No	No	No	None
Queen's	Yes	Yes	Yes	None
McGill	Yes	Yes	No	<i>Cecil Essentials of Medicine</i> ¹⁰ (students not aware)

TABLE III Ranking^a the adequacy of teaching of medical subspecialty-related diseases

Subspecialty	Rank out of 10 as assigned by					
	UMECCM	Medical students	FM program directors	FM residents	IM program directors	IM residents
Oncology	10	10	9	10	10	10
Cardiology	1	1	1	1	1	1
Endocrinology	4	4	3	4	5	6
Gastroenterology	2	2	1	2	2	3
Hematology	7	7	9	9	6	7
Infectious disease	6	9	6	5	7	5
Neurology	9	6	5	8	7	9
Nephrology	5	5	6	7	3	4
Respirology	3	3	3	3	3	2
Rheumatology	7	8	8	6	7	8

^a Where 1 indicates most adequately taught or prepared, and 10 indicates least adequately taught or prepared. Rankings are based on mean scores on a 5-point scale that allows for a tie in rankings.

UMECCM = undergraduate medical education curriculum committee member; FM = family medicine; IM = internal medicine.

students stated that they would attend; another 39% would consider attending.

Table v shows the 5 most important oncology topics for undergraduate medical training programs. The UMECCMS and medical students agreed on only one of their 5 most important oncology topics for medical students: "Breaking bad news." Appendix A shows a full survey ranking of the importance of various oncology topics.

3.2 Oncology Education in FM Training Programs

Of 17 FM training program directors, 7 (41% response rate) agreed to participate in the survey. Of 579 FM residents who received the participation request, 95 completed the survey (16% response rate), representing 8 FM training programs (47%).

No Canadian FM training programs had a mandatory oncology rotation, and only 2 had a set of oncology

objectives for their learners. No program had an oncology curriculum or recommended an oncology textbook or reference resource to its residents.

Oncology education was thought by 57% of program directors and 86% of residents to be inadequate in their respective FM training programs. The FM program directors believed that their residents were least adequately prepared to manage diseases related to oncology and hematology (Table III). The FM residents felt that they were least adequately prepared to manage patients with cancer.

Most FM program directors (71%) supported a standard set of oncology objectives for their residents (Table IV), and 93% of FM residents thought that oncology objectives were maybe or definitely useful. An online-only educational resource was supported by 71% of FM program directors and 39% of residents; 29% of program directors and 57% of residents preferred having both a printed textbook and an online Web book.

TABLE IV Opinions regarding potential standard objectives, curriculum, and resources for oncology education

Question	Surveyed group (%)							
	UMECCM	Medical students	FM program directors	FM residents	IM program directors	IM residents	Oncologists for	
							Medical students	FM and IM residents
Would a standard set of oncology objectives be useful?								
Yes	58	53	14	45	70	53	78	82
Maybe	37	38	57	48	30	30	20	17
No	5	9	29	6	0	17	2	1
Would a standard textbook or web book be useful?								
Yes	63	59	29	54	80	60	61	69
Maybe	26	30	29	37	0	26	34	23
No	11	11	43	9	20	14	6	7
If a standard oncology textbook or Web book was created, which medium is preferred?								
Printed book	0	9	0	4	10	10	4	2
Web book	58	36	71	39	60	42	47	46
Both	42	55	29	57	30	48	49	52
Would a voluntary summer school course in oncology for medical students be useful and would medical students attend this course?								
Yes	32	16	—	—	—	—	41	—
Maybe	37	39	—	—	—	—	46	—
No	32	45	—	—	—	—	13	—

UMECCM = undergraduate medical education curriculum committee member; FM = family medicine; IM = internal medicine.

The FM program directors and residents agreed that “screening for common malignancies” and “principles of palliative care” are among the most important topics for FM residents to learn (Table v).

3.3 Oncology Education in IM Training Programs

Of 17 IM program directors, 13 initially agreed to participate in the study, but only 10 completed the survey (59% response rate). Of the 382 IM residents who received the survey request, 81 completed the survey (21% response rate), representing 13 IM training programs (76%).

Of the 13 IM programs, 5 had a mandatory 1-month oncology rotation; another 2 training programs in Quebec required a 2-month oncology rotation. All of the IM training programs had oncology objectives. Of the 13 responding programs, 9 reported having an oncology curriculum. None reported recommending an oncology textbook or a reference resource to its residents.

Oncology education in their respective IM training program was thought by 50% of program directors and 63% of residents to be inadequate. Training program directors and residents both believed that, upon completion of their training program, internists

would be least adequately prepared to manage diseases related to oncology (Table III).

A standard set of oncology objectives was supported by 70% of IM program directors and 53% of IM residents. An online-only educational resource was supported by 60% of IM program directors and 42% of residents; 30% of program directors and 48% of residents preferred having both a printed textbook and an online Web book (Table IV).

Program directors and residents in IM programs agreed on 4 of their top 5 most important topics for IM residents to learn: “Common complications of cancer,” “Common complications of cancer treatment,” “General knowledge of lung cancer,” and “General knowledge of colorectal cancer” (Table v).

3.4 Opinions of Oncologists

The 123 oncologists who responded to the survey (16% response rate), included 54 medical oncologists, 67 radiation oncologists, and 2 hematology oncologists. Responses were received from at least 1 oncologist from every Canadian medical school. Oncology education in their undergraduate and postgraduate FM and IM training programs was thought by 82% of oncologists to be inadequate. The oncologists also

TABLE V Top 5 most important topics to be included as oncology education core competencies for learners, by program type

Undergraduate medical training program	
UMECCM	
	Common complications of cancer
	Common complications of cancer treatment
	Breaking bad news
	Cancer epidemiology and risk factors
	Screening, prevention, treatment, and prognosis of common malignancies
Medical students	
	General approach to diagnosis in patient with suspected cancer
	General knowledge of breast cancer
	Breaking bad news
	General knowledge of colorectal cancer
	General knowledge of lung cancer
Family medicine (FM) training program	
FM program directors	
	Screening for common malignancies
	Principles of palliative care
	General knowledge of lung cancer
	General knowledge of breast cancer
	General knowledge of colorectal cancer
FM residents	
	Screening for common malignancies
	General approach to diagnosis in patient with suspected cancer
	Breaking bad news
	Prevention of common malignancies
	Principles of palliative care
Internal medicine (IM) training program	
IM program directors ^a	
	Common complications of cancer
	Common complications of cancer treatment
	Breaking bad news
	General knowledge of lung cancer
	General knowledge of breast cancer
	General knowledge of colorectal cancer
IM residents	
	General knowledge of colorectal cancer
	General knowledge of lung cancer
	Common complications of cancer
	General approach to diagnosis in patient with cancer
	Common complications of cancer treatment

^a Sixth topic included because of a tie in the ranking.

UMECCM = undergraduate medical education curriculum committee member.

agreed that diseases related to oncology are least adequately taught compared with diseases related to other medical specialties (Table III). Most oncologists believed that a standard set of oncology objectives and a textbook or Web book based on those objectives would be useful to learners (Table IV).

4. DISCUSSION

Our study is the first to characterize in detail the current state of oncology education in Canadian medical schools and in FM and IM residency training programs. The major finding was that a broad selection of Canadian medical educators and learners agreed that, compared with trainees in all other medical subspecialties, their trainees are least adequately prepared to manage patients with cancer. Oncology is a separate topic in the curriculum in only half of undergraduate medical programs. None of the FM residency training programs required a mandatory rotation in oncology, and oncology rotations were required in only 7 of the 13 Canadian IM training programs surveyed. Most educators and learners also believed that a standard set of oncology objectives would maybe or definitely be useful for learners (92% educators, 90% learners) and that a textbook or Web book focusing on oncology education for medical students and FM and IM residents would be useful.

Our results confirm the findings of an earlier, smaller study of administrators in charge of Canadian undergraduate schools of medicine, nursing, pharmacy, and postgraduate resident training programs³. The education leaders in that study also believed that the level of oncology education in their respective programs at that time was inadequate. The inadequacy of preparation is not surprising given that many programs did not have a dedicated oncology curriculum or rotation. Our results are also consistent with those in a study that surveyed medical school deans from 14 European countries. That study, which was conducted by the European Organisation for Research and Treatment of Cancer, found that only 41% of schools had a curriculum in oncology¹¹. A more recent study from the United Kingdom showed that new graduates from U.K. medical schools lacked adequate knowledge about cancer and symptom control¹². Only 40% of respondents felt prepared to look after patients with cancer, and 61% would have preferred more teaching in oncology.

One potential solution, which has been instituted in Europe, is the development of summer-school oncology programs for medical students^{13–15}. Summer school might not be a viable solution in Canada, given that only 16% of responding Canadian medical students indicated that they would attend a summer school course in oncology. In addition, several medical schools in Canada, such as McMaster University and the University of Calgary, do not have summer breaks. Their students would not have an opportunity to attend summer-school courses.

Although the quantity of oncology teaching might be slightly less than ideal, fragmentation of oncology teaching and the actual information taught are also part of the problem. Of the oncology topics identified in our survey, most were taught to the medical students and residents, but most of the learners nevertheless felt inadequately prepared for their role in managing cancer patients. Encouraging focused coverage of oncology at all levels of medical training and approaching the teaching from the perspective of the knowledge that family physicians and internists will have to acquire for their role in caring for patients with cancer might help to more adequately prepare Canada's future physicians for clinical practice.

Our study addresses the issue of inadequate oncology education by offering potential solutions to the problem. In Canada, medical schools and residency training programs across the country use various methods of teaching; a single standard Canadian oncology curriculum might be impractical. However, a standard set of oncology objectives for each of the three learner groups could be created using the topics identified as important in this study, together with existing objectives, curricula, and syllabi from each Canadian medical training program. A common set of Canadian oncology objectives for each learner group could supplement existing oncology teaching, increase the consistency of oncology education across the country, and decrease the fragmentation of oncology education in the respective training programs. The new objectives might also serve as a starting point for the development of an oncology education textbook or Web book resource for medical students and FM and IM residents.

Our study does have certain limitations. We were not able to obtain responses from educators and learners in all Canadian medical schools and residency training programs. Response rates from certain groups of educators and learners in the medical training programs that we were able to survey were lower than those in other studies^{3,12}. Response rates from UMECCMS and oncologists were lower because we were not allowed to contact those groups directly and had to rely on a third party to forward the survey link and subsequent reminder message. By contrast, we obtained response rates of 41% and 76% for FM and IM training program directors, whom we were able to contact directly. The 34% response rate from medical students is consistent with rates in other multi-institutional undergraduate oncology education surveys¹². However, despite the lower response rates from some groups, we were able to summarize the experiences and opinions of 677 educators and learners in Canada. Our major finding about the inadequacy of preparation in oncology was robust across many universities and training levels. However, an additional limitation was the discrepancies noted between educators and learners and also

between individual learners from the same training program about their oncology teaching. Those differences might be secondary to a discrepancy between what educators believe is being taught and what learners say or perceive they are actually experiencing. In addition, individual learners from the same program may have had different experiences during their training.

5. CONCLUSIONS

Oncology education in Canadian undergraduate and postgraduate FM and IM training programs is currently thought to be inadequate by a majority of educators and learners. The development of a standard set of oncology objectives focused on topics believed to be most important by educators and based on the needs of learners might improve oncology education for learners and thereby improve the ability of future physicians to care for cancer patients.

6. ACKNOWLEDGMENTS

This study was funded by a University of Calgary Starter Grant and was presented in part at the Canadian Association of Medical Oncology Annual Meeting; Toronto, Ontario; April 26–27, 2012. VCT was funded by a Canadian Association of Medical Oncologists/Canadian Institutes of Health Research Rx&D Research Fellowship Award.

7. CONFLICT OF INTEREST DISCLOSURES

The authors have no financial conflicts of interest to declare.

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APPENDIX A: SURVEY INSTRUMENTS

TABLE A.1 Undergraduate medical curriculum committee survey

-
1. What is your age?
 2. What is your gender?
 3. What is your specialty/role?
 4. With which Canadian medical school are you currently affiliated?
 5. Which of the following groups of learners are you involved in teaching?
 6. Is there a separate block of time at your medical school where oncology is taught?
 7. How is oncology taught to the students at your medical school?
 8. Do you believe the amount of oncology education provided in your medical school's current curriculum is ideal?
 9. Do you believe that by the conclusion of medical school the students at your institution have received adequate teaching in the following categories of illness?^a
 10. Is there a set of oncology objectives for medical students at your medical school?
 11. Is there an oncology curriculum at your medical school?
 12. Is there a recommended oncology textbook or other reference resource for medical students at your medical school?
 13. Would a standard Canadian set of oncology objectives be useful for medical students?
 14. Would a standard Canadian oncology curriculum be useful for medical students?
 15. Would a standard Canadian oncology textbook or Web book be useful for medical students?
 16. If a standard Canadian oncology textbook or Web book is created, what medium would you prefer?
 17. Would an elective summer school course in oncology be useful if offered to medical students across Canada?
 18. Which of the following oncology topics are taught to medical students at your medical school?^b
 19. Which topics should be included as core competencies in oncology for medical students?^c
 20. Are there any additional topics not listed that you believe should be included as core competencies in oncology for medical students?
-

^a Cancer, cardiovascular disease, endocrinology, gastroenterology, hematology, infectious diseases, neurology, nephrology, respiratory, rheumatology.

^b See Table A.6 for list of topics.

^c See Table A.7 for list of topics.

TABLE A.2 Family medicine and internal medicine program director survey

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1. What is your age?
 2. What is your gender?
 3. What is your specialty/role?
 4. With which Canadian medical school are you currently affiliated?
 5. Which of the following groups of learners are you involved in teaching?
 6. Is there a mandatory oncology rotation for residents in your program?
 7. How is oncology taught to the residents in your program?
 8. Do you believe the amount of oncology education provided to residents in your program is ideal?
 9. Do you believe that your residents are adequately prepared for their role in the management of patients with the following categories of illness?^a
-

TABLE A.2 Continued

-
10. Is there a set of oncology objectives for residents in your training program?
 11. Is there an oncology curriculum in your training program?
 12. Is there a recommended oncology textbook or other reference resource for residents in your training program?
 13. Would a standard Canadian set of oncology objectives be useful for residents in your training program?
 14. Would a standard Canadian oncology curriculum be useful for residents in your training program?
 15. Would a standard Canadian oncology textbook or Web book be useful for residents in your training program?
 16. If a standard Canadian oncology textbook or Web book is created, what medium would you prefer?
 17. Which of the following oncology topics are taught to residents in your training program?^b
 18. Which topics should be included as core competencies for residents in your training program?^c
 19. Are there any additional topics not listed that you believe should be included as core competencies in oncology for your residents?
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^a Cancer, cardiovascular disease, endocrinology, gastroenterology, hematology, infectious diseases, neurology, nephrology, respiratory, rheumatology.

^b See Table A.6 for list of topics.

^c See Table A.7 for list of topics.

TABLE A.3 Oncologist survey

-
1. What is your age?
 2. What is your gender?
 3. What is your specialty/role?
 4. With which Canadian medical school are you currently affiliated?
 5. Which of the following groups of learners are you involved in teaching?
 6. Do you believe the amount of oncology education provided in your medical school's current curriculum is ideal?
 7. Is there a set of oncology objectives for medical students at your medical school?
 8. Is there an oncology curriculum at your medical school?
 9. Is there a recommended oncology textbook or other reference resource for medical students at your medical school?
 10. Would a standard Canadian set of oncology objectives be useful for medical students?
 11. Would a standard Canadian oncology curriculum be useful for medical students?
 12. Would a standard Canadian oncology textbook or Web book be useful for medical students?
 13. If a standard Canadian oncology textbook or Web book is created, what medium would you prefer?
 14. Would an elective summer school course in oncology be useful if offered to medical students across Canada?
 15. Which of the following oncology topics are taught to medical students at your medical school?^a
 16. Which topics should be included as core competencies in oncology for medical students?^b
 17. Are there any additional topics not listed that you believe should be included as core competencies in oncology for medical students?
 18. Do you believe the amount of oncology education provided to family medicine and internal medicine residents at your institution is ideal?
 19. Is there a set of oncology objectives for family medicine and internal medicine residents at your institution?
 20. Is there an oncology curriculum for family medicine and internal medicine residents at your institution?
 21. Is there a recommended oncology textbook or other reference resource for family medicine and internal medicine residents at your institution?
-

TABLE A.3 Continued

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22. Would a standard Canadian set of oncology objectives be useful for family medicine and internal medicine residents at your institution?
 23. Would a standard Canadian oncology curriculum be useful for family medicine and internal medicine residents at your institution?
 24. Would a standard Canadian oncology textbook or Web book be useful for family medicine and internal medicine residents at your institution?
 25. If a standard Canadian oncology textbook or Web book is created family medicine and internal medicine residents at your institution, what medium would you prefer?
 26. Which of the following oncology topics are taught to family medicine and internal medicine residents at your institution?^a
 27. Which topics should be included as core competencies for family medicine and internal medicine residents at your institution?^b
 28. Are there any additional topics not listed that you believe should be included as core competencies in oncology for family medicine and internal medicine residents?
-

^a See Table A.6 for list of topics.

^b See Table A.7 for list of topics.

TABLE A.4 Medical student survey

-
1. What is your age?
 2. What is your gender?
 3. Which best describes your current training level?
 4. With which Canadian medical school are you currently affiliated?
 5. Do you plan on pursuing a career in oncology (for example, radiation oncology, medical oncology, surgical oncology, general practitioner in oncology)?
 6. Is there a separate block of time at your medical school where oncology is taught?
 7. How is oncology taught to the students at your medical school?
 8. Do you believe the amount of oncology education provided in your medical school's current curriculum is ideal?
 9. Do you believe that by the conclusion of your medical school training that you will have received adequate teaching in the following categories of illness?^a
 10. Is there a set of oncology objectives for medical students at your medical school?
 11. Is there an oncology curriculum at your medical school?
 12. Is there a recommended oncology textbook or other reference resource for medical students at your medical school?
 13. Would a standard Canadian set of oncology objectives be useful for medical students?
 14. Would a standard Canadian oncology curriculum be useful for medical students?
 15. Would a standard Canadian oncology textbook or Web book be useful for medical students?
 16. If a standard Canadian oncology textbook or Web book is created, what medium would you prefer?
 17. Would you attend a voluntary summer school course in oncology if one was developed for medical students across Canada?
 18. Which of the following oncology topics are taught to medical students at your medical school?^b
 19. Which topics should be included as core competencies in oncology for medical students?^c
 20. Are there any additional topics not listed that you believe should be included as core competencies in oncology for medical students?
-

^a Cancer, cardiovascular disease, endocrinology, gastroenterology, hematology, infectious diseases, neurology, nephrology, respirology, rheumatology.

^b See Table A.6 for list of topics.

^c See Table A.7 for list of topics.

TABLE A.5 Family medicine and internal medicine resident survey

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1. What is your age?
 2. What is your gender?
 3. Which best describes your current training level?
 4. With which Canadian medical school are you currently affiliated?
 5. Do you plan on pursuing a career in oncology (for example, radiation oncology, medical oncology, surgical oncology, general practitioner in oncology)?
 6. Is there a mandatory oncology rotation for residents in your program?
 7. How is oncology taught to the residents in your program?
 8. Do you believe the amount of oncology education provided to residents in your program is ideal?
 9. Do you believe that by the conclusion of your residency training that you will be adequately prepared for your role in the management of patients with the following categories of illness?^a
 10. Is there a set of oncology objectives for residents in your training program?
 11. Is there an oncology curriculum for residents in your training program?
 12. Is there a recommended oncology textbook or other reference resource for residents in your training program?
 13. Would a standard Canadian set of oncology objectives be useful to you as a resident?
 14. Would a standard Canadian oncology curriculum be useful to you as a resident?
 15. Would a standard Canadian oncology textbook or Web book be useful for you as a resident?
 16. If a standard Canadian oncology textbook or Web book is created, what medium would you prefer?
 17. Which of the following oncology topics are taught to residents in your training program?^b
 18. Which topics should be included as core competencies in oncology for residents in your training program?^c
 19. Are there any additional topics not listed that you believe should be included as core competencies in oncology for medical students?
-

^a Cancer, cardiovascular disease, endocrinology, gastroenterology, hematology, infectious diseases, neurology, nephrology, respiratory, rheumatology.

^b See Table A.6 for list of topics.

^c See Table A.7 for list of topics.

ONCOLOGY EDUCATION IN CANADIAN MEDICAL PROGRAMS

TABLE A.6 Oncology education topics currently taught in Canadian medical training programs

<i>Topic</i>	<i>Respondents reporting that the topic is taught in their program (%)</i>					
	<i>UMECCM</i>	<i>Medical students</i>	<i>FM program directors</i>	<i>FM residents</i>	<i>IM program directors</i>	<i>IM residents</i>
Basics of oncology and public health						
Cancer biology	100	89	0	15	63	42
Cancer epidemiology and risk factors	100	98	100	89	100	93
Prevention of common malignancies	100	92	100	92	100	77
Screening for common malignancies	100	98	100	97	100	87
Diagnosis and treatment						
General approach to diagnosis in patient with suspected cancer	100	95	100	96	100	90
General principles of staging cancers	93	95	29	40	88	77
General principles of treatment	92	93	100	73	89	76
Principles of surgery or surgical oncology	85	77	40	36	29	65
Principles of radiotherapy or radiation oncology	70	67	0	25	50	34
Principles of systemic therapy or medical oncology	83	72	0	30	86	75
Principles of palliative care	90	83	100	99	78	82
Management of common malignancies	75	86	86	76	100	87
Complications, prognosis, and communication						
Common complications of cancer	86	83	80	74	100	89
Common complications of cancer treatment	86	77	40	56	100	81
Prognosis of common malignancies	82	89	71	65	100	69
Breaking bad news	92	96	100	95	100	88
General knowledge of common malignancies						
Lung cancer	78	98	86	79	100	90
Breast cancer	100	97	100	97	100	74
Colorectal cancer	90	99	100	94	100	91
Prostate cancer	88	97	100	94	75	60
Leukemia	71	94	80	33	100	91
Lymphoma	83	93	60	35	100	94

UMECCM = undergraduate medical education curriculum committee member; FM = family medicine; IM = internal medicine.

TABLE A.7 Ranking of most important topics to be included as oncology education core competencies for learners in Canadian medical training programs

Topic	Rank out of 22 ^a as assigned by							
	UMECCM	Medical students	FM program directors	FM residents	IM program directors	IM residents	Oncologists for	
							Medical students	FM and IM residents
Basics of oncology and public health								
Cancer biology	19	22	22	22	22	22	22	22
Cancer epidemiology and risk factors	4	11	8	16	15	17	5	11
Prevention of common malignancies	6	8	8	4	14	16	4	4
Screening for common malignancies	6	6	1	1	10	8	3	2
Diagnosis and treatment								
General approach to diagnosis in patient with suspected cancer	4	1	6	2	4	4	2	3
General principles of staging cancers	10	18	18	18	17	18	18	7
General principles of treatment	6	16	17	17	18	14	12	13
Principles of surgery or surgical oncology	20	20	20	20	21	21	16	18
Principles of radiotherapy or radiation oncology	21	21	20	20	20	20	19	18
Principles of systemic therapy or medical oncology	21	19	18	19	19	19	17	17
Principles of palliative care	11	16	1	5	15	14	5	5
Management of common malignancies	11	9	8	13	10	13	13	15
Complications, prognosis, and communication								
Common complications of cancer	1	9	11	10	1	3	11	6
Common complications of cancer treatment	1	12	16	10	1	4	15	11
Prognosis of common malignancies	6	13	11	12	4	8	14	16
Breaking bad news	1	3	6	3	1	10	1	1
General knowledge of common malignancies								
Lung cancer	13	5	1	9	4	2	7	10
Breast cancer	13	2	1	6	4	11	8	9
Colorectal cancer	13	3	1	6	4	1	9	8
Prostate cancer	13	7	13	8	10	12	10	13
Leukemia	17	14	13	14	10	7	21	21
Lymphoma	17	14	13	15	9	6	20	20

^a Where 1 indicates most important, and 10 indicates least important. Rankings are based on mean scores on a 5-point scale that allows for a tie in rankings.

UMECCM = undergraduate medical education curriculum committee member; FM = family medicine; IM = internal medicine.