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# “But I See Old People Everywhere”: Dispelling the Myth That Eldercare Is Learned in Nongeriatric Clerkships

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## Abstract

### Purpose

To test the assumption that knowledge, attitudes, and skills (KAS) in geriatrics are learned via exposure to elderly patients in nongeriatric clerkships. In the developed world, the proportion of adults  $\geq 65$  years old will soon surpass the proportion of children  $< 14$ . However, clinical clerkships containing geriatric rotations are not mandated by the Liaison Committee for Medical Education.

### Method

The authors assessed differences in geriatrics-focused KAS between medical students who completed a rotation in eldercare and those who completed a traditional nongeriatric clerkship. Over two

academic years, the authors randomly assigned 263 clinical clerks to a clerkship year that did (eldercare group) or did not contain a two-week rotation focused on geriatrics. All students completed questionnaires that assessed their knowledge of and attitudes toward geriatric patients before and after their clerkships. Before graduation, all students completed an objective structured clinical examination (OSCE) including a clinical station focused on geriatrics.

### Results

Questionnaire and OSCE station response rates were 74.8% and 100%, respectively. The eldercare group had significantly higher knowledge scores

( $P = .004$ ). Students' attitudes toward older adults worsened over the clerkship year in both groups, but slightly less in the eldercare group; that group had significantly higher OSCE geriatric station scores and overall pass rates (both:  $P < .001$ ).

### Conclusions

Geriatrics is often regarded as a nonessential discipline. This study showed, however, that a clerkship year containing a specialized geriatric rotation is significantly more effective than a traditional clerkship year in preparing students to care for an aging population.

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Estimates project that, by 2025, the proportion of older adults (those  $\geq 65$  years old) in Canada and the United States of America will be higher than the proportion of children (those  $< 14$  years old).<sup>1,2</sup> Nevertheless, there are no requirements for formal geriatrics training in clerkship, whereas pediatrics remains an accreditation-mandated rotation. Unique issues in the care and treatment of older adults vary significantly from the issues relating to a younger patient population, in part because of interactions between multiple comorbidities, polypharmacy, and the varied presentation and prognosis of different conditions common to older adults.<sup>3</sup> These factors make older adults a complex population to work with, and thus their care requires transdisciplinary

and holistic collaborations. For this reason, some have advocated that specialized training in geriatrics should be provided to all medical students, ideally through a clerkship experience,<sup>4,5</sup> so that graduating physicians, regardless of specialty, possess basic competencies regarding the care of older adults.

In Canada and the United States, however, specialized training in geriatrics is rarely part of the undergraduate medical school curriculum. For example, a recent survey of Canadian medical schools found that only 7 of 16 schools had a clerkship requirement of a geriatric medicine rotation of at least one week's duration, and only 2 schools had a required geriatric psychiatry rotation.<sup>6</sup> Since this survey was conducted, another medical school was founded (Northern Ontario School of Medicine [NOSM]), which brought the total number of medical schools in Canada to 17; the current curriculum at NOSM, however, does not include a mandatory geriatric medicine or geriatric psychiatry clerkship rotation. The number of schools with that requirement has since fallen to 5 (of

17) as higher student enrollment and greater resource limitations have led 2 schools to suspend their geriatrics-oriented rotations. The Liaison Committee on Medical Education (LCME) found a similar trend in the United States: Only 9 of 126 U.S. medical schools report some form of a geriatrics clerkship.<sup>7</sup> Readers can contrast this situation and curricular philosophy with the situation and curricular philosophy of pediatrics rotations, which are mandatory in all medical schools, which generally last four to six weeks, and which teach the care of another set of patients with age-dependent differences in approach and distinct therapies.

A lack of recognition of the distinct knowledge and skill set that geriatric specialists possess further compounds the effect of the absence of specialized geriatric education. Many students and faculty believe that, because students see older adults in most clinical rotations, the students are acquiring the knowledge and skills needed to work with older adults,<sup>6</sup> and, thus, they consider further specialized training to be redundant.

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Research has also shown that teachers' biases regarding the importance of geriatric education can negatively affect students' interest in geriatric course content.<sup>8</sup> Such tendencies are especially worrisome, given the unavoidable increase in elderly patients in all but the pediatric specialties over the next two decades.

In 2003, the Schulich School of Medicine and Dentistry at The University of Western Ontario (UWO) confronted this difficult constellation of issues. As part of a larger curricular reorganization, UWO mandated that all one-week clerkships either expand to two weeks or become elective. The latter option, however, might mean that fewer students will voluntarily complete clerkships in the less popular disciplines. Because the Division of Geriatric Medicine was small, expanding the clerkship independently was not feasible. Thus, that division and the Division of Geriatric Psychiatry collaborated to create a novel two-week clinical clerkship in eldercare that incorporated the underlying principles of both disciplines. The eldercare clerkship emphasized comprehensive patient assessments and encouraged students to examine patient issues from more than a strictly psychiatric or physical perspective, thus integrating and teaching the medical, cognitive/psychiatric, functional, and social dimensions of the care of older patients. The intent of combining geriatric medicine and psychiatry content into a single clinical experience was to encourage students' assessment skills by recognizing the overlap between geriatric medicine and psychiatry in complex conditions such as delirium, depression, and dementia. While this structure exposed students to a transdisciplinary model of care, the program needed a formal evaluation to assess its ability to increase the students' geriatric knowledge and clinical skill, as well as to improve their attitudes toward the geriatric population.

The eldercare clerkship was resource-intensive, using the skills and expertise of psychiatrists, geriatricians, social workers, occupational therapists, physiotherapists, pharmacists, nurse clinicians, and psychologists. Increasing the size of the classes, attrition of faculty, and doubling the length of the rotation depleted the resources required for this novel program. Given the strain placed on

finite hospital resources, students' reluctance to participate in what they deem to be an unnecessary rotation, and the common view that geriatrics is learned elsewhere in the curriculum, the Division of Geriatric Medicine proposed a formal evaluation of the clerkship experience to test the truth of these prevailing beliefs. Our study asked, Do medical students completing a clerkship year containing a two-week eldercare rotation have significantly greater knowledge of geriatric conditions, better attitudes toward older adults, and superior geriatric clinical skills than do students who completed a clerkship year without this specialized rotation? The impact of teaching a geriatric curriculum on students' knowledge and attitudes was investigated previously, but other studies did not seek to assess differences in geriatric-specific knowledge, attitudes, and skills (KAS) between students who were randomly assigned to either a mandatory rotation in specialized geriatric training or a traditional nongeriatric clerkship.

## Method

For the purposes of this study, we defined "geriatrics," "geriatric care," and "geriatric principles" as the process of caring for older adults that incorporates the underlying principles of both geriatric psychiatry and geriatric medicine. We use the term "eldercare" to refer to the combined geriatric psychiatry–geriatric medicine clerkship at UWO.

## Study design and population

We asked two consecutive cohorts of third-year medical students at both the London and Windsor campuses of the Schulich School of Medicine and Dentistry to participate in this study. We approached a total of 263 students over the two years. One student was excluded for not completing a clerkship at a site affiliated with UWO.

## Eldercare rotation structure

Students were randomly assigned to complete either a clerkship year containing a two-week rotation with a combined geriatric medicine/geriatric psychiatry focus (eldercare [EC] group) or a clerkship year that did not do so (non-EC group). The intervention rotation consisted of groups of four to six students working with geriatric medicine and psychiatry specialists in

various inpatient and outpatient clinics and community settings. A sample eldercare rotation schedule appears in Appendix 1. Faculty in geriatrics and hospital staff, including social workers, physiotherapists, occupational therapists, and pharmacists, delivered small-group teaching sessions on key topics associated with geriatric practice (e.g., polypharmacy, dementia, delirium, depression, and driving). The clerks assigned to the non-EC group completed a clerkship year without focused geriatric exposure and instead participated in a two-week rotation in otolaryngology/ophthalmology. We chose this approach because it was consistent with the amount of geriatrics-specific exposure of the traditional clerkship experience (i.e., no specialized training in geriatrics) typically found in medical schools in Canada and the United States. All students in the study continued to evaluate and manage older adults as opportunities permitted in their usual clerkship rotations throughout the clerkship year.

## Survey instrument and the objective structured clinical examination

The study used a pre/post methodology with surveys administered both immediately before the students' respective clerkship years (i.e., in September 2005 and September 2006) and immediately after completion of the said clerkship year (i.e., in August 2006 and August 2007). We coded all surveys with a unique identifier to allow for survey matching and to ensure participant anonymity.

**Survey.** Surveys consisted of previously validated tests of geriatric knowledge and attitudes adapted to fit the Canadian context: the UCLA Geriatric Knowledge Test,<sup>9,10</sup> the UCLA Geriatric Attitudes Scale,<sup>11</sup> and Palmore's Facts on Aging Quiz, parts 1 and 2.<sup>12,13</sup> In addition, we included a measure of self-reported clinical practice<sup>14</sup> in the postclerkship questionnaire.

**The objective structured clinical examination.** Five months after the conclusion of the clinical clerkship (5–17 months after rotation completion), as part of the exit objective structured clinical examination (OSCE) that all students complete before graduation from medical school, participants completed a previously validated clinical station with a geriatric focus. Expert physician examiners (blinded to group

membership) used predetermined criteria to evaluate competency. The clinical scenario presented by the standardized patient in the EC OSCE station as well as the criteria for evaluation were pilot-tested in February 2006 in a cohort of fourth-year students, all of whom had completed an eldercare rotation the previous year. We compared results of this pilot-testing with those of other established stations in terms of both overall score and pass-fail rates. We found the results for the new eldercare stations to be comparable with those for the other clinical stations. We determined the content of the proposed scenario as well as the topics addressed through consultation with geriatric content experts (geriatricians and geriatric psychiatrists). The 12-minute station required students to obtain the collateral history of a patient experiencing cognitive decline, to evaluate the potential risks associated with independent living, and to make recommendations.

#### Statistical analysis

We used independent-measures *t* tests to compare the groups' baseline geriatric knowledge and attitudes and conducted an analysis of covariance (ANCOVA) to evaluate the effect of the rotation on participants' geriatric knowledge and attitude scores, with preclerkship scores serving as the covariate. We also conducted further independent-measures *t* tests on the self-reported clinical

practice and OSCE scores and compared pass-fail rates on the OSCE by using a chi-square test. We set the level of statistical significance at  $\alpha = .05$  and used SPSS software (version 15.0; SPSS Inc., Chicago, Illinois) to perform all analyses. The health sciences research ethics board of UWO gave ethical approval for this study.

#### Results

Of the 262 participants (149 EC, 113 non-EC), 238 (90.8%) returned the preclerkship survey, 216 (82.4%) returned the postclerkship survey, and 196 (74.8%) returned both surveys. The mean (SD) age of participants was 24.57 (2.03) years (EC: 24.35 [1.40] years; non-EC: 24.85 [2.62] years); 58% of the participants were female (EC:  $n = 78$  [57.8%]; non-EC:  $n = 60$  [58.3%]). The baseline scores for the EC and non-EC groups on tests of geriatric knowledge and attitude did not differ significantly ( $P = .25$  and  $.95$ , respectively). The response rate for the OSCE station was 100%. Comparison of the KAS scores of clerks at the two campuses found no statistically significant differences between groups at either pre- or posttest (all:  $P > .05$ ); therefore, we combined the data from the two campuses for analysis.

#### Knowledge of geriatric care and geriatric patients

We conducted an ANCOVA with the type of clerkship year (EC rotation or

non-EC rotation) as the independent variable. The postclerkship knowledge score served as the dependent variable, and the preclerkship knowledge score served as the covariate for the analysis. The ANCOVA was significant, with the EC group scoring higher on the test of knowledge of geriatric persons and geriatric medicine than did the non-EC group:  $F(1,188) = 8.61, P = .004$  (Table 1).

#### Students' attitudes toward geriatric patients

We conducted an ANCOVA with the pre- and postclerkship scores on students' attitudes toward geriatric patients as the covariate and the dependent variable, respectively. The degree of attitudinal change did not differ significantly between intervention groups:  $F(1,179) = 2.89, P = .09$ . Both groups experienced a worsening of their attitude toward older adults (i.e., their attitude became more negative) over the course of their respective clerkships. However, the attitude of the EC group did not worsen as much as did that of the non-EC group (Table 2).

When we analyzed each cohort-year separately, the EC group in the first cohort had a significantly higher score on attitude toward geriatric patients (i.e., a less negative attitude) than did the non-EC group in the first cohort:  $F(1,88) = 5.52, P = .02$ . Results for the two groups in the second cohort did not differ significantly:  $F(1,88) = 0.13, P = .72$ .

Table 1

**Summary of Geriatric Knowledge Results in Two Consecutive Cohorts of Third-Year Students at a Canadian Medical School Whose Clerkship Year Included or Did Not Include a Two-Week Rotation Focused on Geriatric Medicine/Geriatric Psychiatry, Academic Years 2005–2006 and 2006–2007\***

Time frame and group	Respondents, no. <sup>†</sup>	Pretest: Mean (SD)	Posttest: Mean (SD)	Posttest 95% CI	P value
<b>The two years combined</b>					
EC group	110	6.16 (1.62)	8.09 (1.69)	7.77, 8.41	.004
Non-EC group	81	6.75 (1.65)	7.49 (1.96)	7.06, 7.92	
<b>Year 1 (2005–2006)</b>					
EC group	55	6.15 (1.74)	8.38 (1.71)	7.92, 8.83	.10
Non-EC group	39	6.67 (1.64)	7.97 (1.63)	7.46, 8.48	
<b>Year 2 (2006–2007)</b>					
EC group	55	6.18 (1.52)	7.80 (1.64)	7.37, 8.23	.02
Non-EC group	42	6.83 (1.67)	7.05 (2.14)	6.40, 7.70	

\* Subjects were asked 11 multiple-choice questions on their knowledge of geriatric patients and geriatric care. Results are from an analysis of covariance (ANCOVA) in which pretest score was used as the covariate. EC indicates eldercare and refers to the clerkship year with a two-week rotation focused on geriatric medicine/geriatric psychiatry; non-EC refers to a clerkship year without a two-week geriatric medicine/geriatric psychiatry rotation.

<sup>†</sup> The posttest number of respondents.

Table 2

**Summary of Attitudes Toward Elderly Patients and Their Care on the Part of Two Consecutive Cohorts of Third-Year Students at a Canadian Medical School Whose Clerkship Included or Did Not Include a Two-Week Rotation Focused on Geriatric Medicine/Geriatric Psychiatry, Academic Years 2005–2006 and 2006–2007\***

Time frame and group	Respondents, no. <sup>†</sup>	Pretest: Mean (SD)	Posttest: Mean (SD)	Posttest 95% CI	P value
<b>The two years combined</b>					
EC group	108	3.72 (0.42)	3.58 (0.44)	3.50, 3.66	.09
Non-EC group	74	3.69 (0.43)	3.46 (0.55)	3.33, 3.59	
<b>Year 1 (2005–2006)</b>					
EC group	54	3.67 (0.40)	3.58 (0.41)	3.47, 3.69	.02
Non-EC group	37	3.71 (0.39)	3.44 (0.48)	3.28, 3.60	
<b>Year 2 (2006–2007)</b>					
EC group	54	3.78 (0.43)	3.57 (0.47)	3.45, 3.70	.72
Non-EC group	37	3.68 (0.47)	3.47 (0.61)	3.27, 3.67	

\* Participants were asked 14 questions and responded along a five-point Likert scale. EC indicates eldercare and refers to the clerkship year with a two-week rotation focused on geriatric medicine/geriatric psychiatry; non-EC refers to the clerkship year without a two-week geriatric medicine/geriatric psychiatry rotation. Results were from an analysis of covariance in which the pretest score was used as the covariate. Higher scores indicate a more positive attitude.

<sup>†</sup> The posttest number of respondents.

### Self-reported clinical practice

We conducted an independent-measures *t* test to evaluate the hypothesis that the EC group would be more likely to screen for problems that are common to geriatric populations than would the non-EC group. The EC group reported completing a Mini-Mental Status Examination (MMSE) on a greater number of older patients (mean = 1.41 [1.27]) than did the non-EC group (mean = 0.96 [1.09];  $t[180.81] = 2.66$ ,  $P = .009$ ). There were no items on which the non-EC group had a significantly higher frequency of reporting than did the EC group (Table 3).

When we analyzed the data by cohort-year, we found that the EC group in the first cohort reported higher rates of screening for depression ( $t[86] = 2.88$ ,  $P = .005$ ), dementia ( $t[89] = 2.79$ ,  $P = .006$ ), and alcohol consumption (when patients presented after having fallen) ( $t[61] = 2.36$ ,  $P = .02$ ) than did the non-EC group in the first cohort. In the second cohort, the EC group had higher reported rates of using the MMSE ( $t[97] = 2.10$ ,  $P = .04$ ) and of inquiring about their patients' weight ( $t[95.76] = 2.54$ ,  $P = .01$ ) than did the non-EC group in that cohort.

### The OSCE

We conducted an independent-measures *t* test to compare the total scores of the EC and non-EC groups on the EC OSCE

station. The EC group scored significantly higher than did the non-EC group;  $t(257) = 3.97$ ,  $P < .001$ . Students in the EC group also had a significantly higher pass rate (95%) than did those in the non-EC group (78%);  $\chi^2(1, N = 259) = 16.76$ ,  $P < .001$  (Table 4).

### Discussion

The proportion of older adults in Canada and the United States is expected to surpass the proportion of children by 2025; yet the value of providing specialized undergraduate training in geriatrics remains largely unrecognized. This study set out to determine whether medical students who completed a clerkship year containing a two-week rotation with specialized content in geriatric psychiatry and geriatric medicine gained greater knowledge of geriatric conditions, superior geriatric clinical skills, and better attitudes toward older adults than did those students who completed a clerkship year without this specialized rotation. The findings of this study contradict the common assumption that KAS in geriatric care are equally and effectively learned through exposure to elderly patients in nongeriatric clerkships.

Our results suggest that students who completed a clerkship year containing a specialized rotation acquired more knowledge and demonstrated significantly

better skills in geriatric care than did students who did not complete such a rotation—a conclusion that, at first glance, may seem self-evident. However, as the demographic composition of U.S. and Canadian society shifts toward an older cohort, geriatric-specific KAS will be crucial for all future nonpediatric physicians. If the purpose of undergraduate medical training is to prepare students to care for the patients they are likely to encounter in their practice, then the growing and increasingly rapid “graying” of Canada and the United States makes it essential for some degree of specialized geriatric training to be mandated at the undergraduate level. Our finding that students continued to exhibit an increase in knowledge of geriatric persons and geriatric medicine up to 11 months after completing the rotation supports the findings of others who also reported increases in geriatric medicine knowledge after the implementation of various specialized geriatrics training programs.<sup>15–18</sup> Those studies, however, often measured knowledge immediately after the interventions and did not use a randomized controlled trial methodology. Although the changes those investigators found reportedly were a result of the interventions evaluated, their studies' designs make it difficult to ascertain whether that was actually the case or whether the findings were in part a result of the completion of a third-year clerkship—that is, simply a kind of “maturation effect.”

Table 3

**Summary of Significant Findings on Self-Reported Clinical Practice Among Two Consecutive Cohorts of Third-Year Students at a Canadian Medical School Whose Clerkship Year Included or Did Not Include a Two-Week Rotation Focused on Geriatric Medicine/Geriatric Psychiatry, Academic Years 2005–2006 and 2006–2007\***

Question: "Of your last three elderly patients, ..."	The two years combined				Year 1 (2005–2006)				Year 2 (2006–2007)			
	No.†	Mean (SD)	Posttest 95% CI	P value	No.†	Mean (SD)	Posttest 95% CI	P value	No.†	Mean (SD)	Posttest 95% CI	P value
<b>On how many did you perform an MMSE?</b>												
EC group	116	1.41 (1.27)	1.18, 1.64	.009	58	1.33 (1.25)	1.01, 1.65	.13	58	1.50 (1.29)	1.17, 1.83	.04
Non-EC group	78	0.96 (1.09)	0.62, 1.10		37	0.95 (1.05)	0.61, 1.29		41	0.98 (1.13)	0.63, 1.33	
<b>How many were depressed?</b>												
EC group	111	1.06 (0.89)	0.89, 1.23	.07	54	1.15 (0.81)	0.93, 1.37	.005	57	0.98 (0.95)	0.73, 1.23	.97
Non-EC group	73	0.84 (0.73)	0.67, 1.01		34	0.68 (0.64)	0.47, 0.90		39	0.97 (0.78)	0.73, 1.22	
<b>How many did you ask questions to determine whether they had dementia?</b>												
EC group	114	1.75 (1.15)	1.54, 1.96	.06	56	1.77 (1.29)	1.43, 2.11	.006	58	1.72 (1.18)	1.41, 2.02	.99
Non-EC group	75	1.43 (1.14)	1.17, 1.69		35	1.09 (1.15)	0.71, 1.47		40	1.73 (1.06)	1.40, 2.06	
<b>How many presented with a fall?</b>												
EC group	101	0.58 (0.83)	0.42, 0.74	.06	51	0.57 (0.78)	0.36, 0.78	.20	50	0.60 (0.88)	0.36, 0.84	.17
Non-EC group	68	0.85 (0.99)	0.62, 1.09		32	0.81 (0.93)	0.49, 1.13		36	0.89 (1.06)	0.54, 1.24	
<b>How many did you ask about alcohol consumption?</b>												
EC group	76	1.71 (1.23)	1.43, 1.99	.28	37	1.78 (1.25)	1.38, 2.18	.02	39	1.64 (1.22)	1.26, 2.02	.40
Non-EC group	53	1.47 (1.22)	1.14, 1.80		26	1.04 (1.22)	0.57, 1.51		27	1.89 (1.09)	1.48, 2.30	
<b>How many did you ask what they weigh?</b>												
EC group	112	0.94 (1.26)	0.71, 1.17	.17	53	0.70 (1.03)	0.42, 0.98	.57	59	1.15 (1.14)	0.86, 1.44	.01
Non-EC group	75	0.69 (1.04)	0.46, 0.93		36	0.83 (1.18)	0.45, 1.22		39	0.56 (0.88)	0.28, 0.84	
<b>How many did you ask about unplanned weight loss?</b>												
EC group	113	2.07 (1.17)	1.85, 2.29	.10	54	2.11 (1.18)	1.80, 2.42	.25	59	2.03 (1.18)	1.73, 2.33	.24
Non-EC group	76	1.78 (1.23)	1.50, 2.06		37	1.81 (1.24)	1.41, 2.21		39	1.74 (1.23)	1.35, 2.13	

\* EC indicates eldercare and refers to the clerkship year that included a two-week rotation focused on geriatric medicine/geriatric psychiatry; non-EC refers to the clerkship year that did not include a two-week geriatric medicine/geriatric psychiatry rotation; MMSE, Mini-Mental State Examination. No significant differences were found on the remaining questions asked.

† Represents the posttest number of respondents.

Our study was a randomized controlled trial, which we feel helped to isolate the effect of receiving specialized geriatric training from this possible "maturation effect."

Our study did, of course, have some limitations. The changes in knowledge of and attitudes about geriatric care and geriatric persons, respectively, over the

clerkship year were determined with the use of pencil-and-paper evaluations. Although this technique has certain benefits (e.g., it makes it easier to interpret results objectively, and it is simple to administer to large groups), it is also somewhat artificial. Individuals can select the right answer from a list of choices without being able to apply this knowledge in real situations. Whereas the

scores of the EC group were two points higher than those of the non-EC group on the EC OSCE station (a statistically significant difference), it is the difference in failure rates between the two groups (5% for the EC group; 22% for the non-EC group) that may best demonstrate the clinical and practical significance that completing an eldercare rotation has on students' knowledge of geriatric care.

Table 4

**Summary of Objective Clinical Skills Results in Two Consecutive Cohorts of Third-Year Students at a Canadian Medical School Whose Clerkship Year Included or Did Not Include a Two-Week Rotation Focused on Geriatric Medicine/ Geriatric Psychiatry, Academic Years 2005–2006 and 2006–2007\***

Variable	Objective Clinical Skill			
	Eldercare OSCE station score <sup>†</sup>		Eldercare OSCE station success	
	EC group	Non-EC group	EC group	Non-EC group
<b>The two years combined</b>				
Posttest no. of respondents	147	112	140	88
Mean (SD) score	32.86 (4.03)	30.65 (4.90)		
Percentage of students who passed the station			95	78
Posttest 95% CI	32.21, 33.51	29.74, 31.56	90, 98 <sup>‡§</sup>	69, 86 <sup>‡§</sup>
P value	<.001		<.001	
<b>Year 1 (2005–2006)</b>				
Posttest no. of respondents	70	59		
Mean (SD) score	33.11 (4.04)	30.66 (5.06)	68	47
Percentage of students who passed the station			97	80
Posttest 95% CI	32.16, 34.06	29.37, 31.95	89, 100 <sup>‡§</sup>	67, 90 <sup>‡§</sup>
P value	.003		.002	
<b>Year 2 (2006–2007)</b>				
Posttest no. of respondents	77	53	72	41
Mean (SD) score	32.62 (4.03)	30.64 (4.75)		
Percentage of students who passed the station			94	77
Posttest 95% CI	31.72, 33.52	29.36, 31.92	86, 98 <sup>‡§</sup>	63, 88 <sup>‡§</sup>
P value	.01		.02	

\* Results of an independent-measures *t* test. EC indicates eldercare and refers to the clerkship year that included a two-week rotation focused on geriatric medicine/geriatric psychiatry; non-EC refers to the clerkship year that did not include a two-week geriatric medicine/geriatric psychiatry rotation; OSCE, objective structured clinical examination.

<sup>†</sup> Maximum score is 45.

<sup>‡</sup> The CIs are percentages.

<sup>§</sup> Based on Agresti and Coull's modified Wald method for proportions (Am Statist. 1998;52:119–126).

Clerks who received the specialized geriatrics training were more likely, by the time of graduation, to have achieved the minimum level of practical skills for dealing with this population,<sup>19,20</sup> as assessed by the OSCE station, and some of them maintained these skills for up to 17 months after the rotation.

With regard to self-reported clinical practice, cohorts differed in terms of which tests clinical clerks reportedly administered to patients, but the overall trend of the results suggests that students who completed an eldercare rotation screened for common geriatric issues more often than did clerks who had not done so. This finding further supports the practical significance of the EC experience, which is important, because many common geriatric issues are ignored or remain undetected by health care practitioners, and, thus, they remain unaddressed. Such issues include incontinence, falls, excessive

alcohol use, depression, and cognitive impairment—all conditions for which evidence-based interventions exist. The nature of the difference between cohorts requires further investigation, but one possible explanation might be the varied degrees of direct exposure or variations in the diversity of the geriatric population from one year to the next.

Our specialized geriatric clerkship did not seem to improve students' attitudes toward geriatric patients; however, the clerkship did seem to reduce the worsening in students' attitudes toward this population that occurs over the course of medical school. When we combined the two cohorts, we found the EC groups' attitudes to be less negative than the non-EC groups' attitudes, although the difference in students' attitudes was not statistically significant. When we analyzed the results of the first cohort alone, the between-group differences reached statistical significance, which could be seen as reinforcing the

interpretation that completing a specialized clerkship may help to diminish the worsening in attitude toward older adults that occurs during medical school. The nonsignificant results from the second cohort, however, need further examination to explain the disparity between the two years.

Other studies that investigated the effect of specialized geriatric exposure on attitudinal change have also yielded inconsistent results.<sup>16–18</sup> This inconsistency may stem from the possibility that the instruments or techniques that researchers use to measure attitude (i.e., questionnaires and surveys) simply are too blunt to detect subtle changes that result from training, or from the possibility that the instruments are too high in face validity and may fall victim to a social-desirability or an impression-management bias. Alternatively, there may be an unmeasured factor, unrelated to the study itself, that is responsible for the difference between cohorts.

The difference between cohorts in scores on attitude toward older persons theoretically could reflect a cohort reaction to participation in the eldercare study itself. Undergraduate medical faculty and staff informally noted increasing resentment on the part of some of the clerks, who may have seen random assignment to either of the groups as a loss of control over their own training direction. We hypothesize that the resentment seen in the second cohort of students may represent a worsening attitude about study participation as opposed to a worsening attitude about older adults. The statistically significant decrease in the ratings given by students in university-mandated course evaluations of the eldercare rotation over the course of this study supports this hypothesis. In the 2004–2005 academic year, the year before the current study was undertaken, all third-year clerks completed an eldercare rotation as part of their clerkship year, and the rotation received an overall rating of 5.05 on a 7-point Likert scale. The rating slipped to 4.92 in the 2005–2006 academic year and to 4.38 in the 2006–2007 academic year, the two years during which the current study took place.<sup>21</sup> Ratings of the rotation as a learning experience and teacher evaluations declined in a similar fashion from one year to the next. This decrease in the students' perceptions of the utility of the rotation as a learning experience is particularly interesting in light of study results that show the favorable impact of completing a clerkship year containing an eldercare rotation on knowledge of and clinical skills in geriatric medicine.

The decline in rating shown in these reports highlights the possibility that students may not recognize what they do not know (i.e., they lack meta-knowledge), and as a result they may not be in the best position to determine what they need to learn. Consequently, providing specialized geriatric training as a selective clerkship rotation may put the attainment of the requisite skill-set at risk, because it is unlikely that many students would choose the eldercare rotation. Providing individuals with the skills they lack enables them to better recognize their own limitations, which in turn leads to a degree of meta-knowledge—an improved understanding of their lack of understanding.<sup>22</sup> Providing students with the requisite knowledge for treating a geriatric population might change their attitudes toward treating these patients.

Such a process, of course, would require a faculty that recognizes the value of education in geriatrics.

## Conclusions

In addition to challenging prevailing curricular tendencies in U.S. and Canadian medical schools, our study suggests that an eldercare clerkship rotation is a valuable addition to undergraduate training. Moreover, this curricular initiative may serve to show other schools the importance of mandatory, transdisciplinary instruction in the skill-set required by graduating physicians who will encounter in their clinical practices what Kirchheimer<sup>23</sup> has called the “gray tsunami.” The next steps will include advocating for specialized training in geriatric medicine at local, provincial or state, national, and international levels, with the aim of influencing the LCME to incorporate geriatric medicine education as a required educational directive.

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Appendix 1  
Sample Eldercare Rotation Schedule\*

Monday	Tuesday	Wednesday	Thursday	Friday
<p><b>Week 1</b>  <b>8:30–10:15 AM</b>  <b>Orientation Session</b>                      —Meet preceptor and overview of rotation                      —Teaching: Dementia and cognitive assessment  <b>10:30 AM–12:00 PM</b>  <b>PM</b>  <b>Multidisciplinary Teaching</b>                      —Gait assessment in the elderly  <b>1:00–5:00 PM</b>  <b>Geriatric Psychiatry Clinic</b>                      —Inpatient clinic                      —Meet staff and case management</p>	<p><b>9:00 AM–12:30 PM</b>  <b>Geriatric Psychiatry Clinic</b></p> <p><b>1:00–5:00 PM</b>                      Off-site medicine teaching at medical school</p>	<p><b>9:00 AM–12:00 PM</b>  <b>Geriatric Medicine Clinic</b>                      —Contenance clinic                      —Geriatric rehabilitation unit                      —General geriatric medicine clinic</p> <p><b>1:00–5:00 PM</b>  <b>Geriatric Medicine Clinic</b>                      —Osteoporosis clinic                      —Memory clinic                      —General geriatric medicine clinic</p>	<p><b>9:00 AM–12:00 PM</b>  <b>Multidisciplinary Teaching</b>  <b>9:00</b> Evaluating a medically at-risk driver  <b>10:30</b> Capacity and resources</p> <p><b>1:00–5:00 PM</b>  <b>Geriatric Psychiatry Clinic</b>                      —Cases assessment</p>	<p><b>9:00 AM–12:30 PM</b>  <b>Geriatric Psychiatry Clinic</b>                      —Cases assessment                      —Geriatric mental health clinic</p> <p><b>1:00–5:00 PM</b>  <b>Geriatric Psychiatry Clinic</b>                      —Outreach clinic                      —Rehabilitation consults</p>
<p><b>Week 2</b>  <b>9:00 AM–12:00 PM</b>                      —Meet with preceptor                      —Review log                      —Student case presentations                      —Discussion  <b>1:00–5:00 PM</b>  <b>Geriatric Medicine Clinic</b>                      —General geriatric medicine clinic</p>	<p><b>8:30 AM–12:30 PM</b>                      Memory clinic</p> <p><b>1:00–5:00 PM</b>                      Off-site medicine teaching at medical school</p>	<p><b>8:00 AM–12:00 PM</b>                      Geriatric Psychiatry Clinic                      —ECT clinic                      —Teaching of depression</p> <p><b>1:00–5:00 PM</b>  <b>Geriatric Medicine Clinic</b>                      —Osteoporosis clinic                      —Memory clinic</p>	<p><b>9:00 AM–12:00 PM</b>                      Multidisciplinary Teaching  <b>9:00</b> Delirium teaching  <b>10:30</b> Prescribing issues in the elderly  <b>12:30–5:00 PM</b>                      —Memory clinic                      —Home visits (geriatric medicine or geriatric psychiatry)</p>	<p><b>8:45 AM–12:00 PM</b>  <b>Geriatric Psychiatry Clinic</b>                      —Geriatric mental health clinic</p> <p><b>1:00–4:00 PM</b>                      —Meet with preceptor                      —Presentation of “Question of the Rotation”                      —Evaluations                      —Logs                      —Exit interview</p>

\* ECT indicates electroconvulsive therapy.