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Variability of ethics education in laboratory medicine training programs: Results of an international survey

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ABSTRACT

Background: Ethical considerations are increasingly important in medicine. We aimed to determine the mode and extent of teaching of ethics in training programs in clinical chemistry and laboratory medicine.
Methods: We developed an on-line survey of teaching in areas of ethics relevant to laboratory medicine. Reponses were invited from directors of training programs who were recruited via email to leaders of national organizations.
Results: The survey was completed by 80 directors from 24 countries who directed 113 programs. The largest numbers of respondents directed postdoctoral training of scientists (42%) or physicians (33%), post-masters degree programs (33%), and PhD programs (29%). Most programs (82%) were 2 years or longer in duration. Formal training was offered in research ethics by 39%, medical ethics by 31%, professional ethics by 24% and business ethics by 9%. The number of reported hours of formal training varied widely, e.g., from 0 to >15 h/year for research ethics and from 0 to >15 h for medical ethics. Ethics training was required and/or tested in 75% of programs that offered training. A majority (54%) of respondents reported plans to add or enhance training in ethics; many indicated a desire for online resources related to ethics, especially resources with self-assessment tools.
Conclusion: Formal teaching of ethics is absent from many training programs in clinical chemistry and laboratory medicine, with heterogeneity in the extent and methods of ethics training among the programs that provide the training. A perceived need exists for online training tools, especially tools with self-assessment components.

1. Introduction

As in other areas of medicine and science, ethical questions are present in laboratory medicine [1–3]. These ethical questions have increased in complexity with the advent of genetic testing, biobanking, direct-to-consumer testing, and genomic testing, among other newer areas of diagnostic testing [4–7]. Laboratory medicine practitioners deal with issues of patient confidentiality on a daily basis, as well as issues of research ethics (including publication ethics), professional ethics (such as financial conflicts of interest) and business ethics (such as intellectual property and human resource management). Despite the need for practitioners to answer the questions in these areas, little is known about the teaching of ethics in laboratory medicine training programs.

PubMed searches for "ethics education pathology" and "ethics education laboratory medicine" returned 195 and 151 results, respectively. Few of the returned papers were relevant to the teaching of ethics in laboratory medicine [2,8,9]. One paper called for increased teaching of ethics in pathology residencies [8] and one indicated a need for increased teaching of ethics in training programs in clinical chemistry and laboratory medicine [2]. Only one paper, from 2002, described an attempt to gain information about the then-current teaching of ethics. In that study, chairs of U.S. pathology departments were asked about the training of pathology residents in the U.S. [9]. Formal ethics training was provided by 62% of the programs and 84% of respondents believed

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that ethical issues were under-recognized. In the present study, we aimed to obtain international information about current and planned teaching of ethics specifically in doctoral and postdoctoral training programs that are designed to train directors of clinical chemistry and laboratory medicine.

2. Methods

This study used an online survey of teaching of ethical issues by training programs in clinical chemistry and laboratory medicine. A questionnaire with 43 questions was designed to obtain (A) general information about each surveyed training program (such as the requirements for prior education of applicants to the program) and (B) specific information on various aspects of ethics education, such as the presence or absence of teaching about specific areas of ethics relevant to clinical chemistry and laboratory medicine, and (C) plans for future teaching. (The questionnaire is available in Supplement 1).

The survey was web based in the Survey Monkey format (www.surveymonkey.com). The questions were predominantly of multiple choice with an opportunity to add additional information. To keep the survey brief, detailed questions about teaching in a specific area of ethics (such as business ethics or professional ethics) were not displayed if the respondent indicated that no training was provided in that area.

The target groups were training programs for doctoral scientists or physicians or persons with similar backgrounds engaged in comprehensive training programs to prepare trainees to be directors of large or medium-sized laboratories in clinical chemistry and laboratory medicine. Recruitment was via 2 emails sent from the office of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) to the national representatives of the 89 member societies of IFCC; each of the member societies represent clinical chemists in its country, and each represented country has only one member society of IFCC. The emails were prepared by the authors of this paper in their capacity as members of the IFCC Task Force on Ethics. The emails requested that national representatives invite directors of appropriate training programs in their countries to complete the questionnaire at the survey website. In an effort to increase visibility of the request to training program directors, copies of the emails were sent to the presidents of the national societies. The respondents were invited to provide contact information if they wanted a report on the results of the survey, but the survey was otherwise anonymous.

Responding program directors completed the questionnaire online between December 2, 2013 and June 13, 2014. We downloaded the responses from Survey Monkey and analyzed them further in Excel. No effort was made to link the identities of the respondents to their individual responses to the questions in the survey. The contact information was queried to provide an indication of the diversity of countries from which responses had been received.

3. Results

3.1. Characteristics of training programs of survey respondents

The survey was completed by 80 training-program directors. The largest numbers directed postdoctoral training of scientists (42%) or physicians (33%); post-masters degree programs (33%); and/or PhD programs (29%). The 59 survey respondents who identified themselves were from 24 countries (Table 1A).

As shown in Table 1B, 82% of the programs were accredited by an outside organization. The largest number, 27, was accredited by the Commission on Accreditation in Clinical Chemistry (ComACC). This number of responses approaches the number of programs accredited by ComACC, but may be an overestimate of the response rate as more than one co-director of a program may have completed the survey.

Table 1
Countries (A) and accrediting organizations (B) of training programs directed by survey respondents.

A. Countries of respondents who identified themselves*		
Albania	Indonesia	Poland
Argentina	Italy	Serbia
Australia [2]	Japan	Slovak Republic
Canada [8]	Lithuania	The Netherlands
Croatia	Malaysia	Tunisia
Finland	Morocco	Turkey [4]
Iceland	Nepal	United States (14)
India [12]	Paraguay	Uruguay

B. Accrediting organizations	Number (%)
Commission on Accreditation in Clinical Chemistry (North America)	27 (36%)
Canadian Academy of Clinical Biochemistry	8 (11%)
Accreditation Council for Graduate Medical Education	6 (8%)
Royal College, not otherwise specified	3 (4%)
Other	18 (24%)
None or no response	18 (18%)

* The numbers are minimum estimates as not all respondents identified themselves. The number of respondents who identified themselves from each country is indicated in parentheses if greater than one.

For 82% of the programs, the length of training was 2 years or longer. Forty-six percent of programs produced 1, 2, or 3 trainees per year, although 12 (16%) graduated more than 10. The most common number of graduates per year was one.

As an indication of where the graduates of the programs start their careers after completing their training programs, the respondents were asked to indicate the preferences of trainees for employment. University hospital employment was the clear first choice, followed, in distant second and third places, by research institutions and academic departments and then government and non-university hospital employment and industry employment, respectively.

3.2. Teaching of ethics in training programs

3.2.1. Overview

As shown in Table 2A, 35% of the respondents indicated that formal training was provided in research ethics, although only 24% of programs indicated that training in research ethics was *required*. Fewer programs offered training in medical ethics (29%), professional ethics (20%) and business ethics (8%), with only 21%, 16% and 4%, respectively, requiring training in each of these latter 3 areas. Only three programs provided and required training in ethics in all 4 areas. The teaching of business ethics was so infrequent that it will not be dealt with further here.

Results for programs providing training in selected areas of ethics for different types of training programs are shown in Table 2B. Training of ethics was less commonly offered in postdoctoral programs compared to the other three training levels. Interestingly, training in medical ethics appeared to be less likely to be provided in postdoctoral programs for scientists (22%) than in postmedical programs (40%).

3.2.2. Research ethics

The topics that were most frequently listed as taught in the 25 programs that provide training in research ethics are listed in Table 3A. Most of these critical topics, such as the Helsinki Declaration and protection of participants, were included in over 80% of programs that had formal training in research ethics.

For approximately half of these programs, the time allotted to lectures/seminars on research ethics was 1–6 h (Table 3B). In approximately two-thirds of the programs, the teaching of ethics was done by an interdisciplinary team that included an ethicist. Just over 60% indicated that teaching of research ethics was incorporated in other teaching. Almost 90% of this group indicated that students' knowledge