

Characteristics, Roles, and Responsibilities of the Designated Institutional Official (DIO) Position in Graduate Medical Education

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Abstract

Purpose

In 1998, the Accreditation Council for Graduate Medical Education (ACGME) added the stipulation that each institution providing graduate medical education (GME) have a Designated Institutional Official (DIO). Little is known about the effect of new accreditation requirements on GME practice and outcomes. The authors conducted a cross-sectional survey designed to provide descriptive data about DIOs and to validate a DIO Responsibility Scale (DIORS).

Method

DIOs were identified by the ACGME. The following delivery strategy was used to administer the survey from January 2004 to May 2004: prenotice letter; survey

with self-addressed, stamped return envelope and cover letter; thank-you/reminder postcard; and replacement survey with new cover letter and self-addressed, stamped return envelope.

Results

Completed surveys were received from 243 of 363 DIOs (66.9%). Responses indicated wide ranges in DIO titles, report titles, time spent accomplishing responsibilities, DIO-specific salaries, credentials, and Graduate Medical Education Committee reporting arrangements. DIOs reported confusion or overlap between DIO and program director roles (72.0%), decreasing funding for GME (50.6%), and inadequate support staff (25.1%). The 11-item DIO Responsibility Scale

demonstrated a Cronbach alpha of .86 and a statistically significant relationship to five variables selected to establish construct validity.

Conclusions

The wide variability in DIO characteristics found in this study supports the premise that the DIO role is underdeveloped. The authors established the reliability and validity of the DIORS, which now may be used in future research of the DIO role. The data from this study may be used by DIOs and institutions to develop the role further, improve DIO performance, and create more useful job descriptions.

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Editor's Note: A Commentary on this report is on page 17.

In 2002–2003, there were 8,064 accredited residency and fellowship programs in the United States, training 98,258 residents and fellows.¹ All of these programs undergo periodic, rigorous evaluation by the Accreditation Council for Graduate Medical Education (ACGME). To have an accredited

training program, a sponsoring institution must participate in and meet the requirements of an institutional ACGME accreditation process. The first institutional requirements document was created in 1992. Since then, these requirements have grown from a few pages to a 17-page document.

In 1998, the ACGME instituted the requirement for each institution providing graduate medical education (GME) to have a Designated Institutional Official (DIO). The requirement stipulates that the DIO is to have the authority and responsibility for oversight and administration of ACGME-accredited residency programs and is to ensure compliance with ACGME requirements.² Creation of the DIO position simultaneously met two ACGME needs: to improve institutional accountability by having a single individual with authority and responsibility over all GME, and to provide the ACGME with one primary individual at each institution with whom it could interact.

The purpose of accreditation is to monitor and ensure quality education, but little is known about how new ACGME regulations affect medical education practice. In 1996, the Institute of Medicine launched the Quality of Health Care in America project. In the third and final report created by this initiative, the authors noted that “there is virtually no study documenting the impact of accreditation, licensure, or certification on clinician performance or health outcomes.”³ p. 38 Our study of DIOs was designed to begin addressing that need. The primary purpose was to document relevant demographics, identify roles and responsibilities, and describe the development of the DIO position since the establishment of the requirement in 1998. A secondary purpose was to develop a DIO Responsibility Scale (DIORS), for use in future research involving DIOs.

Method

Research design and study population

This study was cross-sectional in design and included a self-administered survey

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that we mailed to all 363 DIOs listed by the ACGME, who provided us with the mailing list. The survey instrument was designed to provide descriptive data about DIOs so as to allow individual institutions to formalize and structure the DIO position and its associated responsibilities. In addition, these data could be used to develop DIO training materials to improve job performance. The study was reviewed and approved by the University of Nebraska-Lincoln Institutional Review Board, Lincoln, Nebraska.

Survey instrument

In the summer of 2001, prior to the initiation of our study, the Association for Hospital Medical Education (AHME) sponsored a pilot survey to assess the importance of the DIO role in GME. That survey included 16 questions, primarily open-ended, related to the needs of the position as DIOs perceived them. Of the 400 DIOs listed by the ACGME at the time, 122 (30.5%) responded to the survey. The results were interpreted as indicating there was a need to define more clearly the roles and responsibilities of the DIO.⁴ Using the open-ended responses obtained from the pilot study data, the authors designed a 97-item survey consisting mostly of fixed-choice questions covering a range of topics, including the individual DIO's job history in graduate medical education, responsibilities and reporting structure, educational level, and salary, as well as details of the residency program at the institution.

In 2003, the new survey was reviewed for face and content validity by content experts identified through the AHME, as well as other medical education professionals. A content analysis of responses to the open-ended pilot study question "What are the roles and responsibilities assigned to you as DIO of your institution?" yielded 11 core DIO responsibility items, which we used to construct the DIORS to measure different DIOs' distributions of responsibility. This scale in turn makes up one section of the survey for the current study.

Content validity for the 11-item DIORS was established by having content experts review the items for relevance and face validity. Content experts generated 15 additional responsibility items, but none was deemed a core responsibility. We

viewed the additional items as potential responsibilities dependent on institutional structure and organization and included them to collect frequency data. We grouped the original 11 core items together on the current survey and scored them using a three-point scale, where 1 = no responsibility, 2 = some responsibility, and 3 = completely responsible. Scores could therefore range from 11 to 33. According to the suggestion made by Dillman,⁵ we created the new survey in a booklet format for easier handling by respondents and to reduce errors.

The final 97-item survey contained the DIORS items, other fixed-choice questions, and optional open-ended questions for comments. The items were designed to provide demographic information related to the DIO and his/her institution; to describe the roles and responsibilities of DIOs; to identify competencies, training, and experience viewed as essential for DIOs; to provide details of the DIO's professional and academic preparation for this position; to describe the staff support and institutional support available to the DIO; and to describe resources desired by DIOs. This article contains the results from items covering roles, responsibilities, and characteristics of the DIO, as well as institutional characteristics and financial and staff support.

Survey mailings

We sent a hand-signed, prenotice letter to all DIOs on January 10, 2004. Seven days later (January 17, 2004), we mailed the survey with a self-addressed, stamped return envelope and cover letter. All potential participants were assigned a code that allowed only one investigator (LR) to know who had not replied, and upon completion of the study the code and mailing list were destroyed. We mailed a thank-you/reminder postcard seven days after the first survey packet (January 24, 2004). A replacement survey accompanied by a revised cover letter was mailed to nonresponders two weeks later (February 7, 2004). We accepted surveys until the study was concluded on May 31, 2004.

Data analysis

We entered all data into SPSS statistical software, Version 11.5 (SPSS Inc.,

Chicago, IL); data were analyzed using descriptive and inferential statistics. We report demographic data using descriptive statistics. Some variables with large numbers of categories were assessed by looking at the distribution of scores and category labels and then were collapsed into fewer categories. We compared responders versus nonresponders using Pearson's chi-square.

Construct validity relates to how the theoretical relationship of the variable of interest to other variables makes sense according to a theory of how these variables are related. We assumed that two DIO-specific variables, average number of hours spent fulfilling DIO roles and DIO-specific salary, would have a positive association with the total score for the DIORS. We expected that as number of hours worked increases, the DIORS score would increase; similarly, as DIO-specific salary increases, the DIORS score would increase. We also assumed that the following three institution-specific variables would have a positive association with total scores on the DIORS:

- Institutional emphasis on DIO role. This was transformed into a dichotomous variable where 1 = decreasing emphasis, no emphasis, and unchanged, and 2 = increasing emphasis. Institutions with increasing emphasis were expected to have higher DIORS scores.
- DIO role overlap with program director roles. This item had three possible values: 1 = a lot of overlap, 2 = some overlap, and 3 = no overlap. DIO and program director role overlap was expected to be associated with lower DIORS scores.
- DIO role confusion with program director roles. This item had three possible values: 1 = a lot of confusion, 2 = some confusion, and 3 = no confusion. It was expected that DIO and program director role confusion would be associated with lower DIORS scores.

We assessed the internal reliability of the DIORS using Cronbach's alpha. Construct validity for the DIORS score was assessed using the correlation coefficient, Student's *t*-test, and one-way analysis of variance (ANOVA). We considered a *p* value less than .05 to be statistically significant.

Table 1
Characteristics of Designated Institutional Officials (DIOs)*

Characteristic	Value
Gender [no. (%)]	
Male	176 (72.4)
Female	65 (26.7)
Race [no. (%)]	
White	222 (91.4)
Age in years [no. (%)]	
25–49	58 (23.9)
50–59	122 (50.2)
60 and above	61 (25.1)
Degree [no. (%)]	
Below Master’s degree	8 (3.3)
Master’s degree	32 (13.2)
Doctorate (EdD, PhD, JD)	26 (10.7)
Physician (MD, DO, and MD/PhD)	176 (72.4)
Perception of adequate training for DIO role [no. (%)]	
	192 (79.0)
Total annual salary [no. (%)]	
\$100,000 or less	37 (15.2)
\$101,000 to \$200,000	99 (40.7)
\$201,000 to \$300,000	61 (25.1)
\$301,000 or more	29 (11.9)
Missing	17 (7.0)
DIO-specific salary [no. (%)]	
No compensation	18 (7.4)
\$70,000 or less	75 (30.9)
\$71,000 to \$100,000	40 (16.5)
\$101,000 to \$200,000	46 (18.9)
\$201,000 or more	4 (1.6)
Missing	60 (24.7)
Location [no. (%)]	
Rural	17 (7.0)
Urban	162 (66.7)
Suburban	56 (23.0)
Years worked in Graduate Medical Education [mean (SD), median (range)]	
Total	16.9 (9.1) 17.0 (0.08–41)
Years as DIO	4.1 (2.0) 5.0 (0.08–6)
Years as DIO at current institution	4.0 (2.0) 4.0 (0.08–6)
Time spent fulfilling DIO responsibilities [mean (SD), median (range)]	
Hours per week at slowest time	17.9 (15.4) 12.5 (0.0–80)
Hours per week at busiest time	32.9 (20.0) 30.0 (1–80)
Average number hours per week	23.5 (16.7) 20.0 (1–80)
Percentage of time spent fulfilling DIO responsibilities	45.1 (31.1) 40.0 (1–100)
ACGME-accredited residencies and residents [mean (SD), median (range)]	
Total number residency programs DIO oversees	21.1 (22.9) 10.0 (2–130)
Total number residents in these programs	280.3 (305.8) 154.0 (7–2,100)

* The number of respondents for each category ranges from 235 to 243 due to survey questions not answered per variable.

Results

Respondents

We received completed surveys from 243 of 363 DIOs (66.9%). Using the Centers for Disease Control regional breakdown of the United States,⁶ all DIOs were coded into one of nine U.S. regions. Regional response rates were not significantly different ($p = .44$). In all regions, 50% or more possible participants (range, 50.0%–78.9%) returned surveys.

DIO characteristics

Almost three fourths of respondents were male and physicians, 91.4 % (222) were white, and 75.3% (183) were over 50 years of age (see Table 1). Two thirds (162) reported working in urban locations, but there was considerable overlap in the populations reported for each type location: rural (range 9,000–600,000), urban (range 50,000–12,000,000), and suburban (range 15,000–5,000,000). According to our assumption that a typical professional career lasts 40 years, DIO respondents had spent approximately half their careers working in GME (mean = 17; SD = 9). Since the requirement to name a DIO was set in 1998, the maximum number of years a respondent could have served as a DIO was six years. On average, respondents had served 4.1 years as a DIO and 4.0 years at their current institution. Only 9.5% (23) had served as DIO for one year or less and 39.1% (95) had served for all six years.

Respondents reported holding a wide range of academic degrees, from an Associate degree only to a combined MD/PhD. Although the majority of respondents (72.4%) were physicians, 13 other degrees were listed as the highest degree attained, with only a few directly related to education (i.e., Master of Education, Doctor of Education, and possibly some of the PhD holders). Fifty one respondents (21.0%) reported that they did not have adequate training for their DIO responsibilities. It might be assumed those individuals held the lesser credentials, but the opposite was true. Although 72.4% of respondents were physicians, 82.4% (42) of those indicating a lack of preparation were physicians.

Respondents reported a wide range of DIO-specific salaries, from \$0 to

Table 2

Titles of 243 Designated Institutional Officials (DIOs) and the Individuals to Whom They Report

Title	No. (%)
DIO title	
<i>Director</i>	
Director, Medical Education (DME)	51 (21.0)
Director, Graduate Medical Education (GME)	31 (12.8)
Director, Academic Affairs	4 (1.6)
Director, Education	3 (1.2)
Director, Medical Education and Research	2 (0.8)
<i>Administrator</i>	
Administrative Director, Medical Education	4 (1.6)
Administrator	2 (0.8)
Coordinator, Medical Education	1 (0.4)
<i>Dean</i>	
Dean	7 (2.9)
Vice Dean	2 (0.8)
Associate Dean	25 (10.3)
Associate Dean, GME	30 (12.3)
Assistant Dean	6 (2.5)
<i>President</i>	
President/CEO	4 (1.6)
Vice President	9 (3.7)
Vice President, Academic Affairs	11 (4.5)
Vice President, Medical Affairs	9 (3.7)
Vice President, Academic and Medical Affairs	1 (0.4)
Vice President, Medical Education and Research	7 (2.9)
Vice President, Medical Education	3 (1.2)
Vice President, GME	2 (0.8)
<i>Chief/Chair/Head</i>	
Chief Medical Officer	3 (1.2)
Chief Academic Officer	2 (0.8)
Chief of Staff/Associate Chief of Staff	3 (1.2)
Chair, Medical Education or GME	8 (3.3)
Head Office of GME	1 (0.4)
Other/not related to medical education or GME	12 (4.9)
Title of individual to whom DIO reports	
<i>Dean/Chancellor/Provost</i>	
Dean	40 (16.5)
Vice Dean	5 (2.1)
Associate Dean	13 (5.3)
Assistant Dean	1 (0.4)
Dean/Associate Dean and Medical Director	2 (0.8)
Dean and President/CEO	7 (2.9)
Dean and Vice President	5 (2.1)
Chancellor/Vice Chancellor/Provost	6 (2.5)
<i>President</i>	
President/CEO	55 (22.6)
Vice President	17 (7.0)
Vice President, Medical Affairs	28 (11.5)
Vice President, Academic Affairs	3 (1.2)
Vice President, Academic and Medical Affairs	2 (0.8)
Vice President, Medical Affairs and CEO	2 (0.8)
<i>Chief</i>	
Chief Operating Officer	14 (5.8)
Chief Medical Officer	8 (3.3)
Chief Academic Officer	2 (0.8)
Chief of Staff	3 (1.2)
<i>Director</i>	
Medical Director	9 (3.7)
Director	3 (1.2)
Executive/Deputy Director	3 (1.2)
<i>Commander</i>	
Commander	4 (1.6)
<i>Administrator</i>	
Administrator	2 (0.8)
<i>Board of Directors</i>	
Board of Directors	6 (2.5)
<i>Other/not related to medical education or GME</i>	
Other/not related to medical education or GME	2 (0.8)
<i>Missing</i>	
Missing	1 (0.4)

\$360,000 annually. Although 2% of respondents who answered this question indicated a salary of more than \$200,000, 18 (9.8%) reported that their work as a DIO was not compensated. Sixty (24.7%) DIOs did not answer this question. If nonresponse indicated zero compensation, this could mean as many as 78 (32.1%) of respondents receive no compensation for their DIO activities.

The average number of hours respondents reported spending on DIO responsibilities varied widely, with a range from 1 to 80 hours per week (mean, 23.5; SD, 16.7). The average number of hours spent fulfilling DIO responsibilities was positively correlated with the total number of residency programs ($r = .203, p = .002$) and total number of residents ($r = .172, p = .009$) for which a DIO was responsible. Although average hours were positively correlated with the total number of residency programs and residents, those correlation coefficients explain little of the variance, 4.1% and 3.0%, respectively.

DIO titles and report titles

As shown in Table 2, respondents reported more than 35 different job titles. Some variant of director was reported most often (37.5%); followed by vice, associate, or assistant dean (25.9%); and then some form of vice president (17.3%). Five percent of the titles reported had no clear link to medical education; among these were quality improvement coordinator, medical director, director of medical staff services, department chair, and section chief. Another 11.5% had tenuous links to medical education (e.g., president/CEO, vice president of medical affairs, chief/associate chief of staff).

Respondents listed more than 25 different titles for the individual to whom they reported (see Table 2). Cited most often were president/CEO (22.6%), dean (16.5%), and vice president of medical affairs (12.3%). Four categories of titles made up the majority: dean, vice dean, associate or assistant dean, chancellor, or provost (32.5%); president or vice president (44.0%); chief (11.1%); and director (6.2%).

Eighteen (7.4%) respondents had dual reporting relationships and six (2.5%) reported directly to the board of directors. About 60% of respondents reported to an

individual who presumably did not have an intimate knowledge of medical education (e.g., hospital president/CEO, vice president, chief operating officer, department chair).

DIO roles and responsibilities

Respondents were asked to indicate their level of responsibility for 26 items using a three-point scale, where 1 = no responsibility, 2 = some responsibility, and 3 = completely responsible. These

items are listed in descending order of responsibility within categories of items (see Table 3). The categories include the eleven core responsibilities identified by the DIORS, residency program evaluation, GME budgets, discipline, and performance evaluations.

In addition to answering fixed-choice questions, fifty three respondents provided comments related to their DIO-specific roles and responsibilities. Almost

one third (17) of these comments addressed a constant demand for DIOs to assume additional responsibilities (e.g., oversight, duty hours and competencies compliance monitoring, or research). Respondents used phrases like “increasing complexity,” “increasing exponentially,” and “rapidly escalating” to describe their DIO-related work. Comments made by two respondents, “[The] job is expanding such that any issue which touches GME falls under the

Table 3
Roles and Responsibilities Directly Related to the Designated Institutional Official (DIO) Position, Rated by Degree of Responsibility on a Three-Point Scale*

Role or responsibility	% DIOs reporting:		Mean (SD) [†]
	Some responsibility	Completely responsible	
11-item DIO Responsibility Scale (DIORS)			
Provide oversight of GME	14.8	85.2	2.85 (0.36)
Serve as first contact with ACGME, NRMP, and other GME [‡] organizations	16.0	83.1	2.83 (0.39)
Play an active role on the Graduate Medical Education Committee (GMEC)	15.6	83.5	2.83 (0.38)
Ensure compliance with ACGME requirements	21.0	77.4	2.79 (0.41)
Provide leadership for GME	20.2	79.0	2.78 (0.43)
Develop GME policies	29.2	70.0	2.70 (0.47)
Provide management of GME	31.7	66.3	2.65 (0.51)
Facilitate discussion of GME issues	35.0	63.0	2.63 (0.50)
Provide education about GME to individuals in your institution outside of GME	42.0	55.6	2.53 (0.55)
Provide education about GME to GME staff	42.0	53.5	2.50 (0.58)
Serve on other institutional committees	49.8	49.8	2.49 (0.51)
Residency program evaluation			
Initiate program evaluations	33.7	59.3	2.54 (0.61)
Report program evaluation results to others	44.0	52.3	2.50 (0.56)
Interpret program evaluations	51.9	43.6	2.40 (0.56)
Conduct program evaluations	51.0	41.6	2.35 (0.60)
Create program evaluations	49.8	42.0	2.35 (0.62)
GME budgets			
Provide GME budget oversight	35.4	56.8	2.50 (0.64)
Provide GME budget defense	38.3	51.9	2.46 (0.63)
Create GME budgets	52.3	38.3	2.29 (0.62)
Discipline			
Provide GME staff discipline	32.9	56.4	2.47 (0.67)
Provide discipline of residents	75.3	10.7	1.97 (0.49)
Provide discipline of program directors	53.1	19.8	1.93 (0.68)
Provide discipline of faculty members	51.0	7.4	1.66 (0.61)
Provide discipline of medical students	37.4	7.8	1.54 (0.64)
Performance evaluations			
Complete GME staff performance evaluations	35.8	53.9	2.44 (0.67)
Complete program director performance evaluations	33.7	21.0	1.76 (0.78)

* The number of respondents for each category ranges from 237 to 243 due to survey questions not answered per variable.

† Responsibilities were rated on a three-point scale where 1 = no responsibility and 3 = completely responsible.

‡ ACGME stands for Accreditation Council for Graduate Medical Education; NRMP stands for National Resident Matching Program; GME stands for graduate medical education.

Table 4

Additional Responsibilities Reported by 215 Designated Institutional Officials (DIOs)

Responsibility	No. (%)
Undergraduate medical education (UGME)	133 (54.7)
Continuing medical education (CME)	101 (41.6)
Patient care	77 (31.7)
Research and/or institutional review board (IRB)	56 (23.0)
Other academic programs (examples: nursing, pharmacy, physical therapy)	42 (17.3)
Member executive management team	37 (15.2)
Quality assurance/improvement or performance improvement	31 (12.8)
Department chair	27 (11.1)
Library	25 (10.3)
Medical staff administration	25 (10.3)
Program director, assistant/associate program director	21 (8.6)
Other GME (osteopathic programs)	16 (6.6)
Teaching	11 (4.5)
Community service	11 (4.5)
Patient safety	10 (4.1)
Faculty development	9 (3.7)
Compliance officer	8 (3.3)
Information services or electronic medical record	8 (3.3)
Media services	7 (2.9)
Curriculum development	6 (2.5)
Finance (other than GME finance)	5 (2.1)
Human resources	4 (1.6)
Standardized patients	3 (1.2)
Real estate (other than resident housing or in addition to resident housing)	2 (0.8)

auspices of my office,” and “It has expanded so dramatically in past few years, little is understood about this expansion,” serve to illustrate concerns of the DIOs.

Approximately 9% (5/53) of respondents who made additional comments expressed concern that as the ACGME institutional requirements have increased the DIO’s responsibility, there has not been a commensurate increase in DIO authority over the program directors. Respondents commented on their lack of budgetary control, authority over program directors, and program directors’ resentment of and resistance to DIO activities. In another section, several DIOs commented on a lack of flexibility or the authority to create incentives or innovations that might lead to improvements in GME.

Finally, another five of these 53 respondents commented that their institution, and specifically administration, did not understand the importance of the DIO role, the recent

increases in responsibilities, or the amount of time required to do the job appropriately. One respondent commented, “If I were to put DIO on my business card people would have no idea what I do.”

In all, 89% (215) of total respondents reported having responsibilities in areas other than those required of the DIO role (see Table 4). When asked to list these other areas, they reported an average of 2.91 (SD, 1.93; range, 1–10) other responsibilities, with 8.6% reporting no other responsibilities, 14.0% reporting one, 44.0% reporting two or three, 19.3% indicating four or five, and 11.1% reporting six or more additional responsibilities.

Definition of the DIO role

We asked respondents how their current institution came to define the DIO role, as well as how the role had changed since the ACGME mandate of 1998 (see Table 5). Just over half (53.1%) indicated that the role had evolved over time without

discussion. This most likely represents an evolution born of necessity: as the ACGME requirements changed, the DIO assumed more and different responsibilities to meet requirements, without anyone at the institution explicitly discussing this evolution. Sixteen of 36 respondents’ comments related to DIO role definition indicated the role has been driven by the ACGME requirements and citations received during ACGME site visits.

In answering four questions related to program director support, 89.7% of respondents indicated that they received appropriate support from their program directors and about half characterized their support as strong. However, 67.9% noted there was overlap between the roles of the DIO and the program director (some or a lot) and 35.0% claimed confusion between the parameters of the two roles (some or a lot); overall, 72.0% (175) reported confusion and/or overlap between the roles.

Forty four of 83 respondent comments on the topic of the DIO versus program director roles related to problems between DIOs and program directors and took one of two forms. First, some respondents (28) indicated that program directors not reporting to the DIO seemed to resist or resent the DIO. The result was a DIO with considerable responsibility but without authority to ensure compliance. Second, some DIOs (16) commented that the ACGME needs to clarify and stress the DIO role within the program-specific Residency Review Committees (RRCs) and their requirements. For instance, one DIO wrote, “Some program directors try to end run the DIO by dealing directly with the RRC. The ACGME should not allow this, but has been inconsistent.”

Comments related to recent ACGME regulatory changes (i.e., duty hours and competencies) were best summed up by one DIO: “I used to be a facilitator and coordinator. Now, I am an auditor and enforcer.” Although 32.1% (17/53) of comments relating to the DIO role noted rapidly increasing responsibilities, 22.7% of respondents indicated a decreasing emphasis, no emphasis, or unchanged emphasis on the role by their institution.

Table 5
Emphasis and Support for 243 Designated Institutional Official (DIO) Positions

Characteristic	No. (%)
Definition of role	
Evolved over time without discussion	129 (53.1)
Open discussion and evolution	72 (29.6)
Open discussion	11 (4.5)
Other	26 (10.7)
Missing	5 (2.1)
Changes in emphasis since 1998	
Increasing emphasis	179 (73.7)
Unchanged	49 (20.2)
No emphasis	5 (2.1)
Decreasing emphasis	1 (0.4)
Missing	9 (3.7)
Character of support received from program directors	
Appropriate support	218 (89.7)
<i>Level of support</i>	
Strong support	129 (53.1)
Moderate support	69 (28.4)
Low support	2 (0.8)
Mixed support, with some providing more than others	42 (17.3)
Missing	1 (0.4)
Amount of overlap between DIO and program directors roles	
No overlap	77 (31.7)
Some overlap	148 (60.9)
A lot of overlap	17 (7.0)
Missing	1 (0.4)
Amount of confusion between DIO and program director roles	
No confusion	157 (64.6)
Some confusion	79 (32.5)
A lot of confusion	6 (2.5)
Missing	1 (0.4)

Relationship with Graduate Medical Education Committee

A majority of DIOs indicated serving as the chair (63.8%) or co-chair (9.5%) of their institution’s Graduate Medical Education Committee (GMEC). Another 25.5% were members or ex-officio members; overall, most (94.2%) reported a close working relationship with their GMEC. Respondents listed more than 20 different individuals, institutions, groups, or committees to which their GMEC reported, with the medical executive committee, board of directors, or both making up 55.1% of the reporting relationships. GMEC relationships to a school of medicine were the second highest arrangement (20.2%). Reporting to more than one entity occurred at 48 (19.8%) institutions. A majority of respondents (68.3%) believed they had a

close working relationship with the entity to whom their GMECs reported.

Adequacy of financial and staff support

Half (123) of the respondents reported that medical education funding at their institution was decreasing, and one third (41) of those indicated funding no longer was adequate. Thirteen percent (32) of all respondents believed they did not have adequate funding to accomplish their ACGME-mandated DIO responsibilities and one fourth (61) reported they did not have adequate support staff to fulfill their DIO roles and responsibilities.

DIO Responsibility Scale development

The 11-item DIORS had a possible range of scores from 11 to 33. Responses from the DIOs we surveyed yielded a range of

18–33 (mean, 29.5; SD, 3.46). Item means and standard deviations are reported in Table 3. The internal reliability of the scale as measured by Cronbach’s alpha was .86. Construct validity was assessed using five survey variables. The average number hours per week that respondents reported spending in fulfilling DIO-related roles and responsibilities and DIO-specific salary were positively correlated with the DIORS score ($r = .346$ and $r = .416$, respectively; $p = .001$ for each). There was a significant difference of mean DIORS scores ($p = .01$) between the 179 institutions with an increasing emphasis on the DIO role (mean, 29.8) and the 55 institutions with decreasing, unchanged, or no emphasis (mean, 28.3).

Two variables were assessed using ANOVA to determine their relationship to DIORS scores: DIO role overlap with program director roles and role confusion between DIOs and program directors (see Table 6). There was a significant difference between degrees of role overlap ($p = .004$) and between degrees of role confusion ($p = .001$). Higher DIORS scores were associated with less overlap and/or confusion.

Discussion

Our cross-sectional survey documents a wide range of DIO characteristics, roles, and responsibilities. For instance, DIOs reported holding numerous different titles themselves, including some with no clear link to medical education (see Table 2). In addition, DIOs report to individuals with broadly varying titles, some of whom might lack intimate knowledge of medical education (see Table 2).

Moreover, respondents reported a wide range of average DIO-specific hours per week, as well as percentage of time spent accomplishing DIO responsibilities. Although average hours were positively correlated with the total number of residency programs and residents, those variables explained less than 5% of the variance. These figures demonstrate that DIO-specific work is related to factors other than program size and the number of residencies. There may be many explanations for this variation. A strong possibility is that DIOs and their institutions have defined differently the roles and responsibilities required to

Table 6

Comparison of DIO Responsibility Scale (DIORS) Scores for Overlap and Confusion between DIO Roles and Program Director Roles

Category	No.	Mean (SD)*	p Value
Amount of overlap in your institution between the DIO's role and the role of the program director	242		.004
A lot of overlap	17	27.41 (3.99)	
Some overlap	148	29.23 (3.45)	
No overlap	77	30.29 (3.13)	
Amount of confusion in your institution between the DIO's role and the role of the program director	242		.001
A lot of confusion	6	24.17 (4.45)	
Some confusion	79	29.27 (3.18)	
No confusion	157	29.73 (3.41)	

*DIORS scores combine responses to 11 questions answered on a three-point scale; scores have a possible range of 11–33. A high score indicates increased compliance with DIO-specific institutional requirements and increased DIO role development.

meet the ACGME requirement for DIOs to oversee and administer residency programs.

All DIO role and responsibility comments supported the premise that the role of the DIO was underdeveloped. Almost one third of respondents expressed their concern over the demand to take on additional responsibilities during the past four years; little is known, however, about the effects of this expansion. DIOs commented on their lack of budgetary control, authority over program directors, and flexibility required to create incentives. The comments suggest the ACGME institutional requirements have increased the DIO's responsibility without a commensurate increase within individual institutions in DIO authority. In some instances, this has led to resistance from program directors as DIOs tried to fulfill their ACGME responsibilities. Some DIOs believed their institutions did not understand the importance, responsibilities, or time demands of the job.

Furthermore, respondents oversaw many areas of responsibility other than DIO-specific ones, some not directly related to medical education. From this, we can infer that many DIOs face challenges in meeting the expectations of both their institutions and the ACGME. In addition, DIOs have widely varying titles, report titles, responsibilities, hours devoted to DIO-specific work, and support. Couple this with the lack of institutional understanding of the DIO position

reported by some DIOs and the result is very little uniformity in the position.

Respondents also reported a wide range of DIO-specific salary amounts. We consider this as further support for the conclusion that the DIO role definition was highly variable across institutions and the value attached to it was inconsistent.

When asked how the DIO role had evolved at their institutions, most reported that the role had evolved without discussion and several indicated a change only after their institution received citations from the ACGME. Further support that the role is underdeveloped comes from the frequent mention made of rapidly increasing responsibilities; unchanged, decreasing, or no emphasis on the role by their institution; or confusion and/or overlap between DIO and program director roles.

Numerous DIOs commented that the ACGME needed to clarify and emphasize the DIO role within the RRCs. Here, the ACGME could clarify the two roles by including DIO language within the RRC requirements. If DIOs are to be responsible for oversight of GME, they need to have some reporting relationship that gives them authority over program directors. This would extend to DIOs having the GME budgetary discretion required to create incentives and innovations.

Decreases in funding and support staff are likely to exacerbate the issues created

by the underdeveloped nature of the DIO position. As DIOs face increasing mandated responsibilities and decreasing funding and support, accomplishing DIO responsibilities will likely become more difficult. Thus, it is even more important that institutions providing GME take a careful, thorough, and thoughtful look at their DIO position.

The ACGME institutional requirements specify there must be a Graduate Medical Education Committee at each sponsoring institution that must take responsibility for monitoring and advising on all aspects of residency education.² Although most respondents reported a close working relationship with their respective GMECs, there was variability in reporting arrangements, with GMECs reporting to more than 20 distinctly different individuals, institutions, groups, or committees. Such dissimilarity raises concerns. Other educational endeavors—undergraduate medical education and higher education, for instance—have standard titles for those in authority (department chair, dean, associate/assistant dean, provost, and chancellor) and have developed reporting structures that follow traditional lines; GME does not possess this same degree of uniformity. This ambiguity may foster confusion or even a lack of respect for the GMEC and for the DIO position, resulting in diminished efficacy or ability to meet ACGME requirements.

Because two thirds of the DIOs we surveyed responded to our questionnaire, the study generalizability to the broader DIO population is strong. The integrity of responses is only as strong as the honesty of respondents. We assume that the DIOs who responded had a vested interest in the research findings and were motivated to provide honest answers. We provided an opportunity for participants to make comments in addition to answering fixed-choice questions, so concerns about the completeness of this survey are mitigated.

It is possible that some individuals identified by the ACGME as the DIO were not the person within a given institution who actually fulfilled DIO roles and responsibilities. The named DIO might have functioned as a figurehead, with others performing the tasks and accepting responsibilities. This is suggested by the wide variability in the

study results, which bespeak the underdeveloped nature of the DIO role and could mean that—at least for some institutions—DIO responsibilities are shared by multiple individuals. However, figurehead DIOs would have answered questions from their perspectives, which are valid study data. Therefore, we do not consider this a major limitation of the study.

GME in the United States began in the early 1900s. It developed out of two distinctly different motivations. First, the rapid growth of medical knowledge made it essential to expand training beyond the four years of medical school and medical students needed more exposure to patients, who were predominately located in hospitals. The second motivation for the creation of GME had nothing to do with education and everything to do with service. As Rothstein put it, “As hospitals grew, their manpower needs grew correspondingly. One major source of cheap labor was the house officer [resident].”⁷⁷ P. 84 The marriage of these differing motivations resulted in an uneasy alliance between medical education objectives (quality education) and hospital missions (providing quality patient care) and led to tension between service and education in GME.

The disparity in GME organizational structures and variations in the many reported DIO characteristics can be seen as byproducts of this tension. The variability we have discussed may not necessarily degrade educational quality, but it does create opportunities for the system to break down. As quality improvement teaches us, most errors are related to process problems and not individual error. Well-developed systems with clear chains of authority and responsibility, as well as a universal understanding of DIO roles, would reduce process problems and could lead to increases in the quality of medical education.

The wide range of DIO salaries, titles, report titles, responsibilities, time commitment, training, authority, and support we found indicate that the DIO position is underdeveloped. Further, recent increases in DIO responsibilities, such as monitoring of duty hours and competencies implementation, coupled with recent reductions in GME financial support, can be expected to exacerbate the underdeveloped nature of the role demonstrated here. This may limit a DIO's ability to influence educational outcomes. Institutions committed to improving the quality of medical education should review their interpretation and implementation of the DIO role to ensure that it is adequately supported in terms of resources, authority, and prestige. A fruitful area of future research would be to explore the effect of DIO role development.

The 11-item DIORS demonstrated a Cronbach alpha of .86; according to DeVellis,⁸ a scale alpha above .80 is very good. In addition, the scale had the expected positive relationship to five variables we selected to establish construct validity. With internal reliability and construct validity established, we feel confident recommending the DIORS for use by DIOs and institutions as a measure of DIO role development. Further, we suggest that the first five items of the DIORS are stated explicitly or implied strongly in the ACGME's institutional requirements as components of the DIO role. Scores on these items could be used to gauge an institution's degree of compliance with these requirements. Low scores on the remaining six DIORS items could be used to indicate a need for further development of the DIO role.

The data we present could be used to inform discussions of the relative responsibilities of individual institutions and the ACGME in clarifying and delineating the DIO role. However,

establishing the balance of responsibility between these entities is beyond the scope of our research. Our findings, which to our knowledge provide previously unavailable descriptive data relevant to DIOs, support the conclusion that the DIO role is underdeveloped. In addition, this study also establishes the reliability and validity of the DIORS, which may now be used in future research on DIO role and performance.

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References

- 1 Brotherton SE, Rockey PH, Etzel SI. U.S. graduate medical education, 2002–2003. *JAMA*. 2003;290:1197–1202.
- 2 Accreditation Council for Graduate Medical Education, Institutional Requirements (<http://www.acgme.org/acWebsite/irc IRCpr703.asp>). Accessed 10 October 2005.
- 3 Greiner AC, Knebel E, (eds). *Health Professions Education: A Bridge to Quality*. Washington, DC: The National Academies Press, 2003.
- 4 Riesenber L. Editor's educational corner: Designated institutional official (DIO). *AHME News*, Summer 2001:2.
- 5 Dillman DA. *Mail and Internet Surveys: The Tailored Design Method*. 2nd ed. New York: John Wiley & Sons, 2000.
- 6 Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System (<http://www.cdc.gov/nchs/data/hus/tables/2003/03husupdated.pdf>). Accessed 19 September 2005.
- 7 Rothstein WG. *American Medical Schools and the Practice of Medicine: A History*. New York: Oxford University Press, 1987.
- 8 DeVellis RF. *Scale Development: Theory and Applications*. Newbury Park, CA: Sage Publications, 1991.