

Impact of a Competency-Based Curriculum on Medical Student Advancement

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ABSTRACT

BACKGROUND

In 1999, the Indiana University School of Medicine implemented a new curriculum based on 9 core competencies. We sought to document how the Student Promotions Committee (SPC) has adjudicated students' competency-related deficiencies in the past decade.

METHODS

Using SPC records, we determined the frequency of competency-related deficiencies reported to the SPC over time, the nature of those deficiencies, and how the deficiencies were remediated.

RESULTS

From 1999-2009, 191 students (138 males, 53 females) were referred to the SPC for one or more competency-related deficiencies in 8 performance domains: effective communication; basic clinical skills; lifelong learning; self-awareness, self-care, and personal growth; social and community contexts of health care; moral reasoning and ethical judgment; problem solving; and professionalism and role recognition. For the purposes of this study, students with traditional academic performance issues like course failures were excluded from analysis. Collectively, the 191 students were cited for 317 separate competency-related deficiencies (1.66 per student). Of these 317 deficiencies, the most prevalent were in the competencies of professionalism (29.3%), basic clinical skills (28.4%), and self-awareness (17.7%). Each of the remaining competencies constituted less than 10% of the total. Successful remediation utilized 12 methods ranging from a simple warning letter to being required to repeat the year under close monitoring. Remediation was unsuccessful for 17 students (8.9%) who were dismissed from medical school.

CONCLUSIONS

Based on our School's experience, we believe that unprofessional behaviors and other competency-related deficiencies can be identified and remediated in most cases.

BACKGROUND

Based on the pioneering work of Brown Medical School¹, the Indiana University School of Medicine (IUSM) implemented a competency-based curriculum in 1999, one of the first schools after Brown to adopt competency assessment into its undergraduate curriculum.^{2,3} We identified nine core competencies that must be achieved before graduation: (1) effective communication; (2) basic clinical skills; (3) using science to guide diagnosis, management, therapeutics, and prevention; (4) lifelong learning; (5) self-awareness, self-care, and personal growth; (6) social and community contexts of health care; (7) moral reasoning and ethical judgment; (8) problem solving; and (9) professionalism and role recognition. Each of these competencies is defined by specific performance criteria of knowledge, skills, or behaviors, and assessed at beginning, intermediate, and advanced levels of competence. If a student fails to demonstrate satisfactory performance in any of the nine competencies, he or she is referred to the Student Promotions Committee (SPC) for review and action.

REFERENCES

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METHODS

In this descriptive study, we reviewed the official SPC minutes for 10 academic years beginning July 1, 1999 through June 30, 2009. Based on information in the minutes, student cases were broadly classified as representing either academic or non-academic (competency-related) deficiencies. The competency-related cases were then further classified according to the specific competencies involved.

For the purposes of this study, we excluded the cases involving deficiencies in competency 3 (using science) because the SPC has adopted the position that competency 3 embodies the traditional medical curriculum, which emphasizes the acquisition of scientific knowledge.

Additional data elements in the analysis included the student's gender, date of birth, year of matriculation, undergraduate science grade point average (USGPA), Medical College Admission Test (MCAT) score, United States Medical Licensing Exam (USMLE) Step 1 score, and year of graduation (if applicable). For each student case, we listed the date of SPC review, the specific competencies involved, and the SPC action with remedial requirements.

Single-sample z tests were performed to assess differences in the USGPA, MCAT score, and Step 1 score of the students with competency-related deficiencies as compared to the total student population for the same 10-year period. Chi-square was used to assess whether there were differences in the gender. Counts of competency-related deficiencies by year, by type, and by frequency of occurrence were conducted to reveal trends. A compilation of the various remedial requirements imposed by the SPC over the study period was summarized and listed.

RESULTS

In the 10 years since the competency-based curriculum was formally adopted, the SPC has adjudicated 1,323 student cases, of which 233 were referred to the committee because of unsatisfactory competency performance (17.6%). After correcting for multiple SPC encounters by the same individual, we counted 191 different students with competency-related deficiencies.

Compared to the total student population, the students with competency-related deficiencies had a significantly lower USGPA and Step 1 score (Table 1). However, the magnitude of the USGPA difference (3.5 versus 3.6) can hardly be considered meaningful in a practical sense. These findings suggest that standard admissions criteria are not good predictors of performance in non-academic domains like professionalism. The number of males was significantly greater than the number of females, given their relative proportion in the student body as a whole (Table 1).

Table 1: Characteristics of Indiana University Medical Students Cited for Competency-Related Deficiencies Versus the Total Student Population, 1999-2009

Characteristic	Students with Competency Citations	Total Student Population	P Value
% Male	72.3 N = 191	55.5 N = 2,843	< 0.001
USGPA*	3.5 ± 0.32 N = 191	3.6 ± 0.31 N = 2,843	< 0.001
MCAT†	29.4 ± 3.56 N = 191	29.7 ± 3.44 N = 2,843	0.20
Step 1‡	218.3 ± 21.4 N = 191	224.4 ± 20.1 N = 2,727	< 0.001

*Undergraduate Science Grade Point Average (mean ± SD)

†Summed Score on the Medical College Admission Test (mean ± SD)

‡First Administration of the United States Medical Licensing Exam Step 1 (mean ± SD)

RESULTS CONTINUED

Collectively, the 191 students reviewed by the SPC were cited for 317 separate competency-related deficiencies. Of these 317 deficiencies, the most prevalent were related to professionalism, clinical skills, and self-awareness (Table 2).

Table 2: Citations for Competency-Related Deficiencies Issued by the Student Promotions Committee of Indiana University School of Medicine, 1999-2009*

Competency	Number of Citations (%)
Professionalism and role recognition	93 (29.3)
Basic clinical skills	90 (28.4)
Self-awareness, self-care, and personal growth	56 (17.7)
Moral reasoning and ethical judgment	29 (9.1)
Problem solving	22 (6.9)
Effective communication	16 (5.0)
Lifelong learning	9 (2.8)
Social and community contexts of health care	2 (0.6)
Total:	317 (100)

*During the study decade, 191 students were reviewed by the Student Promotions Committee and cited for 317 separate competency-related deficiencies, an average of 1.66 deficiencies per student.

The SPC devised a variety of remedial requirements for the 191 students with competency-related deficiencies (Table 3). In most instances, these efforts were successful in correcting the students' deficiencies and preventing future recurrences. However, remediation was unsuccessful for 17 students (8.9%) who were dismissed from medical school. Unprofessional behaviors (deficiencies in competency 9) were significant factors in 13 of the 17 dismissals (76.5%). Inadequate self-awareness and insufficient recognition of personal limitations (deficiencies in competency 5) were reported in 8 of the 17 dismissals (47.1%).

Table 3: Remedial Requirements for Indiana University Medical Students Cited for Competency-Related Deficiencies, 1999-2009*

Remedial Requirement	Frequency
• Sent warning letter without being placed on academic probation; no further action taken	6.3%
• Required to complete a remedial program devised by competency director and/or clerkship director, usually in conjunction with one or more of the actions listed below	22.9%
• Required to meet with competency director or select faculty members for counseling and guidance	14.2%
• Required to complete delinquent assignment or task	5.3%
• Required to undergo medical, psychiatric, or substance abuse evaluation/treatment and submit progress reports to Dean of Students	10.6%
• Required to check-in at specified intervals and maintain open lines of communication with Dean of Students and other school officials	0.7%
• Required to abide by the terms of learning contract devised by competency director and/or clerkship director	5.3%
• Required to complete an independent project, such as: <ul style="list-style-type: none"> ◦ Write literature review about impact of unprofessional behavior ◦ Submit letters of apology to affected individuals ◦ Maintain daily log of personal interactions ◦ Earn advanced credit in relevant competency 	3.1%
• Required to complete a specified elective or supplemental training experience <ul style="list-style-type: none"> ◦ Usually under learning contract or special monitoring 	5.5%
• Required to repeat a clerkship or portion of clerkship <ul style="list-style-type: none"> ◦ Usually under learning contract or special monitoring conditions 	10.1%
• Required to repeat year <ul style="list-style-type: none"> ◦ Usually under learning contract or special monitoring conditions 	3.9%
• Suspended from school, pending: <ul style="list-style-type: none"> ◦ Resolution of legal case against student ◦ Completion of medical, psychiatric, or substance abuse evaluation/treatment 	3.1%
• Dismissed from school or allowed to withdraw voluntarily	8.9%

*During the study decade, 191 students were reviewed by the Student Promotions Committee and cited for 317 separate competency-related deficiencies. The above requirements were imposed 415 times, in various combinations, in response to these deficiencies.

CONCLUSIONS

A decade after implementation, the competency-based curriculum at IUSM is now well established and part of our institutional culture. We believe that the SPC's early decision to treat competency-related deficiencies with the same seriousness as traditional academic deficiencies, and to impose sanctions as necessary, were major factors in forging the competency-based curriculum into a practical reality. Our findings have shown that competency-related deficiencies are readily identifiable and correctable in most cases, but that deficiencies in professionalism and self-awareness are especially challenging.