

## Transition to Medical School: An Early Course to Enhance Personal and Professional Success in Medicine

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### ABSTRACT

#### Purpose:

To assess the immediate impact of an educational personal and professional transition program for medical school.

#### Method:

The entire class of 2018 (n=120) participated in a six week medical education personal and professional transition program at Wake Forest School of Medicine in August and September 2014. All students took achievement tests, essays, blogged, completed peer assessment and self-assessment instruments, and received anonymous aggregated feedback from five peers. A follow-up survey on peer feedback was administered online as was an end-of- course student evaluation survey.

#### Results:

Large gains were made on the achievement posttest (Pretest= 60.1% / Posttest = 89.3%; Cohen's d=4.87) and all subcomponents. Peer assessments (Cronbach  $\alpha$  reliability = .95) were said to be useful and valid, and resulted in behavioral change. Themes (e.g., inspirational mentorship) and words (e.g., passion) from the role models reflect major aspects of socialization into medicine. Instructors received high ratings (grand mean = 4.55/5), but course content and structure (grand mean = 3.90/5) and overall course (mean = 3.70/5) were lower.

#### Discussion:

The didactic, small group, online, storytelling and experiential learning activities were effective for students' acquisitions of knowledge, skills, and tools to enhance personal and professional transition to medical school. The course objectives were, therefore, partially or fully achieved.

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## Introduction

Medical school is a socialization process of becoming a doctor that involves the formal curriculum (basic science and clinical knowledge, skills and attitudes), learning medical professionalism through didactic processes and role modelling, adopting values and value systems of medicine, and unconscious processes of medical training.

Medical school can be very challenging. Many medical students suffer various forms of psychological distress such as depression, anxiety, suicidal ideation, burnout and so forth during medical school.<sup>1,2,3</sup> Heavy academic demands, poor learning environments, harassment and discrimination, lack of social support, personal crises and experiences of life events and isolation all lead to the high prevalence of psychological distress. In a recent study in seven American medical schools involving 4,287 students, burnout was reported by nearly half (49.6%) of students and 11.2% reported suicidal ideation within the past year<sup>3</sup>. Burnout has been associated with unprofessional conduct, decline in empathy, and thoughts of dropping out of medical school.<sup>4,5</sup>

Are the high distress rates of medical students because they are psychologically compromised at the beginning of medical school? This is possible given the competitive admissions process, demands for high academic performance, and pre-admission extracurricular activities (e.g., volunteerism, shadowing, etc.). In a recent group comparison study, American medical students did report more burnout, and exhibited higher symptoms of depression and fatigue than similarly aged college students.<sup>6</sup> While there has been conflicting findings on whether medical students start medical school more distressed than matched comparison groups, recent work<sup>1</sup> has found that medical students begin medical school with better mental health indicators than age matched college graduates in the general American population. It appears that the high rates of distress subsequently in medical students is due to the medical school experience—the training process and an educational environment that increases risk of mental health issues in the developing doctor.

In most situations, transitions from one major environment to another can be psychologically challenging. Several theoretical

models have been proposed to understand the context of transitions. Bronfenbrenner<sup>7</sup> developed the ecological model which focuses on the social-cultural environment and the psychological systems within the various distal (remote) and proximal (close) impact on the person. The person such as the medical student is situated within a proximal environment (the medical school and classroom) which is situated within a broader but more distant (distal) environment of health care. Prior to medical school, the students' proximal and distal environments may have been less specific and defined. A complementary model is Wegner's community of practice<sup>8</sup> theory where the person is situated within broad social contexts. Here the medical student's identity develops by participating in the community of practice (medicine). The nature of the participation in this valued community of practice and the process of transition are at the core of identity development, professionalism, and the commensurate intellectual and psychological demands of this adaptation.

A third theory that is directly relevant to transitions to medical school is Moos' conceptualization of human environments.<sup>9,10</sup> According to this view, social environments (e.g. classroom, work, family setting, medical school, etc.) can be described by a common set of dimensions: 1) Personal development or goals of the specific environment, 2) relationship dimensions—people involved in the setting, support and help from each other and allow spontaneous self-expression, freely and openly, and 3) system maintenance and system change (environment is orderly and clear in its expectations, maintains control, and responds to change).

The assessment of medical student professionalism has been done through peer assessment of professional behaviors using the peer assessment protocol (PAP).<sup>11,12</sup> Factors measured with the PAP include work habits and interpersonal skills of the student being assessed for peer assessment. Recent work has provided evidence for the construct validity of peer assessments for medical student professionalism.<sup>13</sup> Scores from peers on the PAP work habit items are related to several criteria including students' dean's letter performance evaluation, subsequent ratings during internship<sup>14,15</sup>, course grades<sup>16</sup> and faculty ratings.<sup>17</sup>

The three complementary theories of Bronfenbrenner, Wegner and Moos, provide a context for both understanding and facilitating human transitions and professional identity development in general and educational transitions specifically. The transition program developed at Wake Forest School of Medicine and implemented in August, 2014 was situated within these theoretical frameworks. This is a new course that provided students with a common foundation of knowledge, skills, and tools to enhance personal and professional transition in medical school. Didactic, small group, online, storytelling and experiential learning activities were designed to provide that foundation.

The six week course content was structured around life skills for achieving a healthy life acclimation to medical school and medicine as a career, self-understanding as a person, new words, ideas, and concepts, clinical reasoning and skills, and healthcare environment in the United States. These course elements reflect the proximal and distal aspects of the ecological environment; situate students within the community of practice, and focus on personal development, relationships and system factors.

The major purpose of the present research was to study the short term or immediate effect of this six week transition program. Accordingly, we wished to assess the didactic, role modelling, achievement, professional development, and socialization of beginning medical students into the

medical community of practice generally, and medical school particularly. Effective transition courses may mitigate the propensity for psychological and social distress suffered by many medical students.

## Method

### Participants

The entire class of 2018 (n=120) participated in a six week educational transition program to medical school at Wake Forest School of Medicine (WFSM) in August and September, 2014. There were 64 men (53.3%) and 56 women (46.7%) with a mean age of 24.3 years (SD=2.89; min=20.1, max=35.4). The mean undergraduate GPA = 3.58 (SD=.28), mean MCAT Verbal = 10.22 (SD=1.39), MCAT Physical Sciences =10.77 (SD=1.49), MCAT Biological Sciences = 10.87 (SD=1.26) and MCAT writing sample = 1.76 (SD=3.29). A majority had an undergraduate life sciences major (n=75; 62.5%), and the remainder had majors in the physical sciences (n=15; 12.5%) or in the humanities, art, philosophy or other (n= 30; 25.0%).

### Course Content and Sequence

The content, themes and sequence of events during the six week course are summarized in Table 1. Details of entrustable professional activities (EPAs) which were introduced in week 1 of the course and the course objectives are summarized in Appendix A.

Time	Content and Themes
Week 1	<p>Students were introduced to the concept that being a doctor includes being a healer, a scientist, an advocate, a life-long learner, a collaborator, an educator, and a role model. They were oriented to the domains of competence: Knowledge for practice, interpersonal and communication skills, patient care, professionalism, practice-based learning and improvement, systems-based practice, interprofessional collaborative practice, team work, personal and professional development.</p> <p>Students were oriented to the Core Entrustable Professional Activities. Two longitudinal courses, Population / Epidemiology and Clinical Skills Seminar began as did Embryology, Quality Improvement and Patient Safety, Humanities in Medicine, and Nutrition in Medicine modules. Students were introduced to clinical reasoning and to the concept of the electronic health care record and introduced to tools and resources available through the library.</p> <p>Through didactics, interactive workshops and an opportunity to select from activities like yoga, mindful meditation and others, students learned the nature and benefits of each of the following seven mental activities which promote mental well-being: sleep time, physical time, focus time, connecting time, play time, down time, and time in.</p> <p>Voices from the Field provided students an opportunity to hear stories from physicians of varied specialties and experiences including an orthopedic surgeon and her patient, a pediatrician who advocates for migrant children, a geneticist and a gastroenterologist specializing in prevention and management of childhood obesity.</p>

Week 2	<p>Interactive workshop on the Principles of Bioethics, Behavioral Foundations of Health, and Social Dimensions of Health. All students spent a morning at an art museum where museum educators supported students in developing skills of observation, diagnostic competency, communication and self-reflection. Students enhanced their clinical reasoning skills that they were introduced to during week one in case studies.</p> <p>Students were introduced to the broad area of Radiology, including the history, basic mechanisms, indications, limitations and patient care implications of various diagnostic radiology modalities. Global Health was also introduced. Voices from the Field included a visit with a neonatologist and a neuro-radiologist.</p>
Week 3	<p>The basic sciences were further introduced with sessions in immunology, microbiology and histology. Online modules in Patient Safety, Nutrition and Study skills. A session explored the problem of Obesity Bias in US healthcare systems and the Healthy Mind session focused on Cultivating a Perspective-taking Mind, and Social and Behavioral Aspects of Healthcare.</p> <p>Voices from the Field featured a neurologist-researcher and a surgeon father-son duo.</p>
Week 4	<p>Voices from the Field consisted of stories from an intensivist, surgeon turned neonatologist, and geriatrician. Students engaged in didactic sessions on How Humans Learn, and Cultural Competency in Healthcare Delivery. The basic science focus was Neuroscience, Neuro-anatomy, Patient Safety, and Sleep Disorders. The Healthy Mind focus in week four continued to build on Cultivating a Perspective.</p>
Week 5	<p>Epidemiology was back to the forefront with the session Find the Errors in the Major Media Reports. Neuroscience: Sympathetic and Parasympathetic Nervous systems.</p> <p>Physician Impairment, Professionalism and the Nutrition Smorgasbord cases were presented.</p> <p>The final Healthy Mind session focused on integration of the mind and the power of positivity.</p>
Week 6	<p>The final population epidemiology session focused on Investigating Disease Outbreaks. The anatomy team introduced students to the Integrated Anatomy course and brought them to the anatomy lab where they began superficial dissection of the back.</p> <p>The subject of Pain and Palliative Care was taught in a workshop.</p> <p>The many aspects of research were discussed and suggestions for student involvement in research during medical school were offered.</p> <p>Voices from the Field included stories from a radiation oncologist, an adult emergency medicine doctor with special interests in technology and a family physician with a flair for sports medicine.</p> <p>The course concluded with a final exam, a luncheon, presentations and advice by students from various interest groups.</p>

Table 1: Course Content, Sequence and Themes

### Procedures and Instruments

Various pedagogical approaches including small group sessions, lectures, online modules, readings, presentations, discussions, and question and answer periods were employed. At the beginning of week one, all students took a 75-item multiple choice (MCQ) pretest on Professionalism and Inter Professional Teams, Anatomy and Embryology, Clinical Skills, Population/ Epidemiology, Nutrition and Quality Improvement. At the end of week six students took a 171-item MCQ posttest on the same content as the pretest. All students submitted an essay at the end of week one on a subject that they had been introduced to during this week (Table 1). After several weeks in the program, all students completed a 15-item peer assessment (PAP) and a 14-item self-assessment and were given anonymous aggregated feedback from five peers that had been randomly selected to assess

them. Students gave their comments on Voices in the Field in a blog. They also wrote a brief essay on the development of professionalism. A follow-up survey of the perceptions of use of peer feedback and its value was administered online as was an end-of-course student evaluation survey.

### Analyses

The pre and posttest scores for the achievement were analyzed with the Wilcoxon signed rank sum test as the posttest scores were highly negatively skewed. Cohen's d effect size was used to determine the magnitude of educational growth. Descriptive statistics were computed for the PAP as was Cronbach's  $\alpha$  coefficient for internal consistency reliability.

A word cloud — a visual representation of text data where the importance of each word is shown with font size or

color— was developed from the blog information in Voices in the Field. Iterative reading and thematic analyses was employed with the professionalism essay. Response patterns of open-ended questions were analyzed by frequency analyses. Descriptive statistics were computed for the end of course student evaluation. This study was approved by the Institutional Review Board at Wake Forest University School of Medicine.

## Results

The results are presented in four sections: 1) the pretest/posttest on the achievement test, 2) peer and self-assessments, 3) reactions to Voices from the Field, 4) perceptions of the value of feedback of peer assessments, and 5) student post-course evaluation questionnaire.

### Pre-posttest on the Achievement Test

The pretest/posttest results on the achievement test are summarized in Table 2. It is evident from the mean

percentages and Cohen’s *d* that there were very large increases from the pretest (first day of the course; 60.1%) to the posttest (last day of the course; 89.3%) on the overall test (*d* = 4.87) and its subcomponents. The largest increase was for anatomy and embryology (*d* = 8.92) with clinical skills (*d* = 3.83) and population / epidemiology (*d* = 3.43) second and third. The increase in test scores for professionalism and interprofessional and quality improvement from pretest/posttest were relatively smaller partly because the pretest scores were already high for these exam components (Table 2).

### Peer and Self-assessments

The descriptive statistics and internal consistency reliability of peer and self-assessment and the results of a factor analysis of peer assessments are presented in Table 3. Cronbach’s  $\alpha$  for internal consistency reliability indicated that both of the self and peer instruments had high reliability ( $\alpha$  = .87 and .95 respectively).

Table 2: Scores on Pre and Post Achievement Tests

Test Component	Pretest			Posttest			Cohen’s <i>d</i>
	n items	Mean (%)	SD (%)	n items	Mean (%)	SD (%)	
Overall test***	75	60.1	7.7	171	89.3	4.3	4.87
Anatomy and Embryology***	27	85.3	14.9	58	98.5	4.8	1.34
Clinical Skills***	8	23.5	7.6	8	87.3	6.7	8.92
Professionalism and Inter Professional Teams***	6	27.2	11.9	10	80.5	15.9	3.83
Population / Epidemiology***	7	50.8	18.5	23	93.9	6.6	3.43
Nutrition***	8	49.0	20.2	20	90.7	8.3	2.93
Quality Improvement***	12	76.2	13.0	12	92.4	7.8	1.56
Other (miscellaneous content)***	7	27.3	17.0	40	67.8	4.9	3.72

\*\*\*  $p < 0.001$ , Wilcoxon signed rank sum test; <sup>†</sup> Cohen’s *d*: 0.20 to 0.30 is small, 0.31 to 0.50 medium, 0.51 to 1.00 large, and > 1.00 very large.

Table 3: Peer and Self-Ratings on Professionalism: Descriptive Statistics and Cronbach's  $\alpha$

Questionnaire Items*	Peer Ratings		Self-Ratings	
	Mean (SD)	Range	Mean (SD)	Range
1. Is prepared for sessions	4.82 (.45)	1-5	4.52 (.57)	3-5
2. Identifies and solves problems using data	4.89 (.37)	1-5	4.72 (.49)	3-5
3. Able to explain clearly	4.87 (.39)	1-5	4.56 (.58)	3-5
4. Compassion and empathy	4.89 (.39)	1-5	4.85 (.40)	3-5
5. Seeks to understand others' views	4.87 (.39)	1-5	4.85 (.36)	3-5
6. Initiative and leadership	4.67 (.58)	1-5	4.40 (.66)	3-5
7. information or resource sharing	4.84 (.43)	1-5	4.59 (.59)	2-5
8. Assumes responsibility	4.88 (.39)	1-5	4.73 (.49)	3-5
9. Seeks and employs feedback	4.81 (.48)	1-5	4.59 (.59)	3-5
10. Presents consistently to superiors and peers - trustworthy	4.91 (.37)	1-5	4.90 (.30)	4-5
11. Admits and corrects own mistakes - truthful	4.90 (.36)	1-5	4.82 (.41)	3-5
12. Dress and appearance appropriate	4.95 (.31)	1-5	4.89 (.41)	2-5
13. Behavior is appropriate	4.90 (.40)	1-5	4.80 (.50)	2-5
14. Directs own learning - think and work independently	4.88 (.38)	1-5	4.71 (.54)	3-5
15. I would refer family, patients, self to this future physician	4.81 (.50)	1-5	----	
Cronbach's $\alpha$	.95		.87	

\*1=strongly disagree, 2=agree, 3=neutral, 4=agree, 5=strongly agree

### Reactions to Voices in the Field

A word cloud was derived from the more than 750 blog entries for the presentations by the various physicians (see Table 1) and is presented in Figure 1. The most prominent words in the cloud are patient, work, medicine, hear, enjoy and care. These words reflect major themes of socialization into medicine and are clearly transmitted by the presenting physicians.

The professionalism essay was content analyzed using qualitative analyses and some of the representative direct quotes from students are summarized in Table 4. Major themes of the essays were patient centered medicine, development of professionalism, inspirational mentorship, active listening, well-rounded doctors, and teamwork.



Figure 1: A Word Cloud of Blog Content from Voices in the Field

### Perceptions of Feedback Received from Peer Assessments

The results from participant responses to five open-ended questions of peer feedback indicated that: 1) peer assessments are very or somewhat valuable (71%), 2) students were considering changing, or have changed behavior (63.3%) based on feedback, 3) medical students are accurate in peer-assessment (64.1%), 4) medical students think doctors should routinely receive systematic peer-assessment feedback on professionalism (90.6%), and 5) medical students had thoughts on how peer-assessment feedback could be improved. Common themes were that peer feedback is a resource for self-improvement and can facilitate behavioral change (e.g., “listen more and speak less”). While peer feedback is accurate and valuable and

Table 4: Quotes from Students from the Professional Essay

1. “The habits I establish now when encountering patients will be fundamental to the way in which I provide care for years to come. That is why it is so essential I evaluate myself to try to become the best physician possible.”	9. “A patient [attributed] his recovery from his motorcycle accident and amputation to people who care. He advocated that we all should make an effort to surround ourselves with supportive and caring people...I value that one of the focuses of orientation and the [course] curriculum has been to build our community.”
2. “One of the themes that resonated with me most was finding your inspiration and motivation within your patients.”	10. “The job of a doctor, by design, is to help patients; but from listening to these amazing doctors describe their experiences working with, teaching, and learning from their patients, it is clear that the job is so much more.”
3. “I enjoyed hearing the inspirational, personal stories of current physicians and found myself reflecting upon the associated life lessons long after the hour-long lectures ended.”	11. “We heard of harried physicians that seem to treat patients as cases instead of people, or heard how the mental health and divorce rates of physicians are higher than the national average. Seeing that it is possible to be well-rounded in this profession was immensely encouraging.”
4. “Even though I was in medical school for less than two months, I was already influenced by caring faculty during [the course]. I will seek mentors through my time in medical school and beyond.”	12. “I have felt their inspiration, and for that I am truly thankful.”
5. “I would like to keep up with my personal wellness in the long run as a progress into and through my career.”	13. “I have spent the last three years on the path toward medical school worrying and fretting about the future. These doctors are telling me to take my time, to enjoy, focusing on the now, to paraphrase William Osler: I will focus on the good work of the day.”
6. “Touch the place it hurts.” Belying these simple words, there was difficult truth born of lived experience and exposure.	
7. “I aim to be an intentional physician — to act with premeditation and purpose”.	
8. “I will strive to become an active listener, who always seeks excellence in patient care, communication, education, team situations, and leadership.”	

Table 5: Student Evaluation of Instructor and Course

Instructor (1=unsatisfactory – 5=excellent)	Min	Max	Mean	SD
1. The instructor provided clear expectations for the course.	3.00	5.00	4.51	.47
2. The instructor gave effective lectures or presentations, if applicable.	3.00	5.00	4.47	.47
3. The instructor facilitated discussion and encouraged participation.	3.25	5.00	4.52	.42
4. The instructor communicated effectively.	3.25	5.00	4.54	.46
5. The instructor stimulated my interest in the subject matter.	3.25	5.00	4.56	.45
6. The instructor was accessible outside of class (including after class, office hours, email, etc)	2.33	5.00	4.59	.51
7. The instructor provided helpful feedback on my work.	2.50	5.00	4.29	.62
8. The instructor demonstrated respect for students.	3.25	5.00	4.68	.40
9. The instructor demonstrated mastery of the subject matter.	3.25	5.00	4.81	.34
Course (1=strongly disagree – 5=strongly agree)				
10. The materials helped me understand the subject matter.	2.33	5.00	4.06	.59
11. The work required of me was appropriate based on objectives.	2.67	5.00	4.03	.61
12. The unit was well organized.	1.67	5.00	3.87	.69
13. The assessments accurately measured what I learned in this unit.	2.33	5.00	3.88	.65
14. The amount of time devoted to the unit was appropriate.	1.67	5.00	3.58	.70
15. The depth and breadth of content of the unit was appropriate.	1.33	5.00	3.82	.68
16. The instructional technologies used in the unit are appropriate.	2.50	5.00	4.07	.60
17. I learned a great deal in this unit.	1.67	5.00	3.89	.65
18. Overall Course (1=unsatisfactory – 5=excellent)	2	5	3.70	.79

can help identify doctors' strengths and weaknesses, it should be provided in narrative as well as numerical form and perhaps interpreted by a facilitator. For example, direct phrases from student responses directly stated peer feedback "is a resource for personal improvement, is helpful to identify weakness, has made me more considerate, helped me to take more initiative, made me more thoughtful on feedback, has inspired me to dress more appropriately for the setting, and helps us recognize community of standards".

#### Post-Course Evaluation Questionnaire

The results of the end-of-course evaluation are summarized in Table 5. Aggregate results for five primary instructors — responsible for about 80% of the instructional load — for the course are presented as are the aggregate results for eight course units. Preliminary analyses showed that there were no significant differences in assessment between instructors or units and thus data were aggregated (homogenous data with mean SD=0.46 and SD=0.65, respectively). Mean responses were very positive for all 9 items with the highest mean for item 9 (mean = 4.81; mastery of the subject matter) followed by item 8 (mean=4.68; respect for students). The means for the units were generally lower than for instructors; the lowest in amount of time for the unit (mean=3.58; item 14) and depth and breadth of content of the unit (mean=3.82; item 15). The overall course evaluation had a mean=3.70 (item 18).

#### Discussion

The main findings are 1) large gains were made on the achievement posttest and all subcomponents especially in anatomy and embryology, 2) the PAP was a useful measure of professionalism, in accordance with theoretical expectations and previous findings, 3) results from the Voices in the Field word cloud reflect major themes of socialization into medicine as do the themes of the professionalism essay, 4) student perceptions were that peer assessments are useful and accurate in evaluating medical student professionalism, that many had changed their behavior based on peer feedback, and that doctors should receive systematic feedback from peers on professionalism, and 5) students were very positive towards their instructors, and generally lower on course content and

structure especially in amount of time and depth and breadth of content of the unit.

#### Gains in Achievement

There were large gains made on the achievement posttest and all subcomponents (professionalism and inter professional, clinical skills, population / epidemiology, nutrition and quality improvement) especially in anatomy and embryology. Cohen's *d* is very large in the overall test and the subcomponents. In some ways this is not surprising as the design was a pretest/posttest one where students knew very little on the pretest. The instruction and learning, however, was very successful over the six weeks as large gains were made.

A *d* = 1.0 has 16% overlap of the pretest — posttest distributions such that 84% has been shifted.<sup>18</sup> The current educational gains from pretest/posttest (*d* > 4.00 overall) are huge with the overlap < 2%.

#### Assessment of Professionalism

The results of the PAP in the present study are very similar to previous research with this instrument.<sup>19,20</sup> A comparison of the peer versus self-ratings indicates that generally peer ratings are higher on the average than are self-ratings. This is a very typical finding with medical students,<sup>11,20</sup> residents,<sup>17</sup> and practicing physicians<sup>21</sup>. This discrepancy between self and peer assessment is probably a general psychological phenomenon in many domains.

The extent to which feedback will be used for formative purposes to change behavior is partly dependent on the perceived value and validity of the feedback.<sup>22</sup> In the present study, students were quite positive about the value and validity of peer feedback and many indicated that it had precipitated behavioral change. Moreover, a large majority (~ 91%) said that physicians should receive systematic peer feedback and that the feedback also provides an operational definition of professionalism for medical students. Personal reflection may lead to behavioral change.

#### Voices in the Field and Socialization

The various physicians were presented as role models in this pedagogical component. They were highly credible and influential exemplars in the context of Wegner's

community of practice theory<sup>8</sup> where the medical students' identity develops, in part, from role models. Physicians, who may also be professors — as many were in the present study — become idealized role models in the form of “hero-healers” for beginning medical students who are developing an unconscious representation of becoming a physician.<sup>23</sup> Some of the major themes identified in the professionalism essay (inspirational mentorship, etc.) and word cloud (e.g., care, hear), for example, revealed this idealization. Patient was the most identified word in the word cloud indicating that the concept of patient-centeredness in medicine was identified. There are very high ratings on items 8 and 9 on the student evaluation. These are two major interpretations of the idealization process of the “hero-healer.” The physician role models are highly regarded and influential (at least in the immediate term) for socialization into the community of practice.

Both Bronfenbrenner's ecological theory and Moos' conceptualization of human environments are relevant to the role model findings as well. The physician voices represent a proximal connection to the broader environment and direct exemplar of “people” in Moos' element of socialization.

#### Student Course Evaluation

The instructor ratings on the end-of-course evaluation were high (close to the “excellent” end of the 5-point scale). The means for the course content and structure were lower than the instructor ratings, close to the mid-point of the 5-point scale. The very high ratings of the instructors by students, supports the results of idealized role model findings in the narrative description of the physician presenters. This likely reflects the identification both consciously and unconsciously with the hero-healer role model.

#### Limitations

The main limitations are that the present sample is not large but adequate, represents only one medical class—class of 2018 — and is from a single institution (a private American medical school). Additionally, only the immediate results of the transition program have been studied. Future work should include other institutions and larger samples which may also be profitably studied longitudinally.

#### Summary and Conclusions

The overall results of the present study provide evidence of effectiveness of the present six week transitional program. The pretest-posttest analyses showed that students learned a great deal of cognitive content such as anatomy and embryology, population and epidemiology, nutrition, etc. Student perceptions of the peer assessment feedback were generally positive, acceptable to them and led many to behavioral change. Comments from the blog, professionalism essay and end-of-course evaluation, all supported the impact of the role models, at least in the short-term. This may reduce the prevalence of distress and burnout in medical students.

The three complementary theories of Bronfenbrenner, Wegner and Moos, provide a context for facilitating personal and professional transitions and professional identity development in medicine. Future research can follow this cohort to study the longer term impact of this transition course. Meanwhile, the present results show that the course has had a short-term impact on student learning, socialization, professionalism and identity development as physicians.

## Authors

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## Appendix A

### Core Entrustable Activities

1. Gather a history and perform a physical examination.
2. Prioritize a differential diagnosis following a clinical encounter.
3. Recommend and interpret common diagnostic and screening tests.
4. Enter and discuss orders and prescriptions
5. Document a clinical encounter in the patient record .
6. Provide an oral presentation of a clinical encounter .
7. Form clinical questions and retrieve evidence to advance patient care .
8. Give or receive a patient handover to transition care responsibility.
9. Collaborate as a member of an inter-professional team.
10. Recognize a patient requiring urgent or emergent care and initiate evaluation and management.
11. Obtain informed consent for tests and/or procedures.
12. Perform general procedures of a physician.
13. Identify system failures and contribute to a culture of safety and improvement.

### Course Objectives

At the conclusion of this course, the student should be able to:

1. Explain the concept, rationale, attainment, and evaluation of entrustable professional activities.
2. Apply insights gained through self-assessment and reflection to build upon personal strengths and address areas needing development.
3. Identify institutional resources that are available to enhance medical students' success.
4. Implement a plan to maximize his/ her own personal health and wellness throughout the medical school experience.
5. Articulate a personal statement of professionalism and professional practice.
6. Contribute productively to small and large learning groups.
7. Apply clinical reasoning skills to selected case studies.
8. Demonstrate a general knowledge of anatomy, histology, neuroscience, pharmacology, embryology, radiology and behavioral, emotional, and social aspects of health.
9. Demonstrate a general knowledge of healthcare in the United States (the evolution of medicine and medical practice and an overview of the U.S. health care delivery and payment system, current trends, and future directions and how these may impact your future practice).