

## **Diseases, Doctors, and Divas: Cultivating Reflective Capacity in Preclinical Medical Students through a Critical Examination of Opera**

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### **Abstract:**

**Objectives:** *The humanities, including narrative arts, are a valuable tool to foster reflection for professionally competent clinical practice. Integrating such study into traditional medical school curricula can prove challenging. A preclinical elective on opera and medicine was developed and piloted at the Warren Alpert Medical School of Brown University for pre-medical and medical students to foster reflective capacity supporting professional identity formation.*

**Methods:** *Interdisciplinary faculty from the departments of arts and sciences conducted nine facilitated discussion sessions. A field trip to the Metropolitan Opera, NY complemented students' operatic studies. Students were asked reflection-inviting questions concerning their emotional response to operatic scenes, characters, and physician-patient interactions throughout the course and given opportunities to discuss how opera reflects and reinforces stereotypes and societal stigma of patients, diseases, and physicians. A final reflective paper prompted analysis of more and less successful patient-provider interactions, exploring how students felt about these relationships, and drawing conclusions about how they would like to ideally act in the future. Formative feedback was provided using a reflection rubric.*

**Results:** *Course evaluations demonstrated that sessions were well received. Students' qualitative comments described the influence of the course on the development of their professional identities, as well as the potential impact on their future careers as physicians. Lessons learned and future directions are suggested.*

**Conclusions:** *This novel curriculum can serve as a model for using opera to enhance reflection and foster professional identity formation at other health profession and liberal arts institutions.*

## Introduction

Cultivating reflective practice while mastering a large volume of technical material can be challenging, yet is core to professionally competent clinical practice (Wald & Reis, 2010). Medical practitioners who do not incorporate reflective metacognitive skills in their daily practice may fail to self-critique and modify behaviors that can prove detrimental to person-centered care and caring (Epstein, 1999; Koole, et al., 2012; Plack & Greenberg, 2005). Reflection fosters self, other, and situation awareness and meaning-making, supporting professional identity formation (Wald, et al., 2015). Medical educators are thus challenged to develop reflection-enhancing curricula. Recently, increased emphasis has been placed on curricular innovations with the potential to foster students' reflective capacity as well as their "humanity" through study of the arts (Brett-MacLean, 2007; Karkabi, Wald, & Castel, 2014). Opera has been piloted as a pedagogic tool in medical education to promote reflection and empathy (Blasco, Moreto, & Levites, 2005; Murray, 2013); however, a curriculum focused on opera and medicine has not been previously described. We detail a preclinical elective at the Warren Alpert Medical School of Brown University (AMS) entitled *Diseases, Doctors, and Divas: Opera and Medicine*, which was designed to help cultivate students' reflective capacity through analysis of opera.

Per common usage, the term "to reflect" implies consideration, or deep contemplation. In medical education, a more comprehensive reflection construct is utilized to inform future action: the "critical analysis of...experience in order to achieve deeper meaning and understanding" (Mann, Gordon, & MacLeod, 2009, p.595). Mezirow (1990) describes higher-level critical reflection as facilitating transformative and/or confirmatory learning, given its role as "...the process of becoming critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about our world; of reformulating these assumptions to permit a more inclusive, discriminating, permeable, and integrative perspective; and of making decisions or otherwise acting on these new understandings" (p.14). Critical reflection thus describes the process by which medical students (and practitioners) can reframe their experiences through analysis and questioning to ideally improve patient care (Aronson, 2011). Our curriculum uses opera as a conduit to promote this more in-depth reflective process. The study of opera offers students the opportunity to reflect on their own assumptions and to potentially change them. Looking through the opera glass can illuminate both personal and societal perceptions of health and disease, highlight providers' biases, and provide deep insights into both successful and unsuccessful doctor-patient relationships.

Why study opera? Opera combines dramatic stories with powerful music and elaborate staging to convey themes related to the human condition (M. Hutcheon & L. Hutcheon, 2007). Whereas literary and visual arts are fixed in time, a libretto lives and breathes, subtly changing meaning with each director's interpretation. As the text is sung, the intensity and emotion conveyed through the artists' voices influence the meaning of the words. The musical composition creates a rich atmosphere that exalts the singing and highlights important aspects of the plot. The staging enhances other dimensions, providing a visual tapestry that shapes an audience's perceptions of major themes and characters. These multi-faceted features of each performance, combined with the fact that opera is rich in illness narratives and doctor-patient relationships, make opera an ideal artistic medium to study.

Innumerable diseases have been portrayed on the operatic stage, from deadly scourges of the past, including cholera in Berg's *Lulu*, to tuberculosis in Verdi's *Traviata*, to more modern

epidemics, such as HIV in Larson's rock-opera *Rent* (L. Hutcheon & M. Hutcheon, 1996; Morse, 1998). Psychiatric problems also appear as prevalent themes in opera, from psychosis to depression, grief reactions, and suicide (Tambling, 2004). Analysis of the characters, and how their illnesses are represented (and perceived by audiences), can help illuminate potential stereotypes and stigma with which "we" collectively label patients from past to present day: Infirmary is often associated with the disgrace of poverty (eg. destitute Mimi is afflicted with tuberculosis in *La Bohème* (L. Hutcheon & M. Hutcheon, 1996)). Characters who exhibit "immoral" behaviors are seen to endure the ignominy of divine retribution (eg. Violetta in *Traviata* is a high class courtesan who dies from tuberculosis (Groos, 1995)). Illness is frequently a marker of weakness (eg. Otello in Verdi's eponymous opera is afflicted with seizures, linked during that era to female hysteria and effeminacy (Paglia, 1990)). Many of these associations persist in modern times, as evidenced by the indigent, "dissolute," and flawed character portrayals in *Rent*, where the individuals afflicted with HIV are impoverished, homosexuals, transvestites, and IV-drug users. Students potentially use these dramatizations as a jumping off point to explore their own latent preconceptions, assumptions, and biases.

Opera also provides a fascinating window into doctor-patient relationships (Morse, 1998), allowing students the opportunity to explore how they wish to be perceived by their patients and society. Dr. Miracle in *Les Contes d'Hoffman* is portrayed as an evil genius, abusing his magical medical powers to hasten his patients' deaths. In contrast, Dr. Grenvil in Verdi's *Traviata* comes across as a compassionate man, but helpless to halt the inexorable march of time as tuberculosis consumes his patient. Such physician portrayals offer students a springboard to analyze the magnificent abilities of modern medicine for healing, as well as the potential for abuse of power in patient-physician relationships as students contemplate the type of physician they ultimately want to be.

This opera and reflection curriculum was piloted at AMS in 2013-14. The main goals and objectives of the curriculum were to foster reflective capacity through the analysis of rich illness narratives portrayed in opera, to explore how opera reflects and in turn influences personal and societal perceptions of health and disease, and to examine how these perceptions have evolved over time. This article describes the structure of the elective, the instruments used for course evaluation, and the educational outcomes in order to provide a template for using opera to develop reflective capacity and encourage use of such a paradigm at other institutions.

## Methods

In the spring of 2013, three second-year medical student leaders and a physician faculty advisor with training in vocal and instrumental performance submitted an application to the AMS Curriculum Committee for approval of an opera preclinical elective. This elective was offered in the fall of 2013 through the winter of 2014 to pre-medical and undergraduate medical students. The course directors recruited faculty from the music, history, and foreign language departments, as well as medical practitioners from diverse medical specialties knowledgeable in opera to present and facilitate class discussions. With the input of these experts, ten two-hour seminars were developed: a music professor discussed the portrayal of psychosis in Berg's *Wozzeck*; an infectious disease specialist reflected on the stigma attached to HIV patients after a screening of Larson's *Rent*; and a foreign language professor examined physicians as healers and medical monsters in *Dr. Jekyll and Mr. Hyde*. Table 1 provides an overview of all the seminar topics.

Most sessions opened with a brief presentation, followed by interactive discussion and guided reflection.

<i>Seminar Topics for a Year-Long Opera and Medicine Elective*</i>	
<u>Session</u>	<u>Specialty of Lecturers</u>
1. Pain, Suffering, and Beauty in Opera: Verdi's <i>Otello</i>	Music, History, Foreign Language, Medicine
2. Tuberculosis and the Opera Heroine	Music, Emergency Medicine
3. Perceptions of Madness: Berg's <i>Wozzeck</i>	Music
4. I Lost My Voice! Maintenance of the Operatic Voice	Music, Otolaryngology
5. Dr. Jekyll and Mr. Hyde: Doctor as Human Healer and Medical Monster	Foreign Language
6. Contemplating Mortality: Mozart's <i>Don Giovanni</i>	Music
7. Love and Other Drugs: Operatic Portrayals of Substance Use	Medical Student Leaders
8. <i>Rent</i> : A Puccinian Staging of the AIDS Epidemic	Emergency Medicine, Immunology
9. <i>La Bohème</i> , Metropolitan Opera House, NYC	Emergency Medicine
10. Final Act: Semester Wrap-Up	Medicine

\*Each 2-hour session was taught by a physician and/or humanities professor. Sessions 2, 8, and 9 were led by the course faculty advisor. Session format included review of the assigned works, lecture, analysis of opera video clips, and discussion.

A field-trip to the Metropolitan Opera House in New York City to see a live-staging of Puccini's *La Bohème* complemented the students' study and viewing of *Rent*, which is loosely based on that opera. While *Bohème* focuses on tuberculosis as the insurmountable disease of the 19<sup>th</sup> century, *Rent* draws upon the AIDS epidemic. Students were encouraged to compare how these operatic representations of illnesses previously considered untreatable reinforced and/or reshaped public perception and disease stereotypes. They also were asked to reflect on other parallels raised by the two diseases, including social ostracism based upon fear of contagion, the obligation of the physician to their afflicted patients, and the stigma tied to class and sexual behaviors.

To prepare for the sessions, students were assigned readings and online opera videos for review (open access on YouTube), which were either recommended by the course directors or guest-lecturers (Appendix 1). For example, students examined Susan Sontag's *AIDS and its Metaphors* and watched a YouTube clip of soprano Anna Netrebko's portrayal of the tuberculous victim Violetta at the Salzburg Opera Festival. During class, the lecturers reviewed the assigned works and delivered interactive presentations, during which students were asked reflection-inviting questions to stimulate dialogue. Students were queried concerning emotions particular scenes evoked, their responses to particular character portrayals, and interpretations of patient-physician interactions. They were further prompted to consider how these same features might be viewed by audiences of an earlier time, compared to modern day opera connoisseurs.

Thirteen students enrolled in the course and were given credit based on attendance at eight of ten sessions, as well as the completion of a final reflective paper or presentation based on one of two writing prompts. One suggested reflective writing exercise asked students to consider the representation of a disease in one of the operas they had discussed in class and their

response to the portrayal. They were invited to reflect on how the historical understanding of the disease colored its representation in the opera and to pay attention to the way the disease was perceived and addressed (or perhaps, left unaddressed) by the characters within the opera – including, if applicable, the physician. Students were further prompted to analyze the way the disease, and in a more general sense, illness, was given meaning within the context of the larger themes and plot movements at work in the opera, while inviting exploration of their own 21<sup>st</sup> century response to the illness.

The second topic focused on representations of physician-patient relationships in two of the operas they discussed, and invited comparison of how the physicians interacted with their patients. Students were asked to consider the characterizations of the physicians within the broader context of contemporary views on science, medicine, bioethics, and/or mortality. In addition, a discussion of the way in which modern views on biomedicine may affect their reactions to the represented physician-patient relationships was encouraged.

The final project provided students with the opportunity to bridge their growing medical knowledge with their pursuits in the humanities to expand their reflective capacity. The Reflection Evaluation for Learners' Enhanced Competencies Tool (REFLECT), a formative assessment reflection rubric, was utilized to provide written, individualized feedback to students on their projects (Wald, Borkan, Taylor, Anthony, & Reis, 2012). This rubric assesses overall level of reflection as well as components of reflection, including mindful presence, recognition of conflict/dilemma, emotional awareness, meaning-making and transformative and/or confirmatory learning (based on critical reflection). The rubric was selected for two reasons: it is published and widely accessible, and the students at AMS are familiar with the construct from the reflective writing component of their clinical skills courses. The aim of using the rubric in this course was to further enhance future reflective capacity through formative feedback.

At the conclusion of the course, feedback was solicited anonymously from the students through an online evaluation survey. An original survey tool was developed using the Google Docs program. Students rated individual sessions based on their educational value, using a five-point Likert scale, five indicating finding strong educational value in the session. They were also asked to rate how well the course met its objectives. Furthermore, they had the opportunity to provide qualitative feedback on the curriculum's impact on development of their clinical practice, as well as aspects of the course that they enjoyed and/or would modify. The surveys were reviewed and analyzed for themes by the course leaders.

## **Results**

The course was implemented successfully with all students meeting the course attendance requirements and completing the final project.

### **Course Evaluations**

The response rate for the course evaluations was 100%. Table 2 includes the course evaluation questions and summary of quantitative results. The mean session rating, on the basis of perceived educational value, was 4.62 on a 5-point scale (1 as least and 5 as most educationally valuable). On average, students favorably reviewed the sessions, with the highest rated session focusing on patient-physician relationships and the lowest rated session concentrating on suffering and mortality in opera.

**Table 2***Session and Course Evaluations (response rate 100%)*

<u>Session Evaluations: (“I found the session educationally valuable”)</u>	<u>Mean*</u>	<u>Range</u>
Pain/Suffering: <i>Otello</i>	4.33	3-5
Tubercular Heroines	4.83	4-5
Madness: <i>Wozzeck</i>	4.80	4-5
Otolaryngology/Voice Therapy	4.40	3-5
Doctor as Healer/Monster	5.00	N/A
Contemplating Mortality	4.33	1-5
Substance Abuse	4.50	3-5
<i>Rent</i> /AIDS	4.67	3-5
Field Trip: Met Opera	4.83	4-5
Mean of Lecture Ratings	4.62	
<u>Course Evaluations:</u>	<u>Mean*</u>	<u>Range</u>
I enjoyed learning about medicine and the patient-physician relationship through the lens of opera.	4.67	4-5
I better understand what constitutes an ethical, empathetic, and professional patient-physician relationship through studying both successful and failed doctor-patient relationships in the context of opera	4.67	4-5
I better understand portrayals of illness in opera and how these reflect and influence societal perceptions of disease.	5.00	N/A
I understand how society's perceptions of physicians have evolved by studying their representations in opera and pop culture.	4.83	4-5
Studying opera has enhanced my awareness of how art reflects and propagates stereotypes of medicine and its practitioners.	5.00	N/A
This course was a refreshing way to learn about medicine outside of the traditional basic science curriculum.	4.67	3-5
I appreciated hearing from interdisciplinary faculty from medicine to the humanities.	4.83	4-5
Seeing a live staging of "La Bohème" enriched my understanding of the historical context of tuberculosis and allowed me to draw parallels to contemporary epidemics, such as HIV/AIDS.	4.67	4-5
<u>Additional Questions:</u>		
What was the most interesting thing you learned from this course?		
How has this course impacted your future career as a physician?		
Provide us with up to two constructive comments about the course.		

\*Likert Scale: 1 = strongly disagree, 5 = strongly agree.

Students also rated how well the course achieved its objectives (Table 2). The results indicate that students' awareness of how art reflects and propagates stereotypes of medicine and its practitioners was enhanced (5.00). Students reported developing an understanding of how society's perceptions of physicians have evolved by studying their representations in opera and pop culture (4.83), and students appreciated learning from interdisciplinary faculty (4.83).

In their written feedback, students described how the course inspired them to change their future clinical practice: "This course really opened me up to thinking about how perceptions of doctors and science have changed over the centuries, and actively thinking about public perceptions of medicine today." Students notably appreciated examining operatic representations of disease and how stigmatization of untreatable illness persists today: "It was fascinating analogizing societal perceptions of tuberculosis in earlier operas with more modern takes on previously incurable diseases, like HIV." Some students also reported a greater appreciation of opera, evidencing its role in medical education as a tool to promote self-care and well-being: "I've definitely caught myself on YouTube watching operatic performances even after the class ended!"

Students tended to hone in on the patient-physician relationship when asked to describe the impact of this course on their future career as physicians, suggesting an impact on their professional identity formation. Several students reflected on the power dynamic between physicians and patients and the importance of inviting the patient into the decision-making process, even when the doctor brings greater expertise to the clinical encounter: "This course has shown me how asymmetric the doctor-patient relationship can be. Thus, when I enter my career as a physician, leveling this playing field will be one of my top priorities." Some students developed a greater consciousness of the influence they wield over patients. Others felt a greater responsibility to avoid misusing this authority: "The course has reminded me to always keep the ethical dimension of medicine in mind when speaking with and treating patients."

In their constructive feedback, students recommended incorporating other art genres, including literary fiction and artwork into the assignments, contemporaneous with the operas, in order to gain a more global understanding of cultural portrayals of disease and physicians. Others asked for even more discussion time given the limited opportunities to reflect openly in small groups in medical school. Still others enthusiastically endorsed additional opportunities to practice reflective writing, such as a midterm assignment.

### **Reflective Project**

For the reflective exercise, all students opted to compose a paper with the exception of one student who delivered an in-class presentation. All students selected the second prompt focusing on the representation of physicians in opera and primarily examined unhealthy relationships between doctors and their patients. Sample topics included portrayal of the physician as self-indulgent and fraudulent in Donizetti's *L'Elisir d'Amore* and as a harbinger of death in Verdi's *La Traviata* and Offenbach's *Les Contes d'Hoffmann*. The students' writing clearly demonstrated how all aspects of opera – from the libretto to the music, singing, and staging – influenced learner interpretations and reflective outcomes (Table 3).

**Table 3**

*The influence of different facets of opera (the libretto, music, singing, and staging) on learner interpretations and reflective outcomes*

<u>Student</u>	<u>Reflective writing excerpt</u>
A	In <i>Wozzeck</i> , “The physician brings to the fore the stereotype of an insane German scientist. He sings in bass, accompanied by sharp dynamics and discordant string cascades, which contrast sharply with <i>Wozzeck</i> ’s weary, consistently mezzopiano baritone... The music emphasizes the physician’s abuse of power, as he treats <i>Wozzeck</i> as a mere research subject to promote his own advancement – “Oh my hypothesis! Oh my fame! I shall be immortal!” Clearly, concern for his patient is purely to maintain a healthy guinea pig for his study. In today’s ethical construction of patient-centered care and IRB approval requirement for human research, the doctor’s treatment of <i>Wozzeck</i> here may be enough to send him to prison.”
B	In <i>L’Elisir d’Amore</i> , “the staging portrays Dulcamara as very overweight, and dresses him with frills, fancy coats, and excessive jewelry. This solidifies the perception of Dulcamara (and by extension, physicians of the time in general) as pretentious and self-indulgent.”
C	In <i>Les Contes d’Hoffman</i> , “Dr. Miracle, the supposed healer, enters at a time when Antonia is weak. When he enters the scene of the opera melancholy, suspicious and suspenseful music commences. The actor who plays Dr. Miracle is tall and skinny, wearing all black, looking scary and untrustworthy. He seems very intimidating and the lighting on the stage is dark and ominous.”
D	In the 2005 Salzberg Opera’s minimalist staging of <i>La Traviata</i> , the director uses a giant black and white clock as “a persistent visual reminder of Violetta’s mortality.” In Act III, Doctor Grenvil “walks slowly and steadily along the curve of the semicircular stage, acting out the path of the hand of a clock as he intones a few inquiries about her health. Though his words are solicitous and kind, the doctor is acted out in such a way that he never looks directly at or touches his patient, and his role as the messenger of death far outstrips his role as a healer.”

Based on the REFLECT evaluative rubric, the students’ projects’ overall initial level of reflection ranged from “thoughtful action or introspection” to “critical reflection,” with the majority achieving a level of “reflection.” Students achieved higher levels of reflection in three REFLECT rubric domains: 1) exploring and critiquing assumptions, values, beliefs, biases and consequences of actions; 2) recognizing conflict and dilemmas leading to insight; and 3) using critical analysis for meaning making. Students rarely transcended “thoughtful action or introspection” in regard to voice and presence or attending to their emotions. Written faculty feedback incorporating reflection inviting questions was successful in shifting students toward more critical reflection, as evidenced by subsequent email and in-person communications. An example of a reflective writing exercise and excerpt of faculty feedback using the REFLECT rubric is included in Table 4.

**Table 4**

*Reflective Writing Exercise and Faculty Feedback Using the REFLECT Rubric*

Student D tackles the tensions in the physician-patient relationship through the lens of Offenbach’s

*Les Contes d'Hoffman*. She argues that the opera's malevolent Dr. Miracle, who hastens the protagonist Atonia's death, is a manifestation of the public's suspicion of physicians as wielding excessive power over their patients' mortality:

Student D: "Miracle's characterization, though sparse, seems to hint strongly at contemporary suspicion toward science and medicine. Other works in the nineteenth century, such as Mary Shelley's *Frankenstein* (1818), had broached the theme of science as a dangerous pursuit, one that might lead humans into delusions of god-like authority and power. Doctor Miracle's supernatural powers and apparent obsession with controlling life and death would certainly seem to confirm these ideas about science, particularly in an era when scientific knowledge was so rarefied to the lay public as to occupy the same dimension of public imagination as supernatural matters."

She concludes that the medical community and lay people are not aligned in their understanding of the role that physicians play in altering the life course of their patients. While medical providers have the empirical knowledge to support their decisions, intuition and cultural beliefs govern the public's perception of life and death matters:

Student D: "There would seem to be very little overlap between medicine and the supernatural in today's world, but the operatic treatment of physicians in the nineteenth century has a lot to tell us still about the very real presence of metaphysical considerations relating to death in the practice of medicine. Doctors may no longer be popularly considered harbingers of death, but the lines that separate the modern, linear rationality of medicine and the messier, centuries-old discussions surrounding life, death, power, and religion, including the issues elicited by Doctor Miracle's behavior, are still not as clear as we often like to think they are."

Feedback was sent electronically to students after review and discussion among faculty and student course leaders. Feedback included REFLECT rubric components as "anchors" and use of reflection-inviting questions.

Faculty Advisor: "You transcend a mere reporting of the public's mistrust of physicians, reflecting on the origin of the conflict. You impressively identify the disorienting dilemma of the inaccessibility of medical knowledge to the public. You propose that the esoteric nature of medical knowledge fosters a fear of medical practitioners as possessing mystical and divine authority. You succeed in creating an authentic and unique voice in your writing, clearly conveying your own opinions about the physician-patient relationship. You may further consider who is responsible for the knowledge gap between physicians and patients? How might you modify your own future practice to close the gap? How might you also attend to your own frustrations with the "messier" evolution of the public's views on life/death?"

### **Discussion/Future Directions**

A key argument for the inclusion of arts education in medical school is to foster the development of important habits of mind (Ellen & Stéphan, 2013). This curriculum cultivates reflective capacity through the analysis of opera, a rich and complex performance art genre that has the potential to uniquely contribute to the medical humanities landscape.

Haidet, et al. (2016) performed a metasynthesis of the arts in medical education and proposed a guiding framework to maximize the power of arts-based teaching. They emphasized

four elements that highlighted *the qualities of the art form, how students engage with the art, how students use art to construct new meanings, and how they translate what they have learned into medical practice.*

Opera is robust in the *qualities of art* felt to promote rich learning, including a metaphorical and representative nature, subjectivity, ambiguity, complexity, and universality (Haidet et al., 2016). The plots and characters are often overdrawn and melodramatic, which can bring representations of illness and doctor-patient relationships into sharp relief. As a performance art, opera is heavily influenced by context, including the historical milieu in which it was created and the contemporary one in which it is performed. This allows significant latitude for subjective interpretation. Every performance of the work is thus unique, and allows for comparisons between different versions of the same opera. Opera's complexity promotes multifaceted analysis, and all aspects of an opera's performance, from the libretto, to the singing, music and staging, appear to enhance student learning (Table 3). While other performance genres (i.e. theater) may offer similar experiences in regard to metaphoric representations and staging, the music and singing add impactful dimensions for exploration. Literary works and visual arts can effectively trigger reflection (Karkabi et al., 2014), but may not offer the same complexity as performance arts. Students did suggest that a variety of artistic mediums might be used to complement the study of opera, but clearly embraced maintaining opera as a central genre.

Learners *engage with art* and *construct new meanings* in different ways. According to Haidet et al. (2016), designers of arts-based curricula should identify strategies for engagement (i.e. observation, interpretation, reflection, attending to emotion) and attend to meaning-making (i.e. increasing self-awareness, openness to alternative perspectives, nuanced and deep understandings). Our curriculum primarily focused on engaging learners through reflection, which in turn fostered meaning-making: Through classroom discussions and written assignments students explored and critiqued society's and their own assumptions about illness and reflected upon both the people disease afflicts and the doctors who treat them. This reflection-on-action (past, present, and future), as well as reflection on values, beliefs, and attitudes ("reflection-on-being" (Wald, 2015)) was particularly evident in the three sessions led by the faculty advisor for the elective (author MD), who was most familiar with designing course content toward goals of fostering reflective capacity. These three sessions (2, 8, and 9) focused on comparing and contrasting the historical scourge of tuberculosis to more modern illnesses. A notable moment of guided reflection in the classroom focused on the ability of the physician to heal versus simply to provide comfort. Students noted that in *La Traviata*, the kindly Dr. Grenvil is incapable of intervention. His role is simply to mark the passage of time, as tuberculosis slowly consumes his patient. Students tended to perceive his presence and inability to intervene as a medical "failure," rather than a comfort. This prompted a rich discussion of how providers view end-of-life care today and an analysis of our individual beliefs about death. Even with all our modern medical bells and whistles, death is *still* inevitable.

Somewhat surprisingly, in their reflective papers all of the students chose to write about operatic portrayals of patient-physician relationships rather than the stigma of illness. Since a critical part of reflection involves grappling with a disorienting dilemma, we hypothesize that these learners were more compelled to make sense of doctor-patient relationships in the process of their own professional identity formation. The often exaggerated operatic portrayals of physicians allow students opportunities to compare and contrast more and less successful interactions, to explore how they felt about such interactions, and to draw conclusions about how they would like to ideally act in the future.

While only a modest number of students reached levels of critical reflection in their written assignments, it is our experience that this is typical of pre-clinical learners. Developing habits of mind that will form a foundation for the continued development of reflective capacity is nonetheless valuable early in medical education. While later stage learners may be able to engage more fully in reflection oriented arts-based curricula, the logistical challenges of integrating electives with clinical work can be prohibitive. Haidet et al. (2016) noted in their review that few arts-based curricula are able to demonstrate the fourth element in their framework – *translation to medical practice*. We believe reflective strategies can help with this step, and student comments on the course evaluations describe changes learners plan to apply in their future communications and ethical interactions with patients.

The experience of implementing this course for the first time provided several potentially valuable lessons that may guide future iterations of the curriculum. Although the course leaders aimed to foster reflective capacity through the analysis of opera, this course goal was not made explicit to other faculty or students. Students and faculty alike would likely benefit from understanding that guided reflection supports healthy professional identity formation (Wald, et al. 2015). Of note, the two lowest rated sessions on pain, suffering, and mortality, were led by instructors who utilized more didactic styles of teaching, rather than an inquisitive mode of group engagement that deliberately fostered reflection. A faculty development session for course facilitators on effective cultivation of reflective skills will be implemented for future iterations. Discussion of the core elements of reflection included in the REFLECT rubric can be conducted prior to course participation to help enhance the depth and breadth of student reflection and further the development of critical reflective skills. Reflective writing prompts themselves may be further refined to foster students' awareness of, and focus on, disorienting dilemmas and to encourage exploration of personal assumptions, beliefs, and biases, while attending to emotions, all key elements of reflection.

Further limitations of our pilot curriculum include the self-selection of a small group of students into this elective, which may explain the overall high evaluation scores. A few logistical challenges also warrant highlighting: Our first session was held in a medium-sized lecture hall that did not provide an intimate setting for student participation and discussion. This limitation was quickly resolved by reserving a small conference room with a round table to allow students to sit facing each other and converse more openly. The field trip to the Metropolitan Opera was somewhat difficult to coordinate due to scheduling, finances, advanced ticketing, and travel arrangements. One practical solution is to attend a broadcast of a live opera staging offered at many local movie theaters. Despite the logistical challenges, however, the students thoroughly enjoyed the opportunity to dress formally and attend a live opera. It may thus be worth the effort to provide such an opportunity.

At the conclusion of the course, the faculty advisor identified students interested in leading a future iteration of the curriculum, and the course will be offered next in the fall of 2015. The original student leaders will be available to mentor the new student leaders before they graduate, ensuring a smooth transition. Offering the course every other year is expected to help maximize course enrollment. While historically a popular medium, opera may be perceived as less accessible by younger generations. We anticipate that having students who have already taken the course available to discuss it will generate interest and increase future enrollment. Of course, the musical conventions of opera are not to everyone's tastes, and thus including other art genres in the course may increase its appeal to a broader audience. Additionally, enrollment may be expanded to other healthcare professional trainees in the community, including nursing, social

work, and physician assistant students. Valuable reflective insights may be expected to emerge from such an inter-professional dialogue.

In summary, looking through the opera glass may provide a novel opportunity not often experienced within traditional medical education to cultivate reflective practice and professional identity formation. The pilot curriculum at AMS was well received by students and may serve as a model curriculum for utilizing opera as a pedagogic tool to enhance reflection and professional identity formation within medical education. Future steps include qualitative analyses of reflective writings and potential use of structured reflection assessment instruments to evaluate such outcomes. The curriculum may be easily replicated at other medical schools and liberal arts colleges.

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## Appendix 1

### *Literature and Video Clip Assignments for Opera and Medicine Elective by Session*

#### 1. Pain, Suffering, and Beauty in Opera: Verdi's Otello

- "Act III: Dio! Mi potevi scagliar." *Otello*. By Giuseppe Verdi. Berlin Philharmonic Orchestra. Performed by Jon Vickers and Mirella Freni. Conducted by Herbert von Karajan. Salzburg Festival. Unitel Classica, 1973. Film. *Naxos Video Library*. [On the web.]
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#### 2. Tuberculosis and the Opera Heroine

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#### 3. Perceptions of Madness: Berg's Wozzeck

- "Act I, Scene 4: The Doctor" and "Act III, Scene 4: By the Pond." *Wozzeck*. By Alban Berg. Hamburg State Philharmonic Orchestra. Performed by Toni Blankenheim and Hans Sotin. Conducted by Bruno Maderna. Arthaus Musik, 2007. Film. [On the web.]
- "Act III: The Mad Scene." *Lucia di Lammermoor*. By Gaetano Donizetti. Metropolitan Opera Orchestra and Chorus. Performed by Natalie Dessay. Conducted by Patrick Summers. Met Opera HD Live, 2011. Film. [On the web.]
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- "My Psychopharmacologist and I." *Next to Normal*. By Tom Kitt. Performed by the Original Broadway Cast. Ghostlight, 2009. [On the web.]
- "Passion." In C. Larkin (Ed.) *Encyclopedia of Popular Music, 4th ed.* Oxford Music Online. Oxford University Press. [On the web.]
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- Ashbrook, W. Lucia di Lammermoor. In S. Sadie (Ed). *The New Grove Dictionary of Opera*. Grove Music Online. Oxford Music Online. Oxford University Press. [On the web.]

#### 4. I Lost My Voice! Maintenance of the Operatic Voice

- Franco, R.A., & Andrus, J.G. (2007). Common diagnoses and treatments in professional voice users. *Otolaryngologic Clinics of North America*, 40(5), 1025-61. [Print.]

Landau, E. Recovering a Singing Voice. *CNN Health*. CNN, 12 Feb. 2011. [On the web.]  
Stadelman-Cohen, T., Burns, J., Zeitels, S., & Hillman, R. (2009). Team Management of Voice Disorders in Singers. *The ASHA Leader*, 14(15), 12-15. [Print.]

#### 5. Dr. Jekyll and Mr. Hyde: Doctor as Human Healer and Medical Monster

“Act I: Entrance of Dulcamara.” *L’Elisir d’amore*. By Gaetano Donizetti. Metropolitan Opera Orchestra and Chorus. Performed by Ambrogio Maestri. Conducted by Maurizio Benini. Met Opera HD Live, 2012. Film.

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#### 6. Contemplating Mortality: Mozart's Don Giovanni

“Act II, Scene 5: Don Giovanni! A cenar teco m’invitasti.” *Don Giovanni*. By W.A. Mozart. La Scala Orchestra and Chorus. Performed by Peter Mattei and Kwangchul Youn. Conducted by Daniel Barenboim. Teatro alla Scala, 2012. Film.

Rushton, J. Don Giovanni. In S. Sadie (Ed). *The New Grove Dictionary of Opera*. Grove Music Online. Oxford Music Online. Oxford University Press. [On the web.]

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Williams, B. (2006) Don Giovanni as an Idea. *On Opera*. New Haven: Yale UP, (pp. 31-42.) [Print.]

#### 7. Love and Other Drugs: Operatic Portrayals of Substance Use

“Act I, Scene 1: Cigarette Factory, Habanera” *Carmen*. By Georges Bizet. Metropolitan Opera Orchestra and Chorus. Performed by Elina Garanča. Conducted by Yannick Nezet-Seguin. Metropolitan Opera HD Live, 2010. Film.

“Act II, Scene 2: Oh, what you want wid Bess?” *Porgy and Bess*. By George Gershwin. London Philharmonic Orchestra. Performed by Gregg Baker and Cynthia Haymon. Conducted by Simon Rattle. American Playhouse, 1993. Film.

Macdonald, H. Carmen. In S. Sadie (Ed). *The New Grove Dictionary of Opera*. Grove Music Online. Oxford Music Online. Oxford University Press. [On the web.]

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Crawford, R. Porgy and Bess. In S. Sadie (Ed). *The New Grove Dictionary of Opera*. Grove Music Online. Oxford Music Online. Oxford University Press. [On the web.]

#### 8. Rent: A Puccinian Staging of the AIDS Epidemic

Hutcheon, L., & Hutcheon, M. (1996). ‘Life-and-Passions’: AIDS and the Stage. *Opera: Desire, Disease, Death*. Lincoln: University of Nebraska, (pp.195-219.) [Print.]

Sontag, S. (1989). *Illness as Metaphor and AIDS and Its Metaphors*. New York: Farrar, Straus and Giroux. [Print.]

“You’re What You Own.” *Rent*. By Jonathan Larson. Directed by Chris Columbus. Performed by Adam Pascal and Anthony Rapp. Columbia Pictures, 2005. Film.

#### 9. La Bohème, Metropolitan Opera House, NYC

Hutcheon, L., & Hutcheon, M. (1996). Poverty and Contagion: Mimì. *Opera: Desire, Disease, Death*. Lincoln: University of Nebraska, (pp. 48-60.) [Print.]

10. Final Act: Semester Wrap-Up

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