




# The Hidden Curriculum and Integrating Cure- and Care-Based Approaches to Medicine

Divya Choudhury<sup>1</sup> · Nico Nortjé<sup>2,3,4</sup> 

© Springer Nature B.V. 2020

## Abstract

Although current literature about the “cure versus care” issue tends to promote a patient-centered approach, the disease-centered approach remains the prevailing model in practice. The *perceived* dichotomy between the two approaches has created a barrier that could make it difficult for medical students and physicians to integrate psychosocial aspects of patient care into the prevailing disease-based model. This article examines the influence of the formal and hidden curricula on the perception of these two approaches and finds that the hidden curriculum perpetuates the notion that “cure” and “care” based approaches are dichotomous despite significant changes in formal curricula that promote a more integrated approach. The authors argue that it is detrimental for clinicians to view the two approaches as oppositional rather than complementary and attempt to give recommendations on how the influence of the hidden curriculum can be reduced to get a both-cure-and-care-approach, rather than an either-cure-or-care-approach.

**Keywords** Hidden curricula · Care vs. cure · Formal curricula · Dichotomous · Residents

## Dichotomous Language

“Cure versus care,” often used in healthcare settings, seems to refer to two different approaches to the practice of medicine. Although there is no precise definition for each approach, De Valck et al. (2001) and Sarto-Jackson (2018), describe

---

✉ Nico Nortjé  
NNortje@mdanderson.org

<sup>1</sup> Lovett College, Rice University, Houston, TX, USA

<sup>2</sup> Department of Critical Care, Division of Anesthesiology and Critical Care, University of Texas MD Anderson Cancer Center, Houston, TX, USA

<sup>3</sup> Department of Dietetics and Nutrition, University of the Western Cape, Bellville, South Africa

<sup>4</sup> Centre for Health Care Ethics, Lakehead University, Thunder Bay, Ontario, Canada

“cure-oriented” or “disease-centered” medicine as based on the biomedical model, which is founded upon the philosophic principles of reductionism, the view that “... complex phenomena are ultimately derived from a single primary principle” (Engel 1977, p. 130). The disease-centered approach focuses on quantifiable physical symptoms and responds to the cognitive need of the patient to understand her disease (De Valck et al. 2001, 2018). On the other hand, Tinetti et al. (2016) and Zhao et al. (2016) refer to the “care-oriented” approach as patient-centered and based on the biopsychosocial model, which prioritizes collaboration between physician and patient, sees the patient as an individual rather than a “disease-carrier,” and takes into account context, including their psychological and emotional health (De Valck et al. 2001; Zhao et al. 2016; Engel 1977; Sarto-Jackson 2018). More concretely, a care-oriented approach involves taking into account factors such as a patient’s mental health, long-term access to health-care resources, support systems, and health-related expectations and goals. Another way to conceptualize the difference between “cure-oriented” and “disease-centered” medicine is to consider Aristotle’s four causes: the material cause, or the elements of the organism; the formal cause, or what it is to be a human; the efficient cause, or the function of health and disease; and the final cause, the ultimate reason for caring for the sick (Falcon 2019). According to Bishop (2011), where a cure-oriented approach might attend to the formal and efficient causes of illness, a patient-centered, biopsychosocial approach takes into account all four causes. The reality in medical practice is that “cure” and “care” are not dichotomous, but are differentially emphasized depending on subspecialty (Mahood 2011) and individual physician. According to Mahood (2011), “we teach that family medicine and whole-person care are critical, but the hidden curriculum continues to denigrate family medicine and glorify specialization, suggesting that the best and brightest become specialists” (p. 983). This idea, that family medicine, which is associated with whole-person care, is somehow less than specialties that are more disease-focused, reinforces the idea that the patient-centered, care-based approach is less valuable than the disease-focused, cure-based approach. The perceived dichotomy between the two approaches has created a barrier that could make it difficult for medical students and physicians to integrate psychosocial aspects of patient care into the prevailing disease-based model (De Valck et al. 2001; Zimmermann and Wennberg 2006).

Although current literature about the “cure versus care” issue tends to promote a patient-centered approach, the disease-centered approach remains the prevailing model in practice (Adler and Page 2008; Cesari et al. 2016). The biomedical model has significant value: it has “spurred the development of “empirically supported...treatments” (Deacon 2013, p. 846), and its focus on mechanism and causation (2018) has allowed for reduced etiologic uncertainty. Even Engel, an early critic of the model, describes it as “successful beyond all expectations” and an approach whose “merit needs no argument” (Engel 1977, p. 131). But this emphasis on empiricism has contributed to what De Valck et al. (2001) refers to as medicine’s limited perspective with regard to patient symptoms and functional, emotional, and psychological health, all of which can impact disease progression (Adler and Page 2008) as well as a patient’s willingness to follow up with care (Zhao et al. 2016). Furthermore, the disease-focused model can fail to address patient goals (Tinetti et al.

2016), which are important in a healthcare system that increasingly exalts the principle of patient autonomy (Emanuel and Emanuel 1992).

In 1977, George Engel proposed the biopsychosocial model as a response to deficiencies he saw in the biomedical approach and offered a critique of the existing model's underlying philosophical basis. The biopsychosocial model is intended to augment the biomedical approach by integrating the formerly-excluded psychological and sociological factors within a person's life that might affect their treatment or medical decision making. Initially, Engel's biopsychosocial model was largely neglected (Deacon 2013), but more recently the importance of care for the whole person has been recognized (Tinetti et al. 2016; Zhao et al. 2016). Current literature (Cesari et al. 2016; 2018; Tinetti et al. 2016; Zhao et al. 2016) echoes the advantages Engel cites of a patient-centered approach and reflects a shift towards a more patient-centered model (Zhao et al. 2016). Further advantages include fewer contradicting recommendations and easier coordination among members of the healthcare team (Tinetti et al. 2016), care that better serves an aging population (Cesari et al. 2016), and perhaps most importantly, an ability to address what matters most to patients (Tinetti et al. 2016). Adler and Page (2008) cite the development of policies aimed at biopsychosocial focal areas at the federal and institutional level as evidence of this shift. Such policies include support for programs in integrative medicine and psychosocial health care, and Medicare's decision to pay for behavioral health assessments and to increase pay for patient evaluation and management services. Disease management guidelines often mention patient preferences (Tinetti et al. 2016), and there has been increased emphasis on holistic consideration of the patient and on patient rights (Zhao et al. 2016) in the United States as well as in Canada and Western Europe (Pavolini and Ranci 2008; van der Heide et al. 2018). In all this, it is important to clarify the relationship between the "care" based approach and the "cure" based approach. The "cure based" approach should not be abandoned in favor of the "care" based approach; rather, it should be considered an important component of the "care" based approach.

## Medical School Curricula

The shift to a more patient-centered approach is also apparent in the recent changes in medical school curricula across the United States, which reflect the growing recognition that treatment of disease and symptoms without regard for psychosocial factors constitutes incomplete—if not inadequate—care. Out of 147 medical schools surveyed in the 2017–2018 year, 84.4% are either planning a curriculum change or have implemented one within the past 3 years (AAMC 2018). A closer review of the curricula at individual schools shows that the vast majority require courses that emphasize themes such as psychology, behavior, cultural competence, public health disparities, and patient communication in addition to the more traditional physiology- and disease-focused requirements (see "Appendix 1"). The formal features of current medical education still emphasize a biomedical, scientific approach to medicine, yet these curricula exemplify the growing recognition among medical educators that medical training should have a more psychosocial approach—that it

should teach students the importance of considering non-scientific factors that affect a person's health and care outcomes. While biomedical science remains the focus of medical courses in those schools that have redesigned their curricula (see “[Appendix 1](#)”), and even of the undergraduate pre-medical curriculum, the incorporation of classes such as Health Care Disparities and End of Life & Palliative Care (see “[Appendix 1](#)”: Johns Hopkins Medicine), and the inclusion of a full section on psychology and sociology of health in the Medical College Admissions Test (MCAT) beginning in 2015 (Kaplan et al. 2012; Schwartzstein et al. 2013) are evidence of an effort among educators to a broader approach to teaching medicine. Engel's characterization in 1977 of the biomedical model as dogma—as a “cultural imperative” and the basis for Western society's scientific study of disease (Engel 1977, p. 130)—can no longer be considered accurate.

Although formal curricula are undergoing development, the changes are undermined by the “hidden curriculum,” which tends to reinforce the disease-based model (Martimianakis et al. 2015; Haidet et al. 2005). The hidden curriculum is defined as “a set of influences that function at the level of the organizational structure and culture to impact learning” (Mahood 2011) by communicating “ethical, moral, and value-based teachings” to trainees (Hopkins et al. 2016). The hidden curriculum “exemplifies the 'cultural process' of medical training...as [students] internalize the behaviors, attitudes, and values that are modeled to them in the 'moral community' of medical school” (Bandini et al. 2017, p. 57). Because it is informal and culture-based, different interpretations exist on what exactly is the hidden curriculum; it is nuanced, and varies by institution, specialty or subspecialty, and of course by the individual physicians who impart it to students. Additionally, literature on the subject identifies many aspects of medical training as shaped by the hidden curriculum, including power-hierarchy issues in training and patient care, attitudes towards different specialties, patient dehumanization, emotional suppression, and burnout or work-life balance (Gaufberg et al. 2010; Hopkins et al. 2016; Mahood 2011; Mackin et al. 2019; Rajput et al. 2017) in essence influencing moral values and virtues of physicians rather than the primary informational content or therapeutic models of medical education. Most important in this context is that the hidden curriculum has a direct influence on students' development with regard to their orientation towards patient-centered care (Bandini et al. 2017; Haidet et al. 2005). The significance of the hidden curriculum is well-substantiated, both by individual experience (Liao et al. 2014; Mahood 2011) and by empirical studies (Hopkins et al. 2016; Mackin et al. 2019). The cure-oriented approach is often learned through subtle behaviors. For example, an intern might model an attending physician who pays more attention to the electronic medical record (EMR) on their computer screen than to the patient in front of them. In other cases, the hidden curriculum is not as hidden as the term may indicate: some attending behavior is callous and public (Bynum and Goodie 2014; Riskin et al., 2017). While the hidden curriculum might not dominate the transmission of scientific knowledge to students, its “day-to-day” influence in teaching values, such as the importance of holistic, patient-centered care, cannot be ignored (Mahood 2011; Rajput et al. 2017).

According to Bandini et al. (2017), what students are taught through the hidden curriculum in the clinical environment is often in conflict with what they learn

through the formal classroom curriculum. Thus, the “dehumanising effects” (Martimianakis and Hafferty 2016) of a hidden curriculum that remains dominated by biomedicine (Martimianakis et al. 2015) render the changes in formal curricula less effective. By undermining humanistic values, the hidden curriculum teaches students to prioritize “cure” over “care”. It can also create a “cognitive dissonance with trainees’ developed expectations distilled from the formal curricula” (Mackin et al. 2019). Martimianakis et al. (2015, S9) found that continued prevalence of the biomedical approach is related to the “denigration of ‘nonscientific topics, such as medical history and the socio-cultural contexts of medicine.’” Since the biomedical approach is dominant, students might learn from physicians during clinical observation that medicine is about fighting disease with scientific methods, and that psychosocial factors such as mental health, caretaker availability, or socioeconomic status are not worth considering. The fact that formal curricula are changing to convey the importance of psychosocial factors in patient-care is not enough, because hidden curricula do not yet reflect those changes (Rajput et al. 2017). Patient-centered attitudes fade as students progress through medical school (Haidet et al. 2005); this is evidence of the hidden curriculum’s significance and of the perceived incompatibility between disease- and patient-oriented approaches. In literature and education, the importance of patient-centered care is widely recognized, but through the hidden curriculum students continue to receive a picture of medicine that is mechanism- and causation-based (Martimianakis et al. 2015). The hidden curriculum is, therefore, an additional barrier to the integration of cure- and care-based attitudes among future physicians.

The integration of cure and care in the medical setting is both challenging and necessary in an age in which increasingly narrow subspecialties tackle disease. The concrete changes in formal medical school curricula encourage a biopsychosocial approach that reminds physicians to care for the whole person, but the effects of those changes are hampered by the hidden curriculum. Engel’s original characterization of the biopsychosocial model encompassed both disease treatment and psychosocial factors; he did not advocate abandoning empirically-based therapies, but promoted the incorporation of psychosocial aspects into patient care. In spite of this, there is a general conception in cure versus care literature of the two approaches as a dichotomy. According to De Valck et al. (2001, p. 125), “a unidimensional concept of cure versus care is an important barrier for the development of more care-oriented attitudes because it implies that developing more care-oriented attitudes decreases the cure-oriented attitude.” Medical students in their study considered the ideal physician someone who takes a patient-centered approach, yet expressed difficulty integrating cure and care attitudes into their roles.

Sedimentation, the “phenomenon of experiencing the world and acting in it through the filter of the past, without necessarily realizing it” (Prinz 2018, p. 88), offers a philosophical explanation for the influence of language on thought. According to Prinz (2018, p. 88), theories of “science and philosophy become enshrined in language, inherited, and passively accepted. Sedimentation can lead to prejudicial thinking that closes off certain possibilities” and can be difficult to escape. Although the literature in general supports the idea of cure *and* care (Bensing 2000; De Valck et al. 2001; Grassi et al. 2019; Tinetti et al. 2016), the language many authors use is

further evidence of a perceived dichotomy; words such as “versus” and “instead” are ubiquitous, and play into the conception of the disease- and patient-centered models as not only mutually exclusive but oppositional. The continued and repeated use of adversarial language reinforces the conceptualization of the models as oppositional rather than complementary.

While there is extensive literature on the biopsychosocial model and on the hidden curricula in medical training, there is a need for the development of strategies for effective reform. In the remainder of this paper, the authors suggest ways of addressing the hidden curriculum to dispel the notion that cure- and care-based mindsets are incompatible.

## Discussion

The aim of this paper is to address existing barriers that hinder the integration of cure- and care-based philosophies of medicine and the adoption of a biopsychosocial model. A shift away from the disease-based model is widely supported in the literature, and even in formal medical curricula. Unfortunately, the hidden curriculum, which promotes a biomedical approach and reinforces the dichotomy between cure- and care-based approaches, is a powerful force resisting change.

Integrating psychosocial aspects of care into the prevailing disease-based approach is important because it leads to better coordination among team members, an increased likelihood that patients will follow up appropriately with their care (Tinetti et al. 2016), and a more favorable influence of psychological factors on physical health (Adler and Page 2008). From an ethical perspective, an emphasis on caring for the whole person and considering his or her context, personal fears, hopes, and outlook would allow the goals of the medical team to be better aligned with patient and family goals. Medical treatment and care is beneficial for a patient when it consists not only of an effort to eliminate disease, but also an attempt to restore a patient’s well-being *as she defines it* (Jonsen et al. 2015). The importance of psychosocial factors in health care and the ethical justifications described are proof of the necessity to shift—not only in theory but also in practice—towards a biopsychosocial model.

As the amount of available medical information increases more and more rapidly, and as the capabilities of medicine expand, physicians must have an increasingly specialized knowledge base. According to Densen (2011, p. 50), “it is estimated that the doubling time of medical knowledge in 1950 was 50 years ... in 2020 it is projected to be 0.2 years—just 73 days. Students who began medical school in the autumn of 2010 will experience approximately three doublings in knowledge by the time they complete the minimum length of training (7 years) needed to practice medicine.” While discovery and the expansion of knowledge is generally positive, it is important to recognize that over-specialization could result in a neglect to care for the whole person (Anderlini 2018; Frandsen et al. 2015). As areas of expertise become deeper and narrower, the need for physicians to take a step back and consider a wider perspective is heightened.

In promoting the need to integrate cure and care in medicine, it is important to highlight a particular caveat. An individual physician's style and specialty and a given patient's goals can and should influence what a physician chooses to emphasize in her practice. It is impossible for all (or even any) physicians to have a 50/50 balance of cure and care; after all, people only have so much bandwidth and cannot address every aspect of care at the same time. Some specialties are rightfully more focused on curing, while others are more focused on caring. One would not want their thoracic surgeon taking on the roles of their psychiatrist; the surgeon should not be overburdened with her patient's psychosocial needs. However, *awareness* among all physicians of the importance of psychosocial factors is crucial to good patient care: the thoracic surgeon should know if the patient has a cognitive disorder, a mental health issue, or a socio-economic condition that would prevent adequate postoperative care. In addition, a patient's goals of care and health status will also affect the approach a physician should take. A focus on care may take priority when patients have a terminal illness or in end of life situations. In short, integrating cure and care will not mean the same thing for every physician. What is ultimately important is that patients receive effective care that makes sense for them, taking into account their personal history, identity, and context. In advocating for the integration of cure- and care-based approaches and in abolishing the notion that the approaches are mutually exclusive, it's important to qualify: a diversity of approaches is valuable, as long as the medical community recognizes and teaches the reality that quality care requires more than just a war with disease pathology.

As mentioned earlier the hidden curriculum has a significant impact on the mindsets medical students develop, and today, it tends to promote a disease-based approach (Bandini et al. 2017; Haidet et al. 2005; Martimianakis and Hafferty 2016). The changes in formal medical curricula can only have a limited effect, if the hidden curriculum that supplements formal learning does not reinforce the concepts students are taught with regard to professionalism and approaches to care. Through clinical experience during medical school, residency, and fellowship, students are influenced and mentored largely by physicians who were trained to take a more biomedical approach, so the hidden curriculum will take generations to change. It is, therefore, necessary to accelerate this process through reforms aimed at the hidden curriculum that physicians both knowingly and inadvertently teach.

An important component of changing the hidden curriculum is attempting to break away from the sedimented ideas about cure- and care-based approaches that prevail, including the conception of the approaches as a dichotomy. Practices that are ingrained in medical language and culture are difficult to reform (Prinz 2018)—doing so will involve a critical analysis of the prevailing biomedical model not just by scholars and medical students, but by the practicing physicians who determine the cultural norms in the field. We should ensure that the language we choose to use reflects the nature of the concepts we want to promote. Engel is an exemplar of this, and his term, “biopsychosocial,” is integrative in and of itself. On the other hand, “cure *versus* care” implies opposition between the approaches and is, therefore, counterproductive. In attempting to influence the hidden curriculum, special attention should be paid to rhetoric, as changing the way we talk about something can significantly affect the way we think about it.

## Recommendations/Implications for Clinical Practice

The two primary interconnected but distinct forces that act as barriers to the adoption of a biopsychosocial model are the hidden curriculum and the conceptual dichotomy between cure- and care-based approaches. Since “attending physicians model for residents, who model for medical students, and so on down the line...changes to the formal curriculum do not always get intended results” (Mahood 2011, p. 984). We propose that the barrier created by the hidden curricula be addressed through intervention in this “cascade” by equipping those in residency programs with the means to counteract certain components of the culture in the medical field that promote a disease-based model. Additionally, multidisciplinary collaboration and communication amongst various members of the health care team, including physicians, psychologists, physical and occupational therapy, nurses, social workers, chaplains, and ethicists could have a significant impact on physician mindset. This multidisciplinary approach has proven internationally to be hugely beneficial to overall better patient care and outcome focus for physicians (Horlait et al. 2019; Krause et al. 2006).

Current programs attempting to address the hidden curriculum are extensions of the formal medical school curriculum; we recommend that changes should be instituted through residency programs in such a way that would constitute a change in the informal instead of formal curriculum. According to Mackin et al. (2019), “residents provide a unique opportunity as a population to target given their concurrent role as learner and preceptor of junior trainees,” and programs that target residents can “lead to sustainable change once they move into faculty positions with ongoing opportunities to be preceptors for trainees.” Physicians in the early stages of their career are likely more willing to question the sedimented, disease-based model, so the changes we propose would influence the way residents view and respond to the prevailing physician culture of reductionism and detachment, which contributes to an approach to medicine that is cure-oriented. By indirectly reiterating the importance of psychosocial factors in patient care through residency programs, the effect of changes in medical school formal curricula can be magnified.

Medical professionalism as described by Rhodes (2020) as “the standards derived from the ethics of medicine,” including “identity-forming virtues, commitments, and competencies that physicians are expected to embody and exemplify in their professional behavior” (p. 6). Although the ideals of professionalism are associated with ethical behavior, what it means to be “professional” in practice can steer students away from care-based approaches that tend to emphasize compassion, emotion, and empathy. Students are often praised or rewarded for having “thick skin” or suppressing their own needs and well-being. Strategies that will elicit changes in predominant cultural and mindset should be aimed at re-humanizing a “dehumanized learning environment [and] dehumanized care” (Martimianakis and Hafferty 2016). If residency programs can revise the values associated with professionalism and instill in early physicians values that emphasize the importance of multidisciplinary care-oriented practice, the effect of the negative aspects of the hidden curriculum that push physicians towards a reductionist, disease-based approach will be addressed.



A potential way to accomplish this, and by extension, to reduce barriers to the integration of cure- and care-based approaches is through the development of mentorship programs within residencies. Mentorship can play a positive role in understanding and changing professional attitudes, personal development, and career guidance (Taherian and Shekarchian 2009). Mentorship relationships between established physicians and residents is a common avenue for the hidden curriculum. However, the recommendation in this case is to implement an additional mentorship program in which second and third year residents mentor first years and strengthen the hidden curriculum in a positive manner. Since many medical schools have mentorship programs, residents would likely be comfortable with and open to the idea. In one study, third year surgical residents were found to be equipped to be excellent clinical mentors (Nguyen and Divino 2007). Such positive results in pilot peer-peer mentorship programs are evidence for the potential effectiveness of establishing such programs more broadly. Mentors should be trained to understand and implement the objectives of the program and should be equipped to emphasize the importance of the biopsychosocial model in their discussions and relationships with their mentees. In addition, they should encourage their mentees to think about their coping strategies, mental health, human aspects of care, and their original motivations for pursuing medicine, which often align with a patient-centered approach (Haidet et al. 2005). Basic requirements would vary program-to-program but might include one-on-one meetings with one's mentee(s) at least twice a month. Such a program could be mutually beneficial for both mentors and mentees because it encourages self-reflection in both parties, can provide an outlet for expressing frustrations, a way to get advice from people who are less generally ingrained in some of the "toxic" aspects of medical culture, and will build a community of support and care. Being a mentor can teach empathy, listening, and communication, and can help one reflect on their own mental health, coping strategies, and approach to medicine. In fact, Rajput et al. (2017) establish a specific connection between reflective learning and humanism and compassionate patient-centered care. Reflection, increased emphasis on critical thinking, and self-care will translate to heightened patient-centeredness because it will prevent students from passively accepting some of the negative aspects of medical culture that encourage dehumanizing patients and seeing them as vehicles of disease. These programs should give students a space in which they can apply what they learned in courses like medical ethics and health disparities to their day-to-day experience in the field and break away from the scientific, cure-oriented views of medical training, such that the decrease in patient-centeredness that many experience (Haidet et al. 2005) is mitigated. Thinking more about their own mental health and reasons for wanting to practice medicine can remind trainees to recognize patients not as subjects of disease but as whole persons.

We also recommend that "debriefing sessions" be included in this mentorship program. Such sessions, similar to Balint groups used among family physicians, would be a designated time and space to ask technical, logistical, or emotional questions and could serve as a "safe space" where residents could discuss various aspects of their training. Balint groups have been shown to increase "a participant's coping ability, psychological mindedness, and patient-centeredness" (Roberts 2012, p. 245; Kjeldmand et al. 2004). Being a physician, especially one caring for patients

who are terminally ill, can be emotionally taxing; this can result in detachment or compassion fatigue, so a forum like this in which discussion and reflection are normalized could be useful in combating those issues. In addition, rethinking and even being critical of the behavior of established physicians, such as interrupting patients or being dishonest about uncertainty, should help the next generation of physicians from passively developing those same habits. The debriefing sessions would not only provide an educational opportunity but can also indirectly change the medical culture and help residents retain the care-oriented attitudes that many have at the outset of their training. These sessions should be required, but only for 6 months or so, after which physicians could choose whether or not to attend. To measure the effectiveness of the mentorship program and debriefing sessions in mitigating some of the effects of the hidden curriculum, a survey with both quantitative (agree/disagree numerical scale) and qualitative (describe in words) questions would be administered to all participants in the program at the beginning and end of each year. A final recommendation for residents could be a short 2-week rounding with other members of the healthcare team such as palliative care physicians, social workers, chaplains, ethicists, and nurses to get out of a silo-thinking framework and broaden perspectives.

## Conclusion

Because in medicine scientific knowledge is intertwined with human beings, it is imperative for physicians to embrace the idea that while many aspects of care are reducible to knowable mechanisms and causation, other factors and variables play important roles as well. While it might be simpler to choose between a scientific and a psychosocial approach, appropriate medical decision making requires an integration of the two. Ultimately, the goal of the mentorship, debriefing, and rounding programs is to allow residents to build for themselves a fresh medical culture that embodies the old maxim: “cure sometimes, relieve often, comfort always”.

## Appendix 1: Medical School Curricula

The following schools have curricula that reflect a biopsychosocial approach. The curricula and/or descriptions of the curricula can be accessed at the following links.

---

Johns Hopkins Medicine	<a href="https://www.hopkinsmedicine.org/som/curriculum/genes_to_society/index.html">https://www.hopkinsmedicine.org/som/curriculum/genes_to_society/index.html</a>
Harvard Medical School	<a href="https://medstudenthandbook.hms.harvard.edu/103-course-and-examination-requirements-md-degree-new-pathway-pathways-and-hst">https://medstudenthandbook.hms.harvard.edu/103-course-and-examination-requirements-md-degree-new-pathway-pathways-and-hst</a>
University of Minnesota Medical School	<a href="https://med.umn.edu/admissions/curriculum/years-1-and-2">https://med.umn.edu/admissions/curriculum/years-1-and-2</a>
Duke University School of Medicine	<a href="https://medschool.duke.edu/education/student-services/office-curricular-affairs/about-duke-curriculum">https://medschool.duke.edu/education/student-services/office-curricular-affairs/about-duke-curriculum</a>

---

---

UT Southwestern Medical School	<a href="https://www.utsouthwestern.edu/education/medical-school/curriculum/">https://www.utsouthwestern.edu/education/medical-school/curriculum/</a>
Yale School of Medicine	<a href="https://medicine.yale.edu/education/curriculum/integrated/">https://medicine.yale.edu/education/curriculum/integrated/</a>
Tulane University School of Medicine	<a href="https://medicine.tulane.edu/education/md-program/curriculum">https://medicine.tulane.edu/education/md-program/curriculum</a>
BU	<a href="https://www.bumc.bu.edu/busm/admissions/curriculum/">https://www.bumc.bu.edu/busm/admissions/curriculum/</a>
UCSF School of Medicine	<a href="https://meded.ucsf.edu/md-program/current-students/curriculum/md-program-objectives">https://meded.ucsf.edu/md-program/current-students/curriculum/md-program-objectives</a>
University of Wisconsin-Madison School of Medicine and Public Health	<a href="https://www.med.wisc.edu/education/md-program/curriculum/">https://www.med.wisc.edu/education/md-program/curriculum/</a>
Saint Louis University School of Medicine	<a href="https://www.slu.edu/medicine/medical-education/md/curriculum/curriculum-by-year.php">https://www.slu.edu/medicine/medical-education/md/curriculum/curriculum-by-year.php</a>
University of Washington School of Medicine	<a href="https://www.uwmedicine.org/education/Documents/Graduation-Requirements-2019.pdf">https://www.uwmedicine.org/education/Documents/Graduation-Requirements-2019.pdf</a>
Emory University School of Medicine	<a href="https://med.emory.edu/education/programs/md/curriculum/index.html">https://med.emory.edu/education/programs/md/curriculum/index.html</a>
Georgetown University School of Medicine	<a href="https://som.georgetown.edu/curriculumreform/newsandupdates">https://som.georgetown.edu/curriculumreform/newsandupdates</a>

---

## References

- Adler, N., & Page, A. E. K. (2008). *Cancer care for the whole patient: Meeting psychosocial health needs*. Washington: National Academies Press.
- Anderlini, D. (2018). The United States health care system is sick: From Adam Smith to overspecialization. *Cureus*, *10*(5), e2720.
- Association of American Medical Colleges. (2018). Curriculum change in US medical schools: Implementation of change in 2017–2018. Retrieved July 24, 2019, from <https://www.aamc.org/initiative/cir/427196/27.html>.
- Bandini, J., Mitchell, C., Epstein-Peterson, Z. D., Amobi, A., Cahill, J., Petee, J., et al. (2017). Student and faculty reflections of the hidden curriculum: How does the hidden curriculum shape students' medical training and professionalization? *American Journal of Hospice and Palliative Medicine*, *34*(1), 57–63.
- Bensing, J. (2000). Bridging the gap. The separate worlds of evidence-based medicine and patient-centered medicine. *Patient Education and Counselling*, *39*, 17–25.
- Bishop, J. (2011). *The anticipatory corpse: Medicine, power, and the care of the dying*. Notre Dame: University of Notre Dame Press.
- Bynum, W. E., & Goodie, J. L. (2014). Shame, guilt, and the medical learner: Ignored connections and why we should care. *Medical Education*, *48*(11), 1045–1054.
- Cesari, M., Marzetti, E., Thiem, U., Pérez-Zepeda, M. U., Van Kan, G. A., Landi, F., et al. (2016). The geriatric management of frailty as paradigm of “the end of the disease era”. *European Journal of Internal Medicine*, *31*, 11–14.
- Deacon, B. J. (2013). The biomedical model of mental disorder: A critical analysis of its validity, utility, and effects on psychotherapy research. *Clinical Psychology Review*, *33*(7), 846–861.
- Densen, P. (2011). Challenges and opportunities facing medical education. *Transactions of the American Clinical and Climatological Association*, *122*, 48–58.
- De Valck, C., Bensing, J., Bruynooghe, R., & Batenburg, V. (2001). Cure-oriented versus care-oriented attitudes in medicine. *Patient Education and Counseling*, *45*(2), 119–126.
- Emanuel, E. J., & Emanuel, L. L. (1992). Four models of the physician–patient relationship. *JAMA*, *267*(16), 2221–2226.

- Engel, G. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, *196*(4286), 129–136.
- Falcon, A. (2019). Aristotle on causality. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Spring 2019 ed.). Stanford: Stanford University.
- Frandsen, B. R., Joynt, K. E., Rebitzer, J. B., & Jha, A. K. (2015). Care fragmentation, quality, and costs among chronically ill patients. *The American Journal of Managed Care*, *21*(5), 355–362.
- Gaufberg, E. H., Batalden, M., Sands, R., & Bell, S. K. (2010). The hidden curriculum: What can we learn from third-year medical student narrative reflections? *Academic Medicine*, *85*(11), 1709–1716.
- Grassi, L., Wise, T., Cockburn, D., Caruso, R., & Riba, M. B. (2019). Psychosomatic and biopsychosocial medicine: Body–mind relationship, its roots, and current challenges. In L. Grassi, M. B. Riba, & T. Wise (Eds.), *Person centered approach to recovery in medicine* (pp. 19–36). Cham: Springer.
- Haidet, P., Kelly, P. A., & Chou, C. (2005). Characterizing the patient-centeredness of hidden curricula in medical schools: Development and validation of a new measure. *Academic Medicine*, *80*(1), 44–50.
- Hopkins, L., Saciragic, L., Kim, J., & Posner, G. (2016). The hidden curriculum: Exposing the unintended lessons of medical education. *Cureus*, *8*(10), e845.
- Horlait, M., Baes, S., Dhaene, S., van Belle, S., & Leys, M. (2019). How multidisciplinary are multidisciplinary team meetings in cancer care? An observational study in oncology departments in Flanders, Belgium. *Journal for Multidisciplinary Healthcare*, *12*, 159–167.
- Jonsen, A. R., Siegler, M., & Winslade, W. J. (2015). *Clinical ethics: A practical approach to ethical decisions in clinical medicine* (8th ed.). New York, NY: McGraw-Hill Education.
- Kaplan, R. M., Satterfield, J. M., & Kington, R. S. (2012). Building a better physician—the case for the new MCAT. *The New England Journal of Medicine*, *366*, 1265–1268.
- Kjeldmand, D., Holmström, I., & Rosenqvist, U. (2004). Balint training makes GPs thrive better in their job. *Patient Education and Counseling*, *55*(2), 230–235. <https://doi.org/10.1016/j.pec.2003.09.009>.
- Krause, C. M., Jones, C. S., Joyce, S., Kuhn, M. E. J., Curtin, K., Murphy, L. P., et al. (2006). The impact of a multidisciplinary integrated approach on improving the health and quality of care for individuals dealing with multiple chronic conditions. *American Journal of Orthopsychiatry*, *76*(1), 109–114.
- Liao, J. M., Thomas, E. J., & Bell, S. K. (2014). Speaking up about the dangers of the hidden curriculum. *Health Affairs*, *33*(1), 168–171.
- Mackin, R., Baptiste, S., Niec, A., & Kam, A. J. (2019). The hidden curriculum: A good thing? *Cureus*, *11*(12), e6305.
- Mahood, S. C. (2011). Medical education: Beware the hidden curriculum. *Canadian Family Physician*, *57*(9), 983–985.
- Martimianakis, M. A., & Hafferty, F. W. (2016). Exploring the interstitial space between the ideal and the practised: Humanism and the hidden curriculum of system reform. *Medical Education*, *50*, 271–281.
- Martimianakis, M. A. T., Michalec, B., Lam, J., Cartmill, C., Taylor, J. S., & Hafferty, F. W. (2015). Humanism, the hidden curriculum, and educational reform: A scoping review and thematic analysis. *Academic Medicine*, *90*(11), S5–S13.
- Nguyen, S. Q., & Divino, C. M. (2007). Surgical residents as medical student mentors. *The American Journal of Surgery*, *193*, 90–93.
- Pavolini, E., & Ranci, C. (2008). Restructuring the welfare state: Reforms in long-term care in Western European countries. *Journal of European Social Policy*, *18*(3), 246–259.
- Prinz, J. (2018). Moral sedimentation. In G. D. Caruso & O. Flanagan (Eds.), *Neuroexistentialism* (pp. 87–107). New York, NY: Oxford University Press.
- Rajput, V., Mookerjee, A., & Cagande, C. (2017). The contemporary hidden curriculum in medical education. *MedEdPublish*, *6*(3), 41.
- Rhodes, R. (2020). Introduction. In *The trusted doctor: Medical ethics and professionalism*. New York, NY: Oxford University Press.
- Riskin, A., Erez, A., Foulk, T. A., Riskin-Geuz, K. S., Ziv, A., Sela, R., et al. (2017). Rudeness and medial team performance. *Pediatrics*, *139*, 1–11.
- Roberts, M. (2012). Balint groups: A tool for personal and professional resilience. *Canadian Family Physician/Médecin de Famille Canadien*, *58*(3), 245–247.
- Sarto-Jackson, I. (2018). Time for a change: Topical amendments to the medical model of disease. *Biological Theory*, *13*(1), 29–38.
- Schwartzstein, R. M., Rosenfeld, G. C., Hilborn, R., Oyewole, S. H., & Mitchell, K. (2013). Redesigning the MCAT exam: Balancing multiple perspectives. *Journal of the Association of the American Medical Colleges*, *88*(5), 560–567.

- Taherian, K., & Shekarchian, M. (2009). Mentoring for doctors. Do its benefits outweigh its disadvantages? *Medical Teacher*, *30*(4), e95–e99.
- Tinetti, M. E., Naik, A. D., & Dodson, J. A. (2016). Moving from disease-centered to patient goals-directed care for patients with multiple chronic conditions: Patient value-based care. *JAMA Cardiology*, *1*(1), 9–10.
- Van der Heide, I., Snoeijs, S., Quattrini, S., Struckmann, V., Hujala, A., Schellevis, F., et al. (2018). Patient-centeredness of integrated care programs for people with multimorbidity. Results from the European ICARE4EU project. *Health Policy*, *122*(1), 36–43.
- Zhao, J., Gao, S., Wang, J., Liu, X., & Hao, Y. (2016). Differentiation between two healthcare concepts: Person-centered and patient-centered care. *International Journal of Nursing Sciences*, *3*, 398–402.
- Zimmermann, C., & Wennberg, R. (2006). Integrating palliative care: A postmodern perspective. *American Journal of Hospice & Palliative Medicine*, *23*(4), 255–258.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.