Becoming and Being a Physician: A Developmental Journey

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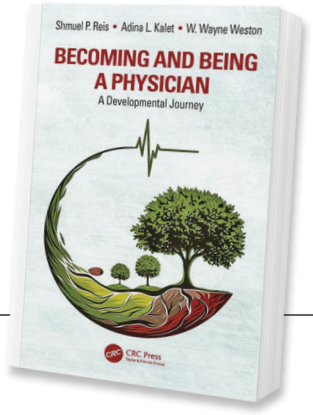

KEY WORDS: complexity science, continuing professional development, doctor's life cycle (DLC), medical education, professional identity formation (PIF)
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The authors' years of scholarship and dedication are evident in this masterful resource in which they not only review the developing literature regarding professional identity formation (PIF) and the doctor's life cycle (DLC) but challenge the reader by offering approaches to understanding the many developmental models, frameworks, constructs, and narratives as well as their interrelationships.

The authors make a strong case for transforming medical education and continuing professional and personal development, even highlighting the coronavirus disease 2019 (COVID-19) pandemic as an event that revealed many of the shortcomings of existing systems.

This book is essentially about the evolution of knowledge regarding the DLC from its seemingly simplistic beginnings to its current extreme complexity. The authors offer a set of lenses to assist in understanding such complexity and discerning what comprises and what may influence the DLC.

For example, among the multidimensional matrix of ideas and suggestions, the authors describe the emergence of a new construct, the Crucible of Learning, a potential response to difficult situations such as cognitive dissonance, uncertainty, failure, compassion, fatigue, and demoralization, which may coalesce in those potentially formative moments of development and uncertainty such as Vygotsky's Zone of Proximal Development.

The authors use the COVID-19 pandemic and the issues that it raised for medical education, professional identity formation, and the DLC to focus on the urgent need for scholarly attention to such areas as the wounded healer and their remediation to bias, gender, and race, as well as to the powerful shifts in society, politics, economics, and technology.

The authors include the 10-point program for fulfilling the imperative need for post-COVID-19 medical education transformation as framed by Lucey and colleagues 2022 [1]. It seems that necessary changes in undergraduate and continuing medical education might require some kind of fundamental interventions for many in the healthcare professions, such as learners, teachers, academic leadership, postgraduates, and practitioners. Political leadership also needs to endorse these changes.

Becoming and Being a Physician: A Developmental Journey is a particularly important contribution for certain categories of education-oriented readers. First, for experts, it is a statement of the big picture, as seen by the authors, offering a compendium of valuable source material and context, as well as the complexity-science based ideas for understanding the field. Second, for educators, it describes the materials, concepts, and language/jargon that need to be learned, mastered, and developed into a scaffold for achieving expertise and beyond. Third, for the prospective educator, it should be taken in small doses guided deliberately by masters or mentors.

Those who want to be part of the coming transformation should note that the language, or rather the jargon, of several disciplines collide in this book. Those who are unfamiliar with some of these terms will need to be part of a community of practice and be supported by mentors, peers, and enlightened academic leadership. This guidance is even more essential for those without native-level English, as illustrated by the amusing narrative on page 115.

While the book addresses the DLC of physicians in clinical practice, it nevertheless is relevant for

aspects of the DLC of other practitioners such as pathologists, clinical microbiologists, radiologists, public health practitioners, and administrators. There is an unspoken challenge to managers of both education and continuing professional development to consider physicians whose practice is less involved with direct patient care but who share the need for professional identity formation and personal development.

Two current issues were not included in the book, probably due to timing of publication: one technological and the other political. Artificial intelligence has the potential to disruptively impact developing scholarship, planning, and execution of the coming transformation. The second concerns diversity, equity, and inclusion (DEI), which are seen as a response in healthcare and health professions education to bias, discrimination, and mistreatment (Chapter 7: Gender, Race, and Core Identities). The authors most likely completed their book before the current political storm surrounding DEI in the United States.

This book illuminates the needs and shortcomings in education and lifelong continuing professional and personal development of physicians. Traditional educators, curriculum developers, program directors, regulators, academic institutions, and professional associations that have not yet incorporated these ideas should take note and adjust their future plans, behaviors, and deeds to accommodate them.

Becoming and Being a Physician: A Developmental Journey should be required, or at least recommended, reading for anyone involved in training and educating clinicians and other physicians at all stages of the DLC.

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1. Lucey CR, Davis JA, Green MM. We have no choice but to transform: the future of medical education after the COVID-19 pandemic. *Acad Med* 2022; 97 (3S): S71-S81.

Capsule

EBV induces CNS homing of B cells attracting inflammatory T cells

Epidemiological data have identified Epstein–Barr virus (EBV) infection as the main environmental risk factor for multiple sclerosis, the predominant autoimmune disease of the central nervous system (CNS). However, how EBV infection initiates multiple sclerosis pathogenesis remains unclear. **Läderach** and colleagues demonstrated that EBV expands oligoclonal T-bet$^+$CXCR3$^+$ B cells that home to the CNS in humanized mice. Effector memory CD8$^+$ T cells and CD4$^+$ T_H1 cells as well as CD4$^+$ T_H17 cells co-migrate to the brain of EBV-infected humanized mice. T-bet$^+$CXCR3$^+$ B cells can colonize submeningeal brain regions in the absence of other lymphocytes and attract T cells. Depletion of B cells with rituximab or blocking of CXCR3 significantly decreases lymphocyte infiltration into the CNS. The authors suggested that symptomatic primary EBV infection generates B cell subsets that gain access to the CNS, attract T cells and thereby initiate multiple sclerosis.

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Capsule

Nucleic acid therapeutics straight to the heart

Nucleic acid therapeutics may eventually be able to treat many diseases, but they must be delivered to the correct tissue. These approaches work best for liver disorders because nucleic acids delivered in lipid nanoparticles get trapped in the liver through a mechanism mediated by apolipoprotein E (ApoE). **Shuvaev** and colleagues developed lipid nanoparticles optimized for cardiac delivery and then used ApoE-knockout mice to demonstrate that they could modulate cardiac function with small interfering RNA targeting a component of the cardiomyocytes' contractile mechanism. This method is still far from human application, but it provides a research tool for targeted modulation of cardiac function and shows what might be possible if we can overcome the delivery limitations caused by ApoE.

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