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**COMMENTARY AND OPINIONS**

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## Innovating medical education: the integration of entrepreneurship education in medical curricula

*Oluwatomisin Olaoluwa, Olayinka Stephen Ilesanmi*

## Innover dans la formation médicale : l'intégration de la formation en entrepreneuriat dans les curriculums médicaux

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Medicine is no longer practiced in isolation from the systems that govern healthcare delivery, therefore we opine that physicians must evolve not only as stewards of health, but also frontliners of healthcare transformation.<sup>1,2,3</sup>

The concept of entrepreneurship has existed for centuries, gaining more popularity in the 19<sup>th</sup> and 20<sup>th</sup> centuries.<sup>4</sup> Broadly defined, entrepreneurship refers to the process of identifying opportunities, taking initiative, managing risk, and innovating to create value, often through pioneering and managing business enterprises to promote.<sup>5</sup> Conversely, medical education is structured training in the science and art of medicine, commencing at the undergraduate level and continuing through residency and continuous learning.<sup>6</sup> Within the context of medicine, entrepreneurship can refer to value-creating solutions that aim to organize, create and manage ventures to achieve a vital subset of entrepreneurship termed “Social Entrepreneurship”

manifesting as initiatives promoting health outcomes rather than the pursuit of profit.<sup>7</sup>

In our formative years, we gained strong clinical skills but had minimal learning experiences with the entrepreneurial side of medicine. To address this gap, we believe that incorporating business topics into the medical education trajectory can offer practical entrepreneurial learning that can transform healthcare systems.<sup>1,2</sup> Yet this concept is not without controversy.

We recognize several factors driving the integration of entrepreneurship into medical education including greater complexity of healthcare systems, advancements in medical technology, increased collaboration among healthcare providers, and a shift toward value-driven, patient-centered care.<sup>3,8</sup> For context, we refer to a 2022 PriceWaterhouseCoopers Report forecasting a future healthcare landscape

that is increasingly centralized, transparent and automated.<sup>8</sup>

Given the foregoing, how can physicians leverage the current dynamics by adopting entrepreneurial skills early in the evolving healthcare ecosystem? Based on anecdotal data and industry reports, we have observed that more physicians are transitioning into corporate roles.<sup>8</sup> Data suggests that doctors have a 1.4 chance of becoming entrepreneurs and building start-up companies worth more than \$1 billion, which is a statistical oddity in the startup industry.<sup>9</sup>

We acknowledge that our argument challenges professional norms, especially the divide between medicine's altruistic ethos and the common entrepreneurial focus on profit. Critics argue that encouraging entrepreneurship may commercialize medicine, but entrepreneurship does not always equate to profit-making; it can center on social innovation and value creation, improving patient access, quality and health outcomes.<sup>10</sup> Moreso, we recognize that business professionals are concerned about the physicians' business acumen. While these concerns may have some merit, we also believe that physicians bring unique and valuable insights into entrepreneurship. A conscientious entrepreneurial approach will enable physicians to innovate, scale patient-centric solutions, and drive systemic change without sacrificing ethics.

Often, we ask: when should entrepreneurship be embedded into the medical curriculum?

In our view, this could be most effective at the undergraduate level where students are more adaptable and open to new ideas.<sup>1</sup> Early experiences equips future physicians to address healthcare challenges with innovative solutions that balance economic and ethical considerations. Furthermore, we opine that it fosters skills essential for both clinical and business environments. Recognizing this, we see more universities now offering integrated MD-MBA programs, rising from 39 in 2003 to 54 today in the United States.<sup>1,2,6</sup>

A study on innovation and entrepreneurship in medical education in 156 US allopathic medical schools however highlights disparity between class sizes and such programs.<sup>11</sup> In our perspective, this gap reveals both the demand for and the limitations of the current educational opportunities.

We find strong evidence in programs like the NHS Clinical Entrepreneur Program. Since the program's launch in 2016, notable accomplishments include Monitree, a financial well-being app and Lighted-Hearted AI, a low-cost screening tool for cardiovascular diseases.<sup>12</sup>

Another practical example is the Harvard Medical School which presently provides a dual MD/MBA program in collaboration with the Harvard Business School for its undergraduate students.<sup>13</sup>

We acknowledge that many physicians wrestle with an internal divide: the desire to be entrepreneurial against the perceived betrayal of traditional medicine ideals. Physicians often aim to maintain a humanitarian image, leading to emotional conflict when they choose profit-oriented paths. Other constraints we observed include medical curriculum limitations, overloaded schedules<sup>2,3</sup> and the perceived value of entrepreneurship to clinical practice.<sup>3,11</sup>

To overcome these challenges, we recommend clearly articulating the practicality and benefit of entrepreneurship in enhancing medical services and patient outcomes.<sup>8,11</sup>

Concluding, we maintain that the timely and ethically framed integration of entrepreneurship into medical education is critical for preparing clinicians to navigate healthcare challenges and reimagine the prospects of contemporary healthcare. Hence, it is not a divergence from medical duty but a necessary evolution of it.

## Correspondence to:

Oluwatomisin Abidemi Olaoluwa

Email: [tomisin.olaoluwa@outlook.com](mailto:tomisin.olaoluwa@outlook.com)

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