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EDITORIAL

Can medical regulation keep pace with the speed of technological evolution?

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Digital transformation has rapidly reshaped work, healthcare delivery, and communication in the health sector. In Brazil, telemedicine has expanded the possibilities for medical consultations, particularly following its rapid adoption during the COVID-19 pandemic[1]. Although social media has brought physicians closer to the public, it has also blurred the boundaries between health education, professional communication, and other forms of digital interaction[2]. More recently, generative artificial intelligence (AI) has begun to transform how healthcare professionals and patients access, interpret, and generate health-related information[3–5].

Ophthalmology occupies a particularly sensitive position in this process. Traditionally characterized by the early adoption of new technologies, the specialty now encompasses telemedicine, automated image analysis systems, AI-assisted diagnosis, and new digital approaches to patient interaction. Against this backdrop, an inevitable question arises: how should medical practice be regulated in an environment of continuous technological transformation?

This challenge is compounded by the accelerating pace of innovation itself. The time required for new technologies to achieve widespread adoption appears to be decreasing, and the recent proliferation of generative AI illustrates how rapidly emerging tools can enter medical discourse and clinical practice[3]. Consequently, the window available to professional institutions to identify new phenomena, assess their risks and benefits, and formulate appropriate regulatory responses is becoming increasingly narrow.

The recent experience of the Federal Council of Medicine (CFM), the national body responsible for regulating medical practice in Brazil, demonstrates that institutional adaptation does not follow a single trajectory. An examination of the CFM's response to three examples of technological advancement—each incorporated into medical practice with varying degrees of rapidity—reveals distinct regulatory pathways. First, telemedicine underwent a prolonged process of technical and regulatory maturation before being adopted on a large scale in clinical practice, a process accelerated by the COVID-19 pandemic[1]. Second, social media prompted updates to medical advertising regulations as new forms of communication and professional authority became established[2]. Third, generative AI followed a considerably more concentrated trajectory: within a few years, it progressed from widespread social adoption to inclusion on the regulatory agenda, culminating in the publication of specific CFM regulations in 2026[3].

At first glance, this sequence might suggest that medical regulation has simply become faster. However, this interpretation is insufficient. Regulatory speed is not synonymous with regulatory quality. A rapid response can reduce uncertainty and establish initial safeguards, but it may also require subsequent revision when scientific evidence remains limited or the technology itself is evolving rapidly. Conversely, a prolonged regulatory process does not necessarily indicate institutional inertia; it may instead reflect technical complexity, the need to build consensus, or instability in the object being regulated.

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Perhaps the most important aspect of these trajectories is therefore the possibility of cumulative regulatory learning. Previous experiences can strengthen institutional capacity to identify emerging phenomena, mobilize relevant expertise, develop and test regulatory responses, and revise strategies when confronted with subsequent technological developments[6]. In this context, a more meaningful question than whether regulators have simply become "faster" is whether they have become better equipped to learn, adapt, and respond to technological change.

The challenge for medical institutions in the twenty-first century will not be merely to develop rules for each new technology. Rather, it will be to establish a continuous capacity to govern technological transformations whose pace may outstrip traditional regulatory cycles.

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