



# Global Trends in Clinical Practice and Healthcare Delivery: Opportunities for Growth and Innovation

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**Abstract.** Balancing efficiency with healthcare quality is an emerging concern around the world. Deep-seated feedback loops are being realized in healthcare systems around the world, driving physician burnout, unnecessary healthcare costs, and suboptimal clinical outcomes. These are not localized or insignificant issues – they are present across cultures, continents, and all medical disciplines. Physician burnout is nearly doubling the rate of medical errors, and physicians involved in major errors are experiencing a threefold increase in suicidal ideation. As the complexity of health systems increases around the world, these trends continue to evolve and perpetuate one another. We have recommended that through non-punitive and interdisciplinary approaches, medical error can be properly disclosed, addressed, and mitigated in future practice. Systemic strategies to optimize healthcare delivery include shifting focus to the quality of care rather than productivity while fostering innovation in clinical practice and policy.

**Keywords:** Quality improvement · Diagnostic accuracy · Physician burnout · Medical error · Healthcare optimization

## 1 Introduction

Healthcare is built on a foundation of improving strategies to deliver care. This human endeavor is fallible to missteps, but also to reflection and adaptation. The landscape of modern healthcare is characterized by shortening physician-patient interactions, rising non-contributory medical practices, and inadequate disclosure of medical error. The manifestations of these issues are becoming increasingly evident through stagnating diagnostic accuracy, widespread physician burnout, and lost opportunities for quality improvement. These are not localized or insignificant issues – they are present across cultures, continents, and all medical disciplines. As these trends continue to perpetuation one

another, it will become increasingly difficult to transition toward more quality-centred, and sustainable pathways. Counteracting these trends will require ongoing reflection and reevaluation to optimize the delivery of care and to create opportunities for new and innovative solutions.

## 2 Physician-Patient Interactions

Healthcare around the world is becoming increasingly focused on productivity and efficiency. This has resulted as a response to the multifaceted challenges faced by healthcare systems, including growing populations, expanding longevity, economic pressures, and increasing prevalence of chronic diseases. Currently, approximately half of the global population spends less than 5 min with their physician [1]. During these brief interactions, it takes on average of 23.1 s for a physician to interrupt patients while they are telling their story [2]. The average number of minutes spent during a primary care physician consultation has been reported as 2.0 in China, 2.0–9.4 in Spain, 3.0–3.8 in Tanzania, 5.0–11.7 in the UK, 5.5–8.3 in Brazil, 7.6 in Germany, 9.0–15.5 in Canada, 9.2–21.2 in the US, and 14.6–15.3 in Australia [1]. In hospital settings, physicians spend an average of 4 min and 17 s interacting with each patient and 20 s speaking with relatives [3]. The extent of the problem is often underappreciated even by physicians. When asked to self-report the duration of physician-patient encounters in primary care settings, physicians overestimate the duration of encounters by 175% [4]. In hospital settings, physicians overestimate time spent with patients by 200% and time spent with relatives by 700% [3]. Inadequate time to interact with patients represents lost opportunities to strengthen communication and to foster trust in the patient-doctor relationship.

## 3 Non-contributory Medical Practices

An emerging technique to overcome time constraints is an increased reliance on laboratory tests and imaging studies to substitute a more thorough history and physical exam. In many cases, this reliance is premature, leading to investigations and treatments that are often unnecessary and unwarranted. This phenomenon has been previously coined as non-contributory medicine [5]. Studies have shown that between 20–50% of imaging studies such as CT scans and MRI studies are medically unnecessary as they fail to contribute to patient care [6]. This trend in over testing and overdiagnosis has been described as an international epidemic that results in unnecessary patient suffering [7]. The overutilization of tests and imaging in unwarranted circumstances pulls finite resources from more fruitful practices [5]. International campaigns such as Choosing Wisely are gaining traction to counteract this trend by identifying overused and unnecessary investigations that have proven costly, risky, and ineffective [8]. As science and technology continue to advance, the appropriate implementation of these tools will require continuous reflection and reevaluation to optimize the delivery of care.

## 4 Diagnostic Accuracy

Despite the unprecedented utilization of laboratory and imaging technology in the last two decades, corresponding improvements in overall diagnostic accuracy have yet to be

seen [5]. Although rates of diagnostic error differ between countries, clinical settings, and study characteristics, it is evident that most patients around the world will experience one or more diagnostic errors in their lifetime [9]. Recent reports of rates of diagnostic error from different corners of the globe include 17.2–23% in USA [10–12], 12.3% in Canada [13], 19% in Greece [14], 21% in Belgium [15], 31.7% in France [16], 25.6% in Spain [17], 18.1% in the Netherlands [18], 9.3% in India [19], 48.4% in Jamaica [20], and 28% in Brazil [21]. Systematic reviews and narrative reviews of the available evidence report varying global diagnostic error rates ranging from 5% to 23.5% [20, 22]. These quality assurance studies are limited by the availability of data, often relying primarily on comparisons between autopsy findings and clinical diagnoses [23]. Therefore, low autopsy rates represent missed opportunities to provide valuable quality assurance feedback to clinicians and hospitals [24]. Progress in diagnostic accuracy and healthcare improvement will require transparency and adequate disclosure of medical errors to recognize and address systematic issues.

## 5 Disclosure of Medical Errors

Medical errors are ubiquitous in healthcare around the globe [25]. Every year medical errors result in more casualties than motor-vehicle accidents, breast cancer, and HIV/AIDS [26]. Approximately one-quarter of hospitalizations involve medical error causing patient harm, most of which can be traced back to system failures rather than attributed only to the healthcare provider [27]. Unfortunately, prevailing responses to near misses, adverse events, and systemic errors are silence and passivity [28, 29]. This is largely in response to fears of criticism, punishment, and litigation [5]. Previous efforts to reduced error based on targeting individuals have shown to be ineffective and harmful, leaving systemic factors unrecognized and unaddressed [29]. Studies have shown that 68% of hospitals do not have a process in place to support reporting, and 79% do not distribute summary reports of adverse events [30]. We have previously recommended non-punitive and interdisciplinary approaches as well as national standards of mandatory reporting of medical errors to improve disclosure and mitigation of medical errors [31]. Trends in underreporting and limited information sharing compromise future patient safety and represent lost opportunities for quality improvement.

## 6 Physician Burnout

Stress, fatigue, and burnout are unappreciated contributors to medical error. Despite the ability to cure, treat, or prevent more diseases than ever before, physician burnout is a prevalent and growing concern around the world [32]. Burnout is often described as an individual phenomenon, influenced by personal beliefs, fulfillment, culture, and values [32]. Trends in physician burnout suggest a more profession-based global epidemic. Recent evidence indicates that the prevalence of physician burnout is 52.9% in Africa, 29.3% in North America, 22.7% in Asia, 19.0% in the Middle East, 15.8% in Europe 12.9% in South America, and 11.6% in Oceania [33]. Burnout is also affecting the new generation of physicians as 30–50% of medical students and residents experience burnout [33, 34]. Physicians rarely seek out mental health care due to stigma and fear

of repercussions for medical errors, precipitating a physician suicide rate that is 1.5 to 4.5 times higher than that of the general population [32]. Widespread burnout among physicians around the world is an indicator of deep-seated upstream issues in the practice of healthcare delivery and speaks to the necessity of timely interventions.

## 7 Interactions Among Trends in Healthcare Delivery

Current trends in healthcare are the products of long-standing pressures and circumstances in which healthcare systems around the world exist. As the complexity of health systems increases around the world, these trends continue to evolve, coalesce and perpetuate one another. Pressures to persistently increase efficiency have been identified as a major factor driving physician burnout, unnecessary healthcare costs, and suboptimal clinical outcomes [1, 3, 35]. Inadequate time to interact with patients impedes the ability to address root causes and tailor treatment strategies, ultimately resulting in suboptimal clinical outcomes with higher follow up costs [1, 3]. Burnout is nearly doubling the rate of medical errors [35], and physicians involved in major errors are experiencing a threefold increase in suicidal ideation [36]. These deep-seated feedback loops (Fig. 1) are being realized in healthcare systems around the world and have become integrated into the status quo of healthcare delivery. The implications of these trends are widely acknowledged, yet the urgency to address their upstream factors remains underappreciated.

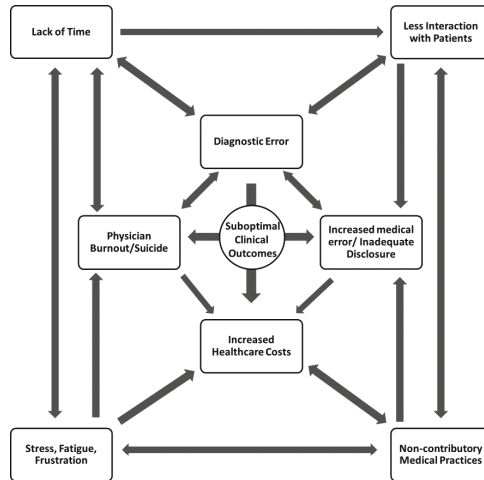


Fig. 1. Interactions among trends in healthcare service delivery.

## 8 Next Steps in Optimizing Clinical Practice and Healthcare Delivery

Acknowledging missteps is an essential step in creating opportunities for growth and innovation. Strategies to optimize healthcare delivery should include shifting focus to

quality of care rather than productivity, protecting work-life balance, and empowering both patients and physicians to create innovative ideas to improve how healthcare is practiced and delivered. Further optimization of healthcare delivery will require multifaceted, interdisciplinary, and cross-hierarchical approaches to ensure sound clinical reasoning in strategies to support the wellbeing of both patients and healthcare providers. This concept of synergistic wellbeing of all members of the healthcare team is illustrated by evidence that doctors in a positive mood arrive at accurate diagnoses 19% sooner and show significantly less anchoring bias than their counterparts in a neutral state [37]. Advancing healthcare quality will require the preservation of adequate time for physicians to understand the context of the patient behind the pathology. Bayesian approaches to risk profiling will serve as an essential asset in reducing unwarranted testing and in tailoring treatment strategies in a patient-specific manner. Through reflection of opportunities for growth, healthcare systems around the world can continue to adapt and find new and innovative strategies to optimize care.

## 9 Conclusion

Although missteps cannot be eliminated from health processes, medical establishments around the world must remain steadfast in their diligence and industriousness to improve quality of care. The modern era of healthcare delivery is faced with multifaceted opportunities for growth that involve the protection of time for physician-patient interactions, optimization of diagnostic tool implementation, and promotion of healthcare wellbeing. The ability of healthcare systems to address these current trends moving forward will determine not only the quality of care that they deliver but also the sustainability of their practices and the wellbeing of their healthcare providers. Continuous reevaluation of the current state and directions of healthcare will allow current systems to grow and adapt while creating opportunities for new and innovative strategies.

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