

Editorial

The Forgotten Diagnoses: Reviving the Art of Clinical Intuition in the Age of Technology

Filippou Dimitrios

Ass. Professor, Medical School, National and Kapodestrian University of Athens
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As dusk settled after a lengthy clinical day, I found myself next to a patient whose complex diagnosis had stumped a team equipped with all the diagnostic tools that contemporary medicine can provide. CT scans, MRIs, extensive laboratory tests, and genetic evaluations—all yielded no clear answers. However, while sitting by her bedside, I observed her slightly drooping eyelid, the subtle rasp in her voice, and the weary tone that followed mere sentences. It was in these understated clues, combined with a distant memory from my residency, that clarity emerged—myasthenia gravis. An overlooked possibility. An almost forgotten skill. In our medical practice today, we are witnessing a significant transformation in the clinical field. The skill of diagnostic excellence attained at the bedside—through meticulous observation, active listening, and thoughtful analysis—now faces the challenge of excessive dependence on technological advancements. Artificial intelligence (AI), wearable devices, algorithm-driven diagnostics, and precision medicine are now woven into the fabric of modern healthcare. These innovations have undeniably propelled progress and saved numerous lives. However, as we deepen our reliance on these tools, a fundamental risk arises: the fading of clinical intuition—the inherently human artistry of diagnosing through observation, pattern recognition, and compassionate interaction. We must consider: Are we identifying illnesses, or are we interpreting data?

In 1816, René Laennec created the stethoscope, not solely as a medical instrument, but as an enhancement of the physician's senses. For over two hundred years, medicine has advanced based on such enhancements—

percussion, palpation, auscultation, observation, and, most importantly, interpretation. Renowned diagnosticians like Sir William Osler and Richard Cabot relied heavily on their sensory faculties, alongside any instruments. Yet today, diagnosis frequently waits for an MRI result or troponin level. In academic hospitals, morning rounds often see more attention to screens than to patients. With AI algorithms capable of recognizing arrhythmias from an Apple Watch and detecting cancers in imaging with nearly radiologist-level accuracy, it is no wonder that clinicians rely heavily on technology. The rationale is compelling: machines deliver quicker, more objective assessments and never skip the "rare" option on a differential diagnosis.

Herein lies the paradox. The very instruments designed to enhance our diagnostic capabilities may also foster dependency. Clinical reasoning—the integration of history, physical exams, and intuition—is increasingly an afterthought, occurring post-data generation instead of prior to it. Some diagnostic elements defy quantification. Consider a patient with early-stage Parkinson's disease. A slight decrease in arm swing, a softened voice, micrographia—these details may go unnoticed during a routine exam unless specifically explored. Or take the elderly patient with a urinary tract infection who presents not with typical dysuria or fever, but with subtle confusion and instability. Such cases require clinicians to engage with patients as individuals, not merely as numbers.

Medical literature is filled with instances where critical diagnoses were overlooked, not due to technological failings, but because of a lack of human observation. A study in *BMJ Quality &*

Safety revealed that many diagnostic errors stemmed from poor history-taking and physical exams—not inadequate testing. Likewise, autopsy research consistently shows that numerous missed diagnoses remain concealed, particularly in patients who passed away without an autopsy. How can this phenomenon persist in the MRI age? The explanation is rooted in both cultural and educational factors. Clinical intuition is cultivated, not inherent. It develops through years of mentorship, practice, and contemplation. Identifying Horner's syndrome or Janeway lesions cannot be achieved solely from reading; it comes from exposure, guidance to recognize these signs, and an ability to recall them. However, in contemporary medical training, such experiences are diminishing. Time at the bedside is increasingly being replaced by time in front of a computer. The underlying curriculum often prioritizes efficiency, documentation, and throughput over hands-on examination. Physical assessments can be abbreviated or entirely overlooked, especially when imaging offers seemingly clearer answers. A survey of internal medicine residents revealed that many felt unconfident in their physical examination abilities, with only 17% rating themselves as proficient in using these skills for diagnosis. Meanwhile, attending physicians, especially those educated before the digital shift, mourn the decline of bedside medicine as an artistry. This shift concerns not just academia; it has tangible clinical repercussions.

Technology is not without flaws. False positives, incidental findings, algorithmic biases, and context-free data can obfuscate rather than illuminate. In a notable case, IBM's Watson for Oncology proposed unsafe and incorrect cancer treatments, underscoring the perils of an over-reliance on machine-generated insights lacking robust human validation. Additionally, tests are often ordered reflexively, lacking connection to a clinical inquiry. This not only escalates healthcare expenditures but also raises the risk of overdiagnosis, overtreatment, and patient distress. Perhaps the most unsettling aspect is the gradual transformation of physician identity—from healer

and interpreter to technician and data navigator. The satisfaction found in piecing together a complex case from nuanced observations and connecting with patients as individuals is being compromised. And with it, joy in our profession diminishes.

To revitalize the art of clinical intuition, we must begin where physicians are trained: within academia. Medical schools and teaching hospitals not only serve as entry points into the healthcare field but also as cultural crucibles that mold the values and priorities of future practitioners. We must act decisively here—not by rejecting technology, but by recalibrating our pedagogical approach. Frequently, new medical students enter a system that rewards test performance over pattern recognition, prioritizes efficiency over thoroughness, and emphasizes technology over human observation. This path requires realignment. If we aim to cultivate a generation of clinicians who can adeptly use advanced diagnostic tools alongside nuanced bedside diagnoses, academic institutions must spearhead this transformation through curriculum reform, mentorship enhancements, cultural shifts, and redesigning assessment methods.

Here's how academia can respond to this urgent call.

Transform the Clinical Bedside into a Revered Space. The initial step is both symbolic and crucial: reinvigorating the bedside as the focal point of education. Medical training needs to reaffirm that the patient, rather than the computer terminal, is the heart of diagnosis. Bedside instruction is frequently an afterthought—squeezed into gaps between lectures, data evaluations, or EMR usage. This sidelining sends the message that the genuine "work" of diagnosis occurs elsewhere. Conversely, educational programs should actively integrate curricula that emphasize in vivo clinical pedagogies: structured bedside rounds, mentorship under adept diagnosticians, and extended patient follow-up that stresses observational skills. Departments can exemplify this by appointing faculty who excel not only as

clinicians but also in observation and communication to facilitate these learning experiences. Modeling presence is essential. As the adage states, "You can't aspire to what you cannot observe."

Establish Clinical Reasoning as a Fundamental Discipline. While subjects like anatomy and pharmacology are systematically taught, clinical reasoning often relies on implicit understanding, with the expectation that students will intuitively absorb the content. This assumption is a significant oversight. Academic institutions must regard diagnostic reasoning as a distinct and rigorous field. This encompasses implementing dedicated courses aimed at teaching students how to develop differentials, identify cognitive biases (such as anchoring, early closure, and availability heuristics), apply Bayesian reasoning, and synthesize conflicting data. Case-based instruction needs to shift from mere rote learning to an exploration of the rationale behind diagnoses and the clinician's thought processes. Narratives should delve into misdiagnoses and diagnostic uncertainties, fostering intellectual humility and resilience amidst confusion. Resources like the Clinical Reasoning Toolkit from the Society to Improve Diagnosis in Medicine (SIDM), NEJM's "Clinical Problem-Solving" series, and the Human Diagnosis Project should be incorporated into the formal curriculum to bolster these competencies.

Preserve the Integrity of the Physical Examination. The physical exam is frequently perceived as mere ritual rather than a substantive practice—a formality preceding more definitive tests. Yet, in skilled hands, it can provide crucial diagnostic insights, even saving lives. Academic medicine must redefine physical diagnosis, approaching it as sophisticated applied physiology. This begins with teaching the reasoning behind each procedure: its diagnostic significance, its anatomical correlations, and its relevance to pretest probability. To achieve this, we need to move beyond a "one-size-fits-all" approach, providing targeted, hypothesis-driven exams. Bedside rounds should highlight subtle signs—like pulsus paradoxus, asterixis, or Cullen's sign—not

merely for their rarity but for training observational excellence. Clinical skills centers should integrate high-fidelity simulations, standardized patients with complex presentations, and multimedia resources that showcase real patients exhibiting classic findings. Advanced electives in diagnostic mastery can be introduced for senior students and residents.

Cultivate Educators Who Exemplify Intuition and Reflection. A curriculum's strength lies in its educators. If we expect students to value clinical intuition, they should be inspired by role models who embody it. This necessitates investing in faculty development programs that help seasoned clinicians articulate their diagnostic thought processes. Often, expert physicians skip the "thinking out loud" stage, leaving students puzzled about how they reached their conclusions. A clinician who pauses to say, "This pattern made me think of a paraneoplastic syndrome," or "This patient's history reminds me of a case from several years ago," transforms an interaction into a masterclass. Furthermore, academic institutions need to allocate time for mentoring and contemplative practice. Clinicians burdened with student supervision alongside full patient loads and EMR alerts cannot effectively teach reflective medicine. Both time and attention are valuable resources that must be judiciously managed.

Revamp Assessments to Favor Thinking Over Responses. Examinations have a profound influence on behavior. When students are incentivized for speed, memorization, and pattern-matching, their cognitive processes will reflect these values. If we wish for them to cultivate clinical intuition, we must evaluate the reasoning behind their thoughts, rather than just their solutions. This could involve incorporating diagnostic reasoning OSCEs (Objective Structured Clinical Examinations) where students defend their reasoning rather than simply providing the correct diagnosis. Written reflections on diagnostic uncertainties, missed diagnoses, or unexpected results could become integral to portfolio evaluations. Clinical rotations should focus on directly observing students during diagnostic

discussions, providing feedback on how they gather information, identify inconsistencies, and adjust their hypotheses. Some institutions have initiated “uncertainty rounds,” allowing students and faculty to discuss ambiguous cases without rushing to closure. This practice fosters a culture that normalizes uncertainty and reinforces that sound reasoning doesn’t always produce immediate solutions.

Reimagine Technology as a Collaborative Diagnostic Tool. In teaching intuition amidst advancing technology, educators must not create a false dichotomy between humanistic practices and technological advancements. Instead, students should be educated on how to integrate both. For instance, a module on AI in medicine could encompass both technical understanding (how algorithms function and their biases) alongside clinical judgment (when to question algorithmic recommendations). Students could juxtapose their own diagnostic reasoning with machine-learning outputs and reflect on the disparities. POCUS training can be presented as a complement to the physical examination rather than a substitute. Importantly, students must understand that crafting the right clinical question remains the most pivotal aspect of any diagnostic journey. Technology responds to queries; it does not generate them.

Foster a Culture that Embraces Diagnostic Curiosity. Ultimately, fostering a supportive culture is crucial. Students need to feel safe to make mistakes, curious to investigate the unusual, and empowered to delve into “weird cases.” This requires moving away from environments that prioritize performance over exploration. Grand rounds should include not only rare conditions but also common illnesses with atypical presentations. Diagnostic dilemmas should be acknowledged, not overlooked. Tales of near misses should be shared openly, fostering a culture of growth and vulnerability among attendings and residents alike. Additionally, medical humanities can enhance this culture. Narratives, essays, film studies, and

patient experiences create avenues to explore the subjective nature of diseases, reinforcing the notion that diagnosis is both technical and interpretative. In this human landscape, intuition flourishes. The new medical students and residents joining the profession are driven and intelligent; however, they often find themselves in systems that undervalue the very abilities essential for stellar diagnostics: attentiveness, creativity, humility, and patience.

Academic medicine must not only adapt to contemporary changes—it must spearhead a renaissance, blending technology with intuition for the benefit of both practitioners and patients alike. We owe this to our students. More importantly, we owe it to their future patients. No argument here is against innovation. The advancements in modern medicine—from targeted immunotherapy to robotic surgery—are wonders worthy of celebration. Nevertheless, innovation devoid of introspection poses risks. The most proficient diagnostician of the future won’t be solely a machine or a machine-reliant practitioner. It will be a clinician adept at leveraging technology while attuned to the patient’s nuanced expressions, observing faint tremors, noticing lost wrinkles, and posing that one crucial question. The clinician who listens not just to data but to the individual. We are more than mere technicians of the body; we are custodians of human experience. In the words of Sir William Osler, “The good physician treats the disease; the great physician treats the patient who has the disease.” Today, I would add: The astute physician recognizes what others might miss—sometimes even what machines overlook.

Forgotten diagnoses symbolize the clinical reasoning at risk of being lost: capacity to appreciate uncertainty, interpret subtleties, be present, and engage in deep thinking. Let us remind ourselves that diagnosis transcends answers; it embodies inquiry, vigilance, and the unique alchemy that occurs when a trained human mind encounters another in distress. Let remember what must not be forgotten.