Arch Argent Pediatr. 2026;e202611179

The AI dilemma in pediatrics: Are we losing our clinical skills?

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The integration of artificial intelligence (AI) into clinical practice is advancing at a rapid pace.[1] This expansion carries an associated cost, as alongside its benefits—such as increased diagnostic efficiency and decision-making support—a growing concern emerges: the loss of clinical skills (*deskilling*) resulting from the excessive or automatic use of AI-based automated tools.[1]

What Is the loss of clinical skills and why does it matter?

The loss of clinical skills is defined as the loss of knowledge, reasoning capacity, and autonomy to execute a clinical task.[1] It is not a new phenomenon; it has already occurred in the aviation industry when pilots lost manual flying skills due to reliance on autopilot, but in medicine its consequences can be severe. The central mechanism is cognitive delegation (*cognitive offloading*) of complex tasks to external systems, causing the brain to reduce prefrontal activation, weaken memory circuits, and reinforce automatic strategies over analytical thinking.[2]

At least four dimensions of the loss of clinical skills have been described in the literature: cognitive (impairment of diagnostic reasoning), diagnostic (dependence on models to generate hypotheses), moral (diminished ethical sensitivity and clinical judgment), and social (weakening of communication skills with the patient).[3] All these dimensions converge on a common risk: professionals who function well in structured and predictable scenarios but fail when faced with ambiguity, rare clinical presentations, or the absence of available technology.

Empirical evidence: Beyond theory

In a multicenter study involving more than 23 000 procedures, experienced endoscopists—with an average of 27 years of practice—showed a 21% drop in the adenoma detection rate when they returned to performing colonoscopies without AI after months of assisted use.[4] Eye-tracking studies explain the mechanism: physicians using AI reduce active visual scanning and wait for the algorithm to point out abnormalities; when the system is removed, they fail to resume active searching. In mammography, radiologists of all experience levels followed erroneous AI recommendations, demonstrating that expertise does not protect against automation bias.[3]

A more concerning finding is the concept of failure to develop skills or competencies (*never-*

doi: http://dx.doi.org/10.5546/aap.2026-11179.eng

To cite: Otero P. The AI dilemma in pediatrics: Are we losing our clinical skills? *Arch Argent Pediatr.* 2026;e202611179. Online ahead of print 23-JUL-2026.

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skilling): trainees who learn exclusively with AI support may never develop the independent cognitive frameworks necessary for unassisted practice.[4]

This phenomenon is consistent with what human-computer interaction research has demonstrated in learning contexts: when AI assistance is maximal and automated, subsequent cognitive performance is lowest, even though users subjectively prefer this modality due to perceived convenience. An intermediate level of assistance, which requires the user to apply knowledge, yields the best comprehension and retention outcomes.[5] The paradox is clear: what the professional prefers is not necessarily what makes them more competent.

The specific case of pediatrics

In pediatrics, the risks of loss of clinical skills take on an additional dimension, as most currently available AI systems were trained on adult data and exhibit inferior performance when applied to the pediatric population.[6] A vertebral fracture detection algorithm designed for adults achieved only 36% sensitivity in children; chest X-ray interpretation models showed similar limitations when used outside the population on which the AI algorithm was trained.

This lack of pediatric evidence has direct consequences for the loss of clinical skills: if a pediatrician delegates diagnostic reasoning to a system not validated in their population, the risk of error is compounded. To date, we have not found specific guidelines on the ethical use of AI in child health from scientific societies, which represents a significant gap given the pace of technological advancement of AI in health care.[6]

Additionally, reliance on AI reasoning can compromise the very skills that define excellence in pediatrics: communication with children and families, the interpretation of non-verbal cues, and the integration of complex family and social contexts. The ability to reason flexibly in the face of atypical presentations or unusual contexts is especially critical in a specialty where inter-individual variability is a constant.[2]

In the case of pediatric residents, there is a risk of *never-skilling*, because unlike the experienced professional who may lose acquired skills, a resident training from the start with AI support is likely never to develop foundational clinical skills, leaving them with no basis to fall back on when technology fails.[7] Berzin and Topol describe that physicians trained before AI start from an established level of competence, which declines due to overuse of automation; physicians trained after AI, however, may never reach that baseline level—leading the authors to suggest that AI is only useful as a copilot if the resident first learned to be the pilot.

The central mechanism is what Ke et al. term *failure in skill acquisition*: the formation of clinical cognitive schemas—the foundation of diagnostic reasoning—requires sustained cognitive effort. When an AI system delivers the diagnostic answer before the resident has attempted to construct it, it interrupts this process. For example, a resident might diagnose diabetic ketoacidosis with algorithmic assistance without having built the pattern-recognition networks necessary to identify an atypical presentation independently.[8] The result is what the authors call *false competence*: an apparently adequate performance during assisted training that collapses when AI is unavailable or makes errors. In pediatrics, where the age range is very broad—spanning from neonates to adolescents, and from common pathologies to orphan diseases—a resident who learns to diagnose with the constant backing of an algorithm does not develop the pattern recognition or the tolerance for uncertainty that characterize the expert pediatrician. Worse still, blind reliance on biased or error-laden AI models can lead to acquiring incorrect skills or inadequate training (*mis-skilling*).[7,8]

Toward responsible integration

The problem is not AI itself, but how it is incorporated into training and practice. For pediatric residency, Ke et al. propose a three-phase framework: first, a foundational competence phase without AI, where the resident builds independent cognitive schemas by working through problems without algorithmic assistance; second, a guided integration phase with adversarial pedagogy—the resident receives AI outputs containing deliberate errors and must detect, explain, and correct them; and third, an integrated practice phase, where AI is incorporated under supervision within the framework of Entrustable Professional Activities (EPAs), with explicit documentation of what reasoning the resident contributed beyond the algorithmic output.[8] Topaz et al. complement this with measures for immediate application: interleaving "AI-off" intervals during rotations and requiring the resident to record their diagnostic hypothesis before viewing the system's suggestion.[4]

In the pediatric context, this also implies requiring that AI systems be specifically evaluated and validated in pediatric populations before clinical implementation, and that pediatric residency training programs explicitly incorporate critical recognition of algorithmic limitations.[6] A concrete measure is to schedule "AI-off" intervals during shifts and rotations, during which the resident must resolve cases without algorithmic assistance and record their performance for feedback. During training sessions, the AI suggestion should appear only after the resident has recorded their own diagnostic hypothesis.[7]

In summary, AI has the potential to positively transform pediatric care, especially given the shortage of specialists. But that potential can only be realized if we pediatricians maintain the ability to reason independently, recognize algorithmic errors, and exercise clinical judgment when systems fail or are unavailable. ■

REFERENCES

1. Monteith S, Glenn T, Geddes JR, Whybrow PC, Achtyes ED, Bauer R, et al. Artificial intelligence and deskilling in medicine. *Br J Psychiatry*. 2026. doi:10.1192/bjp.2025.10496
2. El Tarhouny S, Farghaly A. Deskilling dilemma: brain over automation. *Front Med*. 2026;13:1765692. doi:10.3389/fmed.2026.1765692
3. Heudel PE, Crochet H, Filori Q, Bachelot T, Blay JY. Artificial intelligence in medicine: a scoping review of the risk of deskilling and loss of expertise among physicians. *ESMO Real World Data Digit Oncol*. 2026;11:100693. doi:10.1016/j.esmorw.2026.100693
4. Topaz M, Peltonen LM, Zhang Z, Backonja U. The deskilling effect: Is artificial intelligence eroding clinical competence? *Ann Intern Med*. 2026. doi:10.7326/ANNALS-26-00613
5. Chen X, Ruan K, Ju KP, Yap N, Wang X. More AI assistance reduces cognitive engagement: Examining the AI assistance dilemma in AI-supported note-taking. *Proc ACM Hum Comput Interact*. 2025;9(7):CSCW451. doi:10.1145/3757632
6. Chng SY, Tern MJW, Lee YS, Cheng LT, Kapur J, Eriksson JG, et al. Ethical considerations in AI for child health and recommendations for child-centered medical AI. *npj Digit Med*. 2025;8:152. doi:10.1038/s41746-025-01541-1
7. Berzin TM, Topol EJ. Preserving clinical skills in the age of AI assistance. *Lancet*. 2025;406:1719. doi:10.1016/S0140-6736(25)02075-6
8. Ke Y, Jin L, Ong JCL, Thirunavukarasu AJ, Car J, Cheung CY, et al. AI-induced never-skilling in medical education. *Nat Med*. 2026. doi:10.1038/s41591-026-04438-y