

Healthcare Techno-Humanism: from precision to presence

A Techno-Humanist Framework for Health Care

Every successful technological development closes one technical chapter and opens several anthropological, social, ethical, and aesthetic ones.

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Received: August 20, 2025 Accepted: August 21, 2025

The irruption of artificial intelligence (AI) into contemporary health care is generating advances that would have been unthinkable only a few decades ago—from systems capable of diagnosing cancer with astonishing accuracy, to algorithms that predict clinical deterioration months before it becomes symptomatic, to platforms that personalize pharmacological treatments with revolutionary effectiveness. Yet these gains have not been matched by preservation of the humanist essence of care: global surveys indicate that a high percentage of patients report not feeling heard by professionals in increasingly automated settings. This imbalance poses one of the central ethical challenges of our time: how do we integrate extraordinarily capable technologies without losing the humanist core that defines the health professions?

The answer is not merely technical or regulatory but—above all—ethical and philosophical. The concept of healthcare technohumanism emerges as a framework that proposes a synthesis between technical excellence and humanistic depth. This leads us to define healthcare technohumanism as ‘the conscious and ethically informed integration of AI technologies to amplify caring capabilities without substituting clinical judgment, diluting the therapeutic relationship, or compromising the fundamental ethical principles that govern the health professions.

This definition rests on three pillars that must operate synergistically:

First pillar: Humanism. A set of values centered on the patient’s intrinsic dignity, moral autonomy, and integral well-being as a whole person, not merely as a bearer of pathology. The ultimate aim of any health intervention is human flourishing in its physical, psychological, social, and spiritual dimensions. In the context of AI, every implementation must be assessed not only for technical efficacy but also for its contribution to the integral development of the people it serves.

Second pillar: Science. A commitment to methodological rigor, empirical evidence, and technical excellence in the development, validation, and implementation of AI systems. Humanism without technical competence can devolve into ineffective sentimentalism; technical competence without humanist orientation risks a dehumanized technocracy. Techno-humanist science demands particularly rigorous standards precisely because its technologies affect fundamental dimensions of human experience.

Third pillar: Technology. A tool at the service of humanized care, not an end in itself. This instrumental perspective does not minimize technology; it places it properly: an extraordinarily powerful means to achieve humanist ends, never an objective that justifies any means for its development or deployment.

Healthcare techno-humanism proposes to situate technology in service of the human person, preserving the centrality of clinical judgment, the therapeutic relationship, and the ethical principles that constitute the essence of the health professions. Its implementation requires operational frameworks capable of guiding the daily decisions of physicians, pharmacists, and nurses.

To this end, I propose integrating two complementary ethical traditions:

1. Bioethical principlism (Tom L. Beauchamp and James F. Childress)—autonomy, beneficence, non-maleficence, and justice—which provides universal criteria for evaluating the implications of AI; and

2. Virtue ethics (Edmund D. Pellegrino), which emphasizes the professional as a moral agent: prudence to discern when to trust an algorithm; justice to ensure its benefits reach everyone; temperance to avoid blind dependence; and fortitude to resist commercial or institutional pressures that could compromise humanized care.

The practical integration of bioethical principlism with virtue ethics translates into five operational principles that should guide the development, evaluation, and implementation of AI in health contexts—combining the normative clarity of principlism with the contextual sensitivity of virtue ethics:

1. Ensure meaningful human oversight (Autonomy + Prudence). AI should inform decision-making, not replace it. Professionals retain the final authority and ethical responsibility for each diagnosis and treatment.

2. Secure transparency and explainability (Autonomy + Justice). AI systems must be understandable to professionals and readily explainable to patients, safeguarding their right to know how and why decisions affecting their health are made.

3. Maximize integral techno-beneficence (Beneficence + Integral good). AI should deliver concrete, measurable benefits in clinical outcomes and patient experience, freeing time from routine tasks to strengthen personalized attention.

4. Prevent algorithmic maleficence (Non-maleficence + Temperance). Data and algorithms must be audited to detect and correct biases before harm occurs, with continuous monitoring and immediate intervention protocols for emergent errors.

5. Promote structural and inclusive equity (Justice + Fortitude). Technologies should be designed and evaluated with participation from vulnerable populations, ensuring access and validation across diverse contexts to avoid widening health disparities.

Adopting these principles requires practical tools, such as an ethical analysis matrix that cross-references the four bioethical principles with the virtues to generate operational questions and performance indicators. An implementation protocol should establish phases of pre-deployment evaluation, cultivation of professional virtues—with training focused on AI capabilities and limits—, operational synthesis with dual metrics (technical and humanist), and continuous improvement mechanisms.

At the professional level, the ethical and deontological codes of medicine, pharmacy, and nursing should be enriched with specific obligations regarding AI (competence, explainability, equity, and safety). University education and continuing certification must include technological ethics and algorithm evaluation. Accreditations should no longer assess only clinical results but also ethical compliance in technological implementations.

Faced with emerging challenges — generative AI, autonomous agents, brain-computer interfaces — healthcare techno-humanism offers a north star: to use powerful tools with prudence and justice, oriented to the integral good of each patient.

Real progress is not measured only by diagnostic accuracy or cost reduction, but by the quality of the human bond that gives meaning to medicine, pharmacy, and nursing. Grounded in the integration of principlism and virtues, healthcare techno-humanism offers a framework for ensuring that the AI revolution is also a revolution in the humanization of care.

If AI is to transform health care, let it do so by multiplying presence, not replacing it.