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# The importance of moral clarity and humanity in advancing medical research

**Francesco CHIRICO**[1*]

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[1]*Faculty of Medicine and Surgery, Post-graduate School of Occupational Health, Università Cattolica del Sacro Cuore, Rome, Italy.*

*E-mail: medlavchirico@gmail.com ORCID: 0000-0002-8737-4368*

**Correspondence*

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Dear Readers,

In recent years, the relentless pursuit of recognition has often overshadowed the true goal of medical research: genuine progress. This drive for fame has led many to present medicine as a field of definite answers, ignoring that it is inherently an ongoing inquiry. This trend undermines the true nature of scientific endeavor, which is rooted in curiosity and, importantly, humility.

Prominent medical researchers, such as Dr. Jonas Salk, who developed the polio vaccine, and Dr. Paul Farmer, who dedicated his life to improving healthcare for impoverished communities, exemplify the critical role of humility in medicine. Salk famously refused to patent the polio vaccine, believing it should be accessible to everyone. Farmer, co-founder of Partners in Health, consistently emphasized the importance of providing high-quality healthcare to the world's poorest populations, embodying the spirit of medical research aimed at real-world problems and benefiting all of humanity [1,2].

These examples illustrate that what may seem like an error or a missed opportunity can later prove to be significant insights. Humility in medical science is not about avoiding mistakes but embracing them as opportunities for deeper understanding. It is a mindset that accepts the provisional nature of knowledge and the continuous potential for refinement and revision [1].

The scientific method itself embraces this principle of uncertainty. It operates through hypotheses and models that approximate reality but are always subject to change as new evidence emerges. Medical scientists who adhere to this method understand that absolute certainty is unattainable. Instead, they strive to build the best possible explanations based on current evidence, with the understanding that these explanations may evolve [1,2].

The COVID-19 pandemic highlighted the challenges and importance of communicating scientific uncertainty [3]. Initially, the medical community had limited knowledge about the virus. However, the pressure to provide definitive answers led many to present preliminary findings as certainties, which only increased public confusion. A humbler approach would have acknowledged the knowledge gaps and the ongoing efforts to address them, fostering a more informed and resilient public

response [2,4]. The culture of "publish or perish" further complicates this issue [5]. The relentless drive to publish frequently, particularly positive results, undermines the quality and integrity of medical research. This trend, coupled with the rise of "paper mills" and predatory journals, distorts the scientific literature and prioritizes quantity over quality. Consequently, the scientific body often overlooks negative results, which is crucial for a balanced understanding in favor of sensational findings [6].

Additionally, the academic environment often tacitly encourages arrogance. Researchers are pressured to exaggerate their findings, downplay uncertainties, and present their work in the most favorable light to secure publication and career advancement. This system misleads the scientific community and the public and stifles the genuine pursuit of knowledge [1,3].

We must rethink scientific education and publication practices to cultivate a new generation of humble yet innovative medical scientists. Researchers should be encouraged to discuss their studies' limitations openly and to view errors as integral to the scientific journey. Editors and reviewers must prioritize transparency and rigor over sensationalism, ensuring that published work accurately reflects the uncertainties and complexities of scientific inquiry [1,3].

In essence, humility in medical science is not a weakness but a strength. It aligns with the Socratic wisdom of acknowledging ignorance as a path to greater understanding. As Dr. Atul Gawande, a prominent surgeon and writer, suggests, "Better is possible. It does not take genius. It takes diligence. It takes moral clarity. It takes ingenuity. And above all, it takes a willingness to try" [7].

By embracing this perspective, the medical community can ensure that it remains an actual vehicle for discovery and progress, grounded in an honest appraisal of what is known and, more importantly, what is yet to be understood. The future of medical research must address real-world problems and ensure that advancements benefit everyone, lest we risk a future where the fruits of scientific labor are not shared equitably.

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