Humans, machines and decisions

Clinical reasoning in the age of artificial intelligence, evidence-based medicine and Covid-19

Loughlin, Michael; Copeland, Samantha Marie

DOI
10.1111/jep.13572

Publication date
2021

Document Version
Final published version

Published in
Journal of Evaluation in Clinical Practice

Citation (APA)
Loughlin, M., & Copeland, S. M. (2021). Humans, machines and decisions: Clinical reasoning in the age of artificial intelligence, evidence-based medicine and Covid-19. *Journal of Evaluation in Clinical Practice*, *27*(3), 475-477. https://doi.org/10.1111/jep.13572

Received: 11 April 2021 | Accepted: 12 April 2021

DOI: 10.1111/jep.13572

EDITORIAL

Journal of Evaluation in Clinical Practice
International Journal of Public Health Policy and Health Services Research

WILEY

Humans, machines and decisions: Clinical reasoning in the age of artificial intelligence, evidence-based medicine and Covid-19

This thematic philosophy edition of the journal brings together a range of papers addressing fundamental questions about the nature and value of clinical practice in rapidly changing and deeply challenging times. As practitioners across the world are confronting the issues of how to deliver care, establish meaningful relationships with patients and their families, and how to understand, correctly characterize and analyse the complex problems of individuals in the context of PPE, social distancing and remote access, authors look at the developing relationship between technical and humanistic features of care.

An examination of the role of artificial intelligence (AI) in a variety of clinical contexts is followed by a series of papers addressing the irreducibly human features of clinical reasoning and practice. These papers offer new angles on what has been a key preoccupation of this journal since its inception—the nature of clinical judgement and its relationship with our understanding of knowledge, explanation and evidence in research and practice.

These central themes are then addressed directly in a series of papers which take up arguments and debates that have been on-going throughout the life of the journal and are still in the process of development, regarding evidence-based medicine (EBM), causal explanations, decision-making and person-centred care. While several of the papers in each of the preceding sections make specific reference to the challenges presented by the Covid-19 pandemic, the pandemic becomes the primary focus of the papers in the final section of this edition, where authors discuss the novel issues and problems the global crisis has engendered for the production and application of scientific knowledge, as well as for ethics and mechanistic reasoning.

1 | AI IN HEALTHCARE

The papers in the opening section[1-9] present a diverse and highly original series of discussions regarding both the possible uses and potential problems for AI in healthcare, considering some novel ways to overcome them. Authors examine the role of AI in diagnosing and treating numerous mental health disorders, in narrative therapy,[1-3] in maternity care and shared decision-making.[4]

Discussions of machine learning, decision-support systems, interpretation, bias and the limitations of AI[5-8] are supplemented by consideration of the prospects for AI in facilitating the creation of a 'physicianless' experience for patients and a broad 'reconsideration of the role of humans in medical decision-making'.[9]

2 | THE ROLE OF THE HUMANITIES

The series of papers that follows[10-16] adopts a pertinent shift in focus, to bring in the role of the arts and virtue in the development of human reasoning. Papers highlight new prospects for, and challenges to, the education of health professionals, regarding the cultivation of virtue, the role of culture, humility, existential uncertainty and 'hospitality'.[10-14] Authors propose ways that practitioners can use their distinctively human skills and capacities to support patients navigating the disorienting territory of acute illness,[14] to provide genuinely person-centred responses to patients whose sense of meaning and identity may be undermined by serious threats to their health,[13] and more broadly to design a curriculum to enable medical learners to develop a fuller understanding of what it means 'to be human, live well, experience loss, encounter disease, and engage in a therapeutic relationship'.[11]

The contributors suggest ways to 'broaden understandings of culture and associated workings of power to accommodate the effects of biomedicine's technologising turn',[12] and the section concludes with two rather novel 'non-evidence based lyric essays'[15,16] which chronicle the history of EBM. The essays use this history to reflect upon 'the consequences of medicine's continued quest to be "scientific"', with the goal of demonstrating the need for 'expanding the purview of medical institutions to include not only substantive biomedical capacity, but also scholarly social sciences and humanities infrastructure'.[15]

3 | JUDGEMENT, EXPLANATION, KNOWLEDGE AND EVIDENCE

The papers that form the section to follow address the broad issues of clinical reasoning, evidence, judgement and explanation. The section includes papers on EBM but extends beyond EBM to broader philosophical discussions concerning clinical knowledge, causal reasoning, research and consent—discussing issues of person-centred care and the purpose of medicine, and challenges to clinical judgement presented by the need for virtual care, a need generated by the global pandemic.[17-27]

The first three papers in the section[17-19] take up the issues that were the topic of the concluding papers in the preceding 'Humanities' section,[15,16] though in this case the author outlines the history of the EBM debate from the perspective of medical philosophy and the history of ideas. The papers provide an extremely helpful account and

critical analysis of the debate over the last 30 years, concluding with arguments concerning the possibilities for future development and the relationship between EBM and complexity theory, provider-patient decision making and person-centred care. They are followed by two challenging papers designed to raise awareness of factors that have influenced the development of the evidence hierarchies that inform EBM[20] and to trace EBM's 'curious path' from clinical epidemiology to patient-centred care.[21] Following this 'path' reveals an as-yet unmet challenge to both advocates and critics of EBM, to chronicle the dangers that EBM, in the framework of decision-analysis, poses to health and health care during the current era of industrialization.[21]

The issues of person-centred care, the value of knowledge and the disconnect between currently dominant theoretical models of reasoning on the one hand, and real-world reasoning on the other, are brought out in a fascinating discussion of 'transdisciplinary generalism'.[22] The paper provides a rich alternative to opposing 'reductionist (positivist) biomedical measures and social science (post-positivist) constructivist theories of knowledge' and it is followed by a similarly rich discussion of causal reasoning with application to specific cases[23]—a discussion that aims to explain the relationship between 'standardized evidence-based treatment' and case formulations via a framework of Causal Explanation-based Decision Making.

The focus on the need to develop theories of knowledge and judgement that *make sense* in the context of practice continues with papers on consent and the purpose of medicine[24,25] and a detailed and instructive account of the transition 'from inquiry to evidence to actionable clinical knowledge'.[26] The section concludes with a discussion of the transition from 'traditional in-person care into a new reality of virtual care for patients with complex chronic disease' precipitated by the Covid-19 pandemic, and the specific challenges to clinical judgement this transition presents.[27] This paper sets the scene for the series of papers in the final section.

4 | EXPLORING THE IMPLICATIONS OF THE PANDEMIC FOR RESEARCH, CLINICAL REASONING AND PRACTICE

Perhaps inevitably, given our recent history, this edition includes a section for papers addressing the issues of reasoning—epistemological and moral—in the context of the Covid-19 pandemic.[28-32] Following the discussion of EBM, causal explanation and mechanisms in the preceding section, this one opens with a discussion of the use of EBM and mechanistic reasoning in assessing coronavirus interventions.[28] The authors present several examples to illustrate the importance of mechanistic evidence in this context, defending 'EBM+', an approach to evaluating interventions combining mechanistic studies and association studies. They argue that this approach has an important role in public health, in particular with regard to the prospects for success in the on-going vaccination programmes.

Their discussion is followed by two papers that assess the challenges to medical research presented by the pandemic.[29,30] The papers argue that a lack of prioritization among research questions and therapeutics had extremely serious practical effects. This methodological flaw led to 'the duplication of clinical trials and the dispersion of precious resources'. The papers bring out the need to understand fully the practical implications of practices meant to ensure scientific and epistemic rigour. They argue that study designs aimed at minimizing biases and increasing objectivity became 'the subject of fruitless oppositions' and conclude that 'the duplication of research works, combined with poor-quality research, has greatly contributed to slowing down the creation of novel scientific knowledge'.[29]

The section closes with a series of papers delivered to the online symposium 'Covid-19: Ethical Dilemmas in Human Lives' in May 2020, organized by the Paris Global Center of Columbia University and the Columbia Global Centers.[31,32] The contributors include health practitioners and academic commentators, and the collection consists of an overarching commentary by the conference organizer, plus four papers focussing on specific ethical dilemmas raised by the global crisis, each one followed by a commentary. The papers focus on issues of responsibility, fairness, dignity and honouring death, with the pandemic raising questions about rationing/priority setting and potential conflicts between public interests and individual rights in a particularly stark manner. It would be comforting to conclude that these 'dilemmas' will disappear in a post-Covid era, but as one of the contributors notes, the underlying problems that give rise to them—'the economic, scientific, political and social mechanisms leading to this pandemic humanitarian disaster'—are still there. The discussion about how to find a lasting solution to these problems remains, like so many of our most serious debates, on-going.

Michael Loughlin PhD[1]
Samantha Marie Copeland PhD[2]

[1]*European Institute for Person-Centred Health and Social Care, School of Biomedical Sciences, University of West London, London, UK*
[2]*Ethics and Philosophy of Technology Section, Department of Values, Technology and Innovation, Delft University of Technology, Delft, The Netherlands*

Correspondence
Michael Loughlin, PhD, European Institute for Person-Centred Health and Social Care, School of Biomedical Sciences, University of West London, St Mary's Rd, London W5 5RF, UK.
Email: michael_loughlin@ymail.com

ORCID
Michael Loughlin https://orcid.org/0000-0002-2234-2146

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