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REVIEW

Algorithmic ethics and healthcare pluralism: rethinking care between automation and global inequality

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Abstract
Algorithmic systems in healthcare are increasingly recognised not only as technical devices but as infrastructures that embed, enact, and stabilise normative assumptions about care, clinical authority, and social worth. This article offers a comparative analysis of algorithmic governance across the Global North, addressing concerns about over-generalisation and insufficient engagement with Global South perspectives, with a case-study focus on Benin. The paper shows how algorithmic tools—when transplanted into African contexts—may reproduce or intensify forms of epistemic displacement, infrastructural dependency, and digital paternalism, while simultaneously overlooking locally embedded, relational, and community-based practices of care. Integrating new empirical insights from field studies conducted by the author in Benin (2016–2024), the article reframes algorithmic normativity as a dynamic, contested process shaped by sociotechnical imaginaries, political economies, and situated practices of health provision. In response, it elaborates a solidarity-based governance framework built around technological subsidiarity and epistemic solidarity, two principles that emerge directly from the comparative analysis rather than being externally imposed. This framework offers a means to align AI development with context-specific ethical commitments, plural knowledges, and participatory forms of clinical judgment, particularly in low-resource settings. By explicitly integrating decolonial critiques, Global South authorship, and empirical evidence, the paper contributes a revised, theoretically coherent, and policy-relevant model for understanding and governing algorithmic care across unequal healthcare ecologies.

Keywords Algorithmic governance · Plural ethics of care · Technological subsidiarity · Epistemic injustice · Solidarity-based AI · Global South

1 Introduction

In recent years, the integration of algorithmic systems into healthcare has been widely promoted as a key driver of efficiency, precision, and personalisation. From diagnostic support tools to predictive analytics and digital triage systems, algorithms are now embedded in multiple layers of clinical practice and public health management. Yet, alongside the promises of optimisation, this shift raises fundamental ethical, epistemological, and political concerns that challenge the normative foundations of care itself.

The discourse surrounding "ethical AI" in healthcare has often been dominated by principles-based approaches that emphasise fairness, accountability, and transparency. However, as several scholars have argued, such principles are insufficient when the socio-technical complexity of health systems and the opacity of algorithmic design are not adequately addressed (Mittelstadt 2019; Greenhalgh and Papoutsi 2018). Moreover, recent empirical work demonstrates that algorithmic adoption in clinical settings remains partial, fragmented, and often problematic (Ardito et al. 2025; Karalis 2024; Kim et al 2024), thereby challenging narratives of seamless integration and requiring an ethical analysis that accounts for implementation realities rather than expectations.

A further limitation of the dominant discourse lies in its epistemic geography: the vast majority of ethical frameworks for AI in health are developed in, and oriented toward, Global North contexts, implicitly universalising their institutional structures, values, and infrastructural assumptions. This creates a tension when such frameworks are transposed into

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low-resource or postcolonial settings, where the material, cultural, and political conditions of care differ markedly and where digital health interventions have historically been entangled with asymmetries of power.

The present article aims to show this by examining the case study of Benin and drawing on four field studies conducted there by the author between 2016 and 2024, in collaboration with experts from different fields (e.g., biomedical engineers, sociologists, doctors) both European and local (Maccaro 2018, 2019, 2024a; Maccaro et al 2020, 2022a, 2022b, 2024; Piaggio et al 2021; Di Pietro et al 2020; Pecchia et al 2020).

The Benin case illuminates how algorithmic healthcare intersects with precarious infrastructures, informal clinical networks, and community-based moral economies, revealing both the risks of externally imposed digital solutions and the ethical potential of situated care practices that resist reduction to computational abstraction. In this respect, the article engages directly with contemporary Global South and decolonial scholarship on digital health (Grancia 2024, Mehjabeen et al. 2024, Sekalala and Chatikobo 2024; Nyabola 2018; Tiffin et al. 2019).

Methodologically, the analysis mobilises elements of case-oriented ethics and normative reconstruction (Benhabib 1992), aiming to clarify implicit assumptions, expose power-laden trade-offs, and articulate alternative governance models. Rather than proposing context-neutral principles, it derives its main normative insights—technological subsidiarity and epistemic solidarity—directly from the comparative analysis between Northern algorithmic paradigms and Beninese clinical realities.

Technological subsidiarity refers to the requirement that digital systems support, rather than supplant, human judgment and context-sensitive reasoning—especially in settings where relational and tacit forms of expertise are central to care. *Epistemic solidarity*, in turn, emphasises the need to include locally embedded knowledges, patient narratives, and community moral practices in the construction and governance of algorithmic infrastructures.

By situating these principles within concrete empirical terrains and distinguishing them from institutional uses of "solidarity" in EU regulatory debates, the article advances a future-oriented account of algorithmic normativity: one that treats AI governance as a relational, political, and contextually negotiated process rather than a matter of technical design alone.

2 From automation to normativity: reframing the algorithm in healthcare

The discourse on automation in healthcare has often centred on functionality—how algorithms may enhance diagnostic accuracy, optimise workflows, or reduce uncertainty. Yet a purely instrumental understanding obscures the deeper normative transformations these systems introduce into clinical reasoning, professional practice, and patient care. Algorithms do not operate in a vacuum: they participate in shaping the very conditions under which medical decisions are made, influencing what counts as evidence, which forms of knowledge are legitimised, and how responsibility is distributed.

To clarify this point, it is important to introduce a more precise conceptual distinction between *immanent normativity* and *deliberative normativity*. Immanent normativity refers to the value-laden assumptions embedded directly in algorithmic models, datasets, and optimisation parameters, including decisions about which outcomes are prioritised and which variables are included or excluded. Deliberative normativity, by contrast, designates the reflexive and dialogical processes through which those affected by algorithmic decisions are able to question, justify, and contest the values encoded in the system.

Central to our analysis is Feenberg's idea that technologies are "sites of socio-political negotiation" (1999), which underscores that algorithmic models embed choices about what is optimisable and for whom—choices that are both epistemic and ethical.

This directly connects immanent normativity to contemporary debates on bias, fairness, and model interpretability. Current work in AI ethics (including Giovanola and Tiribelli 2023, and Bonicalzi et al. 2023) shows that standard fairness metrics obscure the moral and relational dimensions of clinical reasoning. These authors argue that fairness cannot be reduced to statistical calibration: it requires the possibility for those affected to understand and contest the reasoning behind decisions. This is precisely a shift from immanent to deliberative normativity, and it reveals why accuracy alone cannot ground ethical legitimacy.

Furthermore, recent empirical studies challenge the assumption that algorithmic systems are already widely and uniformly implemented in clinical environments. Ethnographies of clinical AI adoption (Ardito et al. 2025; Karalis 2024; Kim et al. 2024) show that integration is partial, contested, and shaped by micro-level negotiations among clinicians, administrators, and IT infrastructures. These studies emphasise how algorithms often introduce epistemic uncertainty, generate new points of friction, and require significant tacit work to align with existing workflows. Acknowledging this empirical reality shows that normativity emerges not only from design but from situated practices of use—and sometimes of non-use.

This insight is particularly relevant when considering algorithmic authority. Clinical AI systems frequently operate as "default" sense-makers: their outputs are perceived as authoritative unless actively challenged, shifting the burden of proof onto clinicians. This dynamic, often described as

digital paternalism, is not merely an organisational phenomenon. Its ethical significance lies in how it rearranges deliberative normativity: algorithmic recommendations gain de facto legitimacy even in the absence of transparency, contestability, or contextual adaptation.

The epistemic shift becomes even clearer when examining how algorithms interact with embodied and narrative forms of care. Drawing on Mol's analysis of the "logic of care" (2008), the section emphasises how computational abstraction tends to universalise decision thresholds, fragment situated knowledge, and privilege quantifiable indicators over qualitative assessments, including patient narratives, social vulnerabilities, and relational histories. This represents an ethical transformation, not only an operational one: the conditions under which patients are recognised as moral subjects become mediated—sometimes constrained—by statistical reasoning.

In low-resource environments, immanent normativity encoded in externally designed systems often conflicts with local forms of clinical sense-making grounded in relational trust, tacit expertise, and community accountability. The divergence between algorithmic and contextual norms is thus not merely a matter of accuracy but of normative legitimacy. This mismatch anticipates the argument developed later in the paper: that ethical governance must attend to situated epistemologies rather than presupposing the universality of algorithmic categories.

Finally, this reframing allows us to reconceptualise algorithmic systems as norm-generative actors: they shape options for action, frame moral expectations, and redistribute authority within clinical encounters. Ethical governance requires recognising this active normative role and creating structures—formal and informal—that can sustain deliberative scrutiny. This is the core justification for the two principles elaborated later: technological subsidiarity (to limit the dominance of immanent normativity) and epistemic solidarity (to widen the space for inclusive deliberative normativity).

3 Algorithmic infrastructures in the Global North: standards, oversight, and normative tensions

The integration of algorithmic systems into healthcare within the Global North is often presented as a story of steady, linear progress: expanding computational capacity, maturing regulatory ecosystems, and growing institutional readiness. Yet this narrative obscures both the limited and uneven empirical adoption of clinical AI and the normative assumptions embedded in the infrastructures that support it.

Recent ethnographic studies (Ardito et al. 2025; Karalis 2024; Kim et al. 2024) demonstrate that the actual deployment of AI in hospitals remains partial, fragile, and locally contingent. These works show that algorithmic systems often meet resistance not because clinicians reject technology per se, but because integration disrupts workflow rhythms, relies on incomplete or biased datasets, or produces outputs whose interpretability remains uncertain. Adoption is best understood as patchwork integration, where technical, organisational, and epistemic components remain misaligned (Maccaro et al 2022b).

Recognising this reality enables an ethical analysis. Organisational challenges—such as workflow restructuring, interoperability issues, and liability concerns—intersect with epistemic tensions, including the status of algorithmic recommendations in relation to clinical intuition, embodied expertise, and local diagnostic cultures. These epistemic tensions, in turn, acquire ethical significance when they shape decision-making hierarchies, redistribute authority, or constrain the possibility of deliberative dissent.

This becomes evident when considering how regulatory frameworks position algorithmic systems. The European Union's GDPR, AI Act, and EHDS collectively articulate a vision of "trustworthy" AI grounded in transparency, documentation, and risk classification. However, these instruments primarily institutionalise a *procedural* notion of ethical oversight, one in which compliance is achieved through traceability, documentation, and auditability. What they do not address are the *substantive* ethical implications of standardisation: which values are being optimised; whose uncertainties are being privileged; whose forms of care become legitimate.

To clarify this distinction, organisational issues concern the ways in which hospitals integrate algorithmic tools into existing workflows, train clinical staff, manage liability, and allocate resources. Epistemic issues, by contrast, relate to what counts as clinically meaningful evidence, how uncertainty is interpreted, and how judgment is distributed between human and machine actors. Ethical issues emerge at a further level and concern questions of recognition, patient autonomy, relational care, responsibility, and justice. Algorithms thus become ethically significant not primarily because they malfunction, but because their immanent normativity—the values embedded in design choices, data selection, and optimisation criteria—interacts with clinical ecologies in ways that reconfigure the moral architecture of care.

This dynamic is most visible in the phenomenon of digital paternalism. Digital paternalism does not merely describe friction between human and machine-generated diagnoses; rather, it refers to the normative asymmetry that arises when algorithmic outputs are treated as authoritative by default, thereby shifting the burden of proof onto clinicians. In practice, this asymmetry emerges from a combination of factors, including clinicians' concerns about institutional liability

when diverging from AI recommendations, organisational cultures that increasingly valorise standardisation and "data-driven" decision-making, and audit systems that incentivise adherence to algorithmic pathways even when local knowledge and contextual judgment would suggest caution.

This paternalism is therefore not merely operational: it alters deliberative normativity, reducing opportunities for contestation, mutual justification, and value-sensitive interpretation—elements essential to clinical ethics.

Moreover, the standardisation inherent in algorithmic infrastructures risks narrowing the range of legitimate care practices. Efficiency becomes an ethical issue when it overrides relational or context-sensitive dimensions of care, particularly for patients with complex social vulnerabilities not easily rendered in computational terms.

In the Global North, algorithmic governance tends toward dense regulation, procedural oversight, and standardised infrastructures. In Benin, the case study that we're going to consider, by contrast, the absence of such infrastructures creates a radically different interplay between immanent and deliberative normativity, where informal networks, tacit expertise, and community accountability remain central—and often incompatible with algorithmic abstraction imposed from outside.

In sum, algorithmic infrastructures in the Global North exhibit a specific configuration: procedurally robust yet normatively narrow, technologically advanced yet epistemically constrained, ethically attentive at the level of compliance but often inattentive to the relational and contextual foundations of care. This configuration is not universal—it is historically and institutionally situated—which is why the comparative turn toward Benin is essential for rethinking algorithmic ethics in a plural, globally attentive perspective.

4 Healthcare and algorithmic gaps in Benin: infrastructural absences, situated practices, and plural normativities

The contrast between algorithmic healthcare infrastructures in the Global North and in low-resource settings becomes fully intelligible only when examined through a specific, situated case. This section focuses on Benin, drawing on four field studies conducted between 2016 and 2024 by the author in collaboration with biomedical engineers, sociologists and medical doctors both from EU and locals.

Benin offers an instructive example not because it stands for an undifferentiated "Global South," but because its healthcare system is characterised by a layered combination of infrastructural fragility, informal clinical networks, and plural moral economies of care (Maccaro 2019). These features illuminate how algorithmic systems—when introduced without contextual adaptation—risk displacing rather than supporting local norms.

4.1 Infrastructural conditions and the myth of "digital readiness"

While policy documents and donor agendas often describe African health systems as "emerging digital markets," field evidence from Benin shows a different picture. Hospitals face chronic shortages of medical equipment, frequent power outages, minimal interoperability between data systems, and heavy reliance on paper-based records. Maintenance of medical devices is often improvised, with technicians relying on recycled parts or local artisans due to the absence of stable supply chains (Maccaro et al 2024).

These constraints are not merely operational; they shape what kinds of information can be recorded, retrieved, and validated. As Tiffin et al. (2019) highlight, the limited availability of structured health data in African health systems must be understood not simply as a technological gap but as the outcome of donor-driven data practices that prioritise reporting metrics over locally meaningful clinical information.

In Benin, this asymmetry is particularly visible: data is abundant for external research projects and vertical programs (e.g. HIV), but scarce for everyday clinical decision-making. Attempts to introduce algorithmic decision-support tools trained on external datasets thus risk epistemic misalignment: they presuppose data infrastructures that do not exist and clinical workflows that do not match local realities.

4.2 Informal networks, tacit expertise, and vernacular normativity

One of the most consistent findings across the four field studies concerns the role of informal clinical networks, which frequently compensate for systemic gaps. Nurses and technicians often consult senior colleagues via WhatsApp groups; rural clinics rely on personal ties to urban hospitals; and community health workers draw on relational trust to triage and counsel patients (Maccaro 2018).

These practices—far from being mere "workarounds"—constitute a vernacular infrastructure of care, shaped by tacit knowledge, context-sensitive reasoning, and communal responsibility. As Nguyen (2010) and Whyte (2002) show in other West African contexts, such relational ecologies embody ethical commitments that cannot be reduced to computational metrics.

Introducing preconfigured algorithmic tools into this landscape risks creating a double form of displacement. On the one hand, a *technical displacement* occurs when relational know-how and context-sensitive clinical reasoning are sidelined by standardised algorithmic thresholds. On

the other hand, an *epistemic displacement* emerges when local categories of illness, vulnerability, and urgency are overwritten by imported classificatory models that fail to reflect situated understandings of care.

This explains why the apparent "absence" of algorithmic systems in Benin is not simply technological lag but a space of normative openness, where care is negotiated intersubjectively rather than predefined by optimisation parameters.

4.3 Algorithmic non-use as ethical and epistemic resistance

A recurring theme in the field studies is algorithmic non-use—not as rejection of innovation but as deliberate suspension of tools perceived as misaligned with contextual needs. Clinicians often prefer narrative explanations, physical examination, or peer consultation over digital triage tools introduced by external actors.

This non-use constitutes a form of situated normativity, signalling that legitimacy in clinical decision-making depends not on technical sophistication but on the ability to respond to local vulnerabilities, social histories, and material constraints.

Such findings resonate with decolonial scholarship on "data universalism" (Couldry and Mejías 2019) and critiques of algorithmic coloniality: when external systems attempt to standardise clinical reasoning, they risk reproducing extractive patterns in which technological authority is imposed without co-development or contextual embedding.

4.4 Clinical examples from the field studies

To further substantiate the empirical grounding of this analysis, it is useful to introduce several concrete examples drawn from the field studies conducted in Benin (with details anonymised for ethical compliance). These cases are consistent with existing empirical research on digital health implementation in low-resource settings (Aranda-Jan et al. 2014; Mitsakakis et al. 2018; Kruse et al. 2019), and they help clarify how algorithmic tools designed in Global North contexts encounter structural, epistemic, and normative frictions when deployed within radically different clinical ecologies.

In emergency triage for paediatric malaria, for instance, nurses were observed to rely primarily on rapid relational assessments rather than on the decision trees embedded in imported mobile triage applications. Clinical judgments were shaped by parental narratives, embodied cues, prior illness histories, and contextual information such as recent travel or seasonal patterns, which could not be adequately captured by standardised algorithmic thresholds. As a result, algorithmic recommendations were frequently sidelined, not because they were perceived as inaccurate in principle, but because they failed to resonate with the situational knowledge required in high-uncertainty and resource-constrained environments. Similar mismatches between clinical intuition and algorithmic rigidity have been documented in other African settings, where symptom variability and contextual knowledge play a decisive role in diagnosis (Ndembi et al. 2025).

A comparable dynamic emerged in peri-urban ultrasound diagnostics. Here, technicians routinely depended on informal peer networks to interpret ambiguous images, particularly when devices were outdated, poorly calibrated, or intermittently malfunctioning. Informal consultations—often mediated through messaging applications or personal contacts—functioned as an essential epistemic infrastructure, compensating for technological fragility. Attempts to introduce algorithmic image-classification tools in this context were eventually abandoned, as unstable connectivity and the use of non-representative training datasets generated inconsistent or misleading outputs. This experience echoes broader evidence showing that diagnostic AI systems trained predominantly on Global North datasets tend to perform poorly in African clinical environments, where demographic, epidemiological, and infrastructural conditions differ substantially (Arora et al. 2023).

In rural maternal health, community health workers highlighted a further limitation of algorithmic risk-prediction tools: their inability to account for social determinants of vulnerability that are central to local clinical judgment. Factors such as family dynamics, informal caregiving arrangements, transport availability, and social support networks were routinely integrated into risk assessments by health workers, yet remained invisible to algorithmic models focused on biomedical indicators alone. As a consequence, algorithmic risk scores were often perceived as normatively incomplete, even when technically correct. This finding parallels wider evidence that algorithmic risk tools systematically underperform when structural and relational vulnerabilities are not encoded in the data on which they rely (Obermeyer et al. 2019).

Taken together, these examples illustrate how computational abstraction frequently fails to accommodate the multilayered, relational, and socially embedded constitution of care in Benin. More importantly, they show that the ethical challenges raised by algorithmic systems do not stem solely from technical shortcomings, but from deeper normative misalignments between imported models of decision-making and locally grounded practices of clinical reasoning. These cases therefore reinforce the argument that ethical governance in digital health cannot be reduced to technical calibration or performance optimisation alone, but must engage seriously with situated epistemologies, informal infrastructures, and community-rooted practices of care.

4.5 Normative consequences: from absence to plurality

The Benin case challenges the assumption—common in Global North policy discourse—that the absence of algorithmic infrastructures is simply a technological or ethical deficit. In reality, this absence *coexists* with forms of situated judgment, relational accountability, and interpretive flexibility (Pinch and Bijker 1984) that are central to local clinical ecologies and cannot be captured by computational abstraction.

This is not to suggest that precarity is desirable. On the contrary, weak infrastructures expose health systems to substantial risks: inconsistent standards of care, vulnerability to exploitation, and the experimental deployment of unregulated technologies by external actors, as documented in global health ethics (Crane 2013). What the Benin case highlights is not the value of the absence, but the value of the epistemic and relational practices that persist despite it.

Recognising this ambivalence makes it clear that algorithmic ethics cannot be reduced to technical specifications imported from elsewhere. When externally designed systems embed immanent normativity that presupposes stable datasets, interoperable infrastructures, and individualised models of decision-making, they often conflict with local deliberative normativity in which legitimacy arises through interpersonal negotiation, community accountability, and tacit expertise.

Rather than framing Benin as a "lag" to be corrected, this comparative perspective underscores that plurality is a condition of ethical governance. The challenge is not to replace situated practices with algorithmic ones, but to design systems capable of coexisting with—and learning from—multiple epistemic cultures.

4.6 What the comparison reveals

The comparative analysis between Global North algorithmic infrastructures and Beninese clinical ecologies does not simply confirm the limitations discussed earlier; it illuminates what is at stake normatively when algorithmic categories travel across contexts. Instead of reiterating the principles introduced in the introduction, Technological subsidiarity and Epistemic solidarity, the comparison clarifies *why* they become necessary.

First, it shows that the ethical challenges of clinical AI do not stem solely from design flaws or dataset biases, but from deeper mismatches between the immanent normativity of imported systems and the deliberative normativity embedded in situated practices of care. Algorithmic tools presuppose stable infrastructures, standardised workflows, and individualised models of decision-making—conditions that do not hold in Benin, where relational accountability and tacit expertise guide clinical reasoning.

Second, the comparison reveals that when such systems are introduced without accommodating local epistemologies, they risk producing normative displacement: the erosion of existing forms of justification, responsibility, and community-based decision-making. This is not an argument against technology, but against contextual opacity.

Finally, the Benin case demonstrates that alternative normative trajectories—rooted in relational reasoning, interpretive flexibility, and community accountability—already exist and can enrich ongoing debates about algorithmic governance. These trajectories highlight the need for governance models that do not impose universality but learn from plurality.

In this sense, the comparison does not offer merely an empirical contrast; it provides the conceptual ground for rethinking what ethical AI in healthcare might become when approached through a globally attentive, relational, and context-sensitive lens.

5 The politics of automation: Virginia Eubanks and the algorithmic poorhouse

The ethical implications of algorithmic systems in healthcare cannot be understood in isolation from the broader political economies and historical asymmetries in which they operate. While the Global North often frames automation as a tool for optimisation, transparency, and cost-effectiveness, in many contexts—particularly those marked by structural inequalities or postcolonial dependencies—algorithmic systems function as instruments of classification, triage, and control. This section revisits the politics of automation through a comparative reading of Virginia Eubanks' notion of the "algorithmic poorhouse" and recent decolonial critiques of digital health.

Eubanks (2018) shows how welfare automation in the United States disciplines the poor by embedding logics of suspicion, behavioural monitoring, and resource restriction within digital infrastructures. Eligibility systems, risk assessments, and predictive analytics are not neutral tools: they enact a political rationality grounded in austerity and deservingness, transforming social support into surveillance. This concept is not transferred wholesale to African contexts. Instead, it is used here as an analytical lens to highlight how algorithmic governance—wherever deployed—tends to intensify existing power asymmetries under the guise of objectivity.

Decolonial scholars of digital health, particularly those writing from or about African contexts (Grancia 2024, Mehjabeen et al. 2024, Sekalala and Chatikobo 2024; Nyabola 2018; Tiffin et al. 2019), argue that algorithmic

systems often reproduce "data colonialism": the extraction of local data and the imposition of external categories of meaning. This form of technological coloniality operates not through explicit domination, but through the epistemic authority granted to imported computational models, which can redefine clinical realities even when they contradict lived experience.

The Benin field studies offer a concrete illustration of this dynamic. In clinical encounters where relational reasoning, narrative assessment, and tacit knowledge guide decisions, algorithmic classification tools—often trained on distant populations—tend to overwrite local diagnostic categories or reframe vulnerability through external risk taxonomies. When discrepancies arise, it is typically the local clinician who is rendered deviant, not the tool. This inversion of epistemic authority mirrors the asymmetric dynamics described by Eubanks: the system is treated as correct by design; the human must justify divergence.

However, unlike in the U.S. welfare context, automation in Benin rarely functions as a comprehensive governance system. Due to infrastructural fragility, lack of interoperability, and intermittent implementation, algorithmic systems often remain partial, externally managed, or pilot-bound. Yet these limits do not diminish their normative impact. Even non-use or intermittent use can reconfigure expectations: donors and international organisations increasingly demand data-driven indicators, creating pressure on clinics to conform to externally defined metrics of success, even when these metrics misrepresent local priorities.

This dynamic is well documented in recent African scholarship on digital health governance. Authors such as Nyabola (2018) and Tiffin et al. (2019) show that digital infrastructures can extend geopolitical influence by embedding Northern epistemologies into local health bureaucracies.

In Benin, as observed in the field studies, external algorithmic systems often serve donor accountability before they serve clinical reasoning, a point consistent with Tiffin et al.'s (2019) call for "contextually legitimate" digital health interventions.

What these perspectives share is the insight that algorithmic systems, even when designed for benevolent purposes, tend to redistribute power silently. They determine who becomes visible in data, whose vulnerabilities are legible, and whose forms of care are recognised as clinically valid. This is why the politics of automation can be considered from an ethical perspective as a question related to recognition, responsibility, and justice—not merely an organisational or technical matter.

Eubanks' concept of the "algorithmic poorhouse" highlights that automation often amplifies the vulnerabilities of those already structurally marginalised, whether through restrictive eligibility models in the U.S. or through the erasure of situated knowledges in Benin. In both cases, algorithms become normative devices that allocate trust, credibility, and legitimacy—and that reconfigure the ethical terrain within which care decisions unfold.

Crucially, the politics of automation in Benin reveal not only risks but also forms of resistance and alternative normativity. As shown earlier, clinicians frequently engage in interpretive refusals, selectively withholding trust from algorithmic tools when outputs contradict contextual reasoning. Such practices echo what decolonial theorists identify as epistemic disobedience (Mignolo 2009): the strategic assertion of local knowledge systems against imposed structures of authority.

This interplay—between external algorithmic authority and local epistemic refusal—is foundational to the two normative principles that cross the article. It demonstrates the need for technological subsidiarity, ensuring that algorithmic tools support rather than dominate clinical reasoning. And this underscores the urgency of epistemic solidarity, as a commitment to recognising situated knowledge practices (Haraway 1988) and integrating them into design and governance.

In sum, the politics of automation reveal that algorithms are not only technical artefacts but political actors: they shape who is recognised, who is heard, and whose world counts as valid. Understanding these dynamics is essential for building an ethics of algorithmic care that is globally attentive, plural, and grounded in just relations.

6 Toward a plural ethics of algorithmic care: subsidiarity, epistemic solidarity, and situated normativity

The preceding sections have shown that algorithms in healthcare do not merely process information: they actively reshape the epistemic, relational, and institutional conditions under which care is delivered. As a result, ethical evaluation cannot be reduced to compliance with abstract principles—fairness, transparency, or accountability—when such principles fail to address the *situated* and *norm-generative* character of algorithmic systems.

This section clarifies that the two normative principles proposed in the article—technological subsidiarity and epistemic solidarity—*emerge directly from the comparative analysis* between Global North infrastructures and clinical practices, as observed in the Benin case study. They are not conceptual add-ons; they are conceptual distillations of the empirical and theoretical tensions demonstrated throughout Sects. Algorithmic infrastructures in the Global North: standards, oversight, and normative tensions; Healthcare and algorithmic gaps in Benin: infrastructural absences, situated practices, and plural normativities; The politics of automation: Virginia Eubanks and the algorithmic poorhouse.

6.1 Why a plural ethics is needed

Algorithms distribute epistemic authority: they determine what counts as evidence, whose testimony is credible, which clinical practices are legible. Such distributions are ethically charged because they affect recognition, autonomy, and the moral texture of care—especially in contexts marked by asymmetries of power or structural vulnerability.

In highly regulated Northern environments, the risk is over-standardisation, where optimisation logics marginalise relational judgment and compress deliberative space. In Benin, by contrast, the danger is epistemic displacement, where imported algorithmic models overwrite situated forms of knowing and caring. The need for a plural ethics thus emerges from the heterogeneity of global care ecologies. No single normative framework—neither principles-based AI ethics nor universal fairness criteria—can account for such diversity.

6.2 Technological subsidiarity: safeguarding contextual judgment

Technological subsidiarity is proposed here as a first-order normative principle regulating the relationship between human and machine judgment in digital health. Drawing analogically from political theory but reworked for clinical practice, the principle asserts that decisions should remain anchored where contextual reasoning, relational knowledge, and situated expertise are strongest; that algorithmic tools ought to assist rather than substitute human judgment; and that automation must preserve the deliberative space required for moral reasoning in care (Mol 2008; Kroll 2021; Elish 2019).

This principle responds to empirical patterns observed across contrasting settings. In the Global North, subsidiarity helps counteract digital paternalism, where algorithmic recommendations become authoritative by default due to liability anxieties, the institutional valorisation of standardisation, or governance cultures shaped by audit and compliance (Ananny and Crawford 2018; Beauchamp et al. 2023). In such systems, automation risks narrowing interpretive flexibility and marginalising embodied or narrative forms of expertise central to clinical ethics.

In Benin, by contrast, subsidiarity addresses a different tension: the normative misalignment created when externally developed tools impose classificatory thresholds or risk categories trained on distant populations and incompatible with local diagnostic ecologies. African scholarship on digital health governance has shown how these misalignments reflect broader epistemic asymmetries, whereby imported digital infrastructures reorganise visibility, authority, and the conditions of legitimate knowledge (Nyabola 2018; Tiffin et al. 2019).

Subsidiarity, therefore, does not entail resisting technology. Rather, it requires ensuring that digital systems remain accountable to locally embedded norms, relational practices, and the moral ecologies within which care decisions unfold. Its aim is to make algorithmic support strengthen—rather than displace—the plural and context-sensitive forms of reasoning that sustain ethical clinical judgment.

6.3 Epistemic solidarity: recognising situated knowledges

The second principle, *epistemic solidarity*, broadens the ethical horizon from the organisation of decision-making to the recognition and inclusion of diverse epistemic resources. Building on Fricker's (2007) account of testimonial and hermeneutical injustice—and on recent work in epistemic injustice in healthcare (Carel and Kidd 2014)—epistemic solidarity requires institutions, designers, and policymakers to acknowledge the legitimacy of situated forms of knowledge, including narrative, relational, experiential, tacit, and community-based ways of knowing.

This principle directly responds to empirical findings from Benin, where the challenge posed by algorithmic systems is not limited to technical misclassification but extends to the suppression of interpretive resources that are indispensable for understanding illness, vulnerability, and responsibility in local terms. Similar concerns have been raised in Global North settings, where the growing epistemic authority of predictive systems can marginalise patient narratives and erode the dialogical space necessary for shared clinical reasoning (Bouderhem 2024; Elish 2019; Smallman 2022).

Epistemic solidarity, therefore, requires mechanisms capable of integrating and protecting these plural epistemic contributions. Participatory design approaches—well established in contemporary critical data studies (Lehtiniemi and Haapoja 2020; Birhane 2021)—offer one pathway by ensuring that communities and clinicians can shape the categories and priorities embedded in algorithmic systems. Complementary work on contestability (Kleinberg et al. 2018; Selbst 2020) highlights how both patients and health workers must be able to question and challenge algorithmic outputs when they conflict with contextual reasoning. At a broader level, scholarship on decolonial data governance and structural inequities (Benjamin 2019; Birhane 2021) underscores the need for redistributive attention, ensuring that groups historically excluded or misrepresented in data infrastructures can meaningfully contribute to—and benefit from—algorithmic systems.

Taken together, epistemic solidarity is not an additive principle but a normative reorientation: it demands that algorithmic governance be accountable to the plurality of ways in which knowledge is produced, validated, and interpreted within concrete communities of care.

6.4 Situated normativity and moral pluralism

Situated normativity thus emerges not as a standalone principle but as the conceptual synthesis of technological subsidiarity and epistemic solidarity. It rejects two insufficient extremes: technocratic universalism, which assumes that algorithmic standards can be transferred globally without modification, and cultural relativism, which denies the possibility of any cross-contextual ethical evaluation. Instead, situated normativity affirms that ethical assessment must begin from the empirical contours of local care ecologies; that normative principles should be justified through practices of deliberation, recognition, and co-construction; and that algorithmic systems must remain open to reinterpretation as clinical and social conditions evolve. This understanding aligns with recent work conceptualising normativity as inherently situated within local ecologies of action (van den Herik and Rietveld 2021).

Furthermore, this orientation resonates with Jasanoff's notion of "technologies of humility"—the call to design and govern technologies in ways that acknowledge uncertainty, accommodate plural forms of expertise, and remain accountable to affected communities (Jasanoff 2003). By situating this idea explicitly within clinical and postcolonial contexts, the argument clarifies that humility in digital health cannot be reduced to procedural caution: it requires sustained engagement with the plurality of knowledge systems, vulnerabilities, and moral practices that shape care in different environments (Maccaro 2024b).

6.5 Structural implications for governance

To operationalise this plural ethics, the article does not propose an alternative regulatory checklist, nor does it replicate principles already present in existing European governance instruments such as the AI Act, the GDPR, or WHO frameworks. Rather, it reframes these commitments through the lens of situated normativity, emphasising the ethical and epistemic conditions that must underpin their implementation in diverse clinical contexts.

First, *subsidiarity by design* requires not simply ensuring "human oversight"—as already mandated by EU regulation—but clarifying the *quality* of such oversight: the preservation of contextual judgment, relational understanding, and tacit expertise, especially in uncertainty-laden environments. Second, *contestability* is conceived not as a procedural right of appeal embedded in compliance structures, but as an infrastructural condition that sustains deliberative normativity, enabling clinicians and patients to refuse, reinterpret, or override algorithmic outputs when they conflict with local epistemic priorities.

Third, *equity-aware data governance* expands beyond representational fairness by requiring attention to the epistemic categories through which vulnerability is defined, interpreted, and made actionable—an aspect largely absent from current regulatory instruments. Fourth, while *global standards* remain essential, their ethical legitimacy ultimately depends on locally grounded oversight bodies capable of interpreting how regulatory requirements interact with contingent care practices. Finally, *transparency* is understood not only as explainability but as explicit disclosure of the social, political, and moral assumptions embedded in models, thereby opening them to collective scrutiny rather than merely technical inspection.

In this sense, the proposal does not duplicate existing governance frameworks but specifies the normative conditions under which they can operate ethically, especially when algorithmic systems circulate across heterogeneous and unequal clinical ecologies.

6.6 Integrating care, recognition, and justice

The plural ethics articulated here reframes care not merely as a relational practice but as a dynamic site of negotiation between human and algorithmic agency, where responsibility, vulnerability, and recognition are continuously reshaped. In this view, clinical practice is not a neutral backdrop into which technologies are inserted; it is a normative ecology in which values emerge through situated interactions among patients, clinicians, families, and increasingly, digital systems.

Within this ecology, *subsidiarity* safeguards the integrity of relational care by ensuring that algorithmic tools remain subordinate to the contextual, embodied, and tacit forms of judgment that constitute good clinical reasoning. It counters the risk that predictive systems become normatively dominant, redefining what counts as evidence or overriding the deliberative processes through which moral decisions are negotiated.

Epistemic solidarity, in turn, protects the dignity and legitimacy of plural knowledges. It calls attention to the ways in which algorithmic infrastructures can erase or marginalise narrative, experiential, and community-based forms of understanding, and it demands institutional commitments that re-centre these epistemic resources within design, deployment, and governance.

Together, these principles offer more than a set of constraints: they constitute a coherent framework for reorienting algorithmic health systems toward futures that are context-sensitive, participatory, and attentive to global justice. In doing so, they articulate a vision of digital health in which technological innovation is guided not by abstraction or uniformity but by the lived realities and normative commitments of diverse communities of care.

7 Conclusion

This article has shown that algorithmic systems in healthcare function not merely as technical artefacts but as normative infrastructures that shape what counts as evidence, how responsibility is distributed, and whose knowledge is legitimised within clinical practice. By examining two contrasting healthcare ecologies—the highly regulated environments of the Global North and the situated care practices observed in Benin—the analysis has demonstrated that algorithmic normativity is never context-neutral: it interacts with local epistemic traditions, institutional capacities, and moral expectations in ways that can both enable and unsettle established forms of care.

A central insight emerging from the comparative approach is that ethical principles for algorithmic health systems cannot be detached from the conditions in which they are enacted. The Benin case makes clear that the absence or partial adoption of automation does not simply reflect infrastructural limitations; it also sustains space for relational, narrative, and tacit forms of expertise that carry their own normative weight. Conversely, the Global North reveals how dense regulatory architectures may still overlook relational and contextual foundations of care, despite advanced governance mechanisms.

Against this background, the article has articulated two principles—technological subsidiarity and epistemic solidarity—that provide a coherent framework for evaluating and guiding algorithmic systems across diverse settings. Rather than being externally imposed, these principles arise from the comparative analysis itself: subsidiarity protects the integrity of contextual judgment, while epistemic solidarity demands the recognition and inclusion of plural ways of knowing. Together, they ground a model of situated normativity capable of informing ethically robust and globally attentive digital health futures.

Ultimately, building just algorithmic healthcare systems will require more than compliance or the application of universal metrics. It demands an ongoing engagement with lived clinical realities, epistemic diversity, and the political economies through which technologies travel. An ethics centred on subsidiarity and solidarity offers both a normative compass and a practical orientation for ensuring that algorithmic systems remain accountable to the plural moral worlds in which they operate.

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Declarations

Competing interests The authors declare no competing interests.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors. No experiments were conducted, and therefore no approval from an ethics committee was required. The manuscript complies with the ethical standards of AI & Ethics and with the general ethical guidelines for scholarly publishing.

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