

THEMED ESSAYS

## Attuning Algorithms: Designing AI for Relational Intelligence for Patient Care

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### Abstract

*This essay – written as a reflexive field report – examines the integration of artificial intelligence (AI) into neonatal intensive care units (NICUs) through PreeMe, a digital health platform grounded in long-term anthropological and epidemiological research on neonatal illness trajectories, parent-infant bonding, and NICU family experiences. In the NICU, premature infants confront physiological fragility while parents navigate radical prognostic uncertainty and profound emotional overwhelm. As PreeMe develops an agentic AI chatbot, a central design question emerges: Should this nonhuman actor be named or personified? To address this, the essay introduces the concept of vi(abilities) to analyze how AI can be attuned to the organizational culture of neonatal care, supporting fragile lives, mediating relational and emotional stakes, and complementing clinical judgment without replacing it. Two additional concepts guide this inquiry: relational ecologies, which frame care as an interconnected system of human interactions critical to survival, and relational return on investment, which revalues affective and relational labor as drivers of both clinical and economic outcomes. The essay argues for designing the chatbot as a relational intelligence bridge – more than a tool, but deliberately not a person.*

### Keywords

*Neonatal intensive care unit, Artificial intelligence, Vi(abilities), Relational ecologies, Relational return on investment.*

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Early View

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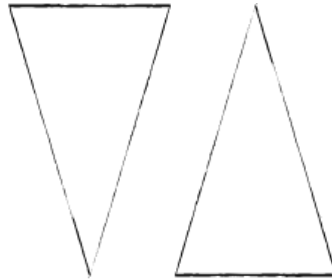
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## WHAT'S IN A NAME?

It is our twice-weekly, early morning tech and design meeting at PreeMe. We are reviewing design mock-ups for the new artificial intelligence (AI) chatbot to integrate into our PreeMe Color Journey System™ that orchestrates the neonatal intensive care unit (NICU) experience into algorithmized color-coded illness severity stages across key organ maturation areas. The proprietary system integrates clinical and fetal organ-maturation pathways with parental-bonding activities.

On the Zoom screen, we are a CTO, COO, five developers, and me (the CEO/founder/medical anthropologist). The team has been working hard on the wireframes and design concept for a NICU AI Chatbot. I stress how impressed I am with what I see, and then I ask:

Can we take the name Clara out of the AI Chatbot wireframes? I'm not sure the AI chatbot should have a human name and persona. We have to be cautious here. When parents use the AI chatbot, we don't want to mess up the primary relationship between parents-clinicians and parents-babies. A third entity with a persona can challenge trust and bring behaviors that are counterproductive to parent-clinician relationships, hurting the health outcomes of babies.

Our CTO responds quickly and assertively, reflecting his deep experience building AI for many companies and the current technological culture around AI:

I'm gonna push back here. People expect AI chatbots to have a personality. AI is already anthropomorphized across all customers. Users have expectations for an AI-chatbot experience. Why wouldn't we lean into this? Not having a persona would be more frustrating to the user.

The developers nod. One adds: "If it doesn't feel personable, people won't trust it." Another adds: "I don't know any chatbots that don't have a name. A name is standard; otherwise, what is it?" Our COO listens and adds his commercial perspective:

Yeah, I get it, if we were Amazon or Apple or in a pure product space where it doesn't really matter who is helping you. Parents need a clear boundary between information given out by a human and the AI bot helping to reinforce and augment their parent education. Clinicians do not want parents to feel "too" validated by the chatbot or to feel the chatbot gives them expert authority. Our chatbot is an extender of the clinical team, reinforcing a message, more Star Wars hologram, less Jarvis from Iron Man which is an intelligent entity. The paying customer is the hospital and their health care providers. The parent user is not our paying customer.

As CEO, I am tasked to make decisions about product strategy, regulatory implications, market expectations, and the commercial narrative investors will look for. But as an anthropologist, I am simultaneously the steward of NICU families' experiences and a technological guardian of the emotional, cultural, and relational stakes that brought this platform into existence based on my primary field research. These dual commitments are a continuous negotiation of entrepreneurial tensions between anthropologically informed design and commercial value (Artz and Ren 2025). They shape how the PreeMe team approaches every design proposal, user-experience decision, line of code, and pilot launch. From this vantage point, product development becomes a form of applied ethnographic practice (Artz 2023), in which technological choices are understood as interventions into existing organizational cultures and care relationships.

This essay draws on long-term primary ethnographic engagement with NICU environments spanning more than a decade, including years of epidemiological and participant-observation research on NICU organizational culture, parent-clinician interactions, developmental care practices, and premature infant illness trajectories across multiple hospital settings (Ren 2018). It also draws on ongoing reflexive fieldwork embedded within the day-to-day product development of PreeMe, including design meetings, pilot planning discussions, and interactions with clinicians, developers, internet security governance, administrators, and NICU families. The essay is therefore both ethnographic and organizationally reflexive. It examines how anthropological knowledge is translated into real-time technological creation and decision making within a healthcare startup.

To an outside observer, the debate about naming a chatbot might look like a simple user-experience debate. But from a business anthropology and organizational behavior lens, something deeper is happening. The startup is balancing standard engineering and design norms that have proven commercially successful in consumer settings with clinical caution, hospital culture, willingness to pay, and, most importantly, the goal of improving health outcomes for sick babies. Every person at the table is drawing on equally valid, yet different logics of value.

A simple question – should this chatbot have a human name? – opens into a larger organizational inquiry. What forms of care should AI embody in the health tech space? What forms should remain exclusively human? How will families interpret relational signals from a nonhuman actor at their most vulnerable emotional times? And how do we build technology that honors the emotional realities of the NICU while remaining commercially and operationally viable?

These questions cannot be resolved at the technical development or design level alone. Recent work in human-centered explainable AI reframes building AI as a reflective, sociotechnical practice embedded in human relationships and institutional contexts (Ehsan and Riedl 2020). The NICU is a high-stakes interactional and communicative social field, one in which infant survival depends upon human-to-human interactions, shared interpretations of risk, and inarticulable forms of fragile trust between parents and NICU teams. Situating AI as a relational actor (Latour 2005) within the NICU is

ontological (Mol 2022), altering the relational architecture through which parents and infant personhoods experience care.

## VI(ABILITIES): ATTUNING AI TO THE ORGANIZATIONAL CULTURE OF NEONATAL CARE

### *THE NICU AS ORGANIZATIONAL CULTURE*

Ann T. Jordan's (2012, 2010) work on business anthropology and organizational culture emphasizes that culture is not merely a collection of shared values, but a dynamic setting with recurrent patterns of formal and informal action, talk, symbols, and meaning-making. In medicine, organizational culture constitutes both formal and informal caregiving patterns of interactions between medical teams, babies, and parents (Heimer and Staffen 1998). Medical protocols and critical parent-infant attachment must coexist for babies to survive and thrive (Anspach 1997; Heimer and Staffen 1998; Ren 2018; Meadow, Lantos, and Roper 2006; Meadow and Lantos 2009). Yet, the relational labor of communication, attention, and presence that are interstitial to NICU care is often inconsistent, disorganized, and inefficient. As a result, data is poorly captured to justify a worthy economic return on investment for hospitals and payers around improving communication and relationships between people (Heimer and Staffen 1995) that is not a reduction in length of hospital stay or readmissions.

Premature infants weigh less than a bag of rice, lie in warming isolettes, and are tethered to machines that whirr while alarms punctuate the air. Clinicians medically keep death at bay until physiological organ maturation can take place. Medical and developmental care of preemies unfolds as a choreography between equipment, protocols, and people: re-establishing oxygen when blood saturation drops, interpreting alarms, performing skin-to-skin kangaroo care around wires and tubes, reading micro-expressions that signal pain or hunger, or modulating one's voice so developing auditory pathways can begin to distinguish human sound from machine noise. These unwritten dimensions of NICU culture are medically complex, sensorial, emotional, and relational. They shape how care is delivered to babies and parents, how un-

certainty is managed, and how relationships of reassurance are formed under conditions where life is suspended.

Parents occupy a structurally contradictory position. They are among the most consequential human presence for their baby's physiological regulation and bonding, yet they often feel like powerless spectators, dependent on clinicians and technology to sustain life while they wait in a state of radical prognostic uncertainty (Meadow, Lantos, and Roper 2006). How staff frame setbacks, narrate progress, parse out time to families, and circulate emotional labor across the unit shapes parents' understanding of their baby's prognosis and of themselves as emerging caregivers. These clinically situated relational practices (how and when they are delivered) are intertwined with tacit clinical and experiential knowledge (Daston 1988), emotional attunement (Heimer and Staffen 1998; Ren 2018), and relational judgment (Heimer and Staffen 1998; Ren 2018; Meadow and Lantos 2009). They are rarely written into medical charts or protocols, yet are organizationally essential to patient outcomes. Any AI introduced into this environment must be designed to engage with unwritten clinical and illness experiences, knowledge, patterns, and values. To do so, the PreeMe platform required creating a NICU epistemological and ontological framework for these felt, but inarticulated forms of knowledge, relational dynamics, and caregiving logics.

The coding logic and design of PreeMe's AI wireframes have three goals: (1) to communicate tacit clinical knowledge that supports developmental parent-infant bonding without flattening its emotional texture; (2) to augment the positive impact of clinician-parent interactions without displacing them; and (3) to help parents surface care priorities and questions in ways that are relationally attuned to NICU workflows. Understanding the NICU as a clinical-moral culture is a prerequisite for making responsible design and coding decisions. AI introduced into the NICU must be designed not only for what it says, but for when it should remain silent, when it should redirect, and when it should deliberately recede so communicative authority returns to the NICU team (Hindelang, Sitaru, and Zink 2024; Ismail et al. 2023).

All hospital technologies participate in networks of care. Ventilators, monitors, pumps, electronic medical records, and alarms all shape how information moves, how roles are enacted, and how clinical urgency is understood. These intensive care and infrastructure technologies surround human to human interactional workflow and patient care, but they are not typically expe-

rienced as interlocutors. AI, however, is different from other hospital technologies, because it introduces a distinct organizational challenge since it does not merely transmit information or stabilize physiological processes. It simulates interpretation, responsiveness, and conversational agency. Agentic AI shifts human-machine relations from exogeny to endogeny: from informational systems that externally support human-human communication to interstitial systems that move into the space of interaction itself. In other words, it no longer simply informs from the outside, but participates in the connective tissue of NICU team-parent communications.

Agentic chatbots blur distinctions between instrument, advisor, and relational actor. They can mimic communicative presence, produce emotionally responsive language, and appear to “understand” parental distress. It is precisely this capacity that raises new anthropological and organizational questions about authority, trust, emotional attachment, and the redistribution of interpretive labor within clinical environments. With anthropological guidance, the agentic PreeMe chatbot is designed as a triadic system that augments rather than displaces human-human interaction. While it inevitably sits between parents and clinicians, its role is to extend the reach of nurses, physicians, and lactation specialists who cannot be in multiple places at once – supporting care continuity amid staffing shortages and, ultimately, expanding the quality and extending the efficacy of direct human-human time. The data on the PreeMe platform and chatbot design implications will read out when the pilot launches in 2026.

### *ATTUNING AI TO VI(ABILITIES)*

In the NICU, viability and personhood are co-constituted, not sequential. A baby becomes viable not only through physiological stabilization, but through being recognized, interpreted, and engaged with as a person in relation to others. Ethnographically, moments when parents are invited to read cues, name progress, or participate in care do more than support medical outcomes; they actively confer personhood, shaping how the infant is seen, spoken about, and acted toward within the clinical system.

Viability, in this sense, is not merely biological survival, but a collection of capacities – vi(abilities) (Ren 2018) – including relational capacities

produced through practices that make the infant legible as a developing person with social and moral status and interactional needs. Vi(abilities), thus, reframes viability as neither a binary nor solely a biological status, but as a distributed relational capacity produced across bodies, machines, people, and institutional routines. Babies have vi(abilities): moment-to-moment physiological capacities that require ongoing interpretation. Parents cultivate vi(abilities): the emotional stamina, knowledge, trust, and confidence that enable them to participate meaningfully in care. Clinical teams sustain and manage vi(abilities): delivering standard-of-care protocols while adapting them through tacit experiential knowledge and workflow rhythm. Technologies, including AI, also hold vi(abilities): potentially increasing efficiency, creating shared meaning, and scaffolding decision making.

Business anthropology (Malefyt 2023; Morais and Malefyt 2017; Jordan 2010, 2012) emphasizes that organizational life is shaped by multiple, overlapping value systems and professional logics that are enacted through everyday practice rather than formal structure alone. The NICU contains multiple groups with differing professional and expertise logics: neonatologists with intensive care expertise; nurses with embodied interpretive knowledge; respiratory, speech, and physical therapists working with breath, feeding, and body positioning practices; lactation specialists focused on getting every baby home with the medicine of mother's milk; and administrators translating care into metrics. Families bring differing lived realities and cultural understandings of what it means to face uncertainty about their infants' life-death trajectory. EMRs, pumps, monitors, and PreeMe are also actors in this organizational field, shaping how information moves and how roles are enacted. At the center are premature infants whose developmental outcomes are still to-be-determined, emerging not solely from biological unfolding, but from early relational experiences of closeness, touch, soothing, and human physical presence that shape emotional regulation and neurodevelopment over time.

Introducing an AI chatbot with a personality does not simply add a feature. It inserts a new actor into a complex biomedical and cultural network (Latour 1990, 2005). Depending on its design, an AI agent can align with certain professional orientations over others, redistribute interpretive authority (Daston 1998), or subtly redraw boundaries around who listens, who explains, and who is emotionally present for parents during moments of fear or uncertainty. The AI chatbot must be understood not as a neutral information

layer, but as a participant in the NICU's existing power-knowledge arrangements. As Michel Foucault (1972) demonstrated, authority in clinical institutions is exercised through regimes of naming, classification, and interpretation. These regimes become embedded in everyday practices, shaping who can speak, how uncertainty is managed, and what forms of care are considered legitimate. In the NICU, this authority is culturally sustained through unwritten norms such as how alarms are interpreted, when questions are appropriate, which requests are collaborative versus disruptive, and how uncertainty is translated for families.

By translating medical language, prompting parental questions, or choosing moments of silence, the chatbot participates in the reproduction and redistribution of communicative authority within the unit. Its success therefore depends not on technical accuracy alone, but on cultural attunement to the NICU's organizational norms: knowing when to speak, how to frame knowledge without challenging clinical expertise, and when to downgrade itself so as not to compete with human judgment. In this sense, AI algorithms and design become an exercise in encoding not only information, but the tacit rules through which care, trust, and legitimacy are enacted.

Naming an AI chatbot confers a form of social presence that signals participation as an anthropomorphized relational actor and de-emphasizes its role as an algorithmic instrument. From an organizational culture perspective, a named chatbot can subtly redistribute interpretive authority, inviting interaction, recognition, and affect that may displace existing clinician-parent relationships and trust. On the other hand, an unnamed AI system may reinforce bureaucratic distance and procedural logic, limiting its ability to motivate parent-infant bonding that clinicians may not have time to repeatedly reinforce. The design choice matters because the chatbot must convey enough warmth and authority to support parents, while constraining that authority so parents are prompted to engage with clinical team members in real time.

When viewed through *vi*(abilities), AI becomes an agent that can amplify or constrain what is possible in the NICU. It can make tacit clinical reasoning legible, standardize communication, support emotional regulation, and extend relational presence into moments when staff are overstretched. It can scaffold parents' understanding of their baby's condition, provide culturally and linguistically attuned explanations, and help them feel seen and empowered in a system that often overwhelms them.

Yet, AI can also undermine clinical expertise, create new dependencies, and complicate the communication of illness severity. The clinical and commercial success of PreeMe's agentic AI chatbot depends on creating positive new dependencies: algorithmic supports that standardize developmental care education and the communication of illness severity, while simultaneously emotionally supporting parental overwhelm and setting appropriate expectations.

The business anthropological design question thus becomes: Whose vi(abilities) should AI privilege, when, and under what context? How and when in the NICU clinical trajectory should algorithms shift priorities based on illness severity, parental distress, and clinical uncertainty? The PreeMe chatbot must stabilize interpretive uncertainty enough to encourage positive parental action and communication with staff, while also reminding parents of the uncertain realities of NICU care. The platform expands parents' vi(abilities) to understand their baby's day-to-day fluctuations and participate more fully in NICU care. At the same time, it enhances clinicians' vi(abilities) to communicate consistently across professional orientations. Through this lens, PreeMe serves as relational infrastructure rather than simply an informational tool.

*DESIGNING CONSTRAINTS:  
HOW TENSIONS WERE NEGOTIATED IN PRACTICE*

In practice, these tensions did not resolve into a simple decision either for or against anthropomorphism. Instead, they produced a series of organizational compromises and design constraints intended to preserve relational clarity within the NICU.

After many development discussions, the PreeMe team moved away from a fully personified chatbot identity, but took a middle road. The platform is externally referred to as "Clara" in descriptive materials (for instance, App Store, Google Play Store, PreeMe video trailer, etc.). This decision allows the commercial and technical teams to draw on dominant AI practices where naming a chatbot signals social presence, relational possibility, and intelligibility with users. This enables the PreeMe platform to compete in the wider AI health consumer culture to gain adoption. Importantly, however, naming

“Clara” remains intentionally absent from the app interface itself. This way, parents are not interacting with a named entity. This is a deliberate split. Externally, the chatbot is named to support cultural recognition and user orientation, while, internally, it remains unnamed, reinforcing its role as an embedded information delivery function within the NICU care environment rather than an interpretative actor in its own right. The AI chatbot is one part of an intentionally designed digital environment of baby care that includes emerging kangaroos, baby bottles, flowers, and trees, which appear as parents log caregiving and bonding activities such as visiting, pumping, singing, skin-to-skin holding, and touching their baby. In this sense, the chatbot functions not as an authoritative clinical actor, but a *digital mascot*: a recognizable symbolic presence that encourages participation, continuity, morale, and emotional momentum without claiming expert authority or human equivalence.

Like mascots more broadly, its social effectiveness does not depend on users believing it is “real.” Mascots are culturally understood as emotionally animating figures that help sustain collective engagement, spirit, and motivation while remaining clearly non-human and non-authoritative. Anthropologically, the PreeMe team designed the chatbot to operate in this symbolic and affective register, supporting participation in caregiving practices and reinforcing parent-infant relationality without displacing clinicians as the primary interpretive and caregiving figures within the NICU.

Several practical design principles emerged from these conversations:

- The chatbot should reinforce, rather than replace, clinician-parent communication.
- Moments of high medical uncertainty or emotional escalation should redirect parents back to human clinicians.
- The chatbot should avoid language implying independent medical judgment or emotional equivalence with caregivers.
- The system should support parental participation without overstating parental responsibility for outcomes.
- The AI should prioritize explanatory scaffolding over emotional simulation.

These decisions were not merely technical. They reflected negotiations between engineering norms favoring engagement and personalization, clinical concerns about authority and liability, commercial concerns about adoption

and customer trust, and anthropological concerns about attachment, relational displacement, and the moral weight of communicative authority in the NICU. The resulting design process revealed that building AI for intensive care settings is not primarily a question of interface optimization. It is a matter of organizational ethics and relational calibration.

Madeleine C. Elish's (2019) analysis of "moral crumple zones" shows that systems claiming to keep humans meaningfully "in the loop" often redistribute responsibility and emotional burden onto those least able to control outcomes. In high-stakes care environments such as the NICU, where parents are already positioned as morally responsible yet structurally powerless, AI systems that present themselves as agents, personalities, or decision makers risk intensifying affective labor and misallocating accountability. This critique suggests that the ethical and organizational challenge is not simply to make AI more explainable or human-like, but to design it as relational infrastructure attuned to layered contexts.

Situating AI in vi(abilities) reveals the NICU as a high-tech kinship system: a dense network of professional and familial orientations in which emotional labor is continuous with relational labor and clinical labor. AI is not neutral. When designed with anthropological intentionality, grounded in ethnography, sensitive to organizational logics, and attuned to vi(abilities), AI can help reorganize care around clarity, emotional integration, and relational return on investment. In this vision, AI does not replace relationships. It becomes a relational intelligence bridge whose significance lies not in persona, but in augmenting actual human-human care, enabling continuity of care when NICU teams cannot always be available to all families at all times.

## RELATIONAL ECOLOGIES AND RELATIONAL RETURN ON INVESTMENT: THE MICRO-INTERACTIONS THAT SHAPE VI(ABILITIES) AND COMMERCIAL VALUE

AI health technology development is often moored to efficiency: predictive analytics, throughput, cost reduction, and the optimization of patients, procedures, and data transactions as they move through hospital systems. This logic, inherited from industrial and computational models, prizes speed, scale, and standardization – the very attributes that make AI appealing to investors

and hospital administrators. Yet, this narrow calculus often obscures the real drivers of sustainable healthcare systems: trust, communication, interpersonal care, and relational intelligence.

As noted, premature infants' survival depends on combinations of intensive care medicine and micro-calibrations of touch, gaze, and communication between babies, parents, and clinicians. How a premature baby is transferred from the bedside to a parent sitting in a rocking chair, ready for skin-to-skin contact, matters. When performed appropriately, the parent is standing at the bedside lowering their torso so the baby's body remains in continuous contact and is, therefore, never untethered from supportive touch. This practice is critical for fetal physiological regulation. Transferring the baby "in the air" – not touching another human body, even briefly – can produce high stress for premature bodies. This is one example of affective relational labor in clinical form. Others include a nurse calming a worried parent while also doing a clinical task; a doctor explaining uncertainty in a way that does not feel overwhelming; a lactation specialist encouraging persistence while acknowledging exhaustion; and taking time remembering names, histories, and emotional context, not just medical facts on medical rounds. These relational actions help patients and families feel seen, supported, and connected, not just treated. When they are organized into a system of care that can be standardized, I refer to it as *relational ecologies*: the interdependent system of emotional, sensory, and communicative exchanges that sustain patients and enable medical teams to deliver human-centered care and healing.

These relational ecologies are fragile because they are continually negotiated under stress, asymmetrical distributions of power and knowledge, and bureaucratic and infrastructural barriers. Traditional metrics of efficiency under-recognize this kind of labor and its value. Efficiency can quantify the difference between what is actually happening and what should happen in an ideal state. But as NICU care demonstrates, empathy is often a keystone of efficacy, even when it does not map neatly onto short-term efficiency metrics. The *quality* of interaction is not a soft variable but a clinical determinant. How staff narrate a lab result, how a parent frames a setback after a difficult night, or how a nurse encourages skin-to-skin when a parent feels too afraid to touch their baby, each recalibrates the relational ecology. When a setback is poorly communicated, a mother may become stressed, struggle to lactate, produce less milk, and become less emotionally available to her infant. Communica-

tion matters when even one drop of mother's milk swabbed into a preemie's cheek can prime the gut against deadly intestinal infections. Navigating these aspects of healthcare requires what anthropologist Corinne Kratz (1994) calls affective labor: the emotional, social, and cultural work through which people sustain relationships, convey empathy, and affirm one another's sense of self when uncertainty strikes. Forms of affective labor are rarely visible in hospital metrics (Lasater et al. 2023; Scott 2022), yet they are the quiet scaffolding that holds every patient journey, even those that end in death. Affective relational labor is not abstract theory, but lived survival economics.

Medical anthropologists have long shown that healing is both physiological and relational (Kleinman 1988). As a leading neonatologist at the University of Chicago noted, “[p]arents need a gentle way to accept the reality of their baby's progress, when they are ready to hear it. It's hard for us to read what parents are hearing or not hearing when we communicate.” A NICU director at another leading Midwest hospital has similarly argued that communication is a critical expert medical skill, yet rarely is it adequately taught in medical education. Parents whose babies do not survive the NICU may still report meaningful care experiences when relational intelligence is present. Difficulties and death are inevitable in healthcare, but grief shared through relational care is not the same as grief borne alone.

This is where a *relational return on investment* (RROI) becomes critical. While traditional healthcare metrics focus on efficiency, throughput, and error reduction (Lasater et al. 2023; Scott 2022), RROI foregrounds a different calculus: the measurable value of strengthened trust, clearer communication, increased parent confidence, reduced emotional distress, and improved participation in care. Kangaroo care illustrates this relational return on investment. It takes time for NICU staff to learn the correct method, teach parents, and manage parental anxiety about holding a baby tentacled to wires, lines, and tubes. From a narrow throughput perspective, this may appear inefficient. It is faster for a nurse to carry the baby across the room and manage any alarms alone. But preparing parents to understand and participate in care is itself a patient-care task. When kangaroo care reduces stress, supports feeding, stabilizes infant physiology, and potentially shortens length of stay, relational labor becomes economically consequential. It generates real value, even when it falls outside conventional billable codes.

In the NICU, relational clarity translates into better adherence to care plans, fewer misunderstandings, more meaningful developmental care, and healthier long-term trajectories for both infants and caregivers. A chatbot, if designed with anthropological sensitivity, can extend this relational work rather than merely automate informational tasks. The question is not whether AI can answer questions, but whether it can support and strengthen the relational ecologies within the NICU. The design of the PreeMe platform produces RROI by stabilizing parents' emotional worlds and enhancing the clarity of clinical communication. Within the NICU, relational ecologies between parents and babies, babies and medical teams, and medical teams and parents are especially fragile (Anspach 1997; Heimer and Staffen 1995, 1998; Ren 2018). Communication of negative events can spiral families into despair, amplifying the impact of clinical setbacks (Ren 2018; Humes 2004). For example, a baby needing to return to a ventilator is a difficult setback for families. How this reality is conveyed to parents can affect stress, milk production, visitation, and emotional availability. Babies, meanwhile, continue to need breastmilk, cradled hand holds, and voice presence when negative events arise.

Understanding affective labor and maintaining relational care stabilizes the parent-infant dyad, shaping both the premature baby's emerging physiological capacities and eventual social personhood. The NICU and the delivery of the PreeMe platform highlight how technical expertise and affective relational expertise can work together for better neonatal outcomes.

This distinction is sharpened by Anders K. Munk, Asger G. Olesen, and Mathieu Jacomy's (2022) framing of explication versus explanation. While explanation provides answers, simplifying complexity into digestible forms, explication surfaces the underlying structures, contexts, and relations that shape meaning. The NICU requires both. Parents need straightforward explanations such as "why is the oxygen going up?" They also need explications that situate those changes within a broader developmental terrain. How babies grow, why variability is normal, what counts as progress, and how to interpret uncertainty. As for explication, PreeMe's Color Journey System gives parents a conceptual scaffold for understanding complex neonatal illness severity using four color stages based on clinical inputs across five key areas: breathing, eating, homeostasis (body temperature control), sleeping (neurodevelopment of sleep and awake cycles and physiology of positioning),

and growth (weight gain, length, and head circumference). An AI chatbot that only provides comfort risks collapsing complexity into shallow reassurance. However, an AI chatbot embedded within an ontology of illness severity can help parents manage overwhelm and participate in positive developmental care-bonding activities. Situating an AI chatbot within a "techno-illness experiential framework" (the PreeMe Color Journey System took several years to validate) enables algorithms to recognize when complexity exceeds a chatbot's role. When human interpretive judgment and emotional support is required, an AI ontological system must then appropriately signal to parents that human clinicians and timely activation of relational care is now required. For all actors to understand when illness severity can be supported by technology and when it can only be supported by humans is the key to strengthening long-term parental resilience after discharge and, thereby, reduce readmissions. In this sense, explication is a relational act that cultivates RROI.

The interpersonal aspects of hospital care – listening, explaining, comforting, and touching – are often overlooked in financial and technical frameworks (Ruiz-Roqueñi 2022). They are rarely measured, coded, or reimbursed, and remain disconnected from efficiency metrics and outcomes. Yet, relational intelligence improves health outcomes (Scott 2022). Emotional attunement and trust influence adherence, engagement, recovery, and the neurobiological processes of healing. These forms of care, while often off-ledger, are indispensable. Talk to any healthcare provider who directly takes care of patients, and few would disagree. The unmet need is not belief in relational care, but formal infrastructure to support and measure it, and budgets that see its value.

## CONCLUSION

When AI systems are introduced into spaces like the NICU, their value should not be measured only by throughput, accuracy, or automation. Their value should also be measured by whether they sustain and amplify the relational forms of care that improve clinical outcomes and build trust between clinicians and families. Used well, AI can help clinicians see patterns of distress or disengagement, organize information in ways that invite empathy rather than distance, and allocate clinical team time and attention to maximize out-

comes for all babies. Used poorly, it risks replacing relational attentiveness with efficiency theater.

The challenge, then, is not to reject efficiency, but to redefine it. True efficiency in healthcare must include the relational. It should be measured not only by how quickly tasks are completed, but by whether care systems help clinicians and families effectively standardize the nuanced delicate rhythms of human presence that make healing possible. In this frame, PreeMe's algorithms perform as a relational barometer: an applied medical anthropology engine that translates affective and communicative dynamics into developmental care protocols. RROI becomes not only a moral imperative, but a strategic performance metric, aligning empathetic relational intelligence with economics that renders visible the hidden value of care labor. The ongoing business life of PreeMe depends on delivering impactful relational care in the NICU while also persuading economic decision makers to adopt a broader view of value – one that includes RROI alongside traditional ROI.

For hospital administrators and payers, this perspective expands the definition of operational success. Relational health becomes a leading indicator of clinical outcomes and organizational health. For venture investors, it is a call to move beyond the reflex to fund technologies only when they promise easily obtainable short-term outputs. The NICU case asks healthcare investors to expand the financial definition of success and allow time for metrics that show both efficiency and efficacy. In this next phase of AI, healthcare will not win by being faster alone. It will win by becoming more relationally intelligent to the often invisible, and uncaptured, relational, interpretive, and affective dimensions of care.

Returning to the design question raised at the beginning of this essay: Should the chatbot have a name? PreeMe's AI is deliberately positioned as relational infrastructure, an interpretive system that supports explanation and explication without claiming personhood. Naming the chatbot risks collapsing this distinction, encouraging misplaced attachment or misplaced authority. Yet, refusing to name it entirely risks rendering its relational labor invisible. The tension itself is instructive. It surfaces how deeply AI imaginaries are shaped by anthropomorphic assumptions, and why an anthropologically informed approach insists on holding AI in a middle position: accountable, assistive, and relationally consequential without pretending to be human.

The NICU case demonstrates that healthcare technologies do not enter neutral environments. They enter fragile relational worlds structured by uncertainty, authority, hope, and emotional labor. AI systems designed for these settings must therefore be evaluated not only by computational performance, but by their capacity to sustain relational intelligence without displacing human care. The challenge is not whether AI can become more human-like, but whether it can become more organizationally and relationally attuned, without aspiring to be more human. In this sense, the future of healthcare AI may depend less on artificial intelligence alone than on the infrastructures of human connection it is able (or unable) to protect.

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