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Clinical Uncertainty as an Ethical Condition: Duties of Disclosure, Deliberation, and Restraint

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Abstract

Clinical uncertainty is often treated as an epistemic limitation to be reduced through further testing, consultation, prediction, or experience. Yet uncertainty also changes the ethical structure of clinical encounters because patients and clinicians must frequently make consequential choices before uncertainty can be eliminated. This normative article examines clinical uncertainty as an ethical condition and asks what obligations arise when diagnosis, prognosis, treatment effects, or the consequences of waiting remain incompletely known. Drawing on recent philosophical, bioethical, communication, and clinical literature, the analysis distinguishes uncertainty itself from clinicians' responses to it and develops a proposed account of three interrelated duties: disclosure, deliberation, and restraint. Disclosure concerns uncertainty that is materially relevant to a patient's understanding or choice without requiring exhaustive transmission of every speculative possibility. Deliberation concerns interpretive support when evidence alone does not determine what should be done. Restraint concerns disciplined action that avoids both unjustified escalation and unjustified withholding motivated by a premature demand for certainty. The article further proposes that these duties should be calibrated to features of the clinical situation rather than applied uniformly. This account does not establish a legal standard, validated decision rule, universal communication formula, or empirically proven intervention. Its purpose is to clarify why acknowledged uncertainty may alter what clinicians owe patients and to provide a normative structure for examining difficult cases in which evidence, values, time, reversibility, and responsibility remain unsettled.

Keywords: Clinical uncertainty, Disclosure, Deliberation, Restraint, Patient autonomy, Clinical ethics

Introduction

Uncertainty is not ethically neutral

Clinical medicine routinely requires action before knowledge is complete. Symptoms may support several diagnoses, prognostic estimates may remain unstable, tests may provide only partial discrimination, and treatments may have uncertain benefits for the individual patient. Structured approaches to uncertainty management consequently begin not with its elimination but with recognizing uncertainty, acknowledging it, and deciding how to respond [1]. The ethical problem begins at precisely that point. Uncertainty may be epistemically unavoidable without being ethically inert: once it bears on a consequential choice, the way it is recognized, communicated, interpreted, and acted upon can alter what patients understand and what burdens they are asked to accept.

Clinical judgment under such conditions cannot be reduced to mechanical application of rules. Accounts of clinical phronesis describe judgment as context-sensitive and interpretive, involving practical wisdom as clinicians relate general knowledge to the particular circumstances

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of a patient [2]. This does not displace evidence-based practice. Rather, it clarifies why evidence can remain insufficient to settle a decision when probabilities are incomplete, outcomes matter differently to different patients, or several defensible actions remain available. The moral significance of uncertainty therefore lies partly in how professionals bridge the gap between what can be known and what must nevertheless be decided.

Technological sophistication does not remove this problem. In AI-assisted pain assessment, for example, epistemic authority may become distorted if apparently objective outputs are granted greater credibility than their evidential or interpretive basis warrants, creating reasons for epistemic humility rather than confidence by default [3]. Likewise, uncertainty communication involves more than transmitting probabilities; it can influence understanding, emotion, trust, and the clinician–patient relationship [4]. These effects make silence, reassurance, disclosure, further investigation, and immediate intervention ethically distinguishable responses rather than neutral stylistic choices.

Nor should tolerance of uncertainty itself be treated as an unconditional professional virtue. A normative account of uncertainty tolerance emphasizes that both deficient and excessive tolerance may be problematic depending on the circumstances [5]. The argument developed here therefore does not praise uncertainty or demand maximal disclosure. It proposes instead that clinically material uncertainty constitutes an ethical condition when it changes what a patient needs to understand, deliberate about, or be protected from in the course of action. On that basis, the article develops three proposed duties—disclosure, deliberation, and restraint—and later asks how their relative demands should vary across different clinical situations.

A typology of clinical uncertainty

Before specifying duties, it is necessary to distinguish uncertainty from a single scalar notion of "not knowing." One ethically important dimension is temporal. Diagnostic uncertainty may change as symptoms evolve, tests mature, treatment responses become visible, or new information becomes available; in some cases, time resolves uncertainty, whereas in others it compounds it [6]. The ethical meaning of waiting therefore depends not simply on how uncertain the clinician is now but on whether delay is likely to clarify the situation and what may be lost while waiting.

Uncertainty also differs according to how clinicians respond to it. Qualitative work with physicians has identified distinguishable strategies aimed at knowledge gaps, uncertainty itself, emotional or behavioral responses, and relationships with others [7]. These strategies should not be mistaken for different kinds of uncertainty, but they demonstrate why two clinicians facing comparable informational limitations may generate different consequences for patients. One may seek more data, another communicate uncertainty explicitly, and another act primarily to diminish discomfort or preserve relational confidence.

Conceptual reviews similarly indicate that uncertainty in medical decision-making contains multiple components rather than one homogeneous state. Models distinguish such matters as recognition of uncertainty, classification, knowledge acquisition, decision approaches, and subsequent evaluation [8, 9]. Building from these distinctions, this article proposes a clinically oriented typology organized around four questions: what is uncertain; why it remains uncertain; how uncertainty may change over time; and how that uncertainty bears on action and relationships. These dimensions may overlap. A diagnosis can be uncertain because evidence is incomplete, temporally immature, conflicting, or differently interpreted, while its ethical relevance depends on what follows from those limitations.

The typology is therefore functional rather than exhaustive. Its purpose is not to classify every form of medical ignorance but to identify when epistemic incompleteness becomes morally salient. Uncertainty about an inconsequential detail need not generate substantial ethical demands. By contrast, uncertainty that affects a patient's understanding of alternatives, changes the expected consequences of acting or waiting, transfers risk, or determines whether a choice can later be revised provides a stronger candidate for ethical attention.

How uncertainty changes the moral situation

The existence of uncertainty does not by itself establish a duty. What matters is whether it changes the relationship among evidence, action, patient agency, and exposure to consequences. Clinicians' tolerance of uncertainty has been associated with aspects of shared decision-making perceptions and practices, suggesting that professional responses to uncertainty can intersect with the way patients are involved in decisions, although the association does not establish causation [10]. The ethical question is therefore not merely how uncertain the

clinician feels, but whether a response to uncertainty alters the patient's opportunity to understand or participate.

Patient distress also complicates rather than resolves this question. In an empirical ethics vignette study, greater communication of diagnostic uncertainty could be preferred despite its capacity to increase worry [11]. Preference data cannot determine a universal duty, but they undermine the assumption that worry alone establishes that uncertainty should be concealed. Patients may have interests in knowing that a diagnosis remains unsettled because such knowledge affects interpretation of symptoms, expectations, follow-up, or willingness to accept a proposed intervention.

Responses to uncertainty can also generate material consequences. Physician tolerance of uncertainty has been associated with variations in resource use and patient experience, although observational evidence cannot establish that intolerance itself causes particular utilization patterns [12]. The normative significance lies in the possibility that a clinician's way of managing uncertainty can redistribute burdens: additional tests may expose patients to cost, delay, false-positive cascades, or procedures, whereas insufficient investigation may expose them to missed or delayed diagnosis.

More fundamentally, clinical decisions require a threshold between incomplete evidence and action. Ethical analysis of uncertainty emphasizes that probabilities do not decide by themselves what ought to be done; judgments about benefits, harms, alternatives, and acceptable risk remain necessary [13]. The proposed claim of this article is that uncertainty becomes ethically material when its management changes what information is owed, whose values must help determine the decision, or how strongly an intervention can presently be justified. **Table 1** summarizes this manuscript-derived mapping.

Table 1. Ethical Salience of Clinical Uncertainty and the Proposed Obligations It Activates

Uncertainty feature	Why it changes the moral situation	Proposed obligation	Limiting consideration
Evidence remains unsettled about a decision-relevant matter	A patient may otherwise mistake a provisional judgment for established knowledge	**Disclosure:** identify material limits to what is known	Trivial or remote possibilities need not receive equal emphasis
Several defensible actions remain because evidence underdetermines choice	Values and burden tolerance become more important to justification	**Deliberation:** interpret options with the patient rather than transfer raw uncertainty	Participation should respect a patient's desired degree of involvement
Action primarily reduces clinician discomfort or defensive exposure	Intervention may shift avoidable burdens to the patient	**Restraint:** require patient-centered reasons for escalation	Restraint must not become neglect or systematic underuse
Uncertainty is likely to change with time or additional evidence	The choice between acting and waiting acquires ethical significance	**Proposed combined response:** disclose what may change, deliberate about consequences, and justify timing	Waiting can itself create irreversible harm

Note: The first two columns synthesize distinctions established in the preceding analysis. The obligation mapping is the article's proposed normative synthesis and is not an empirically validated classification or decision rule.

The duty of disclosure

If uncertainty is materially relevant to a patient's decision, one plausible ethical response is disclosure. The proposed duty, however, is narrower than an obligation to verbalize every diagnostic possibility or professional hesitation. Its object is decision-relevant uncertainty: uncertainty whose omission would give the patient a materially distorted picture of the diagnosis, prognosis, expected benefit, potential burden, available alternatives, or need for reassessment.

A common objection is that disclosing uncertainty may produce avoidable anxiety. That concern deserves moral weight, but it does not by itself settle the question. Cox and Fritz argue that causing patients to worry can sometimes be ethically justified when uncertainty itself is important to their situation [14]. Distress matters, but it must be weighed against other interests, including the patient's interest in understanding whether a recommendation rests on established knowledge, a provisional judgment, or unresolved diagnostic possibilities. Concealment can make reassurance easier while leaving the patient unable to interpret later change. At the same time, informed decision-making cannot require omniscience. Villiger's analysis of informed

consent under ignorance supports the possibility that meaningful consent can exist even when relevant information is genuinely unavailable [15]. This limits the proposed duty in an important way. Clinicians are not required to eliminate uncertainty before seeking authorization, nor to present speculative possibilities as though all alternatives were equally plausible. Ethical disclosure should distinguish what is known, what remains uncertain, why that uncertainty matters, and what is expected to clarify or fail to clarify it.

The proposed standard is therefore one of material and intelligible disclosure, not informational maximalism. Greater uncertainty does not automatically require more words. Sometimes a short statement that the diagnosis remains provisional, followed by the consequences for treatment or follow-up, is ethically more useful than an exhaustive differential diagnosis. Conversely, high-confidence language can be ethically inadequate when unresolved uncertainty would reasonably alter a patient's choice. The factors developed in this section are organized in **Table 2** as a nonquantitative calibration matrix.

Table 2. Factors for Calibrating the Proposed Duty to Disclose Clinical Uncertainty

Calibration factor	Ethical question	Tendency within the proposed account	Boundary
Decision relevance	Would knowing the uncertainty reasonably affect choice or understanding?	Greater relevance strengthens the case for explicit disclosure	Remote possibilities should not dominate discussion
Consequence of mistaken certainty	What may follow if a provisional judgment is understood as settled?	Greater potential consequence strengthens disclosure	Consequence alone does not determine wording
Expected evolution of knowledge	Is the uncertainty likely to resolve, persist, or worsen with time?	Explain anticipated change and reassessment when material	Prognostic claims should not exceed available knowledge
Patient informational preference	How much uncertainty does this patient wish to discuss?	Tailor depth and detail while preserving essential material information	Preference should not be presumed from distress alone
Communicative burden	Could disclosure confuse, overwhelm, or seriously burden the patient?	Modify framing, pacing, and support rather than default to concealment	Exceptional withholding requires separate justification

Note: The matrix is a proposed analytical aid derived from the preceding normative argument. It does not specify numerical thresholds, legal disclosure standards, or a validated communication protocol.

The duty of deliberation

Disclosure alone does not resolve the ethical problem created by uncertainty. A clinician may accurately tell a patient that evidence is incomplete yet leave that patient with an undigested set of possibilities and no meaningful assistance in deciding what follows. Philosophical analysis of shared medical decisions emphasizes that sharing a decision involves more than transmitting information between separate decision-makers [16]. The ethical importance of uncertainty therefore extends from what is said to how patient and clinician reason together about what uncertain information means for this particular choice.

This article proposes a duty of deliberation when uncertainty leaves more than one ethically defensible course of action and the choice depends materially on patient values, tolerance for risk, timing preferences, or willingness to bear burdens. Deliberation does not mean that clinician and patient possess identical expertise or responsibility. The clinician remains responsible for explaining the clinical structure of the problem, identifying options that can reasonably be defended, clarifying uncertainty, and giving professional recommendations when appropriate. The patient contributes knowledge of values, priorities, prior experiences, acceptable trade-offs, and what forms of risk or burden are tolerable.

Recent conceptual analysis of the relationship between shared decision-making and uncertainty supports treating uncertainty as something that can become part of the deliberative interaction itself rather than merely a fact handed from clinician to patient [17]. This matters because two people may interpret the same probability differently depending on what is at stake. A small possibility of serious irreversible harm may dominate one patient's choice, while another may prioritize avoiding an invasive test or preserving time at home.

The proposed duty also guards against a subtler failure: responsibility offloading disguised as autonomy. Saying "we cannot know, so it is your decision" can leave formal authority with the patient while withdrawing professional assistance precisely when interpretation is most difficult. Deliberation instead requires the clinician to help make uncertainty usable—explaining what decisions remain open, what information might change them, what outcomes matter, and when reconsideration would be appropriate. A patient may decline extensive discussion, but that preference should itself be respected through proportionate support rather than assumed disengagement.

The duty of restraint

Uncertainty can provoke action. More imaging, additional laboratory tests, broader consultations, empiric treatment, admission, procedural intervention, or prolonged observation may all offer a way to reduce not knowing. Yet a wish for greater certainty is not itself sufficient justification for transferring the burdens of certainty-seeking to a patient. This article therefore proposes a duty of restraint: when uncertainty materially motivates action, clinicians should be able to justify that action by patient-centered reasons rather than by the psychological or institutional value of eliminating uncertainty alone.

Restraint must immediately be distinguished from therapeutic minimalism. Analysis of the overuse–underuse paradox demonstrates why doing less cannot function as a general ethical solution: unnecessary intervention and insufficient care can both produce harm [18]. A restraint principle concerned only with preventing overtesting could therefore become ethically distorted. The relevant question is whether the intensity and timing of action are proportionate to the available reasons, including the expected benefit of obtaining information or intervening and the consequences of withholding or delay.

Defensive practice makes this distinction especially important. A systematic review of qualitative evidence found that clinicians' practices can be shaped by perceived litigation risk and other professional or organizational pressures [19]. Such evidence does not show that any particular investigation undertaken under uncertainty is defensive or unnecessary. It does, however, establish a credible boundary problem: actions that look clinically precautionary may sometimes serve additional purposes, including professional self-protection. The ethical task is not to remove those pressures by assertion but to ask whether the patient would still have sufficient reason to accept the proposed burden if the clinician's discomfort or external exposure were set aside.

Restraint also applies to withholding action. A clinician who becomes excessively comfortable with uncertainty may postpone investigation, avoid consultation, or understate danger when further action is justified. The proposed duty is therefore bidirectional. It restrains unjustified escalation, but also restrains unjustified passivity. Its governing question is not "Can we tolerate more uncertainty?" but "What action is presently justified given what is known, what remains unknown, and what the patient stands to gain or lose?" In this sense, restraint connects disclosure and deliberation to professional action: uncertainty should be neither concealed nor reflexively extinguished, but carried only to the extent that doing so remains ethically defensible.

Proportionality across stakes, evidence, and reversibility

The three proposed duties do not become equally demanding whenever uncertainty appears. A reversible, low-burden intervention differs ethically from a decision that may produce serious or enduring consequences. This article therefore proposes proportionality as the principle connecting disclosure, deliberation, and restraint: as uncertainty bears more directly on consequential, preference-sensitive, or difficult-to-reverse outcomes, stronger reasons arise to make it intelligible, deliberate about its significance, and limit unsupported commitment.

Reversibility is especially important because it is not simply binary. Conceptual analysis of neurotechnological interventions shows that reversibility can concern different dimensions of an intervention and its effects [20]. Applied more broadly, this suggests asking what can actually be undone, how completely, at what cost, and whether delayed reversal would itself matter. This extension is proposed here rather than established as a universal clinical rule.

Clinical practice also offers examples of conditional commitment. Time-limited trials in critical care combine treatment with a plan for reassessment when benefit remains uncertain [21]. Their appropriateness is context-specific, but their structure is instructive: uncertain action need not always mean either immediate full commitment or passive waiting. A decision can include a defined opportunity to reconsider evidence, goals, burdens, or prognosis.

Proportionality in this account therefore attends to stakes, evidential position, and revisability, with urgency modifying each because waiting may itself reduce options. These dimensions generate reasons, not scores. High stakes may strengthen disclosure without requiring delay; weak evidence may strengthen deliberation without prohibiting treatment; limited revisability may strengthen restraint while decisive action remains justified when delay is more dangerous. The same uncertainty can generate different obligations as evidence changes or options close. Proportionality is relational and temporal: it asks not only how uncertain a proposition is, but what that uncertainty permits clinicians to ask patients to bear now.

Figure 1 presents the manuscript's proposed calibration landscape, showing how these features jointly shape distinct duties without converting them into an algorithm.

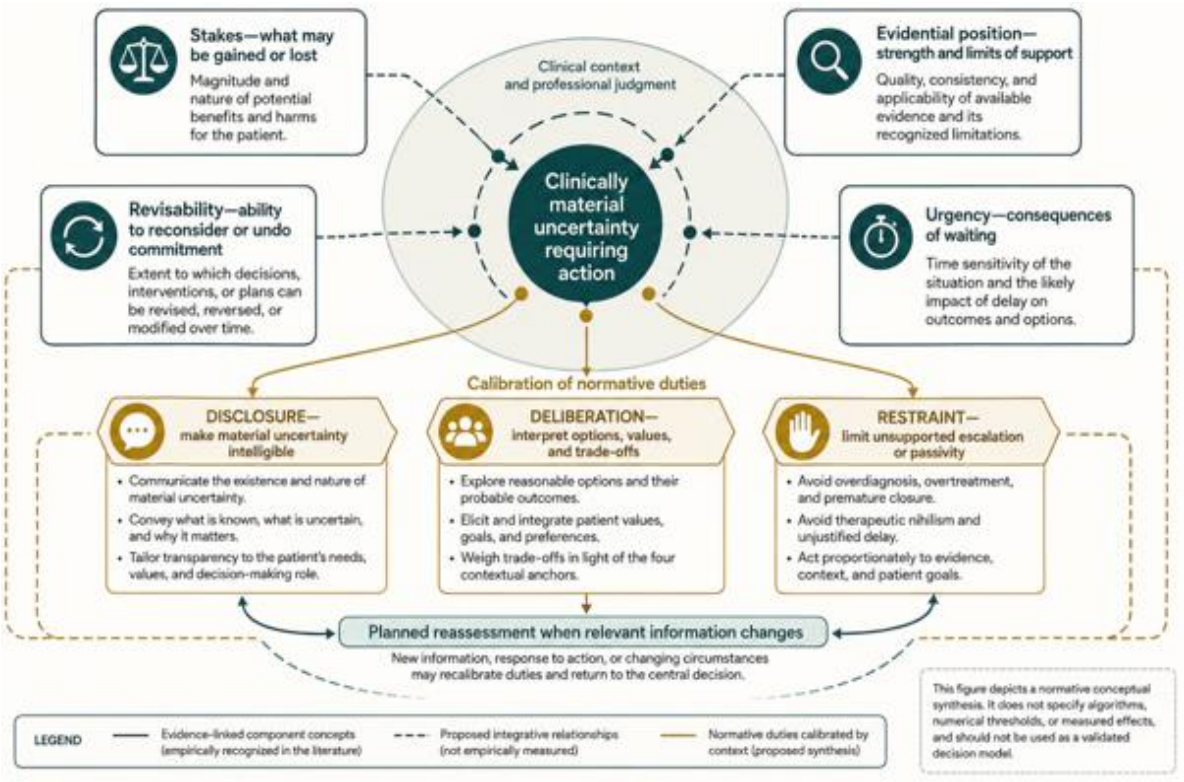

Figure 1. Ethical Calibration Landscape Under Clinical Uncertainty

Communicating and documenting clinical uncertainty

A duty to disclose becomes meaningful only when uncertainty is communicated in a form patients can interpret. An integrative systematic review of primary-care studies found that diagnostic uncertainty may be communicated explicitly, implicitly, or not at all, with heterogeneous patient responses [22]. This cautions against equating ethical adequacy with merely saying "uncertain." A clinician may technically disclose uncertainty while obscuring its significance, or imply it through follow-up plans without explaining why those plans matter.

Physicians also differ in whether and how they communicate diagnostic uncertainty and in their reasons for doing so [23]. Vignette behavior cannot be assumed to reproduce bedside practice, but the variation matters because communication is itself a judgment about what a patient should understand. The proposed approach separates four tasks: identify the uncertainty, explain its practical significance, state what is being done because of it, and specify what would trigger reconsideration. Their depth should vary with the situation rather than follow a fixed script.

Review-level literature supports context-sensitive and preference-aware communication rather than a single standardized disclosure script [22, 24]. Depth, pacing, terminology, and opportunities for questions can therefore be tailored while essential material information

is preserved. Tailoring should not become a rationale for silently deciding that a patient cannot tolerate uncertainty; informational preferences should be elicited where practicable rather than inferred from distress or demographic characteristics.

Documentation raises a related but distinct problem. The record should neither convert provisional possibilities into settled facts nor erase uncertainty once action is chosen. This article proposes documenting, when clinically relevant, the working judgment, significant unresolved issue, plan, and conditions for reassessment. Such documentation may preserve epistemic continuity across clinicians and settings. It is not proposed as an electronic-record standard, and excessive documentation can create noise. Its narrower ethical purpose is to prevent later readers from mistaking a conditional judgment for warranted certainty. Documentation should also preserve disagreement where it remains clinically material. Recording only the final plan can falsely suggest that alternatives were excluded. Conversely, listing remote possibilities can obscure the uncertainty that actually matters. The ethical aim is therefore faithful representation of the decision's epistemic status, not maximal documentation.

Difficult cases and counterarguments

The proposed duties face hard cases where ordinary assumptions about knowledge, agency, or time break down. One is AI-supported medicine. Epistemological analysis of medical AI argues that algorithmic outputs and clinicians do not possess epistemic authority in identical ways [25]. A high-confidence prediction may narrow one uncertainty while leaving questions about applicability, data limitations, causal understanding, or patient values unresolved. The duties therefore do not require distrust of AI; they require avoiding an automatic translation from computational confidence to clinical certainty.

A second challenge concerns patients who do not want information. An absolute disclosure principle would risk turning respect for autonomy into compulsory exposure. Rees argues that withholding information can, under some conditions, be compatible with autonomy [26]. The proposed disclosure duty should therefore accommodate an informed preference for less detail while distinguishing that preference from clinician-initiated concealment. A wish for limited information does not automatically authorize withholding what is necessary to understand a proposed intervention or an immediate serious risk.

Emergency circumstances create another boundary. When delay threatens substantial harm, extended disclosure or deliberation may be impossible. Yet urgency may change the form of the duties rather than eliminate them. A concise explanation of what is known, what remains uncertain, why action cannot safely wait, and what will be revisited may preserve meaningful ethical content. Where the patient lacks decision-making capacity, authorized surrogates and applicable clinical or legal standards remain necessary; this normative account does not determine those rules.

A further objection is that explicit attention to uncertainty may foster indecision. It need not. Restraint is not reluctance to act, and deliberation is not indefinite discussion. The framework asks that confidence and commitment remain proportionate to available reasons. Depending on the case, this can support rapid intervention, testing, consultation, watchful waiting, or conditional treatment. The account would fail if it systematically privileged hesitation over justified decisiveness. A related concern is professional burden: making uncertainty explicit may increase conversational work and expose disagreement within teams. Those costs do not by themselves remove patient-facing obligations. They instead strengthen the case for proportionate communication, clear role allocation, and selective escalation when uncertainty exceeds the competence or authority of the clinician currently responsible.

Scope and limitations

This analysis concerns recognized, clinically material uncertainty in patient-related decisions. It is not a complete taxonomy of ignorance, an account of all diagnostic error, or a legal standard of informed consent. Even uncertainty language is setting-sensitive: a Delphi study in critical and advanced illness developed a specialized documentation lexicon, illustrating both the feasibility and contextuality of naming uncertainty [27]. Its terminology cannot be assumed to transfer unchanged across specialties.

Disclosure also operates within different family structures, cultures, institutions, and jurisdictions. Qualitative research in a tertiary hospital in Bangladesh shows how truth-telling may be mediated by family involvement and local understandings of beneficence and disclosure [28]. A single setting cannot define the norms of a country or cultural group, but it challenges

assumptions that one communication model can simply be universalized.

The principal synthesis is normative rather than validated. Its duties and calibration relationships require philosophical criticism and empirical examination of their assumptions, feasibility, interpretation, and consequences. Future studies could examine how patients and clinicians understand different uncertainty configurations, when documentation preserves epistemic status across transitions, and when disclosure or reassessment becomes burdensome. Such evidence could refine or challenge the framework without converting empirical acceptability into proof of moral correctness. Comparative work across specialties and jurisdictions is important because the moral weight of timing, reversibility, family participation, and informational preference may differ across settings.

Conclusion

Clinical uncertainty becomes ethically significant when incomplete knowledge changes what patients understand, how choices depend on values, what burdens follow from action or inaction, and how confidently professionals can justify commitment. This article has proposed three corresponding duties. Disclosure requires intelligible communication of materially relevant uncertainty without exhaustive enumeration. Deliberation requires interpretive support when evidence leaves defensible alternatives open. Restraint requires discipline against unjustified escalation and unjustified passivity.

These duties are distinct and nonabsolute. Their demands depend on the clinical situation, including stakes, evidential support, revisability, urgency, patient preferences, and opportunities for reassessment. The account is therefore a normative framework for reasoning, not a score, legal rule, communication script, or validated clinical instrument. Its central question is not simply how uncertainty should be reduced, but what patients and clinicians owe one another while it remains. Further conceptual and empirical work should identify where this account clarifies practice, where its duties conflict, and where difficult cases require revision. Its normative ambition is limited but consequential: uncertainty should neither be hidden behind unwarranted confidence nor treated as a reason to abandon professional judgment. Ethical practice requires making limits visible, reasoning with patients about their significance, and acting with defensible commitment as the situation develops.

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