Situating Uncertainty in Clinical Decision Making

Text by Francesco Biaggini

Introduction

Jane Cioffi's article on "Decision Making" explores one of the most complex and pervasive challenges in medicine: uncertainty in clinical decisions. Through a holistic analysis, Cioffi outlines the multiple dimensions and sources of uncertainty, highlighting how ambiguity, probability, and vagueness influence decision-making. This text would not only emphasize the importance of recognizing and classifying uncertainty into categories such as technical, conceptual and personal uncertainty, but also invites critical reflection on how to deal with it effectively.

With a multidimensional approach, the article proposes uncertainty management strategies, emphasizing the importance of case-based reasoning and the adoption of specific decision-making models under conditions of incomplete or ambiguous information. Cioffi guides us through concrete examples that demonstrate the direct impact of uncertainty about patient care, including delays in care and the negative consequences of making difficult informed decisions.

The text also highlights the importance of changing the clinical culture to explicitly address uncertainty, promoting open communication and supporting continuous training to improve competence in managing uncertainty.

Through the integration of these concepts, Cioffi proposes a model for navigating the complex landscape of clinical decisions with greater confidence, emphasizing the crucial role of experience, knowledge and effective communication.

"Situating Uncertainty in Clinical Decision Making" is not only a fundamental contribution to the medical literature; It is an invitation to reflect on how, as a community of health professionals, we can embrace uncertainty not as an obstacle, but as an opportunity to improve clinical practice and enrich the human experience at the heart of medicine.

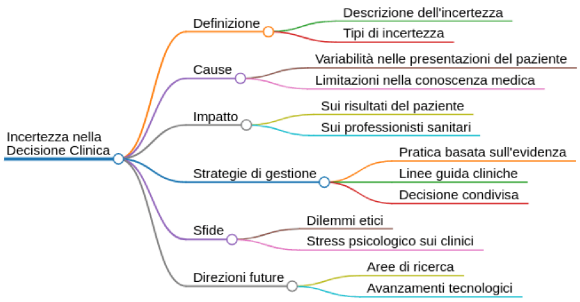
Cioffi encourages us to recognize uncertainty as a constant in patient care, promoting an approach that values continuous learning, collaboration, and professional ethics to successfully address the challenges of contemporary dental practice, ensuring that every clinical decision is driven by the desire to achieve the best possible outcome for patients.

Definition and classification of uncertainty

Uncertainty is conceived as a condition resulting from the limited knowledge available about a specific phenomenon or event. It occurs when existing information is characterized by probability (the possibility of a future event occurring), ambiguity (the presence of multiple possible states for a single concept or event), or vagueness (the presence of multiple possible values on a continuum). These characteristics make uncertainty a constant challenge in clinical decision-making, where decisions often have to be made in the absence of clear guidance or comprehensive knowledge.

The classification of uncertainty proposed by Cioffi through the lens of various scholars highlights different dimensions and sources of uncertainty. Beresford (1991), for example, identifies three main domains of clinical uncertainty: technical, conceptual, and personal.
The technical uncertainty concerns procedural skills and knowledge of the indications; conceptual uncertainty refers to the transition of care, diagnostic decision-making, and conflict management; while personal uncertainty is related to the patient's goals of care.

Elaborating, Cioffi points out that uncertainty is not a static phenomenon but a dynamic one, influenced by a series of factors that go beyond the mere lack of information. These include variability in interpretation, predictability, and the ability to adequately assess consequences.



Individual experience and personal perception play a significant role in modulating the response to uncertainty, confirming that managing uncertainty is not only a matter of acquiring additional information, but also requires in-depth reflection on how this information is interpreted and used in the clinical context.

In conclusion, Cioffi's approach to defining and classifying uncertainty in clinical decision-making provides a framework for better understanding and addressing this pervasive aspect of medical practice.
By encouraging deeper reflection on the nature of uncertainty and strategies for managing it, Cioffi's

work provides an important basis for improving the quality of clinical decisions and, consequently, patient outcomes.

Technical Insight:
Dimensions of Incidence

Technical Uncertainty: This dimension mainly concerns procedural skills and knowledge of indications for specific medical interventions. Technical uncertainty arises when clinicians are uncertain about the procedures to perform, the right time to implement them, or their suitability for a particular patient. For example, there may be uncertainty about whether a patient with particular comorbidities can tolerate an invasive procedure.

Conceptual Uncertainty: Refers to the challenges in making diagnostic and management decisions when there are deficiencies in scientific evidence, or when evidence conflicts. This type of uncertainty manifests itself in transitions in care, choosing between alternative treatment options, or managing situations where patient preferences conflict with clinical recommendations. Conceptual uncertainty underscores the difficulty of applying abstract knowledge to concrete clinical situations.

Personal Uncertainty: This dimension focuses on the relationships and interactions between clinicians and patients, especially understanding the patient's goals of care. Personal uncertainty emerges when the patient's desires or preferences are unclear, or when there is a lack of effective communication that leads to doubts about the best course of action to take. This kind of uncertainty highlights the importance of the human aspect of medicine, where knowledge of the patient as an individual is crucial to the provision of adequate care.

Managing Uncertainty: Effectively managing uncertainty requires an approach that integrates these dimensions, recognizing that they often overlap and interact with each other. Clinicians must develop skills not only in the technical and conceptual domain, but also in communication and empathy to navigate personal uncertainty. Medical education, therefore, must emphasize holistic learning that prepares future physicians to handle all facets of uncertainty.
In conclusion, the dimensions of uncertainty outlined by Cioffi offer a deep understanding of the various aspects of clinical uncertainty. Addressing uncertainty proactively, recognizing and integrating these dimensions into the decision-making process, can significantly improve the quality of care, promoting more informed clinical decisions that are aligned with patients' values and preferences.

In dentistry, uncertainty is a constant, multidimensional challenge that dentists face on a daily basis. This uncertainty can emerge in various contexts, from diagnosis to treatment planning, and in decisions about whether or not to attempt to save/recover a compromised item. When faced with such dilemmas, practitioners rely not only on their extensive knowledge and experience but also seek support in emerging technologies to steer their decisions towards the best possible patient outcomes.

Uncertainty in clinical decisions highlights the variability that exists among dentists regarding treatment decisions. This variability can significantly affect the consistency and effectiveness of dental care provided to patients. Acknowledging the presence of divergences in the interpretation of similar clinical cases and in the therapeutic choices adopted, the need to standardize evaluation and treatment criteria emerges.

To address and minimize these variabilities, clinicians can benefit from knowledge sharing and adopting evidence-based guidelines. Collaboration between professionals through discussion platforms, conferences and scientific publications can facilitate the exchange of experiences and continuous updating on best clinical practices. In addition, a commitment to continuing education and adherence to scientifically validated treatment protocols allow dentists to align their practices with international recommendations, thereby reducing individual discretion and improving consistency of care.

The implementation of software-supported decision-making systems and the use of advanced technologies, such as artificial intelligence for diagnostic analysis, can further assist dentists in managing uncertainty and standardizing clinical decisions. These tools, based on extensive databases of clinical cases and learning algorithms, offer support in the evaluation of therapeutic options, highlighting those with the highest degree of efficacy and safety.

In conclusion, addressing variability in clinical decisions requires an integrated approach that values clinical experience, promotes responsible innovation, and puts patients at the center of decision-making. Through knowledge sharing, the adoption of evidence-based guidelines, and the use of advanced technologies, dentists can successfully navigate the challenges of contemporary dental practice, ensuring that every clinical decision is driven by a desire to achieve the best possible outcome for patients.
Managing uncertainty in dentistry requires a holistic approach, which values the integration of multidisciplinary skills and continuous professional updating. Collaboration between dentists and specialists from different disciplines enriches clinical understanding and refines treatment strategies. Additionally, continuing education ensures that dental doctors stay on top of the latest research and technological innovations, enhancing their ability to deal with uncertainty with evidence-based information.

At the same time, the advent of artificial intelligence in dentistry promises to significantly reduce areas of

uncertainty, providing advanced tools for the analysis of clinical data and for the personalization of treatments. AI can assist in early diagnosis, interpretation of complex dental radiographs, and identification of optimal treatment pathways based on the analysis of large databases of clinical cases. This not only improves the accuracy of clinical decisions but also paves the way for increasingly personalized dentistry, where treatment plans are finely calibrated to the individual needs of patients.

However, the integration of AI and other advanced technologies into daily practice raises questions of training, ethics, and data security. It is essential for clinicians to gain a deep understanding of the potential and limitations of these technologies, as well as the responsibilities involved in handling sensitive patient information. At the same time, ethical reflection on how these innovations are used in patient care remains critical to ensuring that technology is used to improve, not dictate, clinical decisions.

Effective communication with patients plays a crucial role in managing uncertainty, helping to build trust and actively involve patients in decisions regarding their oral health. Openly discussing available treatment options, potential risks and benefits, and realistic expectations allows patients to make informed choices, improving treatment adherence and overall satisfaction.

In conclusion, uncertainty in dentistry requires an integrated approach that values clinical expertise, promotes responsible innovation, and puts patients at the center of decision-making.

While technologies such as AI offer new opportunities to face uncertainty with greater confidence, the core of dental practice remains a commitment to providing high-quality care, based on an in-depth understanding of patients' individual needs and effective communication.

Dealing with uncertainty is not only a matter of applying the latest technologies, but also requires an ongoing commitment to learning, collaboration, and work ethics. In this way, dentists can successfully navigate the challenges of contemporary dental practice, ensuring that every clinical decision is driven by a desire to achieve the best possible outcome for patients.

Texts by Francesco Biaggini

Further reading:

Decision making in dentistry. Part I - II: Clinical applications of decision methods
Ann M. McCreery, Ph.D.,* and Edmond Truelove, D.D.S., M.S.D.

Resident uncertainty in clinical decision making and impact on patient care: a qualitative study
J M Farnan,1 J K Johnson,1 D O Meltzer,1,2 H J Humphrey,3 V M Arora1,3

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