RegenMed

ARTICLE

DETERMINISTIC EVIDENCE: RESOLVING THE PRECISION CRISIS IN CLINICAL DATA

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A core differentiator in modern healthcare information technology is the choice between **deterministic evidence** and **inferred (probabilistic) data**. This distinction determines the reliability, auditability, and ultimate regulatory value of the evidence generated. Inferred data utilizes statistical algorithms to estimate clinical events or patient journeys, often producing "confidence scores" rather than certainties. While useful for marketing or broad identity resolution, this probabilistic approach introduces a level of uncertainty that frequently leads to **AI hallucinations** and rejection by regulatory agencies.

THE PRECISION GAP

In contrast, deterministic models rely on exact, verified identifiers—such as Unique Device Identifiers (UDI) for surgical implants or exact patient credentials—to provide precise outcomes. These models operate on rule-based "yes/no" logic, which is essential for regulated environments where transparency is mandatory.

Metric	Deterministic Evidence	Inferred (Probabilistic) Data
Accuracy	95%–99%	60%–90%
Auditability	Direct, clear audit trails	Requires documentation of confidence thresholds
Clinical Value	Ideal for compliance and regulatory submission	Useful for broader identity resolution

Precision is particularly vital for **2026 registry standards**, where tracking 90-day surgical site infections (SSI), readmissions, and returns to the operating room requires absolute certainty in patient-device linkage. Traditional "big data" scrapes from varied electronic health record (EHR) systems are prone to gaps that cause AI models to generate biased or false results.

THE CIRCLE DATASET INTERVENTION: ELIMINATING AI HALLUCINATIONS

Circle Datasets address the reliability crisis by utilizing **Pre-Set OP Attributes** to generate a foundation of deterministic truth. By defining data specifications within a standardized protocol before collection begins, the platform ensures that the resulting data is verifiable and protocol-driven.

A primary feature of the platform is its **deterministic patient-device linkage**, which achieved an average **F1 score of 97%** in validation simulations—significantly outperforming probabilistic methods. This high-precision data ensures that the AI orchestration layers used by payers for pricing and claims processing operate on verifiable facts rather than statistical inferences, effectively eliminating the risk of automated hallucinations in clinical decision-making.

Download RegenMed white paper "Bridging The 17 Years Evidence to Practice Gap" to go deeper.

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