

USING FL TO IMPROVE PATIENT RECRUITMENT IN CLINICAL TRIALS

Why Patient Recruitment is a Bottleneck in Clinical Trials

- **80%** of trials fail to meet enrollment timelines (Tufts CSDD)
- **50%** of clinical research sites enroll **1 or no patients** (NIH)
- Recruiting 1 patient can cost **\$6,500–\$15,000**, depending on therapy area
- Trials often rely on **manual EMR screening**, missing eligible candidates
- Inadequate **diversity**: <5% of cancer trial participants are Black, despite higher incidence in some groups
- **Data-sharing restrictions** (HIPAA, GDPR, local laws) hinder collaboration across institutions

Disconnected systems, manual processes, and privacy barriers make recruitment slow, expensive, and biased

Source: publicly available information

The Solution — Federated Learning for Patient Recruitment

Federated Learning allows ML models to be trained on **decentralized hospital data**—no data leaves the source

Hospitals retain data **on-premise**, while models are updated centrally through encrypted parameters

FL enables:

- Real-time **eligibility prediction** using EMRs
- **Standardized matching** across sites
- Recruitment from **non-traditional and rural centers**
- **Scalability** across global hospital networks



Technical Details:

Uses **homomorphic encryption, differential privacy** to ensure compliance



Can integrate across **FIS, Cerner, Epic**, and other EHR systems with adapters

Compatible with HL7/FHIR for secure semantic interoperability

Federated Learning unlocks patient recruitment from *everywhere*, without compromising *anyone's* data

ROI — Faster, Cheaper, Smarter Recruitment at Scale

Measurable ROI and Outcomes from FL-Driven Recruitment

Metric	Traditional Approach	Federated Learning	Impact
Avg. Recruitment Time	15–24 months	6–12 months	↓ 50–60%
Recruitment Cost / Patient	\$6,500–\$15,000	\$3,000–\$7,000	↓ 40–60%
Trial Cost Impact	\$100M–\$300M for Phase III	\$20M–\$50M saved	↑ Budget efficiency
Trial Success Rate	33% (Phase II → III)	+10–15% uplift	Better cohort fit
Diversity in Trial Populations	10–15% minorities	20–30% with FL-enabled reach	Regulatory & social advantage

Other Benefits:

- Reduces **protocol amendments** (which cost \$500K–\$1M each)
- Improves **sponsor-site relationships** with automated matching tools
- Minimizes site burden** by automating EMR screening workflows

Federated Learning can save **\$20M+ per trial**, reduce recruitment time by **50%**, and drive **better clinical outcomes** through smarter matching

Source: publicly available information, expert interviews