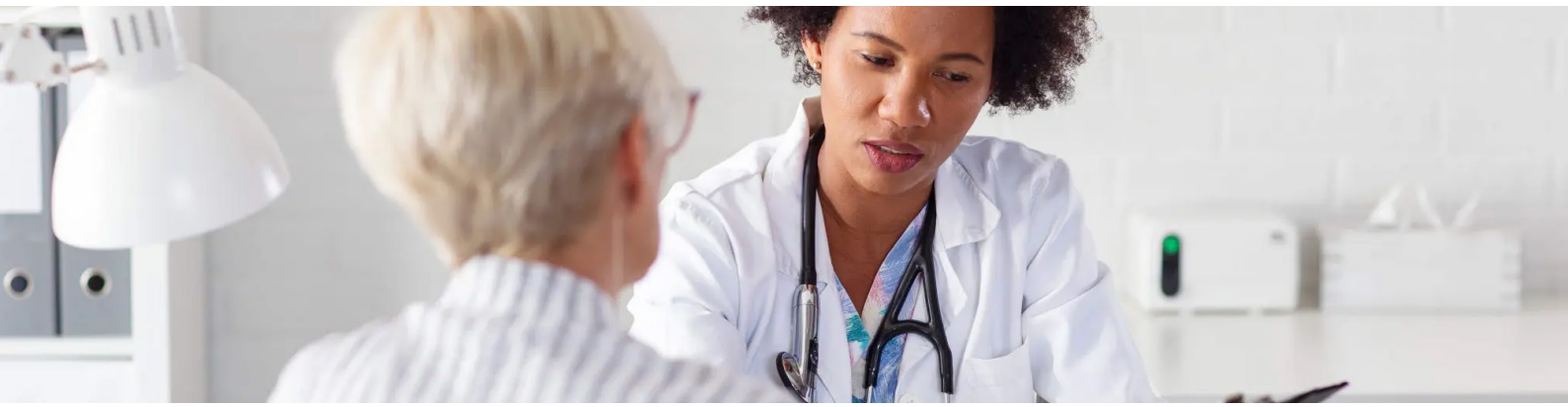
TripleRing

Transdermal GFR Measurement

MediBeacon
Life, illuminated.



Client
MediBeacon

Practice Areas
Smart Medical Devices

Core Disciplines
AI & Advanced Algorithms
Mechanical Engineering
Systems Engineering
Electrical Engineering
Industrial Design
Quality System Management
Embedded Systems

Challenge

MediBeacon needed a wearable optical detection system capable of monitoring fluorescent tracer signals through human tissue with clinical-grade sensitivity and accuracy — while remaining comfortable, manufacturable, and cost-effective for clinical use. Balancing demanding optical performance requirements against ergonomic design, regulatory compliance, and strict program timelines presented a complex, multidimensional development challenge.

Solution

Triple Ring collaborated closely with MediBeacon to design and deliver a non-invasive wearable detection system leveraging light-based tissue analysis and advanced simulation to optimize optical performance. Wearable detector systems were engineered to meet clinical sensitivity requirements while supporting user comfort and usability. Development was executed under ISO 13485 design controls, with structured program milestones aligned to regulatory requirements and clinical funding timelines throughout.

Client Impact

- Delivered fully integrated wearable GFR detection systems under ISO 13485 design controls for clinical trial use
- Enabled accurate, non-invasive kidney function measurement through transdermal fluorescent tracer detection
- Supported real-time physiological monitoring in clinical environments while maintaining patient comfort
- Advanced MediBeacon's GFR monitoring platform toward clinical validation and regulatory submission

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