

COMPANY PROFILE

SPECIALISTS IN HEALTHCARE DATA
ANALYTICS & EMR RESEARCH



Welcome To Africa Quantitative Sciences

To succeed in today's competitive landscape, one must harness the power of data. At AQS, we offer not just the tools, but the expertise to do so. Our team of experienced data scientists, analysts, and strategists leverage cutting-edge technology and advanced analytics tools to transform unstructured data into powerful, actionable insights. We are dedicated to working with our clients, co-creating solutions tailored to their unique needs. In addition, our commitment extends beyond our services to making a meaningful impact on our community, empowering the next generation of leaders. Let AQS be your partner in innovation, efficiency, and growth. Together, let's shape the future of Rwanda and beyond.



Hinda Ruton
Founder & CEO

“ *Driving Societal Impact Through Data-Driven Solutions* ”

WHO WE ARE

Africa Quantitative Sciences (AQS) is a specialized healthcare data analytics company unlocking the value of electronic medical records (EMR) and administrative healthcare data across Africa. Based in Rwanda with pan-African reach, we transform complex clinical data into actionable insights that drive measurable improvements in healthcare delivery and research outcomes.

Led by founder and CEO Hinda Ruton, our team combines expertise in biostatistics, epidemiology, software engineering, and public health with extensive experience in EMR data management and analysis, positioning us as leaders in healthcare data science in the region.





Our Vision & Mission

Vision: A world where data-driven insights transform public health outcomes, strengthen global health security, and enable rapid response to emerging threats.

Mission: To leverage innovative, data-driven solutions that enhance disease and vaccine monitoring systems, optimize resource allocation, and generate evidence for better health outcomes.

Motto: Your data, your power!



Our Core Capabilities

AQS Capabilities

EMR Data Analysis & Management

- EMR System Implementation & Optimization
- Data Quality Assessment & Enhancement
- Healthcare Administrative Data Analytics
- EMR Data Standardization & Governance
- Clinical Data Protection Policies

Healthcare Research Excellence

- Observational Study Design & Implementation
- Patient Recruitment & Retention Strategies
- Digital Data Collection System Implementation
- Statistical Analysis & Reporting
- Implementation Research

MEAL Framework

- Comprehensive Monitoring Systems
- Impact Evaluation Methodologies
- Accountability Mechanisms
- Evidence-Based Learning Cycles

EMR & ADMINISTRATIVE DATA EXPERTISE

Healthcare Data Governance

- Development of comprehensive data protection policies for healthcare institutions
- Implementation of data quality assessment frameworks
- EMR data standardization and harmonization
- Secure data sharing protocols for research purposes

Real-World Evidence Generation

- Extraction and analysis of clinical data from diverse EMR systems
- Linking administrative data with clinical outcomes
- Development of synthetic datasets for research acceleration
- Policy brief development based on EMR data analytics

EMR Implementation Research

- User experience and adoption assessment
- Workflow integration analysis
- Implementation effectiveness evaluation
- Health worker training and capacity building



CLINICAL & OBSERVATIONAL STUDY **SUPPORT**

End-to-End Study Capabilities:

- Site Feasibility & EMR Readiness Assessments
- Patient Identification & Recruitment Strategies
- Standardized Digital Data Collection
- Advanced Biostatistics & Epidemiological Modeling
- IRB & Ethical Protocol Compliance
- Policy Briefs, Manuscripts, and Scientific Outputs

CASE STUDIES

EMR Data Quality Enhancement at CHUK

Challenge: Kigali University Teaching Hospital (CHUK) needed to improve data quality and utilization of their electronic medical records system.

Solution: AQS conducted a comprehensive assessment of EMR data completeness, developed data protection policies, and initiated a data cloning project with University of Rwanda and Washington University at St. Louis (WashU) to accelerate research.

Outcome: Published peer-reviewed research on EMR data quality, established data governance framework, and created synthetic datasets that preserve privacy while enabling advanced analytics and research.

COVID-19 Vaccine Effectiveness Evaluation with RBC

Challenge: Rwanda Biomedical Centre needed to assess nationwide COVID-19 vaccine effectiveness and identify uptake determinants.

Solution: AQS leveraged nationwide EMR data to perform comprehensive statistical analysis, including regression models and interrupted time series analysis to evaluate real-world vaccine effectiveness.

Outcome: Generated critical evidence that directly informed national vaccination strategies and policy adjustments, demonstrating the power of EMR data for public health decision-making.

Multi-Site EMR Analysis for Policy Development with SFH

Challenge: Society for Family Health (SFH) needed to extract actionable insights from EMR data across 80+ health posts to inform policy recommendations.

Solution: AQS implemented standardized data extraction protocols, conducted cross-site analysis, and synthesized findings into comprehensive policy briefs.

Outcome: Developed evidence-based policy recommendations that addressed critical healthcare gaps and optimized resource allocation across multiple facilities.

RESEARCH EXPERTISE

Healthcare Implementation Research

AQS has partnered with Resolve To Save Lives (RTSL) to conduct multiple implementation research studies:

- User research on nationwide medical EMR systems
- Implementation effectiveness research on national EMR platforms
- Community EMR implementation research and optimization
- Digital health intervention adoption and sustainability assessment

Clinical Research Partnerships

We maintain productive research collaborations with leading institutions:

- **Johns Hopkins University** - Documenting successful digital health implementations for maternal and child health systems and national insurance schemes
- **University of Rwanda** - Capacity building and collaborative research
- **Washington University St. Louis** - Data science collaboration for EMR data utilization
- **IQVIA** - Supporting clinical research activities in Rwanda

EMR Data for Specialized Care

Our work extends across specialized healthcare domains:

- Pediatric EMR data analysis and optimization
- Surveillance systems for antimicrobial resistance
- Disability care data management with specialized hospitals
- Maternal and child health information systems

WHY CHOOSE AQS FOR YOUR OBSERVATIONAL STUDIES



Unparalleled EMR Expertise

Our extensive experience with diverse EMR systems and administrative healthcare data provides a unique advantage for observational studies that require high-quality, real-world data.



Research Publication Track Record

Our team has published peer-reviewed research on EMR data quality and implementation, respiratory diseases such as Covid-19 trials, demonstrating scientific rigor and academic credibility.



Data Privacy & Protection Leadership

We develop and implement data protection policies for healthcare institutions, ensuring compliance with local regulations and international best practices.



Established Clinical Site Network

We maintain productive relationships with Rwanda's leading healthcare facilities, including CHUK, RBC, and specialized care centers, facilitating efficient study implementation.



Multi-Site Data Integration Experience

Our work across 80+ health facilities with SFH demonstrates our ability to standardize and integrate data from diverse sources for comprehensive analysis.



Implementation Science Approach

Our collaboration with RTSL on implementation research ensures we understand the practical challenges of healthcare data collection and can design studies that produce valid, reliable results.

CERTIFICATIONS & COMPLIANCE

- Full compliance with Rwanda's Data Protection and Privacy Law (Law No. 058/2021)
- Experience with IRB protocols and ethical research guidelines
- GDPR-aligned data management practices
- Proven compliance track record with UN agencies and academic IRBs

OUR TEAM

Our multidisciplinary team combines expertise in:

- **Biostatistics and Epidemiology**
- **Clinical Research Management**
- **Data Science and AI**
- **Public Health and Policy Analysis**
- **Software Engineering and Data Security**



Sample Peer-Reviewed Publications

1. A Multi-Center, Adaptive, Randomized, Platform Trial to Evaluate the Effect of Repurposed Medicines in Outpatients with Early COVID-19 and High Risk for Complications: The TOGETHER Master Trial Protocol

- **Study Type:** Adaptive, multi-center, randomized, placebo-controlled platform trial [New England Journal of Medicine](#)
- **Objective:** Assess the efficacy of repurposed drugs in preventing disease progression in high-risk outpatients with early COVID-19 [The Lancet](#)
- **Collaborating Institutions:** Multiple international partners [PubMed+6ResearchGate+6C19Early+6](#)
- **Publication:** Gates Open Research, 2021 [OUCI+3CoLab+3The Lancet+3](#)
- **DOI:** [10.12688/gatesopenres.13304.2](https://doi.org/10.12688/gatesopenres.13304.2)
Florida State University+4OUCI+4C19Early+4

2. Towards Improving Data Quality in Electronic Medical Records: An Investigation of Data Completeness in a Tertiary Hospital in Rwanda

- **Study Type:** Observational study [CoLab+1The Lancet+1](#)
- **Objective:** Evaluate and enhance data completeness in electronic medical records at a Rwandan tertiary hospital
- **Collaborating Institutions:** University of Rwanda, Rwanda Biomedical Center
- **Publication:** Journal of Medical Informatics, 2023
- **DOI:** check it



Sample Peer-Reviewed Publications

3. Oral Fluvoxamine with Inhaled Budesonide for Treatment of Early-Onset COVID-19

- **Study Type:** Randomized, placebo-controlled trial
- **Objective:** Evaluate the efficacy of combining fluvoxamine and budesonide in treating early-stage COVID-19
- **Collaborating Institutions:** Multiple international partners [The Lancet](#)
- **Publication:** Journal of the American Medical Association, 2022
- **DOI:** check it

4. Effect of Early Treatment with Metformin on Risk of Emergency Care and Hospitalization Among Patients with COVID-19: The TOGETHER Randomized Platform Clinical Trial

- **Study Type:** Randomized, adaptive platform clinical trial [New England Journal of Medicine](#)+1 [Wikipedia](#)+1
- **Objective:** Determine the effectiveness of metformin in reducing COVID-19-related hospitalizations in high-risk outpatients [ScienceDirect](#)
- **Collaborating Institutions:** Washington University in St. Louis, University of Rwanda, Rwanda Biomedical Center
- **Publication:** [The Lancet Regional Health – Americas](#), 2022 [ResearchGate](#)+2 [C19Early](#)+2 [OUCl](#)+2
- **DOI:** [10.1016/j.lana.2021.100142](#) [ResearchGate](#)+3 [C19Early](#)+3 [OUCl](#)+3

STRATEGIC ADVANTAGES

Feature	AQS Strength
EMR System Expertise	Deep experience across 80+ facilities
Team observational study Track Record	National-level studies on COVID-19, MTCT, ART
Scientific Credibility	Peer-reviewed publications with leading institutions
Healthcare Integration	Strong relationships with RBC, CHUK, and specialized hospitals
Data Privacy	Policies aligned with global standards
Rapid Mobilization	Agile teams with on-the-ground readiness

OBSERVATIONAL STUDY CAPABILITIES

Proposed Approach for Syneos Health Partnership

Site Selection & EMR Assessment

- Leveraging our existing relationships with clinical sites
- EMR data quality assessment at potential study sites
- Data completeness and standardization evaluation

Patient Identification & Recruitment

- EMR-based screening algorithms for identifying eligible patients
- Digital tools for streamlining recruitment
- Community health worker engagement for harder-to-reach populations

Data Collection & Integration

- Integration of existing EMR data with study-specific data collection
- Quality assurance mechanisms at point of collection
- Secure data transfer and management protocols

Analysis & Knowledge Translation

- Advanced statistical analysis for observational data
- Accounting for potential confounders in EMR-based studies
- Synthesis of findings for publications and policy recommendations

OBSERVATIONAL STUDY CAPABILITIES

Strategic Advantages for Asthma Study

- **Existing EMR Data Access:** Our established relationships provide privileged access to historical and current patient data
- **Data Standardization Expertise:** Ability to harmonize data across multiple systems and sites
- **Published Experience:** Demonstrated capability through peer-reviewed publications on EMR data quality
- **Local Context Knowledge:** Deep understanding of the healthcare delivery system and patient population in Rwanda

STRATEGIC PARTNERSHIPS

Our established network provides unique advantages for observational research:

Clinical Research Partners

- **Rwanda Biomedical Center (RBC)** - Principal health research institution
- **Centre Hospitalier Universitaire de Kigali (CHUK)** - Leading teaching hospital
- **IQVIA** - Supporting in-country research efforts
- **Leading Hospital for Children with Disabilities** - Specialized care data

Academic Collaborations

- **Johns Hopkins University** - Digital health research
- **Washington University in St. Louis** - EMR data science
- **University of Rwanda** - Capacity building and research

Health Implementation Organizations

- **Society for Family Health (SFH)** - Multi-site EMR analytics
- **Resolve to Save Lives (RTSL)** - Implementation research
- **Global Fund** - Data analytics for HIV, Malaria and TB programs

Let AQS be your partner in unlocking the full potential of EMR data for observational research in Africa.

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