

BIG DATA IN HEALTHCARE (MANAGEMENT & SECURITY)

““Harnessing Big Data for Smarter, Safer, and More Efficient Healthcare Systems””

Schedule

Date	Venue	Fees
08 - 12 Feb 2026	Manama, Bahrain	USD 3495 per delegate

► Available delivery methods: Face-to-Face & Online Training, In-House Training

Introduction

Healthcare organizations are generating massive volumes of data from electronic health records (EHRs), wearable devices, diagnostics, insurance claims, and operational systems. Effectively managing and securing this data is critical for improving patient outcomes, optimizing operations, and ensuring regulatory compliance.

This intensive five-day course equips healthcare managers, IT professionals, and analysts with the knowledge and tools to manage, analyze, and secure big data within healthcare systems. Topics include data architecture, analytics, regulatory compliance (HIPAA/GDPR), cybersecurity threats, and implementation of secure, data-driven healthcare solutions.

Objectives

- By the end of this course, participants will be able to:
- Understand the sources, types, and value of big data in healthcare
 - Design and manage healthcare data architectures and governance frameworks
 - Apply analytics tools and techniques to extract insights from clinical and operational data
 - Identify key risks and security challenges associated with healthcare data systems
 - Implement policies and technologies for protecting sensitive healthcare information

Why Attend

- Learn how big data is transforming healthcare delivery and decision-making
- Understand the importance of data privacy, interoperability, and governance
- Enhance your ability to lead secure, compliant data initiatives
- Gain practical tools for analytics, data mapping, and risk management
- Stay current with evolving digital health trends and global data regulations

Target Audience

This program is designed for:

- Healthcare managers, hospital administrators, and medical directors
- IT and data security professionals in healthcare settings
- Health informatics specialists and EHR system analysts
- Clinical data managers, researchers, and public health officers
- Compliance, legal, and risk professionals in the health sector

Individual Benefits

Key competencies that will be developed include:

- Data governance and lifecycle management in healthcare
- Application of big data analytics for clinical and operational decisions
- Cybersecurity awareness and incident prevention
- Understanding of global healthcare data privacy regulations
- Strategic thinking for digital health transformation

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved data-driven decision-making and patient care quality
- Enhanced protection of patient and organizational data assets
- Stronger compliance with HIPAA, GDPR, and local regulations
- More efficient data workflows and analytics capabilities
- Greater confidence in digital transformation and innovation projects

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – Big data technologies, healthcare IT systems, and legal frameworks
- Case Studies – Analysis of real-world big data initiatives and security breaches in healthcare
- Workshops – Hands-on exercises in data mapping, threat identification, and policy planning
- Peer Exchange – Discussions on local challenges and international best practices
- Tools – Templates for data governance, security checklists, and analytics dashboards

Course Outline

Detailed 5-Day Course Outline

Training Hours: 07:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: The Role of Big Data in Modern Healthcare

- Module 1: Introduction to Big Data in Healthcare (07:30 – 09:30) • What is big data? Volume, velocity, variety, veracity, value • Data sources: EHRs, devices, imaging, claims, genomics • Opportunities and barriers in healthcare analytics
- Module 2: Data Architecture and Infrastructure (09:45 – 11:15) • Data lakes vs data warehouses • Structured vs unstructured data • Integration with hospital information systems
- Module 3: Data Governance and Interoperability (11:30 – 01:00) • Data ownership, standardization, and exchange • HL7, FHIR, ICD, SNOMED CT • Interoperability challenges and solutions
- Module 4: Workshop – Mapping a Hospital Data Ecosystem (02:00 – 03:30) • Participants identify and structure data flows within their own organizations

Day 2: Healthcare Analytics and Insight Generation

- Module 1: Foundations of Healthcare Analytics (07:30 – 09:30) • Descriptive, predictive, and prescriptive analytics • KPIs in clinical and operational performance • Data quality and cleaning methods
- Module 2: Tools and Techniques for Data Analysis (09:45 – 11:15) • Excel, Power BI, R, Python – when and how to use • Dashboards and visualization in clinical settings • Using data for decision support systems
- Module 3: Population Health and Predictive Modelling (11:30 – 01:00) • Risk stratification and readmission forecasting • Chronic disease surveillance using big data • Data-driven care coordination
- Module 4: Workshop – Designing a Basic Healthcare Dashboard (02:00 – 03:30) • Build an interactive dashboard for a sample healthcare dataset

Day 3: Cybersecurity in Healthcare IT Environments

- Module 1: Cyber Threats and Attack Vectors (07:30 – 09:30) • Malware, phishing, ransomware in healthcare • Insider threats and vendor-related vulnerabilities • Real-life breach case studies
- Module 2: Healthcare Security Frameworks (09:45 – 11:15) • NIST Cybersecurity Framework • ISO 27001/27799 for health information security • Security risk assessments and penetration testing
- Module 3: Endpoint and Network Security (11:30 – 01:00) • Role-based access, encryption, and firewalls • Mobile device and cloud security • Backup and recovery planning
- Module 4: Workshop – Threat Identification and Response Planning (02:00 – 03:30) • Develop a response plan for a simulated breach scenario

Day 4: Data Privacy, Compliance, and Legal Considerations

- Module 1: Health Data Privacy Laws and Regulations (07:30 – 09:30) • HIPAA, GDPR, local privacy frameworks • Patient consent and data usage rights • Cross-border data exchange issues
- Module 2: Building a Compliance Culture (09:45 – 11:15) • Staff training and awareness • Data classification and labeling • Monitoring and incident response protocols
- Module 3: Ethical Use of Healthcare Data (11:30 – 01:00) • AI and machine learning in clinical settings • Bias, fairness, and accountability • Transparency in algorithm-based decisions
- Module 4: Case Study – Data Privacy Violation Analysis (02:00 – 03:30) • Review of a real-life privacy breach and group discussion

Day 5: Strategy, Innovation, and Final Integration

- Module 1: Big Data Strategy in Healthcare (07:30 – 09:30) • Strategic planning for digital transformation • Stakeholder engagement and funding models • Scaling from pilot to enterprise-level
- Module 2: Digital Health Innovations (09:45 – 11:15) • AI diagnostics, remote monitoring, digital twins • Blockchain in medical data sharing • Role of big data in public health emergencies
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- Module 3: Final Integration and Action Planning (11:30 – 01:00) • Recap of tools, frameworks, and best practices • Participant action planning for their organization
- Module 4: Certification and Wrap-Up (02:00 – 03:30) • Final discussion and course evaluation • Certificate distribution and group photo

Certification

Participants will receive a Certificate of Completion in Big Data in Healthcare (Management & Security), validating their ability to manage, secure, and leverage healthcare data for innovation, compliance, and patient-centered improvement.

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