

# Creation of a Comprehensive Center for Informatics and Analytics

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THE UNIVERSITY OF MISSISSIPPI  
**MEDICAL CENTER**  
EDUCATION • RESEARCH • HEALTHCARE

# Objectives

- Explain why combining an associative data lake model and honest broker process is efficient and cost effective
- Describe key success factors in becoming a comprehensive Center for Informatics and Analytics
- Describe target outcomes that we can positively impact

# University of Mississippi Medical Center



- 722 bed academic medical center
- 6 hospitals including women's, children's, critical access, and community
- 1600 Clinicians
- 125 specialties
- 100+ clinics
- 5 health sciences schools

# Center for Informatics and Analytics

- Mission
  - The overarching mission of the Center of Informatics and Analytics (CIA) is to improve the health of Mississippians by integrating informatics and analytics into all three missions of the University of Mississippi Medical Center (UMMC).

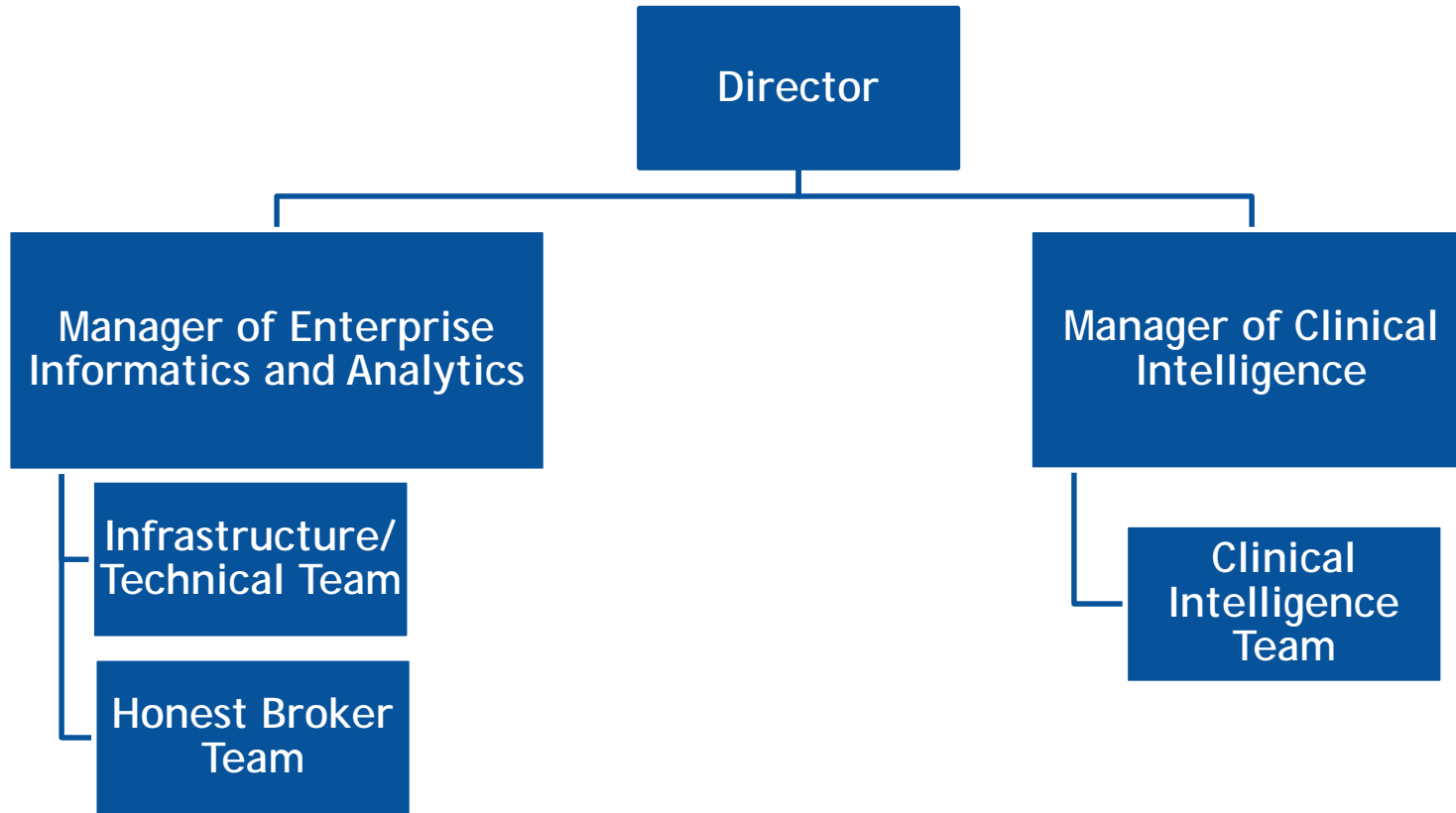
# Three Missions of UMMC

- Healthcare mission
  - Enterprise dashboards
  - Clinical analytics
- Research mission
  - Enable collaborative use of information
  - Increase analytic capabilities
  - Manage data in a variety of formats and across platforms
- Education mission
  - Support the Clinical Learning Environment Review (CLER) Program
  - Utilize analytics that advance educational research
  - Establish informatics and analytics educational programs

# CIA Structure

- Establish key pieces of infrastructure including a federated data warehouse, a data visualization and discovery platform (Qlik), mission focused data governance boards and an honest broker process for analytics requests and data release
- Responsible for centralizing reporting teams and efforts into well governed analytic teams
- Focus on moving the organization from relying on ad hoc reporting to a focus on data visualization, self-service discovery and integrated predictive analytics
- Three teams
  - Infrastructure/Technical
  - Honest Broker
  - Clinical Intelligence

# CIA Structure





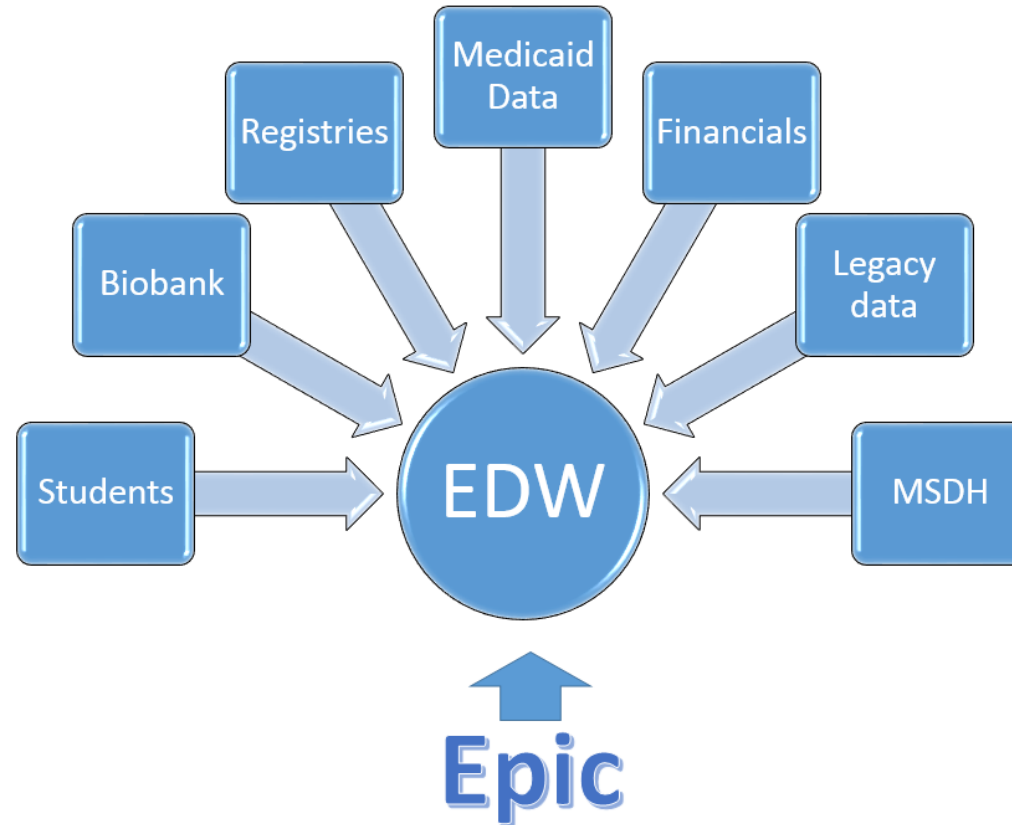
# Infrastructure/Technical Team

- CIA's infrastructure is designed to be efficient and cost effective by using an associative data lake model
  - Epic Cogito Data Warehouse, Epic Clarity Reporting Database, Business Object Enterprise, Qlik, REDCap, i2b2
- Infrastructure/Technical Team
  - Responsible for designing, feeding and maintaining the data warehouse and supporting analytic applications
  - Maintain and support the technical infrastructure to capture, aggregate, manage, share, and analyze data to create clinical knowledge, improve population health, and connect research, education, and patient care



# Infrastructure/Technical Team

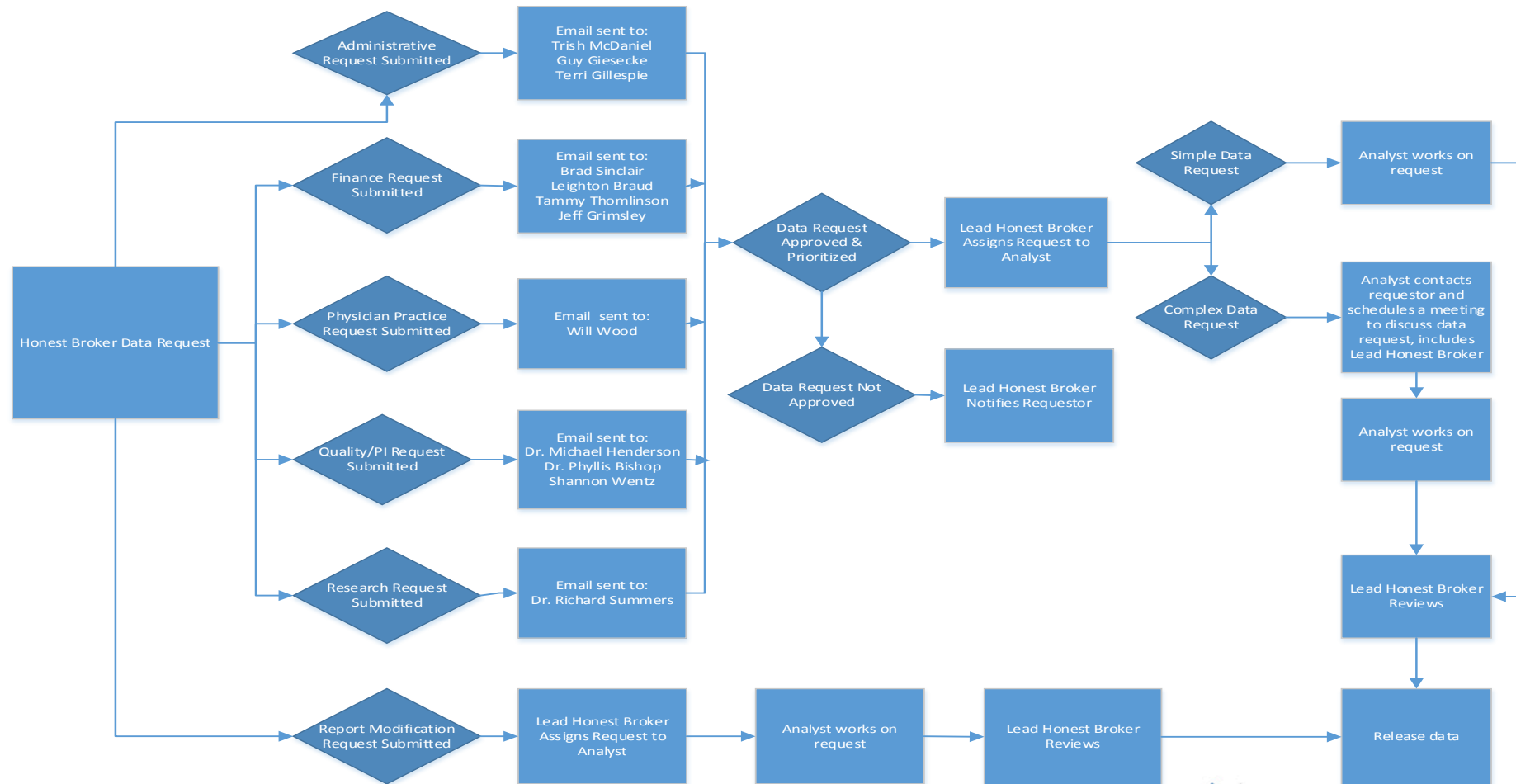
## Federated Enterprise Data Warehouse



# Honest Broker Team

- The CIA houses the Honest Broker process to provide de-identified data sets, limited data sets, and data sets containing protected health information (PHI) with proper approval and authorizations under the guidance of the EDW Governance Committee
- Policies have been created and are in place to help ensure all data requests go through the CIA
- Honest Broker Team
  - Responsible for appropriate data release, data security, data definitions, reporting and data validation
  - Verify all documentation for data release, including data use agreements (DUA), IRB approval letters, and business associate agreements (BAA)
  - Develop QVDs which are the raw data files that feed Qlik's data visualization and discovery tool

# Honest Broker Team



# Honest Broker Team

- 541 Total Data Requests since July 2015
  - 102 Administrative Data Requests
  - 21 Clinical Activity Reporting
  - 34 Finance Data Requests
  - 70 Physician Practice Data Requests
  - 201 Epic Report Modification Requests
  - 46 Research Data Requests
  - 58 Quality Assurance/Performance Improvement Data Requests

# Clinical Intelligence Team

- Charged with applying clinical business rules to available data to create actionable knowledge for the healthcare enterprise
- Responsible for data visualization and clinical analysis to improve outcomes, including predictive analytics
- Strong focus on guiding the organization to appropriately use analytics to drive patient care and healthcare operations

# Cohort App

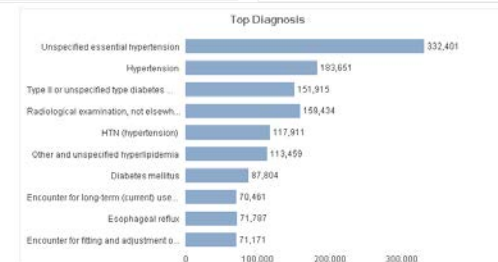
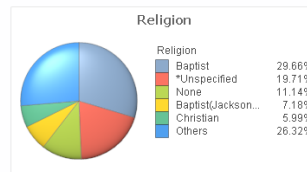
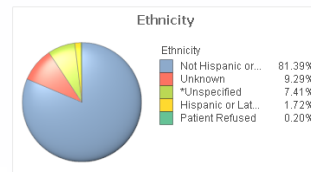
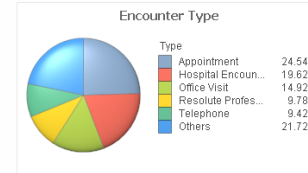
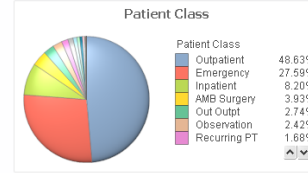
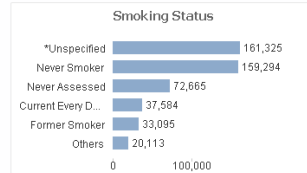
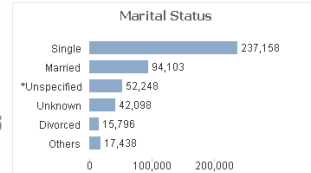
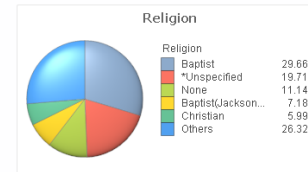
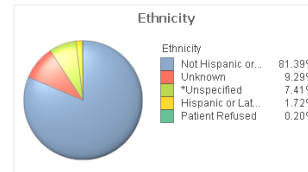
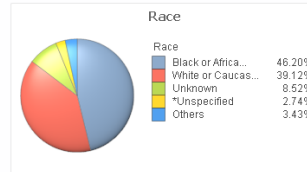
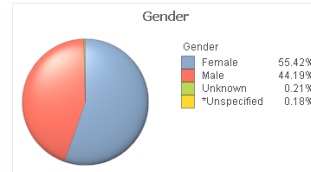


**Patients**  
**437,637**

**Visits**  
**5,735,652**

**Admissions**  
**115,120**

**ED Visits**  
**404,457**



# 1 year goals/accomplishments

- Healthcare Mission
  - Develop a Clinical Intelligence Advisory Board that will focus on data needs and set analytic priorities related to the Healthcare mission.
  - Develop clinical analytics to demonstrate improvements in patient care, population health, productivity, cost, and functionality.
  - Pilot and implement an AMI predictive model in Epic that will support decision making by physicians.
  - Establish data sharing mechanisms that encourage continuous improvement, metric tracking, and accountability.
  - Facilitate improvement in utilization of narrow-spectrum antibiotics and utilization of radiology services.
  - Facilitate reduction in readmissions, health acquired conditions (HAC), and unnecessary laboratory tests.
  - Develop a Population Health Informatics Advisory Board that will focus on data needs and set analytic priorities related to population health.



# 1 year goals/accomplishments

- Research Mission
  - Develop a Research Informatics Advisory Board that will focus on data needs and set analytic priorities.
  - Offer honest broker services for de-identified, limited data sets, and data sets containing protected health information (PHI) with proper approval and authorizations.
  - Develop cohort discovery tools (Qlik application and Informatics for Integrating Biology and the Bedside (i2b2) environment) for grant proposals by internal investigators and to collaborate with external investigators for funding opportunities.
  - Validate the EDW data and publish the process for investigators to include in grant proposals.
  - Assist with implementing an institutional bio-specimen inventory (bio bank) management system to ensure all specimens are captured and stored in a central biorepository.
  - Support institutional electronic data capture applications, including REDCap, to streamline data collection, manage online surveys and databases, import data from various sources, and automate data exports for download to common statistical packages.
  - Seek extramural funding opportunities to support the informatics and analytics infrastructure.

# 1 year goals/accomplishments

- Education Mission
  - Develop an Educational Informatics Advisory Board that will focus on data needs and set analytic priorities for the Education mission.
  - Develop internships for medical students, residents, and other health-related professional's students (i.e., physical therapist, occupational therapist) as a 4-week rotation elective.
  - Develop rotations for nursing and pharmacy students as a 1-semester credit elective.
  - Develop a journal club to critically evaluate specific articles, educate our faculty, staff, and students, and discuss implications related to education, research, and clinical practice.
  - Develop student-focused analytics to facilitate schools improving student learning, create opportunities for formal and informal learning activities, and advance the interest of faculty and students.

# Key Success Factors

- Creating strong data governance
- Focusing on institutional strategic priorities
- Cultivating leadership engagement
- Creating a source of truth for the organization

# Next 12 months

- Add an Operations/Finance Intelligence team, Education Intelligence team, and Population Health Intelligence team
- Incorporate additional data sets
  - Medicaid
  - Department of Health
  - Biobank
- Research validation of NLP and predictive analytics

# Questions

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