Data Quality and Stewardship in the Veterans Health Administration

ABSTRACT

The mission of the Veterans Health Administration (VHA) is to serve the needs of America's Veterans by providing primary care, specialized care, and related medical and social support services.   VA operates more than 1,400 sites of care, including 153 medical centers and 909 ambulatory care and community-based outpatient clinics. Almost 5.5 million people received care in VA health care facilities in 2008.   In addition, VHA manages the largest medical education and health professions training program in the United States and serves as a backup to the Department of Defense (DoD) during national emergencies and as a federal support organization during major disasters.

BIOGRAPHY

Mark Love
Data Stewardship Program Manager
Veterans Health Administration

Mark Love is the Data Stewardship Program Manager for the Veterans Health Administration (VHA), the nation's largest integrated health care provider. Mr. Love was a principal architect of the VHA's Data Stewardship program and has served in the management role from its inception. As Program Manager, Mr. Love provides strategic leadership to and coordination and support for data governance in the VHA business community. Mr. Love has 10 years experience in clinical informatics specializing in software development, electronic medical record design, data quality and data modeling. Mr. Love received his Master's Degree from the University of Utah.

Sara Temlitz
Business Product Manager
Office of Information, Health Data and Informatics, Data Quality Program
Department of Veterans Affairs

Sara Temlitz has been with the Department of Veterans Affairs for over 20 years, and has used her technical and analytical skills to further the growth of the electronic health record (EHR) and data quality within VHA. Currently, Sara is the Business Product Manager for the Office of Information, Health Data and Informatics, Data Quality Program. Sara holds technical responsibilities for all business aspects of Data Quality and Identity Management, coordinates the technical activities for data quality, as well as those of the Identity Management Data Quality

team, including the facilitation of training, software development and data quality issue resolution related to data quality, identity management and any related applications, products and services. She is also involved with several other initiatives within VHA and with other business partners, including the National Committee on Vital and Health Statistics, the Industry Advisory Council (IAC) Collaboration and Transformation Shared Interest Group, Connecting for Health, Department of Defense and others.

Before working for the Office of Information, Ms. Temlitz worked in the Information Resources Management service at the VA Medical Center in Milwaukee. Throughout her tenure at the facility level, she provided technical expertise in many areas of the electronic health record and acted as the Director of the IRM Service.

Data Quality and Stewardship in Veterans Health Administration (VHA)

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Data Quality Program

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Objectives

- **Provide an overview of the VHA Data Quality (DQ) Program focusing on:**
  - Multifaceted approach to data quality
  - Management of the integrity of the patient identity within and across the longitudinal electronic health record (EHR)
  - Facilitation of data sharing
  - Growth of our Data Stewardship Program and its role in promoting data quality and data governance
  - Expanding effort to identify and respond to key administrative and clinical data quality issues

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VHA's Data Quality Program

Functional Areas within DQ
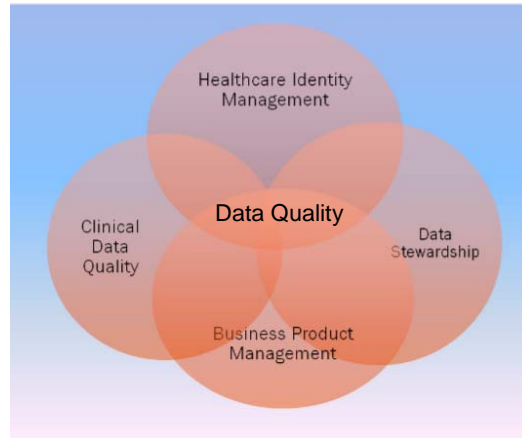
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VHA Overview

- VHA Statistics
    - 5.58 million total unique patients treated in (FY 08)*
    - 153 medical centers
    - 768 community-based outpatient clinics (CBOCs)
    - Over 292,000 VA employees
    - Almost 110,000 health care professionals rotating through VA (FY 08)
- Mature and highly integrated EHR, VistA**
    - 100+ applications
    - Includes Computerized Patient Record System (CPRS)
- Extensive re-hosting and modernization underway based on a service-oriented architecture

*Source: "VA Stats at a Glance", http://www1.va.gov/vetdata/docs/4X6_summer09_sharepoint.pdf, Veteran Population as of 08/09; VA Employ Pay Status Count 06/30/09; Veterans Affairs Site Tracking (VAST) 06/30/09; Office of Budget; Health Services Training Report FY08 ; * Includes Medical Care Cost Fund (MCCF)
**Veterans Health Information Systems and Technology Architecture

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Integrity of Patient Identity Across EHR

- Healthcare Identity Management (HC IdM) in VHA responsible for the integrity of the patient's identity within and across the enterprise longitudinal EHR
  - Involved in managing data quality at source of data entry in Department of Veterans Affairs (VA) Medical Centers
  - Business steward established in 2000; now a team of 40 specialists
  - Defines business requirements to ensure integrity is supported as a matter of organizational commitment to patient care and safety
- Business Product Management provides support to programs within DQ
  - Ensures DQ and HC IdM requirements allocated to each newly funded application
  - Provides DQ Analytics and encourages Continuous Quality Improvement

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VHA's Master Patient Index (MPI)

- Adheres to American Society for Testing and Materials (ASTM) standard E1714 for Universal Health Care Identifier
- Leverages the Object Management Group (OMG) Person Identification Service (PIDS) standard
- Uses the Integration Control Number (ICN) as the unique Universal Healthcare Identifier (UHID)-compliant identifier and enterprise ID within VHA
- Holds over 16 million unique patient entries, with correlations to all sites of interest
- Expanding to Master Person Index in 2011

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VHA's MPI
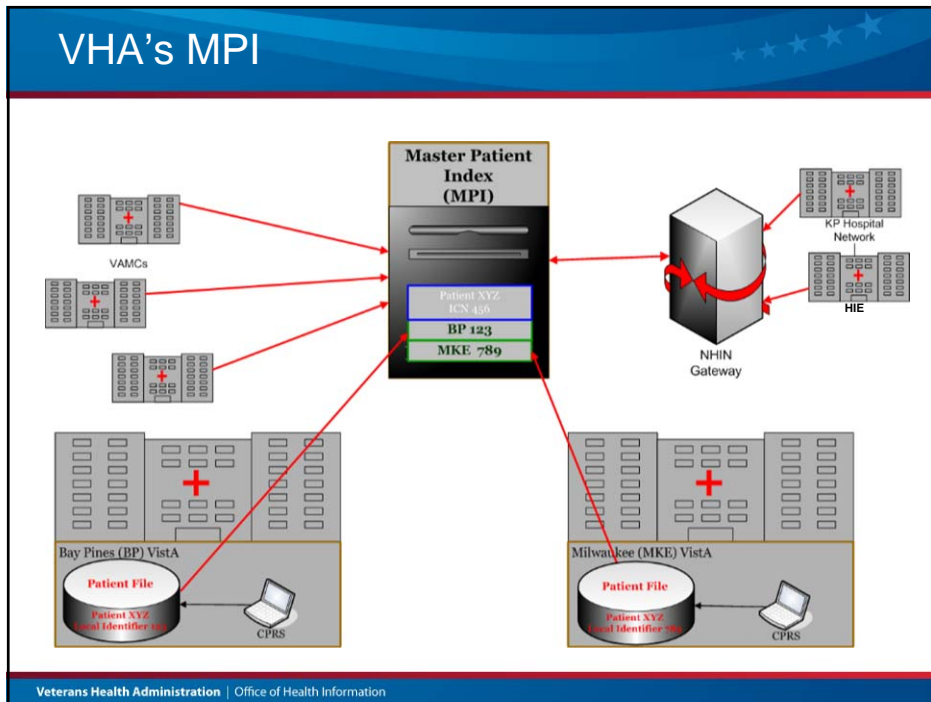
VHA's Primary View

- Incorporates logic for facilitating the "best of breed" for identity traits in MPI and synchronizes with facilities
  - Provides higher quality data
  - Minimizes introduction of errors at entry point
- Allows fine tuning of business rules and authority scores for edits to traits and introduction of new systems
- Provides flexibility in determining authoritativeness of data sources

How VHA Finds the Correct Patient

- Transition from deterministic to a probabilistic search mechanism
  - Exact trait matching to "fuzzy" matching
  - Additional traits and weighting
- Initial load of patient data (using probabilistic algorithm) resulted in:
  - Detection of previously unidentified potential duplicates
  - Identification of previously unknown duplicates for "auto linking"
  - Identified data quality issues with expansion of traits
- Benefits
  - Better matching upfront
  - Less human intervention needed locally
  - Less human intervention needed nationally

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What is a Catastrophic Edit?

- A change in the identity of the patient as a result of changes made to key identity traits (First Name, Last Name, SSN, DOB and Gender) in the patient record *OR*
- When different patients' records are merged

Jane Q. Doe	John Q. Doe
000-00-0111	000-00-0011
01-01-1940	01-01-1941
Female	Male
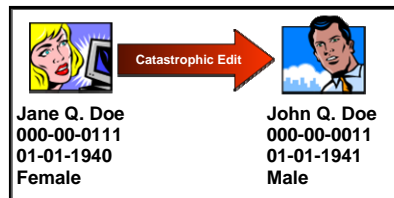
Catastrophic Edit

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Catastrophic Edits: Ramifications and Responsibilities

- Ramifications
  - **Patient Safety – clinical and administrative information is incorrect and/or unavailable for patients involved**
  - **Erroneous updates are propagated to national databases**
  - **Patient data, both clinical and administrative is intermingled**
  - **Data cleanup is labor and time-intensive**
  - **Some data cannot be recovered or restored to the proper record**

- Responsibilities
  - **Intake Frontline Staff**
    - Ensure correct patient is selected for edits
    - Exercise good data quality and data entry practices
  - **Intake Supervisors**
    - Provide adequate training for front-line staff
    - Follow-up on all catastrophic edits in a timely manner
    - Take appropriate action as necessary to prevent future errors
  - **MPI Points of Contact**
    - Assist in identification and resolution of data quality issues
    - Interface with national Identity Management Data Quality team as needed

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VHA Data Sharing

- Internal
  - Data sharing among VHA treating facilities
  - Veteran Relationship Management (VRM)
    - One identity management solution throughout VA (VHA, Veterans Benefits Administration (VBA), and National Cemetery Administration (NCA))
    - Provide one-stop service for Veterans
- External
  - Nationwide Health Information Network (NHIN)
  - Department of Defense (DoD)
  - Federal Health Care Centers (FHCC)

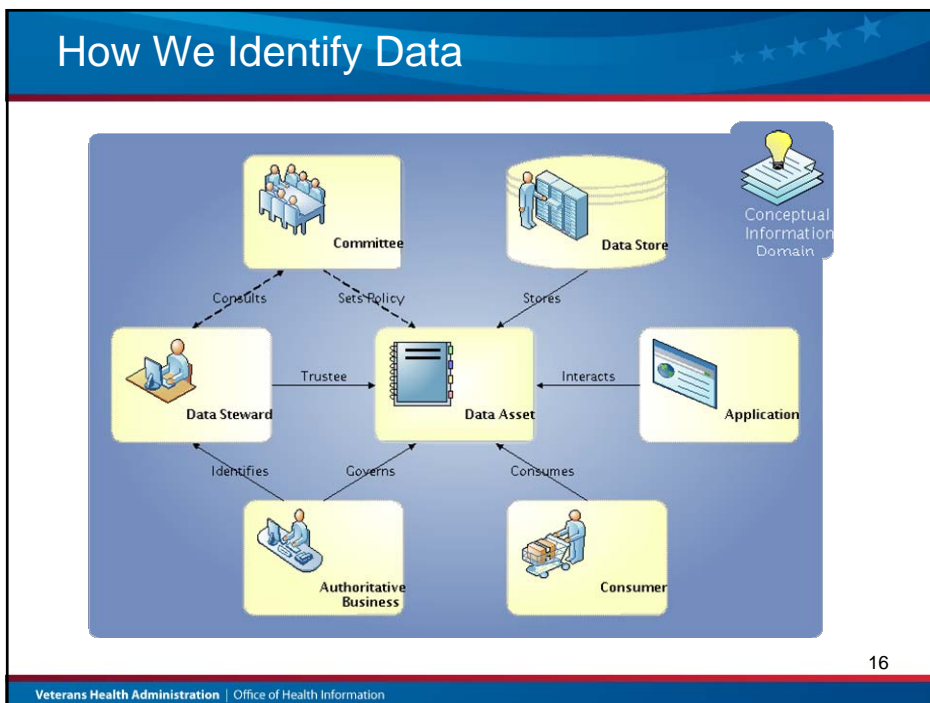**Veterans Health Administration** | Office of Health Information

Stewardship Business Proposition

- Manage data throughout its lifecycle
- Manage data across complex IT environments
- A strategic foundation for continuous data quality improvement
- Synchronize data definition, usage and storage
- Support data sharing initiatives

Create a single, accurate and authoritative view of enterprise data and to cultivate and preserve institutional knowledge

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VHA Data Stewardship & Data Governance

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Building the Program

Strategic Foundation for Continuous Data Quality Improvement

Data — Domain Identification
Business — Authority & Accountability
Stewards — Recognition & Designation
Policy — Roles Responsibilities Metadata
Data Quality — Profiling & Remediation

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How We Identify Data

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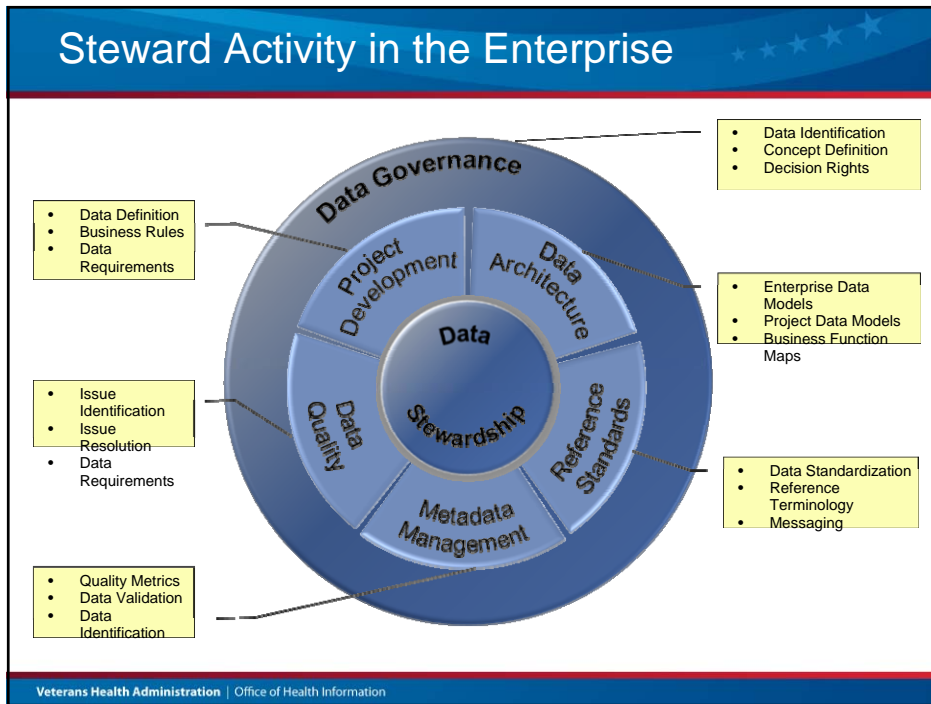## Steward Recognition Process

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Stewardship and Metadata

- Stewardship metadata
  - Manage steward information
  - Associate stewards with metadata entities
- Stewards critical to metadata quality
  - Collection
  - Validation
  - Maintenance

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Steward Activity in the Enterprise

- Data Identification
- Concept Definition
- Decision Rights

- Data Definition
- Business Rules
- Data Requirements

- Enterprise Data Models
- Project Data Models
- Business Function Maps

- Issue Identification
- Issue Resolution
- Data Requirements

- Data Standardization
- Reference Terminology
- Messaging

- Quality Metrics
- Data Validation
- Data Identification

Data Governance

Project Development

Data Architecture

Data

Stewardship

Data Quality

Reference Standards

Metadata Management

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Steward Role in Data Quality

- Primary objective is data quality
  - Establish the policies, processes, and tools
  - Define quality metrics
  - Monitor quality assurance
  - Establish rights
- Implement the DQ strategy
  - DQ issue management process

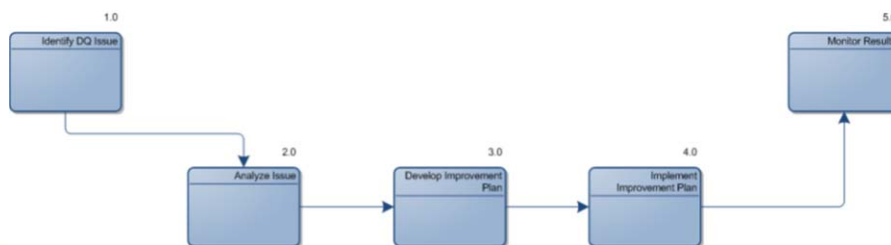Veterans Health Administration | Office of Health Information

DQ Issue Management

- DQ Issue: A problem regarding the data's ability to meet:
  - Completeness
  - Timeliness
  - Consistency
  - Accuracy
  - Integrity requirements and expectations of intended users
- Examples:
  - Wrong address resulting in medications being mailed to wrong person
  - Identity data entered incorrectly leading to mis-identification of the patient

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DQ Issue Management Process

- Address data quality issues through systematic issues management process
- Key activities include:
  - Analyze candidate issues based on scoring criteria to determine impact and DQ involvement
  - Identify related stakeholders
  - Determine if data profiling or business analysis is needed
  - Develop and implement improvement plan

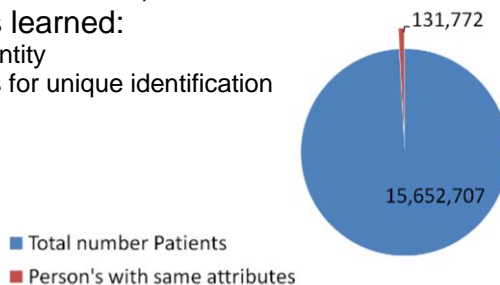**Veterans Health Administration** | Office of Health Information

Data Quality Analytics

- Activities are directed and guided by goals and initiatives of DQ Program
- Near term initiatives:
  - Person Identity: Evaluate quality of person identifying traits to help establish business rules for enumeration
  - Patient Identity: Profiling to determine patient identity traits quality within Corporate Data Warehouse
  - Patient Safety: Any issues discovered automatically become highest priority
- Office of Quality and Performance (OQP)/Patient Care Services

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Data Quality Analytics: Sample Activity

- Purpose: Determine number of patients with same name and date of birth (DOB)
- Profiled: Patient Demographic Data
- Source: Corporate Data Warehouse
- Findings: .841 % of Unique persons within VHA have same Last Name, First Name, and DOB
- Impact and lessons learned:
  - Risk of mistaken Identity
  - Necessary attributes for unique identification

131,772

15,652,707

■ Total number Patients
■ Person's with same attributes

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Summary

- Strategic alignment positions Data Quality Program to address VA's highest priorities
- Health Care Identity Management supports goals of quality and interoperability
- Data Stewardship provides a strategic foundation for continuous data quality improvement and data governance
- Business Product Management and Data Analysis provide key infrastructure for managing Data Quality issues

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Questions?

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