



## Dirty Data- A Plague for the Electronic Health Record

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WHIMA 2007 Fall Conference  
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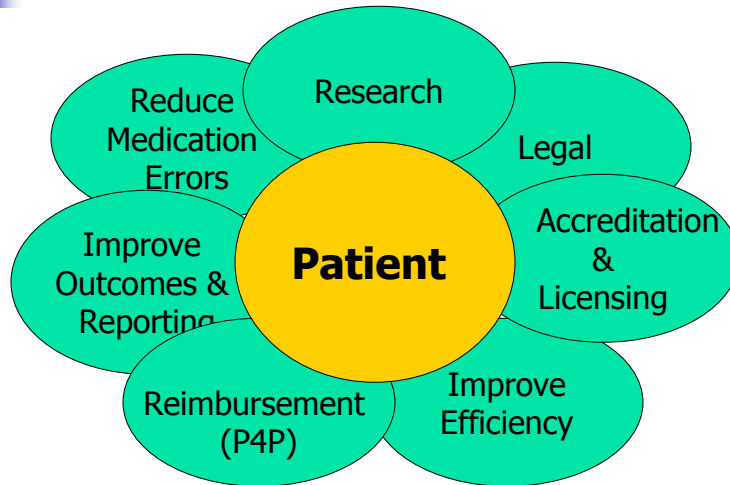


### Dictionary Definition: Plague

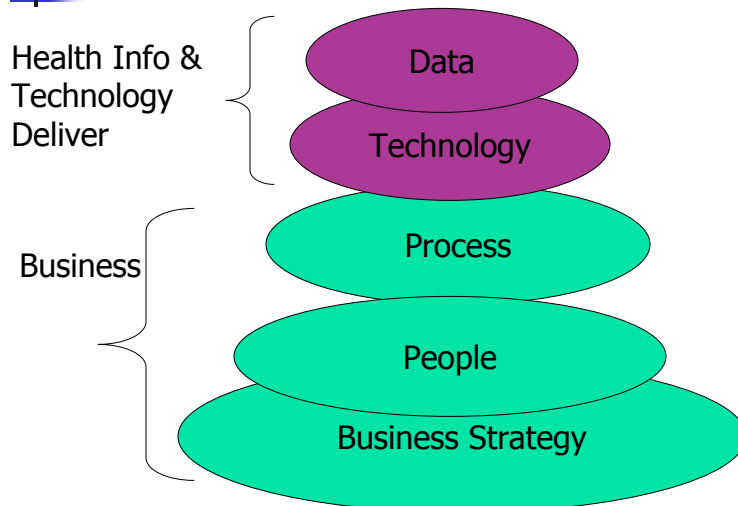
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- an epidemic disease that causes high mortality; pestilence.
- any widespread affliction, calamity, or evil, esp. one regarded as a direct punishment by God: *a plague of war and desolation.*
- any cause of trouble, annoyance, or vexation: *Uninvited guests are a plague.*
- to trouble, annoy, or torment in any manner: *The question of his future plagues him with doubt.*
- to afflict with any evil: *He was plagued by allergies all his life.*

## Why is Data Quality Important?



## Achieving a Data Culture





## Categories of Errors

- Systematic: programming mistakes, bad definitions, violation of rules established for data collection; poorly defined rules; and poor training
- Random: keying error, data transcription problems, hardware failure,

### Data Quality Management Model



#### Characteristics of Data Quality

- Accessibility
- Consistency
- Currency
- Granularity
- Precision
- Accuracy
- Comprehensiveness
- Definition
- Relevancy
- Timeliness



## Implementing EHR Documentation Improvement

- Greater focus on standardized documentation procedures.
- Shift from the traditional “retrospective” method of auditing data to front-end acquisition of quality data and transfer of that data



## Model for EHR Documentation Improvement

- **Accuracy:** *Ensure data has the correct value, are valid and attached to the correct patient.*

**Policies exist on how to take BP, when to take BP, who takes and records the BP.**

- **Accessibility:** *Data items should be easily obtainable and legal to access with strong protections and controls built into the process.*

**Data from previous encounters is brought forward.**



## Model for EHR Documentation Improvement (Con't)

- **Comprehensiveness:** *All required data items are included; ensure the entire scope of data is collected and document intentional limitations.*

**Includes all components required by regulatory agencies and accreditation bodies, e.g. pain assessment, pain intensity.**

- **Consistency:** *The value of the data should be reliable and the same across applications.*

**Data values and required content are the same across the organization**

- **Currency:** *The data should be up-to-date.*

**Policies exist to ensure most current data are entered or verified for each component. When auto-population of data occurs, author validates and updates, as necessary.**



## Model for EHR Documentation Improvement (Con't)

- **Definition:** *Clear definitions should be provided so the current and future data users will know what the data mean; each data element should have clear meaning and acceptable values.*

**Standardized data definitions for each required component.**

- **Granularity:** *Attributes and values of data should be defined at the correct level of detail.*

**Attributes for each field are defined, e.g. blood pressure**



## Model for EHR Documentation Improvement

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- **Granularity:** *Attributes and values of data should be defined at the correct level of detail.*
- **Precision:** *Data values should be just large enough to support the application or process.*
- **Relevancy:** *The data are meaningful to the performance of the process or application for which they are collected.*
- **Timeliness:** *Timeliness is determined by how the data are being used and their context.*



## Data Strategies

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- Context Management
- Single Sign-On
- Interfaces
- Integration
- Duplication of key information in both systems
- Data Conversion

## Data Quality Best Practices

- Standardize documentation practices in compliance with regulatory and legal requirements.
- Design of applications and data entry screens
- Front-end acquisition of data
- Data Integrity
- A program of repeated assessment, feedback and training.
- Data Dictionary
- Data Standards

## Data Dictionary

The screenshot shows a software application window titled "Gundersen/Lutheran Data Dictionary - [Application Information for SMS]". The interface includes a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help), a toolbar with various icons, and a main display area. The main area has tabs for "Attributes", "Users/Developer", "Tables", "Queries", and "Report". The "Tables" tab is active, displaying a list of tables with columns for "ID", "Table Friendly Name", and "Table Object Name". The list contains 11 rows of data, with the first row highlighted. At the bottom of the window, there are buttons for "Get Structure", "Delete", "Build MDB", and "Exit Form", along with a status bar showing "Common Name of Application" and "NUM".

ID	Table Friendly Name	Table Object Name
91	TBL_GUARANTOR_EMPLOYER	TBL_GUARANTOR_EMPLOYER
92	TBL_HF_CHARGE_AMOUNTS	TBL_HF_CHARGE_AMOUNTS
99	TBL_INSURANCE	TBL_INSURANCE
108	TBL_OPERATING_ROOM_IP	TBL_OPERATING_ROOM_IP
108	TBL_OPERATING_ROOM_OP	TBL_OPERATING_ROOM_OP
118	TBL_ORDERS	TBL_ORDERS
118	TBL_PATIENT_ADDRESS	TBL_PATIENT_ADDRESS
118	TBL_PATIENT_CASE	TBL_PATIENT_CASE
120	TBL_PATIENT_CASE_ADDITIONAL	TBL_PATIENT_CASE_ADDITIONAL
134	TBL_TRAUMA	TBL_TRAUMA
136	TBL_VISIT	TBL_VISIT

## Data Dictionary – Pt Case

The screenshot shows a software window titled "Gundersen/Lutheran Data Dictionary - [Table Information]". The window has a menu bar (File, Edit, View, Insert, Format, Records, Tools, Window, Help) and a toolbar. The main area is divided into several sections:

- Table Name:** Friendly Name: TBL\_PATIENT\_CASE, Table Name: TBL\_PATIENT\_CASE. Buttons: View Table, Exit.
- Attributes | Validation | Fields | Indexes:** A tabbed interface.
- Description:** A text box containing the following text: "A record is created for each episode of care. This table contains basic demographic information such as name, sex, date of birth, age, account number, dates of admission and discharge, and hospital service as some examples. Account number is the linking factor between this and other tables to see information related to this episode of care. Not all fields have data back to 4/1/81. Refer to individual fields for retention."
- Connect:** A text box for connection details.
- Table Type:** A dropdown menu set to "ODBC".
- Date Created:** A text box.
- Last Update:** A text box.
- Data Start:** A text box containing "4/1/1981".
- Data End:** A text box.
- Table Usage:** Radio buttons for "Data" (selected) and "Lookup/Master".
- Source Table:** A text box containing "WHSE.TBL\_PATIENT\_CASE".
- Application Friendly Name:** SMS.
- Application:** SMS.

At the bottom of the window, there is a "Table Common Name" field and buttons for "FLTR" and "NUM".

## Common Standards Used Today

- Health Level 7 (HL7)  
([www.hl7.org/ehr](http://www.hl7.org/ehr))
- Continuity of Care Record (CCR)  
([www.astm.org](http://www.astm.org))
- National Council for Prescription Drug Programs (NCPDP)  
([www.ncdp.org/frame\\_standards.htm](http://www.ncdp.org/frame_standards.htm))
- Digital Imaging and Communications in Medicine (DICOM)  
(<http://medical.nema.org/dicom>)



## Common Standards Used Today

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- Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT)  
([www.snomed.org](http://www.snomed.org))
- Logical Observation Identifiers, Names and Codes (LOINC)  
([www.openclinical.org/medTermLoinc.html](http://www.openclinical.org/medTermLoinc.html))
- International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM)  
([www.cdc.gov/nchs/icd9.htm](http://www.cdc.gov/nchs/icd9.htm))
- Current Procedural Terminology (CPT)  
([www.ama-assn.org/ama/pub/category/3113.html](http://www.ama-assn.org/ama/pub/category/3113.html))



## 11 Common Data Sets

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- ASTM International's E1384-02a Practice for Content and Structure of the Electronic Health Record Minimum Essential Data Set
- ASTM International's WK4363 Standard Specification for the Continuity of Care Record (CCR)
- Doctor's Office Quality Information Technology's Data Element Specification v.1.1.2
- Electronic Medical Summary project (Canada) Core Data Set
- International Organization for Standardization (ISO)/TS 18308 Health Informatics: Requirements for an Electronic Health Record Architecture



## 11 Common Data Sets (con't.)

- Joint Commission on Accreditation of Healthcare Organizations Comprehensive Accreditation's Manual for Ambulatory Care: Information Management Standards 6.20, EP1
- Centers for Medicare and Medicaid Services' Minimum Data Set, Version 2.0, for Nursing Home Resident Assessment and Care Screening
- National Center for Vital and Health Statistics' Core Health Data Elements
- Centers for Medicare and Medicaid Services and the Joint Commission on National Hospital Quality Measures
- AHIMA's Personal Health Record Minimum Common Data Elements
- Health Level Seven's Clinical Document Architecture, release 2



## Role of HIM S

- **Develop** EHR data quality models with clinical partners.
- **Align** standard documentation practices with clinical practice.
- **Provide expertise** on accreditation and regulatory documentation requirements.
- **Audit** and monitoring check points.
- **Develop recommendations** for resolution of data collection processes that are at risk. Resolution may involve people, processes, or systems.
- **Educate** and transfer knowledge of data content standards within the organization and to vendors:



## References

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- AHIMA e-HIM Workgroup. "Model for Implementing an EHR Documentation Improvement Process" Available online at [www.ahima.org](http://www.ahima.org) , 3/2007.
- AHIMA e-HIM Workgroup on EHR Data Content. "Data Standard Time: Data Content Standardization and the HIM Role." *Journal of AHIMA* 77, no.2 (February 2006): 26-32.
- AHIMA e-HIM Work Group on EHR Data Content. "Guidelines for Developing a Data Dictionary." *Journal of AHIMA* 77, no.2 (February 2006): 64A-D.



## Resources

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- The office of the National Coordinator for Health Information Technology, U.S. Department of Health & Human Service. "Recommended Requirements for Enhancing Data Quality in Electronic Health Record Systems". June 2007.
- AHIMA e-HIM Resources
- FORE Library: HIM Body of Knowledge