Health Care Information Systems: A Practical Approach for Health Care Management, 2nd Edition, by K. A. Wagner, F. W. Lee, and J.P. Glaser, 2012

Kaiser Permanente 🡪 paperless system, cost: $5B. Physicians are now helped by their hospitals – IRS allows 85% of the doctors’ EMR cost to be met by hospitals. The Fed Govt is linking reimb to e-prescribing and quality data reporting. The book is for folks in health care management.

Preface: Parts on Health care information, systems for that, IT, and Senior Mgmt IT challenges.

IT challenges in health care:

* large number of small organizations – Thousands of hospitals have < 100 beds; 7000+ home health agencies; An investment of $25K in EMR may be high for a solo practitioner. It also makes it difficult for SW and HW vendors to make money from. Most of these vendors are small and may find it hard to survive year to year.
* Incentive Misalignment – Many health care information systems have the potential to improve quality care. CPOE can reduce adverse drug events. Reminder systems in EMR can improve mgmt. of chronically ill pts. There is, however, no incentive, for the doctors. Insurance payments do not increase if there are fewer medical errors. This misalignment does not occur in other industries – more customers will come if IT improves QOS and cost.
* Fragmented Care – A pt’s care is at many clinics. Unnecessary repeats of tests. The clinics do not have financial incentives to share Pt info. Integrated delivery systems are one approach to reducing fragmentation. But Pts may seek care outside of this system. Clinical data may reside in very different settings and IT demands to integrate them may be too much. The desired pt data may also be randomly dispersed.

Complexity of the process of care: Looking it as an engineering or manufacturing process, where the pt is the input, the manufacturing process is the medical process applied to them, with the output a healthy patient, this would be the most complex manufacturing process that exists, with immense care process variability and process volatility. There is likely to be great variability in treatment. In an academic medical center a physician may have 2500 medications (each with variations in frequencies, doses, routes of administration), 1100 clinical lab tests, 300 radiological procedures, etc. The physician needs to choose the right combination and sequence based on patient condition and comorbidity. There are approximately 10K diseases, syndromes, and problems,l each of which, in theory, requires its own pathway, guideline, or approach/approaches.

This variability and opportunity for variability is unparalleled by any other manufacturing process. This is compounded by the volatility of the medical process – research and clinical trials are ever expanding.

Complexity of Health and Medical Data:

* Comprehensive ways to formally decompose many key components of the pt record – for e.g., admission history and physical status – into coded concepts have not been fully developed.
* When data models are developed, vocabularies of terms to use are difficult to evolve. The condition of a pt is often complex and probabilistic, needing nuanced description.
* Even with a good data model and coded terms, the provider may find it easy to enter ordinary text
* No single way exists to organize automated medical data.

Rising to the Challenges:

Chapter 1: Intro to Health Care Information

* Compare various definitions of health care info
* Major types of health care info
* Specific examples of major types
* Contents of Pt records
* A typical encounter

Definitions:

Health Insurance Portability and Accountability Act Definition (HIPAA): protects patients’ health information from unauthorized disclosure. Defines Health Info as “Any info, whether oral or recorded in any form or medium, that (A) is created or received by a health care provider, health plan, public health authority, employer, life insurer, school or university, or health care clearinghouse: and (B) relates to the past, present, or future physical or mental health or condition of an individual, the provision of health care to an individual, or the past, present, or future payments for the provision of health care to an individual.

HIPAA refers to this type of info as protected health informatics (PHI). Not all the info that must be managed in a health care org is protected health info. Much of the info used by health care providers and executives is neither Pt specific not identifiable in the HIPAA sense.

National Alliance for Health Information Technology Defs: This alliance released a report (4/08) on EMR, EHR,and PHR, and refer to Pt-specific, identifiable health care information that would meet the HIPAA defn of PHI:

EMR (elect medical record) – an electronic record of health-related info on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one healthcare org

EHR – an electronic record of health-related info on an individual that conforms to nationally recognized interoperability stds and that can be created, managed, and consulted by authorized clinicians and staff across more than one healthcare organization.

PHR – Personal health record – info on an individual that conforms to nationally recognized interoperability stds and that can be drawn from multiple sources while being managed, shared, and controlled by the individual.

*The Joint Commission Definitions:* Major accrediting agency – broader definitions. It defines not only Pt-specific, identifiable health care info, but also info that is aggregage, knowledge-based, and comparative. They measure the quality of the different types of health care info found and used with health care orgs. Manage info just as they do for human, material, and financial resources.

*Health Care Data Framework:* Intl (Pt encounter and General ops) and Extl (Comparative and expert-knowledge based). Book’s focus on Pt encounter – Pt specific, aggregate, and comparative.

Pt Specific – Clinical – purposes: patient care, communication, legal documentation, billing and reimbursement, and research and **quality** mgmt.. Content of patient records: AHIMA (Amer Healt Info Mgmt Assoc) has a site **www. myPHR.com** - lists the common components: Id sheet, problem list, medication record, history and physical, progress notes, consultation, physician’s orders, Imaging and X-ray reports, Lab reports, consent and authorization forms, operative report, pathology report, and discharge summary.

Intl Data and Info: Pt Specific – Admin – Look at two standard billing documents **UB-04** (CMS-1450) and CMS-1500. UB-04 is the de facto hospital and other institution claim standard. Requires that each claim include a valid Natl Provider ID (NPI) ( Ref: CMS, 2006: Centers for Medicare and Medicaid). NPI is a 10-position “intelligence-free” numeric ID. **CMS-1500**: The Natl Uniform Claim Committee (NUCC, 2008) was formed by AMA to develop a std data set for the noninstitutional health care community to use in the submission of claims. Other uniform data sets: **UHDDS** (Uniform Hospital Discharge Data Set); **ACDS** (Uniform Ambulatory Care Data Set), and **MDS** (Minimum Data Set) used for long-term care. They share two purposes: ID the data elements that should be collected for each Pt, and provide uniform definitions for common terms and data elements.

**Internal data and Information:** Patient Specific – combining clinical and administrative. ICD-9-CM (Intl Classification of Diseases, 9th revision, Clinical Modification – modified for sue in the US) – published by the Natl Center for Health Statistics; CPT (Current Procedural Terminology), published by the AMA. **ICD-9-CM**: Codes not only disease info, but also procedural info. ICD-10 is due 10/13. Since 1983, ICD-9-CM has been used for determining the diagnosis related group (DRG) into which a Pt is assigned. DRGs are the basis for determining appropriate inpatient reimbursements for Medicare, Medicaid, and many other health care insurance beneficiaries. ICD-10 includes substantial increases in content and many structural changes. **CPT**: AMA publishes an updated Current Procedural Terminology each year. CPT is copyrighted, unlike ICD-9-CM.The government adopted CPT, in its entirety, as the major component (“Level 1”) of the Healthcare Common Procedure Coding System (**HCPCS**). HHS OIG (Health and Human Services Office of Inspector General) is responsible for (among the other duties) investigating fraud involving government health insurance programs. Web site: [**www.oig.hhs.gov**](http://www.oig.hhs.gov)

**International data and information: Aggregate – Clinical:**

**Intl Data and Information: Aggregate – Administrative:** *Medical Cost Reports:* Medicare cost reports are filed annually by all hospitals, home health agencies, skilled nursing facilities, and hospices that accept Medicare or Medicaid. [**www.cms.gov**](http://www.cms.gov) . *Health* *Care Statistics:* Categories of stats are routines gathered for health care executives –on Census Stats and Discharge Stats.

**External data and information: comparative**

*Outcome Measures and Balanced Scorecards:*

*Comparative Health Care Data Sets:* 5 categories – Pt satisfaction, practice patterns, health plans, clinical indicators, and population measures. The Dartmouth Atlas provides an online interactive tool for customizing comparative Medicare reports. NCQA (**Natl Committee for Quality Assurance**) goal: improve the quality of health care. Two major activities: **accreditation and performance measurement**. Chapter 3 on accreditation. **HEDIS (Health Plan Employer Data and Information Set)** was developed NCQA. HEDIS consists of **71 measures across 8 domains** of care. Used by 90% of America’s health plans. Eg., Asthma medication use; persistence of beta-blocker treatment after a heart attack; controlling high BP; comprehensive diabetes care; breast cancer screening; antidepressant medication mgmt.; childhood and adolescent immunization status; and advising smokers to quit. **NCQA web site offers an interactive tool for obtaining report cares on specific health plans accredited by NCQA.** Multiple health plans can be compared to each other and against national averages.

*Clinical Indicators:* Both the Joint Commission and CMS are committed to the improvement of clinical outcomes. The Joint Commission’s Quality Check has evolved since its introduction in 1994. Check [**www.qualitycheck.org**](http://www.qualitycheck.org)to search fora variety of parameters of health care orgs, **download** hospital perf measures. The **Hospital Compare Web Site** ([www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov)) is managed by CMS quality program aimed at hospitals, nursing homes, home care, and physician practice. Interactive tool developed in collaboration with **Hospital Quality Alliance**. Comparison reports can be created based on location and on specific medical conditions or surgical procedures.

*Population Measures:* Other comparative data sets – population measures. Most state health departments collect statewide morbidity and mortality data. These data generally come from many sources: CDC, AHRQ 🡪 for population-based health care data.

**External Data and Information: Expert or Knowledge based**

Joint Commission defn: **“A collection of stored facts, models, and information that can be used for designing and redesigning processes and for problem solving. This is found in the clinical, scientific, and management literature.”** Health care execs and providers rely on this to maintain their professional competence and to discover the latest techniques and procedures.

**Chapter 2: Health Care Date Quality**

To discuss: relationship between health care data and health care information; able to Id problems associated with poor quality health care data; able to define the characteristics of data quality; and able to discuss the challenges associated with measuring and ensuring health care data quality.

**DATA VS INFO:**  Health care data is generally not very useful for decision making. *Knowledge is seen by some as the highest level in a hierarchy with data at the bottom and information in the middle.* Knowledge is defined by Johns as “ a combination of rules, relationships, ideas, and experience.” It is also information applied to rules, experiences, and relationships, used for decision making. A journal article that describes the use of bed occupancy rates in decision making or one health care facility’s experience with improving its occupancy rates might be an example of knowledge.

**PROBLEMS WITH POOR-QUALITY DATA:**  Data quality must be established at the most granular level. MRI (Medical Records Institute) is a professional org dedicated to the improvement of Pt records through technology. It has identified 5 major functions that are negatively affected by poor-quality documentation: *Patient Safety, Public Safety, Continuity of Pt care, Health care economics, and Clinical research and outcome analysis.*

**ENSURING DATA AND INFO QUALITY:** No nationally recognized data quality standards. Two documents provide guidance: **MRI – “Essential principles of healthcare documentation.” AHIMA - a data quality management tool.** *MRI -- key principles – Unique Pt ID, healthcare documentation – accurate and consistent, complete, timely, interoperable across types of documentation systems, accessible at any time and place where Pt care is needed, and auditable, and confidential and secure authentication and accountability. AHIMA – on data quality standards – accuracy, accessibility, comprehensiveness, consistency, currency, and definition.* Preventing, Detecting, and Fixing Data Errors: Useful framework for ensuring data quality in a centralized health care database (‘medical registry’). Figure 2.3 (pp 57) shows outline – ***Use Enum Filter***. This framework illustrates that there are multiple reasons for data errors and multiple approaches to preventing and correcting these errors. **Testing the use of it**: The US GOA (Govt Accountability Office) published a report on 8 hospital case studies of health care quality data submitted to CMS. There were limitations. GOA report recommends that the secretary of the US HHS identify specific plans to promote the use of IT for the collection and submission of data to CMS. **Using IT to improve Data Quality:** GAO (2007) – data in existing EMR systems were recorded in an unstructured format – in narrative form etc – rather than in data fields designated to contain specific pieces of information. Dictated, transcribed, etc. **This limits the ability of an EMR to be a quality improvement tool**.

**Chapter 3: Health Care Information Regulations, Laws, and Standards**

Discuss how accreditation, facility licensure, and certification influence the info needs of health care facilities; Id and differentiate among major health care accrediting bodies; understand and manage the impact of the health record as a legal document; discuss HIPAA privacy regulations; and describe the laws, regulations, and standards that govern Pt confidentiality.

Chapters 1 and 2 focused on the health care info and data that are available to, used by, and managed by health care orgs.

**Two major accrediting orgs: Joint Commission and NCQA (Natl Comm for Quality Assurance).**

**LICENSURE, CERTIFICATION, AND ACCREDITATION:** *Licensure of a facility:* on areas such as physical plant standards, fire safety, space alocations, and sanitation.Min stds for equipment and personnel. A few states tie licensure to professional stds and quality of care. The Joint Commission Stds are more detailed and generally more stringent than the state licensure regulations. JC updated annually; most licensure Stds are not. *Certification:* This is needed to participate in the federal Medicare and Medicaid programs. CoPs – Conditions of Participation. Have stayed the same since 1972. But JC standards have moved on. *Accreditation:* Different accrediting agencies. Accreditation is voluntary, but there are financial and legal incentives for health care orgs. Other benefits: reimbursement, validates QOC (quality of care), reduce liability insurance, increase managed care contracts, and competitive edge. *Joint Commissions on Accreditation of Healthcare orgs –* Mission: “continuously improve the safety and quality of care provided to the public…” Accredits > 15K health care orgs and programs in the US. New Standard manuals are published annually. Six official accreditation decisions. JC may publicly disclose if an accreditation changes such as to significantly risk of death or serious injury. One clear focus is the **quality of care**. **150 of hospital stds are scored** on the Pt medical record alone. *The JC Information Mgmnt Standards:* JC accepts both paper based or electronic info. ***May be we can add PDF reader and NLP for the local data.*** *Natl Committee for Quality Assurance:* Many large employers, such as IBM, AT&T, FedEx will not do business with a health plan that is not NCQA accredited. Sixty specific stds grouped into 5 categories: ***access and service; qualified providers; staying healthy; getting better; and living with illness.*** NCQA Accreditation surveys are conducted by teams of physicians, and other health care providers. They rely heavily on health care data and info, **including the HEDIS measures**. Five levels of accreditation: Excellent, Commendable, Accredited, Provisional, and Denied. NCQA provides a free, online *health plan report card*. ***Check for BCBS.*** *Other Accrediting Orgs:* pp. 69