Evolution of Clinical Informatics

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Clinical Informatics

- Patients
- Clinicians

Clinical Data

- High quality, efficient care
- Patient engagement
- Augment the biomedical knowledge base

Columbia University Department of Biomedical Informatics
Introduction

• 20 years in Healthcare
• 15 years in Informatics
• Pratt Regional Medical Center, Pratt Ks
• Informatics

Be aware of...
- Slips
- Trips
- Falls
Introduction

- 20 years in Healthcare
- 15 years in Informatics
- Pratt Regional Medical Center, Pratt Ks
- Informatics
- Clinical Consulting
- Baptist Health Care
Baptist Health Care

Our organization dates back to 1951. We are the only locally owned nationally recognized health care system in the area with a personal interest in being your care provider. Our passion for caring is evident through involvement in our community’s health. We’ve made it our Mission to help people throughout life's journey.
Baptist Health Care

OUR MISSION
Helping people throughout life’s journey.

OUR VISION
To be the trusted partner for improving the quality of life in the communities we serve.

OUR VALUES
- Ownership
- Integrity
- Compassion
- Excellence
- Service
Baptist Health Care

• Facilities:
  ➢ Andrews Institute for Orthopaedics & Sport Medicine
  ➢ Baptist Hospital
  ➢ Baptist Medical Group
  ➢ Baptist Medical Park – Airport
  ➢ Baptist Medical Park – Navarre
  ➢ Baptist Medical Park – Nine Mile
  ➢ Baptist Medical Park – Pace
  ➢ Gulf Breeze Hospital
  ➢ Jay Hospital
  ➢ Lakeview Center
Baptist Health Care

- Location: Pensacola, Florida
- Total Providers: 275
- Total IT Employees: 90
- Application Support:
  - Clinical Informaticists: 15
  - Systems/Application Analysts: 5
  - Offshore Analysts: 14,000hrs/yr
Why Do We Need Technology

• Patient Safety
• Better Quality of Care
• Improved Interoperability
• Coordination of Care
• Streamline Facility Workflows
Is Healthcare behind the times in adoption?

- Healthcare is conservative – Lives count on it.
- Technology slows down the physician
- When workflow is negatively impacted so is patient care, patient flow and revenue.
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AMIA:

“Clinical Informatics is the application of informatics and information technology to deliver healthcare services. It is also referred to as applied clinical informatics and operational informatics.”
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HIMSS

“Clinical Informatics (aka Health Informatics) promotes the understanding, integration, and application of information technology in healthcare settings. This helps to ensure adequate and qualified support of clinician objectives and industry best practices.”
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"Clinical informaticians transform health care by analyzing, designing, implementing, and evaluating information and communication systems that enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship."

- Gardner RM et al. Core Content for the Subspecialty of Clinical Informatics
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“The first EHRs appeared in the 1960s. By 1965, approximately 73 hospitals and clinical information projects and 28 projects for the storage and retrieval of medical documents and other clinical information were underway, according to HIMSS.

The Mayo Clinic in Rochester, Minn., was one of the first major systems to adopt an EHR, picking up the project in the early 1960s, according to the National Institutes of Health.”

("A history of EHRs: 10 things to know," 2015)
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“Eclipsys, which is now part of Allscripts, was invented for El Camino Hospital in Mountain View, Calif., in 1971 by the Lockheed Corp., according to AHIMA.”

The EMRs of today first appeared in 1972 from the Regestrief Institute in Indianapolis but was so expensive that it did not spread among physicians. Instead, it was used by government hospitals, according to the University of Scranton in Scranton, Pa.”

("A history of EHRs: 10 things to know," 2015)
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“The federal government implemented an EHR in the Department of Veteran Affairs called the De-Centralized Hospital Computer Program and the Composite Health Care System in the Department of Defense in the 1970s, according to the American Medical Association. That system eventually became VistA.

Health Level 7 was founded in 1987 to address standardization issues as EHR development pushed forward. Today it has members in 55 countries, according to Greater Than One Labs, a New York City-based digital communication agency.”

("A history of EHRs: 10 things to know," 2015)
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“The Institute of Medicine set a goal in 1991 that all physicians would be using computers in their practice by 2000. It was not a law, however, and only 18 percent of physicians were using an EHR system in 2001, according to the ONC.”

("A history of EHRs: 10 things to know," 2015)
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“Interoperability has been a concern since at least the mid-1990s, when a growing clinician user base made it necessary for systems to communicate with each other to effectively coordinate care, according to a 1997 book published by the Institute of Medicine, ‘The Computer-Based Patient Record: An Essential Technology for Health Care: Revised Edition.’”

("A history of EHRs: 10 things to know," 2015)
“The federal budget for healthcare IT projects doubled during President George W. Bush's presidency. In 2004, he issued an executive order creating the Office of the National Coordinator of Health Information Technology. There was also a call for a nationwide implementation of EHRs by 2014, according to the University of Scranton.  

("A history of EHRs: 10 things to know," 2015)
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“EHRs have carved a niche in medical liability law. Privacy breaches, printing errors and miscommunications have led to a spate of lawsuits, and the landscape of liability risks and benefits will vary as EHRs spread, according to a November 2010 article in the New England Journal of Medicine.”

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("A history of EHRs: 10 things to know," 2015)
Clinical Informatics Today

• Masters and PhD in Informatics
• Certifications in Informatics
  – Nursing
  – Physicians
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<td>All Hospitals with a Basic EHR*</td>
<td>9%</td>
<td>12%</td>
<td>16%</td>
<td>28%</td>
<td>44%</td>
<td>59%</td>
<td>76%</td>
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<td>6%</td>
<td>8%</td>
<td>11%</td>
<td>22%</td>
<td>39%</td>
<td>53%</td>
<td>70%</td>
<td>81%</td>
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<td>All Rural Hospitals with a Basic EHR*</td>
<td>6%</td>
<td>8%</td>
<td>11%</td>
<td>22%</td>
<td>36%</td>
<td>53%</td>
<td>70%</td>
<td>80%</td>
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<td>All Critical Access Hospitals with a Basic EHR*</td>
<td>4%</td>
<td>7%</td>
<td>10%</td>
<td>20%</td>
<td>35%</td>
<td>54%</td>
<td>68%</td>
<td>80%</td>
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<td>All Hospitals with a Certified EHR^</td>
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<td>72%</td>
<td>85%</td>
<td>94%</td>
<td>97%</td>
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*Basic EHR with Clinician Notes
^2014 estimate was 96.9 and 2015 estimate was 96.0; the difference is not statistically significant
How Nurses Spend Their Time?

- Documentation: 35.30%
- Patient Care Activities: 19.30%
- Care Coordination: 20.60%
- Assessments: 7.20%
- Medication Administration: 17.20%

How Providers Spend Their Time?

- Paperwork/EMR Documentation, 49.20%
- Face to Face Patient Care, 27%

Lee (2016) Forbes
Clinical Support

• Providers of Care (Physicians and Midlevel)
• Nursing Staff
• Ancillary Staff
  – Lab
  – Radiology
  – Dietary
  – Respiratory, et al
• Case Management
• Referral Coordinators
Clinical Support

- Quality
- Risk
- Health Information Technology
- Coding/Billing
- Patients – Patient Engagement/Portals
HIT Application Support

- Acute Care (ED/ICU/OR)
- Ambulatory Clinic Care
- Computerized provider order entry (CPOE)
- Pharmacy IS
- Pharmacy Dispensing
- Bar-code Medication Administration
- Radiology Information Systems (RIS)
- Laboratory Information Systems (LIS)
HIT Application Support

- Clinical Decision Support
- Secure Health Messaging
- Acuity Applications
- Medical Record Imaging
- Nursing Documentation/Care Planning
- Chart Deficiency (HIM)
- Telemedicine
- Patient Portal
Attributes of Clinical Informaticist

• Clinical Expertise
• Organization
• Communication
• Problem Solving Skills
• Analytical Thinking
• Teachers
• Leadership
• Personable
Role of Clinical Informatics

- Workflow analysis
- End user “at the elbow” support
- Troubleshooting – Ticket Management
- Subject matter expert
- Interpreter during technical and clinical discussions
- Champion for buy-in
- Testing for upgrades and optimization
- Design
28% of hospitals are scanning all patient records.

75% of patients are willing to go online to view their medical records.

33% The estimated drop in productivity when providers aren't using EMRs tailored to the workflow in their line of service.

72% of hospitals are utilizing full time employees for scanning patient records.

36% of hospitals expect to hold on to their paper records.

48% of healthcare providers expect to use paper and electronic records for patient care for the next 1-3 years.
Designing to Workflow

- ADC AVANDMLS
Designing to Workflow

- A
- D
- C
- A
- V
- A
- N
- D
- I
- M
- L
- S
Designing to Workflow

- **A** – Admit: Admit to Dr. Smith
- **D** – Diagnosis: Diagnosis: Acute Pneumonia
- **C** – Condition or Code: Condition: Fair, Inpatient, Full Code
- **A** – Allergies: Allergies: PCN
- **V** – Vital Signs: VS Q 4 hours
- **V** – Activity Level: Activity: Up in chair for meals
- **A** – Activity Level: May shower, ambulate daily
- **N** – Nursing Orders: Low sodium diet
- **N** – Nursing Orders: Normal Saline at 100cc/hr IV
- **D** – Diet: Lasix 20mg PO Daily,
- **I** – IV Fluids: May continue home meds
- **M** – Meds: CBC, BMP
- **L** – Labs: DVT prophylaxis,
- **S** – Special: Oxygen at 2L/NC
Designing to Workflow

- S
- O
- A
- P
Designing to Workflow

- S – Subjective
- O – Objective
- A – Assessment
- P – Plan
Designing to Workflow

• Nursing: Asking for a reason the medication is being administered late before inserting the medication being administered

• Entering the diagnosis on 3 different subsequent screens prior to entering an order
Understanding the Ask

• Providers: Ask for a lab value, needs trending values
• How to send an OP Report – Look into autofaxing solutions.
Conclusion

• As more applications are implemented more effort is needed to support users.
• Clinical Informatics has evolved over the past 60 years and will continue to grow
• Clinical experience is sentential for clinician support
• The demand for effective clinical informaticists will continue to rise
Columbia University Department of Biomedical Informatics
References


