

Electronic Medical Records

Robert A. Jenders, MD, MS, FACP, FACMI

Associate Professor, Department of Medicine

Cedars-Sinai Medical Center

University of California, Los Angeles

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<http://jenders.bo.ucla.edu> -> Documents & Presentations

Overview:

Electronic Health Record Systems

- **Using the EHR: Why we need it, What it is**
- **History & characteristics of the EHR**
- **Adoption:**
 - **Barriers**
 - **Improving adoption**
- **Case study: CSMC**
 - **Centricity, Web/VS**



Need for EHR = CDSS: Medical Errors

Estimated annual mortality

Air travel deaths	300
AIDS	16,500
Breast cancer	43,000
Highway fatalities	43,500
Preventable medical errors	44,000 -
(1 jet crash/day)	98,000

Costs of Preventable Medical Errors:

\$29 billion/year overall

Kohn LT, Corrigan JM, Donaldson MS eds. Institute of Medicine. To Err is Human: Building a Safer Health System. Washington, DC: NAP, 1999.



Need for EHR/CDSS: Evidence of Poor Performance

- **USA: Only 54.9% of adults receive recommended care for typical conditions**
 - **community-acquired pneumonia: 39%**
 - **asthma: 53.5%**
 - **hypertension: 64.9%**

McGlynn EA, Asch SM, Adams J et al. The quality of health care delivered to adults in the United States. *N Engl J Med* 2003;348:2635-2645.

- **Delay in adoption: 10+ years for adoption of thrombolytic therapy**

Antman EM, Lau J, Kupelnick B et al. A comparison of results of meta-analyses of randomized control trials and recommendations of clinical experts. Treatments for myocardial infarction. *JAMA* 1992;268(2):240-8.



Examples of EHR/CDSS Effectiveness

- **Reminders of Redundant Test Ordering**

- *intervention*: reminder of recent lab result
- *result*: reduction in hospital charges (13%)

Tierney WM, Miller ME, Overhage JM et al. Physician inpatient order writing on microcomputer workstations. Effects on resource utilization. JAMA 1993;269(3):379-83.

- **CPOE Implementation**

- **Population**: hospitalized patients over 4 years
- **Non-missed-dose medication error rate fell 81%**
- **Potentially injurious errors fell 86%**

Bates DW, Teich JM, Lee J. The impact of computerized physician order entry on medication error prevention. J Am Med Inform Assoc 1999;6(4):313-21.



Examples (continued)

- Systematic review
 - 68 studies
 - 66% of 65 studies showed benefit on physician performance
 - 9/15 drug dosing
 - 1/5 diagnostic aids
 - 14/19 preventive care
 - 19/26 other
 - 6/14 studies showed benefit on patient outcome

Hunt DL, Haynes RB, Hanna SE et al. Effects of computer-based clinical decision support systems on physician performance and patient outcomes: a systematic review. *JAMA* 1998;280(15):1339-46.



Summary: Need for EHR

- Medical errors are costly
 - Charges/Costs
 - Morbidity/Mortality
- CDSS technology can help reduce
 - errors
 - costs
- EHR
 - Collection and organization of data
 - Vehicle for decision support



Evolving Definitions

- **Computer-based Patient Record (CPR): Electronic documentation of care, integrating data from multiple sources (clinical, demographic info)**
 - **EMR: Single computer application for recording and viewing data related to patient care, typically ambulatory**
 - **EHR: Suite of applications for recording, organizing and viewing clinical data**
 - **Ancillary systems, clinical data repository, results review, “CIS”, “HIS”**
 - **“Record” (patient data) vs “Record System” (computer application containing patient data)**



EHR = EMR + PHR + CPOE + (etc)

- **EMR**: A computer-accessible resource of medical and administrative information available on an individual collected from and accessible by providers involved in the individual's care within a single care setting.
- **EHR**: A computer-accessible, interoperable resource of clinical and administrative information pertinent to the health of an individual. Information drawn from multiple clinical and administrative sources is used primarily by a broad spectrum of clinical personnel involved in the individual's care, enabling them to deliver and coordinate care and promote wellness.

ONC Terms Standardization Project, Defining Key Health IT Terms, Interim Draft Report, 21 February 2008



Personal Health Record

- **PHR**: A computer-accessible, interoperable resource of pertinent health information on an individual. Individuals manage and determine the rights to the access, use, and control of the information. The information originates from multiple sources and is used by individuals and their authorized clinical and wellness professionals to help guide and make health decisions.
- **Recent Examples**: Microsoft HealthVault, Google Health, embedded patient portals (Centricity), Pre-Key (CSMC OB/GYN)

ONC Terms Standardization Project, Defining Key Health IT Terms, Interim Draft Report, 21 February 2008



Computer-based Provider Order Entry

- **CPOE: Order entry + communication + management using computers**
- **Local effort: EpicCare**
- **Advantages: Reduction in errors, improved documentation, clinical decision support**
- **Challenge: Profound workflow change for the entire organization**



History of the Medical Record

- **1910: Flexner Report--Advocated maintaining patient records**
- **1940s: Hospitals need records for accreditation**
- **1960s: Electronic HIS--communication (routing orders) & charge capture**
- **1969: Weed--POMR**
- **1980s: IOM report, academic systems**
- **1990s - present: Increasing commercial systems, increasing prevalence, emphasis on interoperability & standards (ONCHIT, etc)**



Trend Toward Outpatient Records

- **Inpatient record structured first**
 - **Regulatory requirement**
 - **Many contributors (vs solo family practitioner)**
 - **Reimbursement: More money than outpatient visits**
- **Now, more attention to outpatient records**
 - **Multidisciplinary/team care**
 - **Managed care**

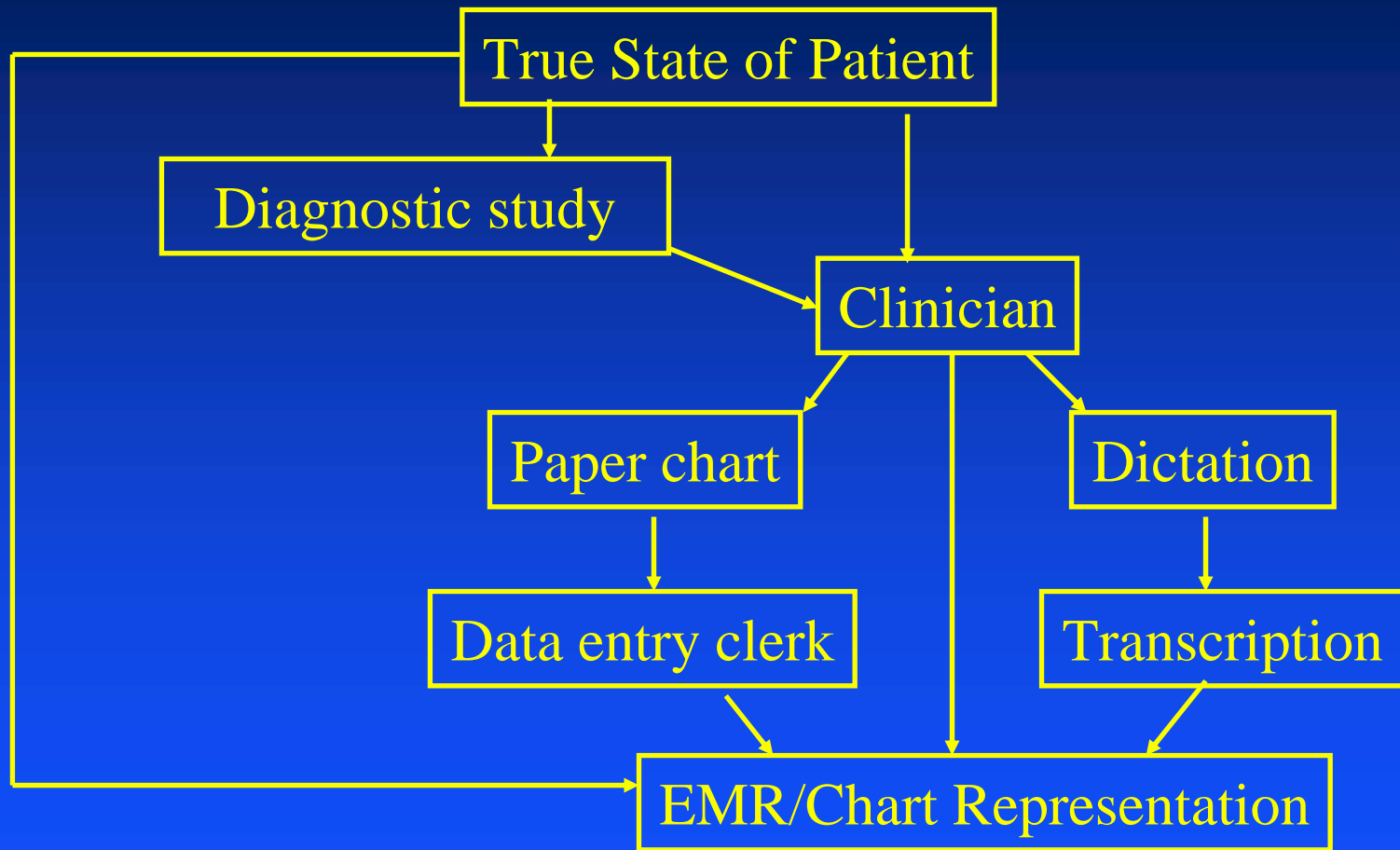


Uses of the Medical Record

- **Main purpose: Facilitate patient care**
- **Historical record: What happened, what was done**
- **Communication among providers (& patients)**
- **Preventive care (immunizations, etc)**
- **Quality assurance**
- **Legal record**
- **Financial: coding, billing**
- **Research: prospective, retrospective**



Characterizing the Record: Representing the Patient's True State



Characterizing the Record: Representing the Patient's True State

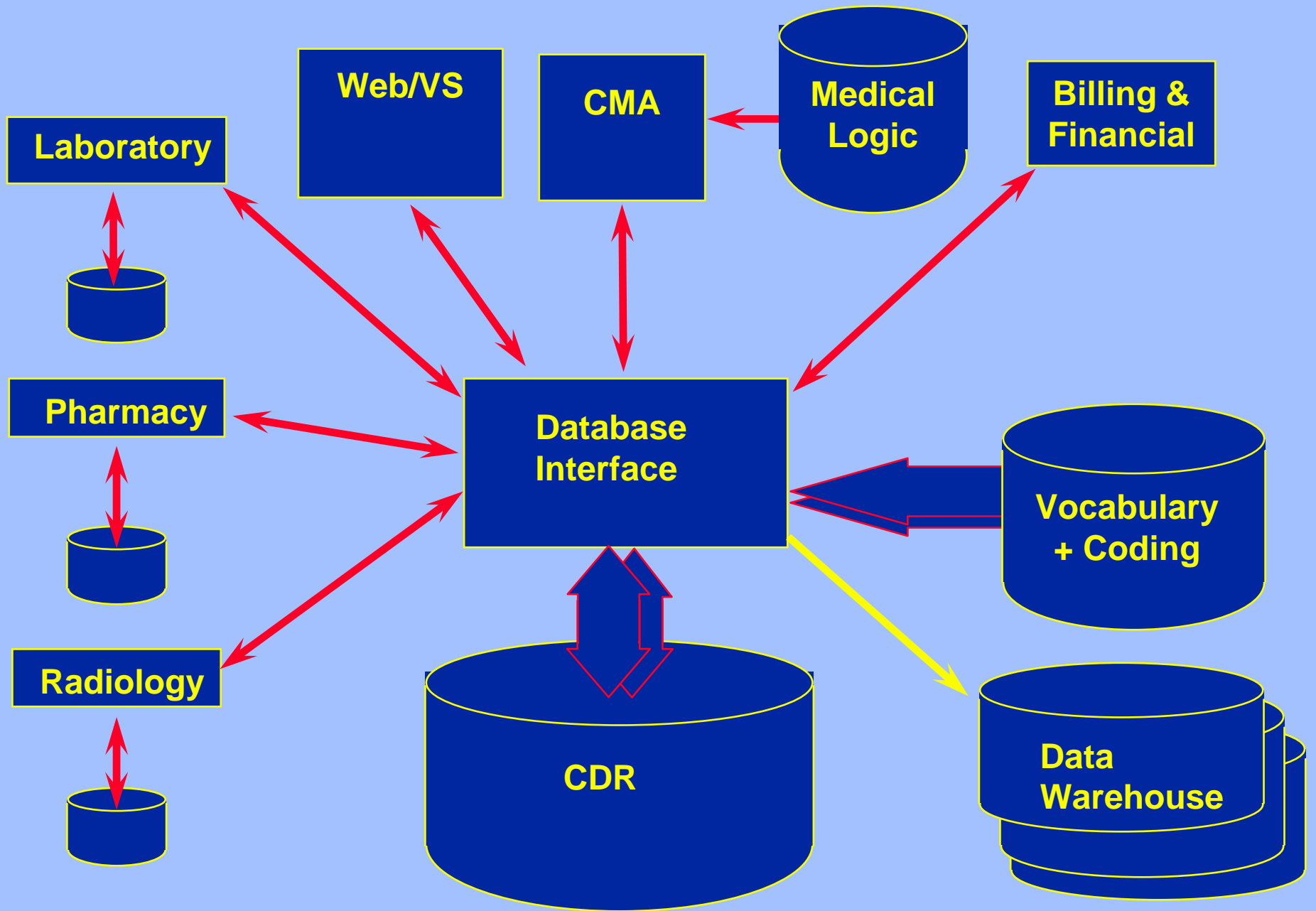
- **Completeness**: Proportion of observations actually recorded
 - 67 - 100%
- **Correctness**: Proportion of recorded observations that are correct
 - 67 - 100%



Functional Components

- **Integration of data**
 - **Standards: Messaging (HL7), terminology (LOINC, SNOMED, ICD9, etc), data model (HL7 RIM)**
 - **Interface engine**
- **Clinical decision support**
- **Order entry**
- **Knowledge sources**
- **Communication support: Multidisciplinary, consultation**





Who Enters Data

- **Clerk**
- **Physician: Primary, consultant, extender**
- **Nurse**
- **Therapist**
- **Lab reports/ancillary systems**
- **Machines: Monitors, POC testing**



Fundamental Issue: Data Entry

- **Data capture: External sources**
 - Laboratory information systems, monitors, etc
 - Challenges: Interfaces, standards
- **Data input: Direct entry by clinicians & staff**
 - Challenge: Time-consuming and expensive
 - “Free text” vs structured entry



Data Input

- **Transcription of dictation: Very expensive, error-prone**
- **Encounter form: Various types**
 - Free-text entry
 - Scannable forms
- **Turnaround document: Both presents & captures data**
- **Direct electronic entry**
 - Free-text typing
 - Structured entry: Pick lists, etc
 - Voice recognition



Weakness of Paper Record

- **Find the record: Lost, being used elsewhere**
- **Find data within the record: Poorly organized, missing, fragmented**
- **Read data: Legibility**
- **Update data: Where to record if chart is missing (e.g., “shadow chart”)**
- **Only one view**
 - **Redundancy: Re-entry of data in multiple forms**
 - **Research: Difficult to search across patients**
- **Passive: No decision support**



Advantages of EMRs

- **Access: Speed, remote location, simultaneous use (even if just an “electronic typewriter”)**
- **Legibility**
- **Reduced data entry: Reuse data, reduce redundant tests**
- **Better organization: Structure**
- **Multiple views: Aggregation**
 - **Example: Summary report, structured flow sheet (contrast different data types)**
 - **Alter display based on context**



Advantages of EMRs (continued)

- **Automated checks on data entry**
 - **Data prompts: Completeness**
 - **Range check (reference range)**
 - **Pattern check (# digits in MRN)**
 - **Computed check (CBC differential adds to 100)**
 - **Consistency check (pregnant man!)**
 - **Delta check**
 - **Spelling check**



Advantages of EMRs (continued)

- Automated decision support
 - Reminders, alerts, calculations, ordering advice
 - Limited by scope/accuracy of electronic data
 - Tradeoff: Data specificity/depth of advice vs time/cost of completeness
- Cross-patient analysis
 - Research
 - Stratify patient prognosis, treatment by risks
- Data review: Avoid overlooking uncommon but important events



Advantages of EMRs (continued)

- **Saves time?**
 - **1974 study**: find data 4x faster in flow sheet vs traditional record (10% of subjects could not even find some data)
 - **2005 systematic review**
 - **RN POC systems**: decreased documentation time 24%
 - **MD**: increased documentation time 17%
 - **CPOE**: More than doubled time

Poissant L, Pereira J, Tamblyn R, Kawasumi Y. The impact of electronic health records on the time efficiency of physicians and nurses: a systematic review. *J Am Med Inform Assoc* 2005;12(5):505-16.



Improving Outcomes with Clinical Decision Support: An Implementer's Guide

Jerome A. Osheroff, MD, FACP, FACMI

Eric A. Pifer, MD

Jonathan M. Teich, MD, PhD, FACMI

Dean F. Sittig, PhD, FACMI

Robert A. Jenders, MD, MS, FACP

HIMSS



Disadvantages of EMRs

- **Access: Security concerns**
 - Still, logging helps track access
- **Initial cost**
 - Attempted solutions: Reimbursement, Office VistA
- **Delay between investment & benefit**
- **System failure**



Disadvantages of EMRs (continued)

- **Challenge of data entry**
- **Coordination of disparate groups**
- **Data diversity: Different data elements, media (images, tracings), format, units, terminology, etc**
- **Unintended consequences**
 - **Increase in overall mortality after CPOE (2.8% -> 6.57%)**
 - **Highlighted poor use of older technology**

Hong YY et al. Unexpected increase in mortality after implementation of a commercially sold computerized physician order entry system. *Pediatrics* 2005;116:1506-1512.





"C'mon, c'mon—it's either one or the other."



Examples: “Classical” EMRs

- **COSTAR**
 - Originally in 1960s, disseminated in late 1970s
 - Encounter form input
 - Modular design: security, registration, scheduling, billing, database, reporting
 - MQL: ad hoc data queries
 - Display by encounter or problem (multiple views)



“Classical” EMRs (continued)

- RMRS: McDonald (IU), 1974
- TMR: Stead & Hammond (Duke), 1975
- STOR: Whiting-O’Keefe (UCSF), 1985



Commercial EMRs

- General use: EpicCare, Centricity, NextGen, etc
- Specialty use: Velos (clinical research), RemedyMD (clinical research), TeleResults (transplant), Easydent (dental)
- “Free”: Office VistA EHR



Adoption

- **No advantage if not used!**
- **Varying prevalence in USA**
 - **20-25%** (CHCF, “Use and Adoption of Computer-based Patient Records,” October, 2003)
 - **20%** (MGMA, January, 2005)
 - **17%** (CDC ambulatory medical care survey 2001-3, published March, 2005)
- **Higher prevalence elsewhere**
 - **Netherlands = 90%, Australia = 65%**
 - **Reasons: Single-payer system, certification, cost-sharing**



Barriers to EHR Adoption

- **Financial**: Up-front costs, training, uncertain ROI (misalignment of benefits & costs), finding the right system
- **Cultural**: Attitude toward IT
- **Technological**: Interoperability, support, data exchange
- **Organizational**: Integrate with workflow, migration from paper



Improving Adoption

- **Interoperability**: Increase chance that EHRs can be used with each other + other systems
 - Standards: CCR
 - Harmonization: HITSP
 - Certification: CCHIT
- **Compensation**
 - CPT code: CMS trial
 - P4P: Reporting measures; decision support to improve performance
- **Donation**
 - “Safe harbor” provisions in federal law



Improving Adoption: Interoperability Standards

- **Continuity of Care Record: ASTM E31 WK4363 (2004).
Coalition = AAP, AAFP, HIMSS, ACP, AMA, etc.**
- **Continuity of Care Document: Further standardization**
- **Defines the core data elements & content of the patient record in XML**
- **Uses: Record sharing (paper or electronic), eRx (allergies, medications), certification**



Improving Adoption: Interoperability Standards

- **EHR Functional Model and Specification**
- **HL7 2004: Funded by US Government**
- **Identifies key functions of the EHR**
- **Purpose**
 - **Guide development by vendors**
 - **Facilitate certification**
 - **Facilitate interoperability**
- **Certification governance: CCHIT**



Direct Care	DC1.0	Care Management
	DC2.0	Clinical Decision Support
	DC3.0	Operations Management and Communication
Supportive	S1.0	Clinical Support
	S2.0	Measurement, Analysis, Research, Reporting
	S3.0	Administrative and Financial
Information Infrastructure	I 1.0	EHR Security
	I 2.0	EHR Information and Records Management
	I 3.0	Unique identity, registry, and directory services
	I 4.0	Support for Health Informatics & Terminology Standards
	I 5.0	Interoperability
	I 6.0	Manage business rules
	I 7.0	Workflow



ID	Formative Ballot Content		Functional Description	See Also	Rationale	Citation
	Function Name	Function Statement				
			and date of resolution are stored. The entire problem history for any problem in the list is viewable.			
DC.1.1.3.2	Manage medication list	Create and maintain patient-specific medication lists.	Medication lists are managed over time, whether over the course of a visit or stay, or the lifetime of a patient. All pertinent dates, including medication start, modification, and end dates are stored. The entire medication history for any medication is viewable. Medication lists are not limited to medication orders recorded by providers, but may include patient-reported medications.		Supports delivery of effective healthcare, Improves patient safety	
DC.1.1.3.3	Manage allergy and adverse reaction list	Create and maintain patient-specific allergies and reactions.	Allergens and substances are identified and coded (whenever possible) and the list is managed over time. All pertinent dates, including patient-reported events, are stored and the description of the patient allergy and reaction is modifiable over time. The entire allergy history, including reaction, for any allergen is viewable.		Supports delivery of effective healthcare, Improves efficiency, Facilitates management of chronic conditions, Facilitates self-health management, Improves patient safety	
DC.1.1.4	Manage Patient History	Capture, review, and manage medical, procedural, social, and family history including the capture of pertinent negative histories, patient-reported or externally available patient clinical history.	Patient historical data related to previous medical diagnoses, surgeries and other procedures performed on the patient, and relevant health conditions of family members is captured through such methods as patient reporting (for example interview, medical alert band) or electronic or non-electronic historical data. This data may take the form of a positive or a negative such as: "The patient/family member has had..." or "The patient/family member has not had..." When first seen by a health care provider, patients typically bring with them clinical information from past encounters. This and similar information is captured and presented		Supports delivery of effective healthcare, Facilitates management of chronic conditions	



Improving Adoption: Standards Process in USA

- **Standards are created**
- **Competing standards are harmonized by HITSP**
- **Vendors incorporate standards in software**
- **CCHIT certifies that software complies with standards**
- **Clinicians use certified software**



Improving Adoption: DOQ-IT

- **Doctor's Office Quality - Information Technology**
 - Outgrowth of CMS-funded QIOs
 - ACP, Lumetra, etc
 - Goal: Overcome barriers to EHR adoption
- **Interventions**
 - Expert advice: Needs assessment, vendor selection, case management, workflow integration
 - Peer-to-peer dialog: Share best practices
 - Does not provide funding, day-to-day assistance



Improving Adoption: Office VistA

- **VistA: Veterans Information System Technology Architecture**
 - M-based comprehensive VA EHR
 - Includes CPRS = Computer-based Patient Record System
- **Office VistA**
 - Outpatient version
 - Available under FOIA
- **Challenge: Free up front, but need to implement and maintain**



Improving Adoption: RHIOs + HIEs

- **Facilitates interoperability: Mechanism for exchanging data between organizations**
- **Important elements**
 - **Standards: Messaging, data model, terminology**
 - **Mechanism: Clearinghouses**
- **Part of a federated NHIN**
- **Important driver: Public health**
 - **Integrate data from many HCOs**
 - **Syndromic surveillance (e.g., RODS, etc)**
- **Examples: Santa Barbara; Indiana; CalRHIO**



Improving Adoption: “Safe Harbor”

- **Goal**: Facilitate adoption by having hospitals cover part of the cost of the EMR
- **Challenge**: Federal law restricts the business relationship between MDs and hospitals
 - Anti-kickback law
 - Anti-self-referral law (“Stark”)
- **Medicare Modernization Act of 2003**: Mandated creation of a “safe harbor” exception for HIT
 - Final rule adopted 8/2006
 - Allows donation of hardware & software to promote e-prescribing
 - Software must be certified (CCHIT)



EHR at CSMC

- **Components**
 - Central data repository
 - Ancillary systems (lab, radiology)
- **Accessing data: Electronic medical records**
 - Web/VS
 - Centricity
 - EpicCare: On the way
- **Knowledge sources**
 - Electronic textbooks + libraries
 - InfoButtons
 - Order Sets



Raul R. Torres

73 Year Old Male (DOB: 09/29/1930)

Patient ID: 103-TEST011

Home: 503-649-2858 Work: None
 Insurance: BHI (Futura) Group: BHI1595

Problems

DIABETES MELLITUS
 HYPERTENSION, BENIGN ESSENTIAL
 HYPERPLASIA, PROSTATE
 DEPRESSION
 RETINOPATHY, DIABETIC
 POLYNEUROPATHY IN DIABETES
 ANXIETY

Medications

HYTRIN CAP 5MG (TERAZOSIN HCL) 1 po qd
 PRINIVIL TABS 20 MG (LISINOPRIL) 1 po qd
 HUMULIN INJ 70/30 (INSULIN REG & ISOPHANE (HUMAN)) 20
 PROZAC CAPS 10 MG (FLUOXETINE HCL) 1 po qd
 CALAN SR 180 MG TBCR (VERAPAMIL HCL) 1 tab po qd

Allergies

CODEINE

Directives

DO NOT RESUSCITATE


Flowsheet: Enterprise/Medicine/Internal Medicine

	Date	Value
HEIGHT	10/29/1998	70
WEIGHT	10/29/1998	190
TEMPERATURE	10/29/1998	98
TEMP SITE	10/29/1998	oral
PULSE RATE	10/29/1998	72
PULSE RHYTHM		
RESP RATE	10/29/1998	16
BP SYSTOLIC	09/26/2003	200
BP DIASTOLIC	09/26/2003	100
CHOLESTEROL		
HDL		

Documents: All

Date	Summary	Status
09/26/2003	Ofc Visit: URI Visit	On Hold
09/26/2003	Ofc Visit: Hypertension Visit	Signed
11/02/1998	Lab Rpt: Urinalysis	Unsigned
11/01/1998	Lab Rpt: HGBA1C	Unsigned
10/31/1998	Lab Rpt: Lipids	Unsigned
10/30/1998	Lab Rpt: Metabolic Panel	Signed
10/29/1998	Ofc Visit: F/u Diabetes	Signed

Registration Notes



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Insurance: BHI (Futura) Group: BHI1595

Find Pt.
 Protocols
 Graph
 Handouts
 Update
 Phone Nt.
 Refills
 Edit
 Sign
 Append
 Route
 Organize

Summary | Problems | Medications | Alerts | Flowsheet | Orders | Documents

Document View: All

- All
- Hospital Documents
- Tests

	Date	Summary	Provider	Location	Status
	09/26/2003 4:04 PM	Ofc Visit: URI Visit	Robin C. Janoff MD	E IM	On Hold
	09/26/2003 2:02 PM	Ofc Visit: Hypertension Visit	Robin C. Janoff MD	E IM	Signed
	11/02/1998 6:00 PM	Lab Rpt: Urinalysis	Robin C. Janoff MD	MHS	Unsigned
	11/01/1998 6:00 PM	Lab Rpt: HGBA1C	Robin C. Janoff MD	MHS	Unsigned
	10/31/1998 6:00 PM	Lab Rpt: Lipids	Robin C. Janoff MD	MHS	Unsigned
	10/30/1998 6:00 PM	Lab Rpt: Metabolic Panel	Robin C. Janoff MD	MHS	Signed
	10/29/1998 10:54 AM	Ofc Visit: FU Diabetes	Robin C. Janoff MD	E IM	Signed

Doc ID: 7 Properties: Office Visit at E IM on 09/26/2003 2:02 PM by Robin C. Janoff MD

Hypertension Visit
History of Present Illness - Hypertension

Current symptoms: none

Current Status

Compliance with tx: poor
Comments: Copious salt consumption.

Risk Factors

Tobacco use: current
cigarettes: 1 pack(s) per day

Review of Systems

General: Denies fevers, chills, sweats, anorexia, fatigue, malaise, weight loss.

Vital Signs

Height: 70 inches
Blood Pressure: 200/100 mm Hg

Physical Exam

General appearance: well developed, well nourished, no acute distress

Ears, Nose and Throat

Teeth/Gums/Palate: poor dentition

Neck

Neck veins: no JVD; a, v or cannon a waves
Thyroid: no nodules, masses, tenderness, or enlargement

Respiratory

Raul R. Torres

73 Year Old Male (DOB: 09/29/1930)

Patient ID: 103-TEST011

Home: 503-649-2858 Work: None
Insurance: BHI (Futura) Group: BHI1595

Find Pt. Protocols Graph Handouts

Summary Problems Med

Doc ID: 10 Properties: Rx Refill a

Summary:

Prescriptions

[Prescriptions]

Prescriptions: Raul R. Torres Formulary: CHC Gold

Formulary	Medication	Previous Rx			Refill?	New Rx		Pt Info
		Quantity	#Refills	Date		Quantity	#Refills	
<input type="radio"/>	HYTRIN CAP 5MG (TERAZOSIN HCL) 1 po qd	30	0	10/29/1998	<input type="checkbox"/>			
<input type="radio"/>	PRINIVIL TABS 20 MG (LISINAPRIL) 1 po qd	30	2	10/29/1998	<input type="checkbox"/>			
<input type="radio"/>	HUMULIN INJ 70/30 (INSULIN REG & ISOPHANE (HUMAN)) 20 units ac breakfast	600 u	0	10/29/1998	<input type="checkbox"/>			
<input type="radio"/>	PROZAC CAPS 10 MG (FLUOXETINE HCL) 1 po qd	30	2	10/29/1998	<input type="checkbox"/>			
<input type="radio"/>	CALAN SR 180 MG TBCR (VERAPAMIL HCL) 1 tab po qd				<input type="checkbox"/>			

Pharmacy: 24-Hour Pharmacy
737 SW 185th
Aloha, OR 97007 USA
Ph: 503-642-5647
Fax: 503-642-5600

Authorized By:

Prescribing Method:

State:

Raul R. Torres

73 Year Old Male (DOB: 09/29/1930)

Patient ID: 103-TEST011

Home: 503-649-2858 Work: None

Insurance: BHI (Futura) Group: BHI1595

Active Only All Lookup problems with: Medscape Problem Search

Description	Code
DIABETES MELLITUS	ICD-250.
HYPERTENSION, BENIGN ESSENTIAL	ICD-401.1
HYPERPLASIA, PROSTATE	ICD-600
DEPRESSION	ICD-311
RETINOPATHY, DIABETIC	ICD-362.0
POLYNEUROPATHY IN DIABETES	ICD-357.2
ANXIETY	ICD-300.00

Details

Onset Date: **10/29/1998**
End Date: **<No End Date>**
Entry Date: **11/07/1998 9:54 AM**
Entered By: **Robin C. Janoff MD**
Responsible: **Robin C. Janoff MD**
Comments:

Assessments



Results reported from 9/23/05 through 9/27/05

9/27/2005 08:24 SHABOT

Collection Date/Time	Result Date/Time	Test Name	Result	Ref. Range
9/23/05 09:31	9/23/05 11:33	Logician HEMATOLOGY-ONCOLOGY OFFICE VISIT by Chaisang uanithum Result No. 1443087104351910		
9/23/05 09:31	9/26/05 01:18	Outpatient Clinic MEDICATION LIST Result No. 1443087104351910		
9/23/05 08:02	9/26/05 13:00	POC INR Accession No. F8632		
		POC INR	2.4 INR REFERENCE RANGE THERAPEUTIC:2.0-3.0 HIGH DOSE:2.5-3.5	<1.4

QuickLook All Reports Print

Confidentiality Warning: The information in this system should only be viewed by patient care personnel with a "need to know" for purposes of diagnosis and treatment. All accesses are logged with your name, the patient's name, the type of data viewed, the date and time. Inappropriate accesses are subject to disciplinary measures and/or legal action, up to and including termination of employment on the first offense. Any printouts from this system should be disposed of properly.

Clinical Results

Reported Collected

09 23 05 thru
09 27 05 Go

Flow Sheets

Blood Bank Go

Reports

All Reports Go

Find Any Test

Go








































- Another Pt QuickLook
- PPL Add Subscribe
- MD Feedback
- PBS Ticket
- Help Log Off


Outpatient Clinic Medication List as of 9/26/2005 01:18

Allergy Information as of 7/2/05: **NKA**

9/27/2005 08:25 SHABOT

Outpatient Medications

Start Date	Medication ▲	Instructions	Stop Date	Status	Micro Medex	Skolar MD	Care Notes
6/1/2005	ASCORBIC ACID 500 MG	1 tab daily		Verified			
7/4/2005	COREG	3.125 mg BID		Verified			
5/12/2005	COUMADIN 5 MG TABS (WARFARIN SODIUM)	Take 7.5mg every Thurs & 5mg on all other days of the week.		Verified			
7/22/2005	FERROUS SULFATE 325 MG TABS	Take one tab daily		Verified			
7/22/2005	ISOSORBIDE MONONITRATE CR 60 MG TB24	Take one daily		Verified			
	LIPITOR 10 MG TABS (ATORVASTATIN CALCIUM)	take 1 daily		Verified			
8/26/2005	LOVENOX 70MG	70 mg sub-q bid; restart lovenox after procedure		Verified			
7/6/2005	PAXIL 20 MG	1 tab daily		Verified			
	VASOTEC 10 MG TABS (ENALAPRIL MALEATE)	take 1 tab bid		Verified			
9/23/2005	XELODA 150 MG TABS (CAPECITABINE)	2 tabs po bid		Verified			
9/23/2005	XELODA 500 MG TABS (CAPECITABINE)	3 tabs po bid		Verified			
	ZETIA 10 MG TABS (EZETIMIBE)	take 1 daily		Verified			
	ZOFRAN 4 MG TABS (ONDANSETRON HCL)	1 tab every 6-8 hours as needed for nausea after chemotherapy		Verified			

Note: Click medication dose for detailed dosing and administration information. Click  for on-line search of information resources.

View Antibigram

Print

Confidentiality Warning: The information in this system should only be viewed by patient care personnel with a "need to know" for purposes of diagnosis and treatment. All accesses are logged with your name, the patient's name, the type of data viewed, the date and time. Inappropriate accesses are subject to disciplinary measures and/or legal action, up to and including termination of employment on the first offense. Any printouts from this system should be disposed of properly.

Protocol "USPS 65 Yrs & Older Males" :

Male patients with an age of greater than 65 years.

Should have the following:

Test	Schedule	Last Done	Last Rslt	Status
HEMOCCULT or SIGMOID	Every 12 months			Due Now
BP DIASTOLIC	Every 24 months	06/18/2007	80	Due On: 06/18/2008
BP SYSTOLIC	Every 24 months	06/18/2007	140	Due On: 06/18/2008
FLU VAX	Every 12 months			Due Now
PNEUMOVAX	Every 7 years			Due Now
TD BOOSTER	Every 10 years			Due Now

Comment: "Height and weight are recommended as part of the periodic health examination. Visual screening questions, assessment for hearing impairment, and assessment for problem drinking are recommended as part of the health examination."

Protocol "Nursing Compliance" :

Patients of either sex.

Should have the following:

Test	Schedule	Last Done	Last Rslt	Status
SEATBELT USE	Every 6 months	06/18/2007	100	Due Now
FLU VAX	Every 12 months			Due Now
PAIN NOW?	Every 1 months			Due Now
TOBACCO USE	Every 6 months			Due Now

 All

 Due Only

Close

Inquiry

Find Patients

Active Patients Only

Where Problem Code, Active (Diagnosis lookup)

is

Hypertension (ICD-401.9)

Add

Delete

Replace

Combine With

AND OR

Find Patients where:

Problem Code, Active (Diagnosis lookup) is 'Hypertension (ICD-401.9)

Match case when searching mixed case text

Select...

Save...

Clear

Count

Search

Count Result:

Search Result: Patients found: 18


Blair, Linda
Branson, Marjorie L.
calloway, cab
Davenport, Scott L.
duck, donald
Gelner, Kevin S.
Greene, Loren
Inishi, Robert S.
Johnson, Cheryl L.
Lopez, Lisa
Mann, Michelle
Nyberg, Carl O.
O'Malley, Martha A.
PEES, ALOT
Simpson, Laura P.
test, more
TESTING, CMIS A
Training8, Test8

View Item

Print...




View Clinical Data
[Log On To Web/VS](#)



Electronic Mail
[Log On To Email](#)




CME at Cedars-Sinai
[Link to Site](#)



Nurses eNotes
[Link to Site](#)


Knowledge-Based Resources






CSMC Medical Library
[Link to Medical Library Site](#)

- ◆ **CSMC Library Resources:**
- ◆ [CSMC Medical Library Catalog](#)
- ◆ [Order Articles or Books](#)
- ◆ [ACP Medicine \(formerly Scientific American Med. Online\)](#)
- ◆ [Clin-eGuide](#)
- ◆ [Harrison's Online](#) (Note: Search feature compatible with Netscape 6 or higher)
- ◆ [Lexi-Comp Reference Laboratory](#)
- ◆ [PubMed@CSMC](#) (Note: Use Netscape 4.79, Netscape 7 or higher, or Internet Explorer 5.5 or higher)
- ◆ [MD Consult](#) (Note: Use Netscape 4.79 or higher or Internet Explorer 5.5 or higher)
- ◆ [Medline and Full-Text Journals](#) (Note: Use Netscape 6 or higher or Internet Explorer 5 or higher)
- ◆ [Micromedex](#)
- ◆ [Natural Medicine Database](#)
- ◆ Scientific American Medicine Online (title changed - see ACP Medicine above)
- ◆ [SKOLARMD](#) **NEW**

Medical Staff Resources



CSMC Medical Staff Resources
[Link to Medical Staff Site](#)

- ◆ **[Hospital Epidemiology/Infection Control Resources:](#)**
- ◆ [Influenza Updates](#)
- ◆ [SARS Updates](#)
- ◆ [2004 CSMC Antimicrobial Treatment Recommendations](#) 
- ◆ **Telephone Directories:**
- ◆ [CSMC Employee Directory](#)
- ◆ [Medical Staff Directory \(Search\)](#)
- ◆ [Medical Staff, AHP & Emeritus](#)
- ◆ [Pocket Phone Directory](#) 
- ◆ **Privileges:**
- ◆ [MSO Net - Staff Privileges](#)
- ◆ [Resident Privileges](#)
- ◆ [Medical Staff Profile Update Form](#)
- ◆ [Delinquent Procedure Dictations Report](#) 
- ◆ **Call Schedules:**
- ◆ [NICU On-Call Schedule](#)
- ◆ [Department of Surgery On-Call Schedules](#)

Cedars-Sinai Web Resources



CSMC Intranet [Link to Site](#) **CSHS Internet** [Link to Site](#)

- ◆ **Intranet Sites:**
- ◆ [Breast Cancer Articles](#)
- ◆ [CALs Ed | HIPAA | JCAHO Manual](#)
- ◆ [Clinical Nutrition Formulary](#)
- ◆ [Conflict of Interest Questionnaire](#)
- ◆ [Corporate Compliance Site](#)
- ◆ [Crisis Hotlines and Abuse Information](#)
- ◆ [Diet Manual](#)
- ◆ [Duplicate MRN Merge Request Form](#)
- ◆ [Formulary and Laboratory Svcs.](#)
- ◆ [Neurology/Stroke Information](#)
- ◆ [Nurses eNotes](#)
- ◆ [Patient Education Materials](#)
- ◆ [Pharmacy](#)
- ◆ [Pediatric Code Drug Calculator](#)
- ◆ [Standing Ovation Nomination Form](#)
- ◆ **Documents:**
- ◆ [Drug Shortage List](#) 

Results reported from 4/24/03 through 4/30/04

4/30/04 18:05 JENDERSR

Collection Date/Time	Result Date/Time	Test Name	Result	Ref. Range
4/13/04 00:00	4/13/04 15:29	ECHOCARDIOGRAM - ECHO/DOPPLER/COLOR by Kraus Result No. 20601		
10/13/03 14:33	10/16/03 16:35	Final CT CHEST W CONTRAST by Moser Result No. 4000241		
10/13/03 14:10	10/16/03 08:17	Final CT NECK W CONTRAST by Moser Result No. 4000243		
10/10/03 10:54	10/10/03 11:32	ADENOSINE MYOCARDIAL PERFUSION by Friedman Result No. CARD90618		
9/16/03 00:00	9/16/03 14:39	ECHOCARDIOGRAM - ECHO/DOPPLER/COLOR by Kraus Result No. 13978		
7/6/03 01:36	7/6/03 04:07	Preliminary E.R. TREATMENT RECORD by Massey Result No. 014803216651		
7/5/03 23:23	7/6/03 06:28	Final EXR CHEST PORTABLE 1VW by Mehrpoo Result No. 3898418		
7/5/03 23:21	7/5/03 23:41	ROUTINE BLOOD COUNT Accession No. S38560		
		WBC COUNT	9.6	4-11 1000/UL
		RBC COUNT	5.53	4.5-6.0 MILL/UL
		HEMOGLOBIN	16.3	14-18 G/DL
		HEMATOCRIT	46.9	42-53 %
		MCV	84.8	80-100 FL
		MCH	29.4	27-33 PG
		MCHC	34.7	32-36 %
		RBC DISTRIBUTN WIDTH	15.1	11.5-14.5 %
		PLATELET SCREEN	306000	150000-450000 /UL
		MEAN PLATELET VOL	7.4	7.4-10.4 FL
7/5/03 23:21	7/5/03 23:41	DIFF, AUTOMATED Accession No. S38560		
		POLYS	36	%
		LYMPHS	53	%
		MONOS	6	%
		EOS	4	%
		BASOS	1	%
		ABS POLYS	3.5	1.8-8.0 1000/UL
		ABS LYMPHS	5.1	1.0-4.5 1000/UL
		ABS MONOS	0.6	<0.8 1000/UL
		ABS EOS	0.3	<0.4 1000/UL
		ABS BASOS	0.1	<0.2 1000/UL
		RBC MORPHOLOGY	ABNORMAL	

Web/VS

Clinical Results
 Reported Collected
 04 24 03 thru
 04 30 04


Flow Sheets

Reports

Find Any Test

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Web/VS



Clinical Results
 Reported Collected
 04 24 03 thru
 04 30 04 Go

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 Blood Bank Go

Reports
 All Reports Go

Find Any Test
 Go

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 PPL Del Subscribe
 MD Feedback
 PBS Ticket
 Help Log Off

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Collection Date/Time	Result Date/Time
4/13/04 00:00	4/13/04 15:29
10/13/03 14:33	10/16/03 16:35
10/13/03 14:10	10/16/03 08:17
10/10/03 10:54	10/10/03 11:32
9/16/03 00:00	9/16/03 14:39
7/6/03 01:36	7/6/03 04:07
7/5/03 23:23	7/6/03 06:28
7/5/03 23:21	7/5/03 23:41
7/5/03 23:21	7/5/03 23:41

Netscape

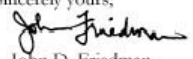
Patient: [redacted] Study: **October 10, 2003 09:24** Referring Physician: [redacted]
 MRN: [redacted] Outpatient MRN: [redacted] Tel. 310-423-6356
 Age: 35 Sex: M Cedars-Sinai Medical Center Fax. 310-423-0436
 5 Mark Taper Founder Imaging Center

ADENOSINE MYOCARDIAL PERFUSION STUDY
 Reason: chest pain
 Symptom: atypical chest pain
 History: CATH(03/10/2003); Valve surgery(03/13/2003)
 Medications: beta blocker, calcium blocker
STRESS TEST RESULTS: Type: walking adenosine
 • Peak heart rate = 102
 • Blood pressure: Rest: 148/92 Stress: 166/84
 • Symptom during test: none
 • Resting ECG: 1st degree A-V block, nonspecific T wave abnormality
 • Stress ECG: no ST segment depression
NUCLEAR RESULTS: Dual isotope gated SPECT [stress sestamibi(supine+prone)/rest thallium]
 • **Myocardial Perfusion results:** Total defect 0% myocardium (0% reversible, 0% fixed)
 LV enlargement: no; Lung uptake: normal; Visual TID: no; TID ratio: 1.13
 • **Myocardial Function results:** LVEF LVEDV
 Rest 65% 133 ml
 Post stress (38 min after) 62% 167 ml
 Post adenosine resting gated SPECT revealed no wall motion abnormalities.

CONCLUSION:
 • **Clinical response** Nonischemic • **Perfusion** Normal
 • **ECG response** Nonischemic • **Function** Normal

These test results indicate a low (<10%) likelihood for the presence of jeopardized myocardium.

Based on 5,873 patients undergoing adenosine myocardial perfusion SPECT at Cedars-Sinai Medical Center and followed for 2.2 ± 1.1 years, the combined clinical, adenosine stress ECG and perfusion SPECT results observed in this patient are predictive of an annual cardiac death rate of <0.2%. These estimates of risk do not take into account ventricular function or the results of previous testing.

Thank you for referring this patient to us.
 Sincerely yours,

 John D. Friedman
 Cardiac Imaging Specialist
 JDF/JDF Processed: 10/10/2003 09:24 Printed: 10/10/2003 11:17
 cc:Kamar, Kavita Fax: 310-423-0245

4/30/04 18:05 JENDERSR

Ref. Range
4-11 1000/UL
4.5-6.0 MILL/UL
14-18 G/DL
42-53 %
80-100 FL
27-33 PG
32-36 %
11.5-14.5 %
150000-450000 /UL
7.4-10.4 FL
%
%
%
%
%
1.8-8.0 1000/UL
1.0-4.5 1000/UL
<0.8 1000/UL
<0.4 1000/UL
<0.2 1000/UL
RBC MORPHOLOGY ABNORMAL

Results reported from 4/24/03 through 4/30/04

4/30/04 18:05 JENDERSR

Collection Date/Time	Result Date/Time
4/13/04 00:00	4/13/04 15:29
10/13/03 14:33	10/16/03 16:35
10/13/03 14:10	10/16/03 08:17
10/10/03 10:54	10/10/03 11:32
9/16/03 00:00	9/16/03 14:39
7/6/03 01:36	7/6/03 04:07
7/5/03 23:23	7/6/03 06:28
7/5/03 23:21	7/5/03 23:41

Clinical Results

Reported Collected

04 24 03 thru

04 30 04 Go

Flow Sheets

Blood Bank Go

Reports

All Reports Go

Find Any Test

Go

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PPL Del Subscribe

MD Feedback

PBS Ticket

Help Log Off

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Netscape

File Edit View Go Bookmarks Tools Window Help

CDR report on file as of: 4/30/04 at 6:08:42 PM JENDERSR

CEDARS-SINAI MEDICAL CENTER

PATIENT: [REDACTED]
 MED REC: [REDACTED]
 DICTATOR: [REDACTED]

EMERGENCY TREATMENT RECORD
 07/05/2003

CHIEF COMPLAINT: Chest pain.

HISTORY OF PRESENT ILLNESS: A 35-year-old black male presents with chest pain. The patient reports that about 2-1/2 to 3 hours ago, he began complaining of a mild left-sided chest pain. He said he only noticed the pain with movement of the chest and the left arm. He said that he has no pain at the present time. He has no pain at rest. He has not had a similar problem in the past. He said the pain came on after he was wrestling with a 7-year-old child. He has had no shortness of breath. No nausea, no vomiting, no sweating, no cough, no sputum, no hemoptysis, no fever, no night sweats and no chills.

PAST MEDICAL HISTORY: Aortic valve replacement five months ago.

MEDICATIONS: Lotensin, Norvasc, hydrochlorothiazide, aspirin.

ALLERGIES: NO KNOWN DRUG ALLERGIES.

SOCIAL HISTORY: The patient smokes, occasional alcohol, no drugs. Lives with girlfriend.

EMERGENCY DEPARTMENT REVIEW OF SYSTEMS: All systems were reviewed and all systems were negative, except for HPI.

PHYSICAL EXAMINATION: GENERAL: A well-appearing black male, in no

BASOS	1
ABS POLYS	3.5
ABS LYMPHS	5.1
ABS MONOS	0.6
ABS EOS	0.3
ABS BASOS	0.1
RBC MORPHOLOGY	ABNORMAL

	Ref. Range
	4-11 1000/UL
	4.5-6.0 MILL/UL
	14-18 G/DL
	42-53 %
	80-100 FL
	27-33 PG
	32-36 %
	11.5-14.5 %
	150000-450000 /UL
	7.4-10.4 FL
	%
	%
	%
	%
	%
	1.8-8.0 1000/UL
	1.0-4.5 1000/UL
	<0.8 1000/UL
	<0.4 1000/UL
	<0.2 1000/UL



TEST, UB82 (010634870)

Clinical Results

Reported Collected

04 24 04 thru
 04 30 04 Go

Flow Sheets

Blood Bank Go

Reports

Face Sheet Go

Find Any Test

Go

- Another Pt QuickLook
- PPL Add Subscribe
- MD Feedback
- PBS Ticket
- Help Log Off

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OUTPATIENT REGISTRATION

***** PATIENT INFORMATION *****

 TEST, UB82 CNF: 000055
 UNKNOWN/PM CONVERSION
 UNKNOWN/PM CONV XX 00000
 TEL: / - RES: USA

AGE..: 054 BIRTHDATE.: 01/01/1950
 SEX..: F BIRTHPLACE:
 M.S..: S OCCUPATION:
 ETH.GRP: U SOC SEC NO: - -
 RELIG.: LANGUAGE..:

***** PATIENT'S EMPLOYER *****

 NONE

TEL: / -
 ***** NOTIFICATION 1 *****

***** NOTIFICATION 2 *****

TEL: / - REL:

***** MEDICAL RECORDS *****

 ADMISSION DIAGNOSIS: TESTUB82
 OPERATION/PROCEDURE:

INSURANCE 1 INSURANCE 2 INSURANCE 3

 INSURANCE....: MEDICARE
 PLAN NAME....: B OUTPATIENT
 GROUP NUMBER.:
 FIN CLASS: 520/000/000/000

BUSINESS DATA

CASE NO: 003/010634870
 DR CD PHYSICIAN(S)

 000055 DESSER, PENROSE
 TEL : 310/397-7703
 TEL : / -

REG. DATE/TIME: 10/15/1989 02:25
 DSCH DATE/TIME: 10/15/1989 02:30
 LAST ADMISSION: / / :
 CASE EXP. DATE: 10/15/1989
 SERVICE.....: MED
 ADMITTED BY...: KRIS99
 PATIENT TYPE...: R
 THALIANS CODE..:

SHORT STAY IN..: / / :
 SHORT STAY LOC.:
 SHORT STAY TYPE:

***** GUARANTOR INFORMATION *****

 TEST, UB82
 UNKNOWN/PM CONVERSION
 UNKNOWN/PM CONV XX 00000
 TEL: / - REL: 0
 SOC SEC NO: - -

***** GUARANTOR'S EMPLOYER *****

 NONE

TEL: / -

Physician Encounter Form

Patient Name:	JENDERS, ROBERT	Date of Admit:	
Medical Rec. No.:	001417091	Date of Service:	
Admitting Physician:		Date of Injury:	
Referring Physician:		Date of LMP:	
Billing Physician:	ROBERT A. JENDERS (8579)	Physician Email:	jenders@csmc.edu
Resident:		Assistant's Email:	

I attest that:

I personally provided the services indicated.

I was physically present and directly participated with the resident/fellow in the patient's care (GC modifier for Medicare only).

I am a primary care physician for this patient.

I am a consultant for this patient.

Inpatient Encounter

Outpatient Encounter

Evaluation and Management


History	<input type="radio"/> (PF) Problem Focused - Brief HPI (1-3 elements)	<input type="radio"/> (EPF) Expanded Problem Focused - Brief HPI (1-3 elements) - Problem-pertinent ROS (1 system)	<input type="radio"/> (D) Detailed - Extended HPI (4 or more) - Extended ROS (2-9 systems) - Pertinent PFSH (1 area)	<input type="radio"/> (C) Comprehensive - Extended HPI (4 or more) - Complete ROS (10 or more) - Complete PFSH (2-3 areas)
Exam	<input type="radio"/> (PF) Problem Focused - Limited exam of affected body area or organ system	<input type="radio"/> (EPF) Expanded Problem Focused - Limited exam of affected body area/organ system and others (up to 7)	<input type="radio"/> (D) Detailed - Extended exam of affected body area/organ system and others (up to 7 in depth)	<input type="radio"/> (C) Comprehensive - Complete single organ/system or general multi-system exam (8 or more systems)
Medical Decision Making	<input type="radio"/> (SF) Straightforward (2 of 3) - Minimal mgmt options/Dx - Minimal data - Minimal risk	<input type="radio"/> (LC) Low Complexity (2 of 3) - Limited mgmt options/Dx - Limited data - Low risk	<input type="radio"/> (MC) Moderate Complexity (2 of 3) - Multiple mgmt options/Dx - Moderate data - Moderate risk	<input type="radio"/> (HC) High Complexity (2 of 3) - Extensive mgmt options/Dx - Extensive data - High risk
Supplementary Documentation	Face-to-Face Time with Patient (minutes): <input type="text"/>		Counseling/Coordination Time (minutes): <input type="text"/>	

Inpatient Encounter Type

<input type="radio"/> Initial Inpatient Hospital Care (Admit) <input type="radio"/> Subsequent Inpatient Hospital Care <input type="radio"/> Hospital Discharge Services <input type="radio"/> Inpatient Consultation <input type="radio"/> Hospital Observation <input type="radio"/> Observation or Admit with Same Day Discharge <input type="radio"/> Follow-up Inpatient Consultation	Prolonged Services <input type="checkbox"/> First Hour <input type="checkbox"/> Additional <input type="text" value="0"/> 30-Minute Increments	Critical Care Services <input checked="" type="radio"/> None <input type="radio"/> 30-74 minutes <input type="radio"/> 75-104 minutes <input type="radio"/> 105-134 minutes <input type="radio"/> 135-164 minutes <input type="radio"/> 165-194 minutes
--	--	--

Inpatient E&M Codes

Initial Inpatient Hospital Care (Admit) <input type="checkbox"/> 99221 D or C/D or C/SF or LC (30 min) <input type="checkbox"/> 99222 C/C/MC (50 min) <input type="checkbox"/> 99223 C/C/HC (70 min)	Hospital Discharge Services <input type="checkbox"/> 99238 30 minutes or less <input type="checkbox"/> 99239 More than 30 minutes (document time in medical record)	Critical Care Services (document time in medical record, must not include resident time, teaching time, or time performing separately billed procedures) <input type="checkbox"/> 99291 First 30-74 minutes <input type="checkbox"/> 99292 Each additional 30 minutes
Subsequent Inpatient Hospital Care <input type="checkbox"/> 99231 PF/PF/SF or LC (15 min)	Inpatient Consultation <input type="checkbox"/> 99251 PF/PF/SF (20 min)	Prolonged Inpatient Services (used only in addition to basic inpatient E&M services)

Web/VS

Self-Inquiry
JENDERS, ROBERT (001417091)
Clinical Results
 Reported Collected
 04 24 01 thru
 04 30 04 Go
Flow Sheets
 Urine Tests Go
Reports
 All Reports Go
Find Any Test
 Go
 Another Pt QuickLook
 PPL Add Subscribe
 MD Feedback
 PBS Ticket
 Help Log Off
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7/5/03 23:21	7/5/03 23:41

Web/VS

Clinical Results

Reported Collected

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All Reports Go

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PPL Del Subscribe

MD Feedback

PBS Ticket

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Clin-eguide

DISEASE DRUG LABORATORY PERFORMANCE

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THIS PAGE LOCATION: erythrocyte distribution width > high

SELECT CONTENT

- Reference range
- Clinical significance**
- Causes
- Further tests
- Full references

Clinical significance

- NOT helpful for diagnosis in patients without anemia.
 - Red cell size distribution width should be used in conjunction with other diagnostic tests.
- Useful in the early classification of some anemias.
 - Red cell size distribution width often becomes abnormal earlier than other red cell parameters.
 - More sensitive in microcytic conditions than macrocytic.
 - Most useful to distinguish early iron deficiency from:
 - anemia of chronic disease
 - thalassemia minor.
 - Useful to improve detection of early iron, vitamin B₁₂ or folate deficiency.
- Usually interpreted in conjunction with the mean cell volume (MCV).

Indices	Red cell size distribution width elevated	Red cell size distribution width normal
MCV low	Anemia of chronic disease (occasionally)	Anemia of chronic disease (occasionally)

ABS LYMPHS 5.1
ABS MONOS 0.6
ABS EOS 0.3
ABS BASOS 0.1
RBC MORPHOLOGY ABNORMAL

4/30/04 18:05 JENDERSR

Ref. Range	
4-11	1000/UL
4.5-6.0	MILL/UL
14-18	G/DL
42-53	%
80-100	FL
27-33	PG
32-36	%
11.5-14.5	%
150000-450000	/UL
7.4-10.4	FL
	%
	%
	%
	%
	%
1.8-3.0	1000/UL
1.0-4.5	1000/UL
<0.8	1000/UL
<0.4	1000/UL
<0.2	1000/UL

- General Information
- Methodology
- Help
- Zynx Order Sets
 - My Hospital Order Sets
 - My Health System Order Sets
- Rules
 - Ambulatory Blood Pressure Measurement
 - Ambulatory Foot Examination Reminder
 - Ambulatory Hemoglobin A1c Rem**
 - Ambulatory Lipid Profile Reminder
 - Ambulatory Nephropathy Screening Rem
 - Ambulatory Office Visit Reminder
 - Ambulatory Retinopathy Screening Rem
 - Influenza Immunization Reminder
 - Pneumococcal Immunization Reminder
- Evidence
 - Vital Signs
 - Nursing Orders
 - Diet
 - Medications
 - Laboratory
 - Diagnostic Tests
 - Specialty
 - Consults
 - Noncategorized

Evoke

[A patient's electronic medical record is closed in an outpatient setting] OR [the "Adult Diabetes Ambulatory" order set is signed].

Logic

[The patient is age \geq 18 years] AND [the problem list includes "diabetes mellitus"] AND [there is no hemoglobin A1c level recorded within the last year] AND [a hemoglobin A1c level has not been ordered on the "Adult Diabetes Ambulatory" order set] AND [a hemoglobin A1c level is not preselected on the customized "Adult Diabetes Ambulatory" order set defined by the hospital] AND [a "hemoglobin A1c testing exclusion form" has not been completed during this encounter]

Action

A reminder is presented that states: "No [hemoglobin A1c level](#) has been documented in the last year."

- Option: Dismiss reminder
- Option: Order a hemoglobin A1c level
- Option: Document reason for not ordering a hemoglobin A1c level

Date Entered:	7/29/2002
Date Modified:	5/12/2003
Authors:	Bertina Yen MD, Victor Lee MD, David Rhew MD
Version:	1.7
Institution:	Zynx Health
Purpose:	When an electronic medical record is closed in an outpatient setting for an adult patient with diabetes mellitus, or an adult diabetes ambulatory order set is signed, a reminder that a hemoglobin A1c (HbA1c) level has not been documented in the last year will be displayed to the user if certain criteria are met.
Explanation:	The annual testing of HbA1c in patients with diabetes mellitus is a quality of care measure in the 7th Scope of Work by the Centers for Medicare & Medicaid Services, and is a national performance measure according to the National Quality Forum.
Keywords:	diabetes mellitus, hemoglobin A1c, HbA1c

General Information Methodology Help
Continuing Medical Education
Zynx Order Sets
Admission to ICU
Admission to Med/Surg
Ambulatory
Ambulatory Follow-up
Discharge
Emergency Department
Step-down Transfer
My Hospital Order Sets
My Health System Order Sets
Rules
Ambulatory/ED/Admission Antimicrobial
Ambulatory/ED/Admission Blood Culture
Ambulatory/ED/Admission Level of Care
Ambulatory/ED/Admission Oxygen Asses
Avoid Chest Physiotherapy Alert
Discharge Instability Criteria Reminder
Early Switch/Discharge Reminder
Influenza Immunization Reminder
Pneumococcal Immunization Reminder
Smoking Cessation Reminder
Evidence
Condition
Activity
Nursing Orders
Medications
Laboratory
Diagnostic Tests
Noncategorized

View orders under: [dropdown]
My Hospital Order Sets: Create New [dropdown]
[Go . Print](#) Include order description
Supporting Evidence

- Orders
- Condition
- Vital Signs
- Activity
 - Ambulate [Evidence](#)
 - Bed rest [Common Practice](#)
 - Up ad lib [Common Practice](#)
 - Up to chair [Evidence](#)
- Nursing Orders
- Diet
- IV Fluids
- Medications
 - Antibacterial Agents**
 - Aminoglycosides [Evidence](#)
 - Beta-Lactam/Beta-Lactamase Inhibitors [Evidence](#)
 - Carbapenems [Evidence](#)
 - Cephalosporins, 2nd-Generation [Evidence](#)
 - Cephalosporins, 3rd-Generation [Evidence](#)
 - Cephalosporins, 4th-Generation [Evidence](#)
 - Fluoroquinolones [Evidence](#)
 - Lincosamides [Evidence](#)
 - Macrolides [Evidence](#)
 - Monobactams [Evidence](#)
 - Nitroimidazoles [Evidence](#)
 - Penicillins [Evidence](#)
 - Tetracyclines [Evidence](#)
 - DVT Prophylaxis [Common Practice](#)
 - Immunizations
 - Ancillary Medications [Common Practice](#)
 - Reminders
- Laboratory
 - Chemistry
 - Hematology
 - Microbiology
 - Panels
 - Pathology
 - Serology
 - Urine Studies
 - Other
 - Reminders

Summary

- **EHR needed: Acquisition and management of clinical data**
 - Many advantages, some disadvantages
 - Key: integration of data
- **Aspects of the EHR: Functions, advantages, disadvantages**
- **Improving adoption**
 - Standards, interoperability



Additional Resources

- **Baron RJ, Fabens EL, Schiffman M, Wolf E.** Electronic health records: just around the corner? Or over the cliff? *Ann Intern Med* 2005;143:222-6.
- **Bates DW, Ebell M, Gottlieb E et al.** A proposal for electronic medical records U.S. primary care. *J Am Med Inform Assoc* 2003;10:1-10.
- **California Healthcare Foundation.** *Electronic Medical Records: A Buyer's Guide for Small Physician Practices.* October, 2003. <http://www.chcf.org>
- **CCHIT.** *2007 Physician's Guide to Certification for Ambulatory Electronic Health Records.* <http://www.cchit.org>
- **HHS.** <http://www.hhs.gov/healthit/>



Future Discussions

Lecture #1: Computers in Patient Care: The Basics of Medical Informatics

Wednesday, 8 August 2007

Lecture #2: Electronic Medical Records

Wednesday, 12 March 2008

Lecture #3: Computer-based Clinical Decision Support

Wednesday, 13 August 2008

Lecture #4: Computer-based Information Retrieval and Use

Wednesday, 11 March 2009



Thank you!

jenders@csmc.edu

jenders@ucla.edu

<http://jenders.bol.ucla.edu>

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