

# EMRs and Disease Registries for Chronic Disease Care: Technologies and Trade-offs

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# Role of Information Technology in Chronic Disease Care

- Identify disease populations
- Track outcome measures
- Track process measures
- Report on performance at various levels
  - ◆ Physician, Facility, and Organization
- Prompt Providers regarding needed interventions
  - ◆ Screening and monitoring tests, vaccinations
  - ◆ Medications
  - ◆ Patient outreach

# It's All About Data

- Diagnoses
  - ◆ ICD-9 billing codes
  - ◆ Clinical diagnoses
- Medications
  - ◆ Med prescriptions
  - ◆ Med claims
  - ◆ Meds dispensed
- Lab tests
  - ◆ Test orders
  - ◆ Test claims
  - ◆ Test results

# It's All About Data

- Diagnostic/therapeutic/screening procedures
  - ◆ Orders
  - ◆ CPT-4 billing codes
  - ◆ Test results
  - ◆ Physical exam documentation



# Electronic Medical Record Systems vs. Disease Registries

# Electronic Medical Record Systems

- General, multi-purpose
  - ◆ Document all aspects of clinical care
  - ◆ Replace paper chart (ostensibly)
- Data entered by provider in the clinical setting

# Electronic Medical Record Systems

- Variability among systems
  - ◆ Structure and coding of data
    - ◆ Free text vs. standard coding
  - ◆ Availability of data interfaces
    - ◆ Billing, lab, and pharmacy systems
  - ◆ Support for chronic disease care
    - ◆ Quality-tracking reports
    - ◆ Care-reminder features

**Adams, Patti G 06/29/42**  
 198 Elm St Sherman, TX 77521  
 Home #: (214) 766-7676  
 Mobile #: (214) 777-7987  
 EMail: mom5645566@aol.com  
 SS#: 876-45-6676  
 Sex: F  
 Marital Status: Married  
 Pt ID #: 31

**Problem List**  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 Hypercholesterolemia 272.0

**Allergies**  
 Codeine

**PMHX**  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 cholecystectomy 1998, TAH BSO 1999

**Routine Meds**  
 Diovan 80mg i po q am  
 Glucophage XR 500mg i po bid  
 Lipitor 10mg i po q am  
 fish oil, glucosamine

**Other Sensitivities**  
 erythromycin causes nausea

**FMHX**  
 HTN 401.9  
 F died of MI age 48. DCF died of MI

**Diagnosis Hx**  
 04/26/03 HTN 401.9  
 04/26/03 DM, Adult Onset,NID, Controlled 250.00

- Adams, Patti G 06/29/42
- Encounters
    - 11/17/2004 Chart Evaluation
    - 11/17/2004 Chart Evaluation
    - 11/17/2004 Chart Evaluation
    - 11/17/2004 Chart Evaluation
    - 04/07/2004 Chart Evaluation
    - 04/26/2003 Office Visit
    - 12/16/2002 Office Visit
    - 09/12/2002 Refill Rx
    - 09/12/2002 Office Visit
  - Immunizations
  - Medications
  - Lab
  - Imaging

**OV 04/26/2003**

Pt: Adams, Patti G 06/29/42 Date: 04/26/2003 last mod: 09/08/2004

Tobacco Us

CC PI ROS Vitals Exam Dx Rx Test Proc Other Tx F/U-Rem

**04/26/2003 Office Visit**  
**S:**  
 Needs medications refilled.  
**O:**  
 Vitals: 97.5 F 80 14 130/74 Wt: 180.0 lbs Ht: 64.0 in  
 BMI: 30.89  
 EAC/TM's nl. Pharynx nl. Neck supple s adenopathy. Thyroid normal to palpation. Chest clear to auscultation. Heart rrr s m or g. Abdomen: BS nl. nontender no organomegaly or masses. Extremities: pulses symmetrical UE and LE's. motor strength normal extrem x 4. cap refill < 2 sec extrem x 4. Neurological: CN II - XII nl. DTR's symm no sens defects. Gait nl.  
**A:**  
**Dx:**  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 Hypercholesterolemia 272.0  
**P:**  
**Rx:**  
 Diovan 80mg i po q am #30 rf x3

**Dx**  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 Hypercholesterolemia 272.0

**DIAGNOSIS**

Select Diagnosis

**PMHX + Problem List**  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 HTN 401.9  
 DM, Adult Onset,NID, Controlled 250.00  
 Hypercholesterolemia 272.0

**Previous Diagnoses**  
 Hypercholesterolemia 272.0  
 DM, Adult Onset,NID, Controlled 250.00  
 Cellulitis 682.9  
 Insect Bite, Nonvenomous 919.4  
 Allergic Rhinitis 477.9  
 HTN 401.9

User C

Click here  
 Suppor  
 Docum  
 Downl

Done Print Report Delete Spell Template

Sign



# EMRs: Reminders and Guidelines

The screenshot displays an EMR application window for patient Adams, Patti G 06/29/42. A red circle highlights the 'Evaluate Chart' option in the 'Actions' menu. The main window is divided into several sections:

- Header:** Adams, Patti G 06/29/42
- Menu:** File, Edit, Windows, Actions, New
- Table:** A table with columns for patient information and medical data. The 'Evaluate Chart' menu item is highlighted in blue.
- Problem List:** HTN 401.9, DM, Adult Onset, NID, Controlled 250.00, Hypercholesterolemia 272.0
- PMHX (Past Medical History):** HTN 401.9, DM, Adult Onset, NID, Controlled cholecystectomy 1998, TAH BS 1999
- Routine Meds:** Diovan 80mg i po q am, Glucophage XR 500mg i po bid, Lipitor 10mg i po q am, fish oil, glucosamine
- Other Sensitivities:** erythromycin causes nausea
- FMHX (Family Medical History):** HTN 401.9, F died of MI age 48, PGF died of age 53, DM,
- Diagnosis Hx:** 04/26/03 HTN 401.9, 04/26/03 DM, Adult Onset, NID, Cort, 04/26/03 Hypercholesterolemia 272, 12/16/02 Insect Bite, Nonvenomous, 12/16/02 Cellulitis 682.9
- Social HX:** Tobacco Use,
- Referred By:** Physician Body, Able
- Prescription Hx:** 04/26/03 Diovan 80mg i po q am #30, 04/26/03 Glucophage XR 500mg i po, 04/26/03 Lipitor 10mg i po q am #30, 12/16/02 Duricef 500mg i po bid #1, 09/12/02 Glucophage XR 500mg i po, 09/12/02 Allegra 180mg i po q am #, 09/12/02 Flonase NS 0.05% ii spray
- Insurance:** No Insurance Info
- Chart Note:** Friend of Mrs Bibi
- Procedure Hx:** (Empty section)
- Encounters:** 04/07/2004 Chart Evaluation, 04/26/2003 Office Visit, 12/16/2002 Office Visit, 09/12/2002 Refill Rx, 09/12/2002 Office Visit
- Immunizations:** (Empty section)
- Medications:** (Empty section)
- Lab:** 04/26/2003 CBC, 04/26/2003 SMAC, 04/26/2003 Lipid Panel, 04/26/2003 HGBA1C

# EMRs: Reminders and Guidelines

Adams, Patti G 06/29/42

File Edit Windows Actions New

**Adams, Patti G 06/29/42**

198 Elm St Sherman, TX 77521  
Home #: (214) 766-7676  
Mobile #: (214) 777-7987  
Email: mom5645566  
SS#: 876 45 6676

**Problem List**

HTN 401.9  
DM, Adult Onset,NID, Controlled 250.00  
Hypercholesterolemia 272.0

**Adams, Patti G 06/29/42**

Encounters

- 04/07/2004 Chart Evaluation
- 04/08/2003 Office Visit

**Evaluate Chart 11/17/2004**

Recommendations for this Patient:

**Allergie**

Codeine

**Other Sensit**

erythromycin cause

**Social H**

Tobacco Use,

**Insurance**

No Insurance Info

Recommend: Everyone Age 14 yrs to 105 yrs DT every 10 yrs

Mark this 'Done'

Pt Response:

Recommend: Females Age 35 yrs to 110 yrs Mammogram every 1 yrs

Mark this 'Done'

Pt Response:

Done Edit Print Cancel

Edit Delete

# EMRs: Reminders and Guidelines

**Edit Chart Evaluation Item** [X]

**New Chart Evaluation Item**

\* **If Pt is:**  Male  
 Female  
 Either

---

\* **Age from:**   years  months  
**to:**   years  months

---

\* **Should have:**

---

\* **Recurring:**  Only Once  
 Every  years  
 Number of times:

---

**Only if:**  Pt has a diagnosis of:    
 Pt has FMHX of:

\* Required

# EMRs for Chronic Disease Care

## ■ Pros

- ◆ No redundant data entry
- ◆ Rich data from many sources

## ■ Cons

- ◆ High barriers to physician adoption (cost, workflow changes)
- ◆ Data may not be sufficiently coded/structured
- ◆ Systems may lack disease-management features

# Disease Registry Systems

- Specific, single purpose
  - ◆ Focus on specific disease states
  - ◆ Focus on data and features needed for care management
- Consistent structure and coding of data

# Disease Registry Systems

- Variability among systems
  - ◆ Sources and frequency of data
    - ◆ Automated loading by EDI processes
    - ◆ Manual data entry by providers at POC/TOC
    - ◆ Manual data entry by support staff
  - ◆ Interface to providers at point of care
    - ◆ Delivery of static “exception” reports from remote system (paper, email)
    - ◆ Workstation access to standalone system
    - ◆ Web-based access to centralized system
  - ◆ Integration with routine care processes
    - ◆ Scheduling, documentation, billing

# Visit Planner

Print Date: 6/24/2004

Page 1 of 1

Date of Visit: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Patient: **David Demo**

Gender: **Male**

Phone: **215 666-1844**

Provider: \_\_\_\_\_

MRN: \_\_\_\_\_

DOB: **6/12/1949 (55)**

Conditions: **Diabetes, Asthma**

Comorbidities:

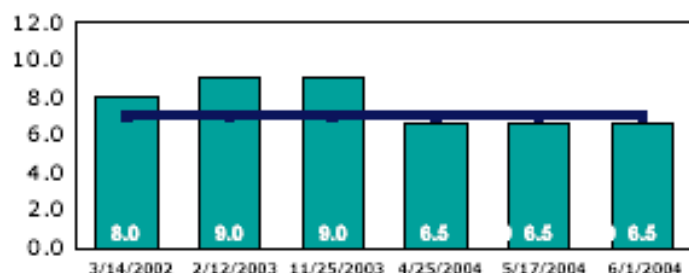
Medications: **Altace 10mg qd ,Ultra-Lente 30U Qam; Regular 10U Qam + Sliding Scale; Aspirin QD; Lisinopril 10mg QD**

Allergies: **Sulfa - Rash**

First Measure Date: **1/8/98**

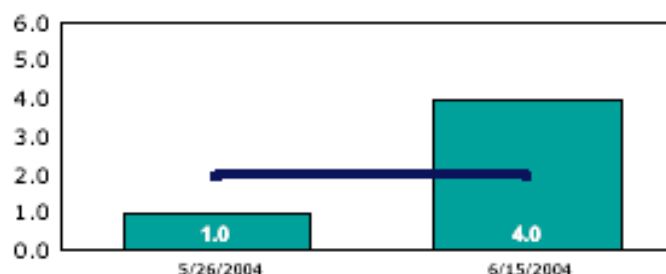
Preferred Language: **English**

## Hemoglobin A1c



Bar = Results | Line = Goal (Currently 7.00)

## # SA Beta-2 Ag/wk



Bar = Results | Line = Goal (Currently 2.00)

Prevention	Today's Action	Last Value	Date Last	Pt. Goal	Int. Days	Due Date
Advise-quit smoking	Y, N	Y	6/21/2004	=	per visit	
HEDIS	Today's Action	Last Value	Date Last	Pt. Goal	Int. Days	Due Date
LDL>130mg/dL-treat	Y, N				per visit	
Vitals	Today's Action	Last Value	Date Last	Pt. Goal	Int. Days	Due Date
BP SBP	mmHg	130	6/10/2004	< 140	90	6/21/2004
BP DBP	mmHg	78	6/10/2004	< 85	per visit	
Height (inch)	in	74	4/21/2004	>= 30	per visit	
Weight (lb)	lb	155	5/18/2004		per visit	
Body Mass Index	Calculated	19.9	5/18/2004	< 25	per visit	
Clinical	Today's Action	Last Value	Date Last	Pt. Goal	Int. Days	Due Date
# SA Beta-2 Ag/wk	# times/week	4	6/15/2004	< 2	60	8/14/2004
# Days Asthma Sx/wk				< 1	per visit	
# Nights Awakened due to Asthma Past Month		0	5/26/2004	<= 2	per visit	
Daily Weights	Y, N			= Y	180	
Eye Exam-Diabetes	Normal, 1+, 2+, Laser Tx, ...	Normal	6/14/2004	=	365	6/14/2005

# Registries for Chronic Disease Care

## ■ Pros

- ◆ Low cost barriers to physician adoption
- ◆ Specifically designed for the task

## ■ Cons

- ◆ Manual data loading entails redundant work
- ◆ Automated data loading often entails delays
- ◆ Limited or no integration with routine workflow (scheduling, documentation)
- ◆ Some systems lack point-of-care access



# EMRs and Registries – Impact on Care Process

Higher  
Impact

Interfaced, Structured  
EMR with  
DM Features

?  
=

Point-of-Care, Real-time  
Registry with  
Workflow Integration

Reports &  
Reminders

Integration with Scheduling  
and Documentation Systems

Electronic  
Data Interfaces

Real-time  
Data Feeds

Coding &  
Structure

Point-of-Care  
User Interface

Standalone  
Unstructured  
EMR

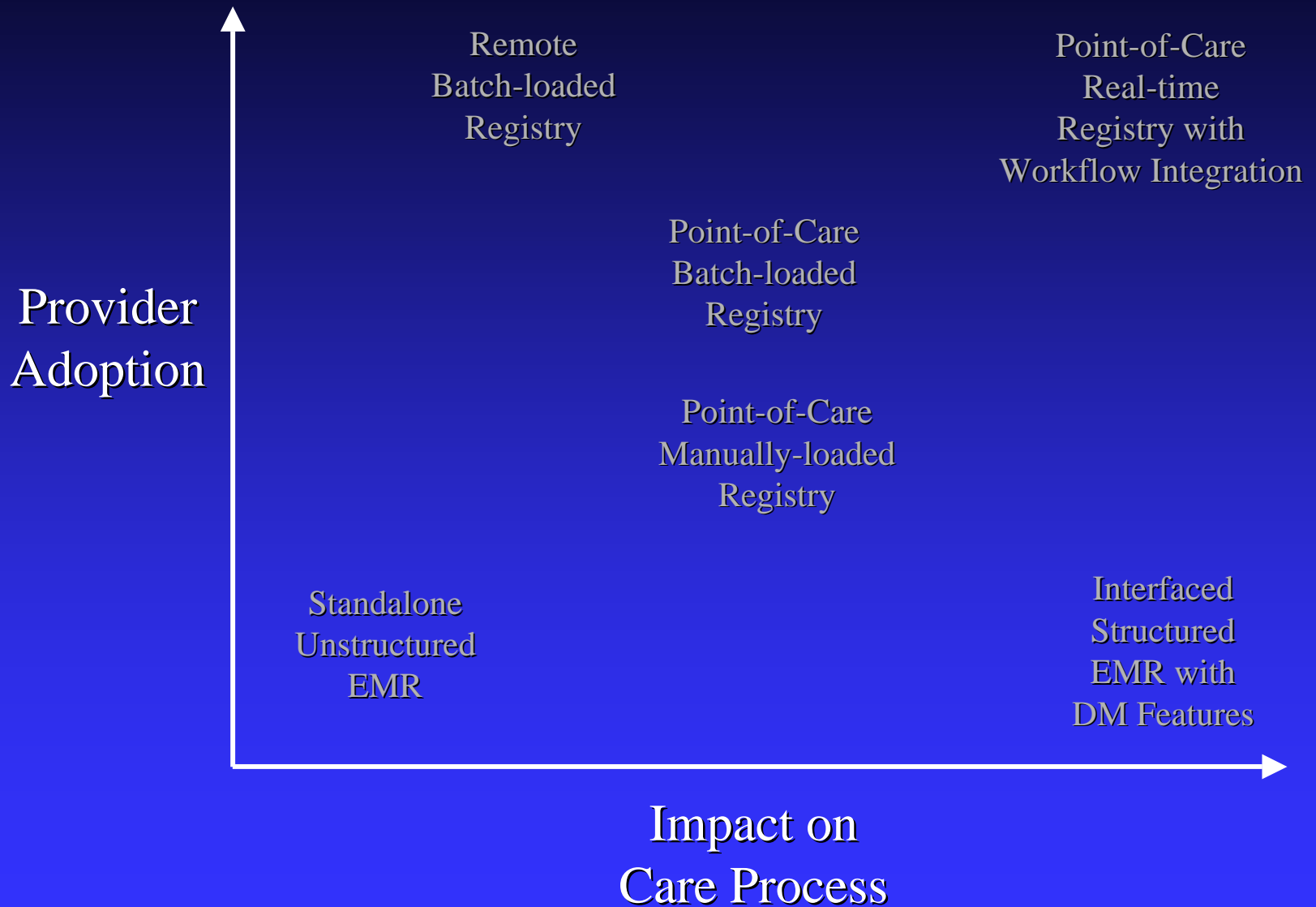
Remote  
Batch-loaded  
Registry

Lower  
Impact

EMR Features

Registry Features

# Value = Impact x Provider Adoption



Thank You

Sujansky & Associates, LLC