

THE INDIAN HEALTH SERVICE



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Superior Health Information Management  
Now and for the Future

**NASA Occupational Health Conference**  
**July 19, 2006**

# Objectives

- ~~Why Electronic Health Records?~~
- ~~Demonstration~~
- Introduction to IHS and RPMS
- Overview & status of RPMS EHR
- Risk mitigation & disaster experience
- Site Metrics
- Preparation for EHR



# IHS · EHR Electronic Health Record



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## EHR Presentations

This page contains links to presentations that have been made recently about the IHS Electronic Health Record. They are shared for your interest and information.

**Please note that information in these presentations was current as of the date they were presented. Some information may no longer be current, as the software development and testing process is fluid, and some issues change over time. Presentations will be removed from this site if their content is no longer relevant.**

- This presentation was offered in workshops at the 2005 Annual IHS Combined Councils Conference in San Diego. It includes some early metrics from EHR sites as well as discussion of suggested preparation activities.  
[NCCD 022805](#) [PPT-2.2MB]
  
- The following presentation was made in August 2004 to the IHS Technical Conference held in Scottsdale. The emphasis was on facility preparation for EHR. The open forum including presentations by Drs. Byron and Rudd on the Crow and Warm Springs experience is not captured in this slide capture.  
[IHS EHR Tech Conf 082504](#) [PPT-30KB]
  
- This presentation was offered by Dr. Miles Rudd at the IHS Technical Conference in August 2004. It describes the EHR implementation experience at Warm Springs Health Center.  
[EHR Business Process Improvements](#) [PPT-292KB]
  
- This presentation was prepared for a site manager's conference in August 2004. It describes the EHR preparation process from the Warm Springs perspective.  
[Preparing for EHR](#) [PPT-647KB]
  
- The following presentation was made in April 2004 to the joint Health Information Management and Business Office conference held in Reno NV. The emphasis in this presentation is on the impact of EHR on medical records, data entry, coding and billing staff.  
[IHS EHR HIM-BO Mtg 042204](#) [PPT-272KB]
  
- The following presentation was made in May 2004 to the national "Toward an Electronic Patient Record" meeting sponsored by the

[www.ehr.ihs.gov](http://www.ehr.ihs.gov)

# Indian Health Service

- Provides comprehensive care to over 1.6 million American Indians / Alaska Natives
- Nearly 600 health care facilities

	Federal	Tribal
Hospitals	36	13
Health Centers	61	158
Health Stations	49	76
Residential treatment centers	5	28
Alaska village clinics		170
Urban programs		

# Indian Health Service

- Over 50% of programs are operated by tribes through tribally run compacted or contracted facilities
- 34 urban programs are contracted to provide care to AI/AN populations in metropolitan areas
- Remaining care is provided through federally operated 'direct' programs (majority of the user population still receives care in direct programs)

# Mission of IHS

**“To raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level.”**

# Performance and Funding

- Funding of Federal agencies is tied to performance of mission
- The IHS is responsible for achieving its mission for all beneficiaries whether served by Federal or Tribal facilities
- Proof of performance (improvement of health status) requires collection of individual and public health data
- In IHS, performance is measured by GPRA/CRS

# Data Needs

- **Clinical care**
  - Provision of care (diagnoses, meds, results, etc.)
  - Assessment of quality of care
- **Public Health Surveillance**
  - Fluoridation, Immunization, Suicide, etc.
- **Billing / Collections**
  - Diagnosis and service codes
- **Research**
  - Collaborations with CDC, AHRQ, academia
- **Performance Assessment**
  - GPRA and other national measures
- **Legislative**
  - Congressional reports, budget justification, etc.

# Data Issues in IHS

- Funding and reporting are centralized, but administration and governance are decentralized
- Over half of Indian health programs are administered autonomously by tribes
- Submission of health data from tribes is voluntary
- Therefore, we (IHS) must provide tools for quality care and data collection that are attractive and meet the needs of all constituents, Tribal and Federal.

# RPMS

- Resource and Patient Management System
- IHS Health Information Solution since 1984

---- A.K.A. ----

***Really Powerful at Measuring Stuff***

# What is RPMS?

- **RPMS is an integrated Public Health information system**
  - **Composed of over 50 component applications**
  - **Patient and Population based clinical applications**
  - **Patient and Population based administrative applications**
  - **Financially-oriented administrative applications**

[www.ihs.gov/CIO/RPMS](http://www.ihs.gov/CIO/RPMS)



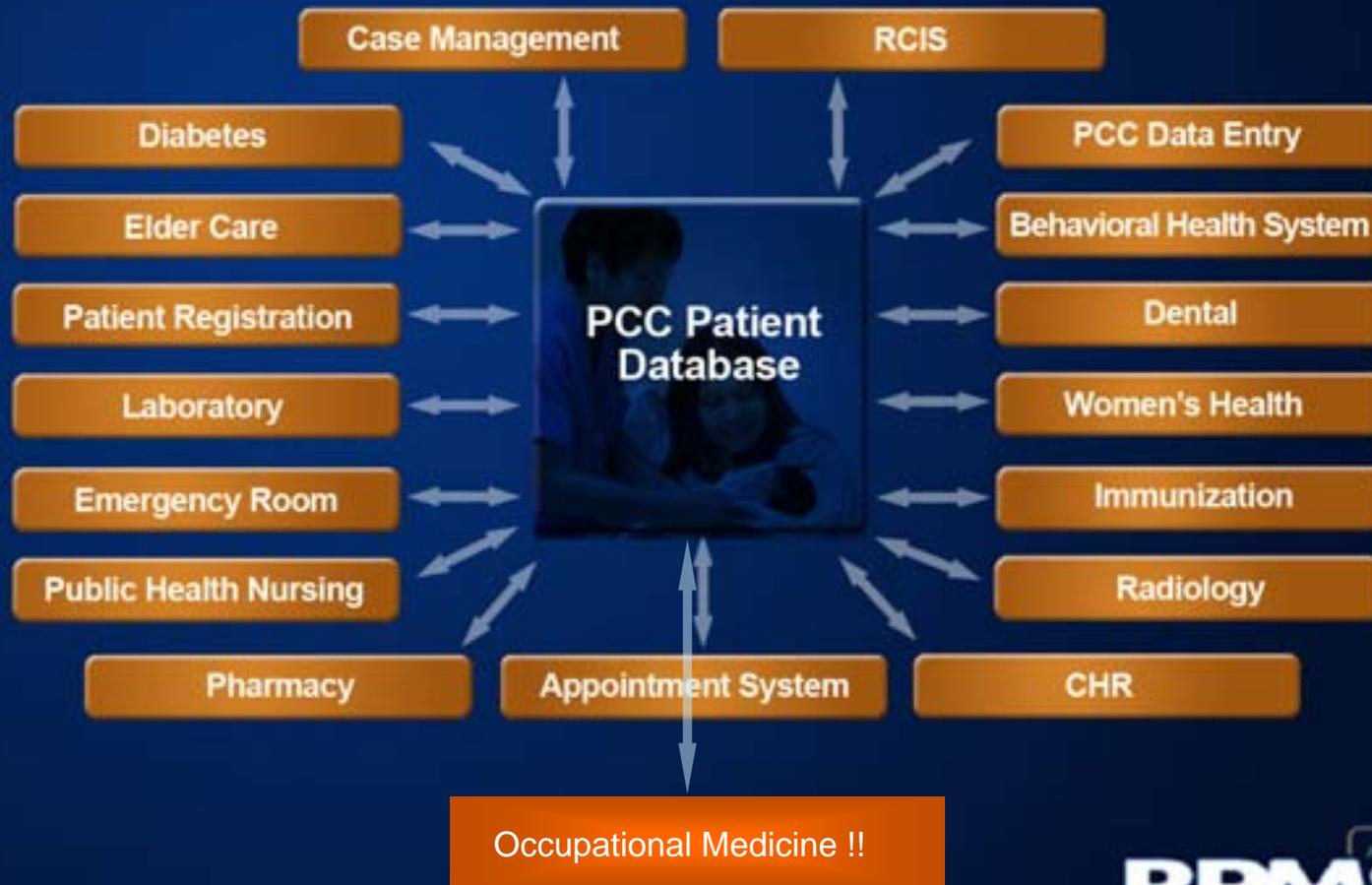
# VistA and RPMS

- Clinical information systems for VHA (VistA) and IHS (RPMS)
- Common programming architecture (M)
- Applications shared by VHA and IHS
- Most developed for use in VHA and adapted for IHS
- Some developed for use in IHS and adapted for VHA

# VistA and RPMS

- VHA-developed apps:
  - Pharmacy
  - Radiology
  - Laboratory
  - Dietary
  - Health Summary
  - PIMS
  - Etc.
- IHS-developed apps
  - Women's Health
  - Immunization
  - Pharmacy POS
  - 3<sup>rd</sup> Party Billing
  - Health Summary
  - Etc.

# RPMS Integrates Multiple Clinical Systems



# The EHR Challenge for IHS

- Produce or acquire an Electronic Health Record system that:
  - Meets clinical and business needs of both Tribally and Federally operated facilities
  - Is scalable to the needs of facilities ranging from small rural clinics to medium-sized hospitals
  - Is affordable to facilities with no resource cushion or ability to borrow
  - Is sustainable into the future

# RPMS – Elements of an EMR for over 20 Years

## Existing elements

- Registration
- Scheduling
- Pharmacy
- Radiology
- Laboratory
- Immunizations
- Reminders (passive)
- Problem List
- Health Summary
- Other PCC functions
- Billing
- More . . .

## Lacking elements

- Provider order entry
- Note authoring
- Point of care data entry
- GUI usability
- Active reminders & notifications

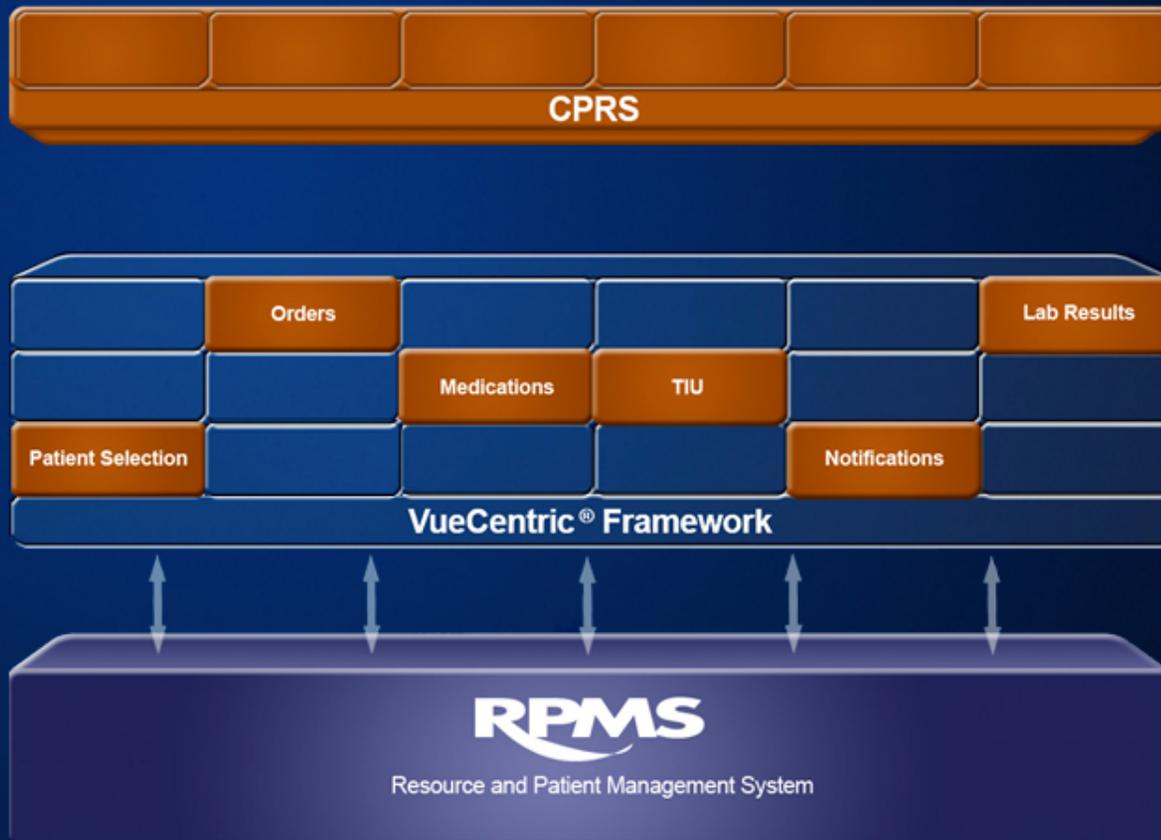
# What is RPMS EHR?

- **Integrated RPMS database**
  - Applications adapted from VHA or developed by IHS
- **Graphical User Interface**
  - User-friendly and intuitive access to RPMS database for clinicians and other staff
  - Components derived from VHA (CPRS) or developed internally for I/T/U needs
  - Proprietary “framework” for presentation of various GUI components
    - Licensed from Clinical Informatics Associates (now Medsphere)

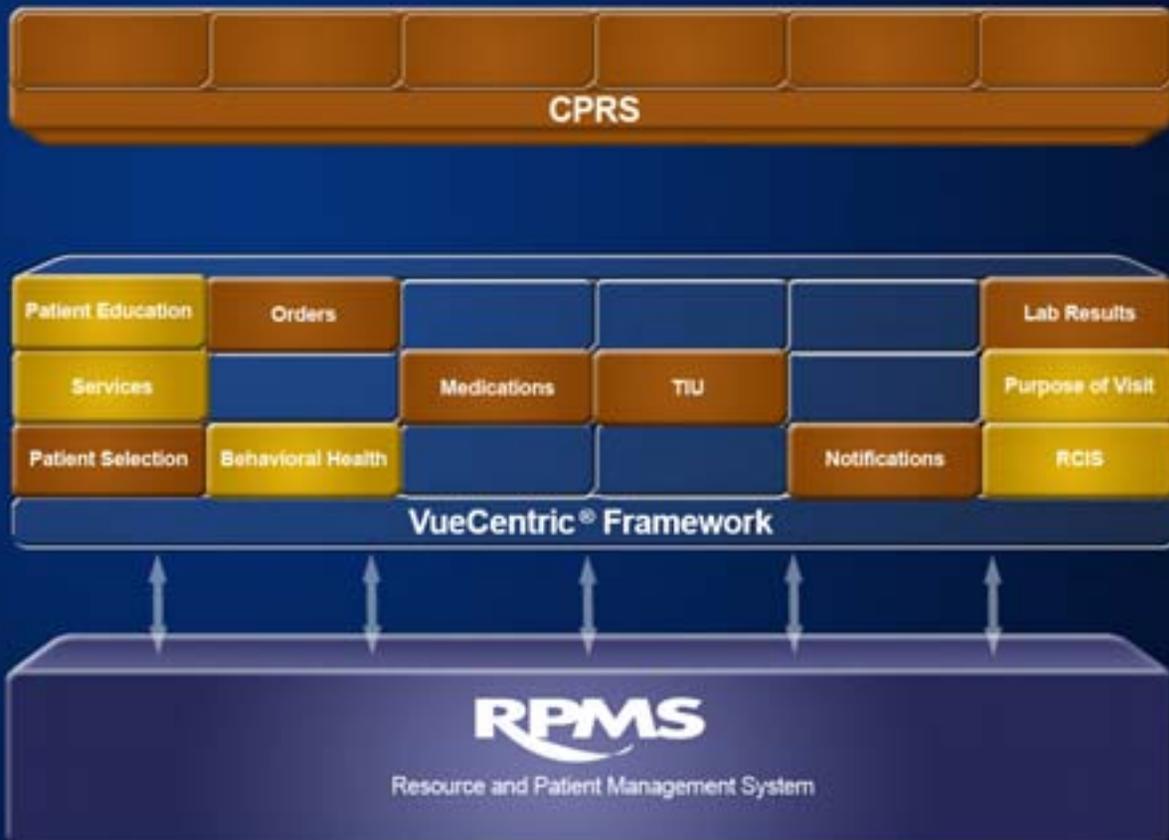
# The EHR Componentized Framework



# The EHR Componentized Framework



# The EHR Componentized Framework



**Demo\_Patient**  
 1 20-Mar-1947 (57) F  
**GENERAL** 22-Feb-2005 13:48  
 LAMER,CHRISTOPHER CLAYTON

Primary Care Team Unassigned  
 Postings  
**CAD**

**Alerts**

No Alerts Found

Alert	Date

**Reminders**

No Reminders Found

Reminder	Date

**Appointments/Visits**

Appointment/Visit	Date	Status
Payne	12-Apr-2005 14...	
Payne	29-Mar-2005 1...	CANCELLED BY PATIENT
FARRELL FP-15	16-Mar-2005 1...	
Payne	01-Mar-2005 1...	
ULTRASOUND-2	25-Feb-2005 0...	CANCELLED BY PATIENT
PT student	22-Feb-2005 1...	CANCELLED BY CLINIC
CONTINUITY O...	22-Feb-2005 1...	AMBULATORY
HYDE-G SAME ...	22-Feb-2005 1...	
<PHYSICAL TH...	22-Feb-2005 0...	AMBULATORY
<PHYSICAL TH...	22-Feb-2005 0...	AMBULATORY
HYDE-G SAME ...	18-Feb-2005 1...	CANCELLED BY CLINIC
HYDE-G SAME ...	18-Feb-2005 1...	CANCELLED BY CLINIC
PT student	18-Feb-2005 1...	CANCELLED BY CLINIC
<PHYSICAL TH...	18-Feb-2005 1...	AMBULATORY

**Crisis Alerts**

Crisis Alert	Date
ADVANCE DIRECTIVE	25-Jan-2005 13:47
CRISIS NOTE	06-Jul-2004 11:12

**Problem List**

Error Retrieving Problem List...

Problem	Date

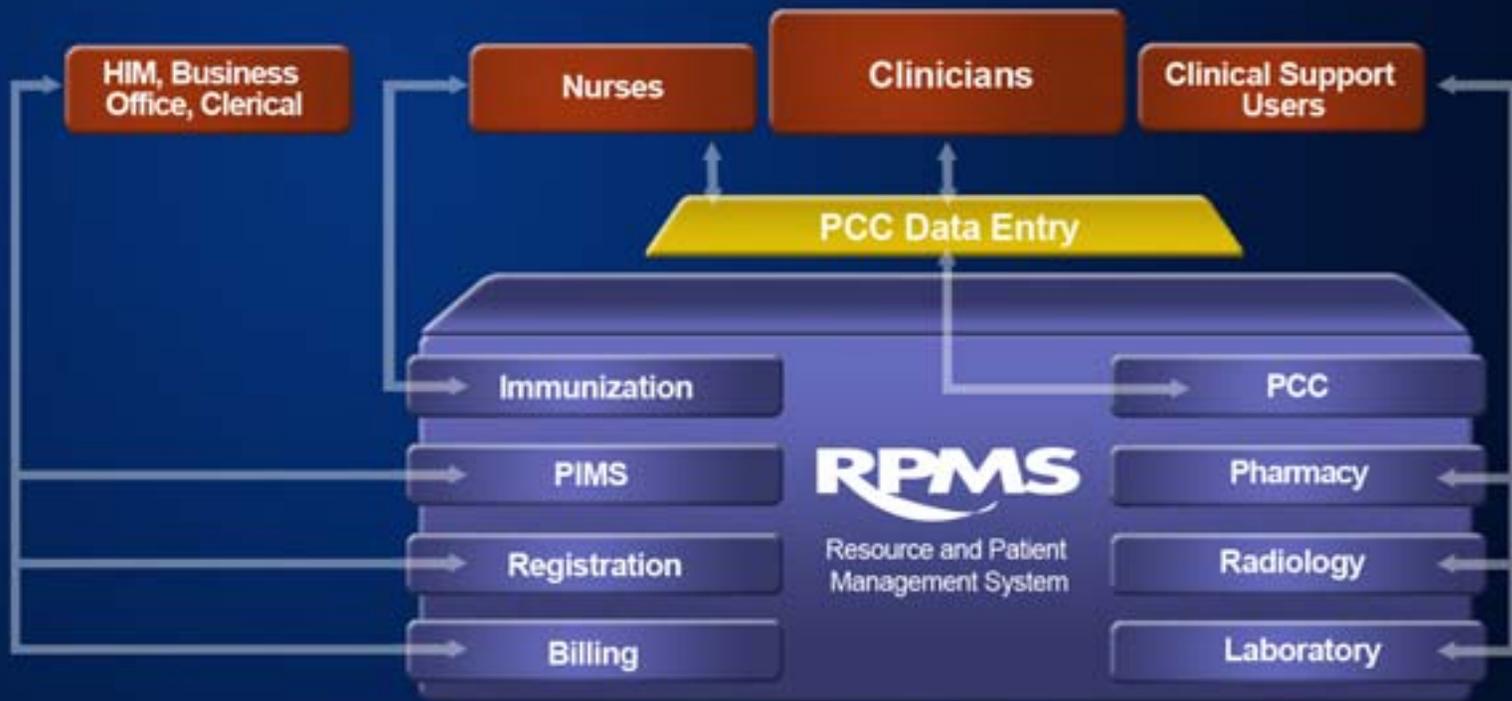
**Lab Orders**

Lab Order	Status	Date
HGB BLOOD S...	COMPLETE	02-Feb-2005 10:52
URINE DIPSTIC...	COMPLETE	14-Feb-2005 12:39

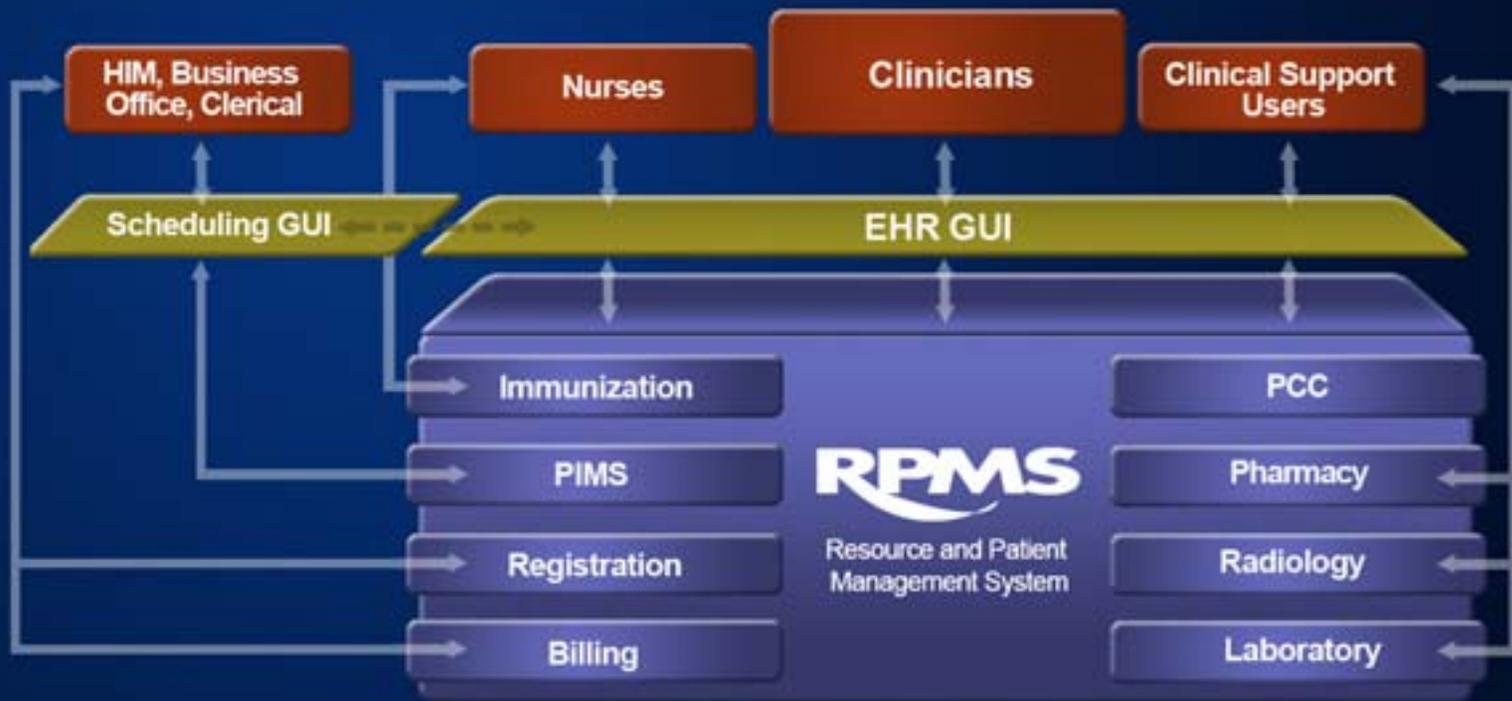
**Adverse Reactions**

Agent	Reaction
ALLERGIC TO FLIES	WEIGHT GAIN
ASPIRIN	
BEE STINGS	HIVES ANXIETY
EASY OPEN CAPS	EASY OPEN CAPS
EGGS	RASH
FLIES	
IODINE	ANAPHYLAXIS
METOCLOPRAMIDE	DROWSINESS
PEANUTS	HIVES
PHENYLEPHRINE /PRO...	muscle irritability
POLLEN EXTRACTS FRE...	CHILLS
POVIDONE IODINE	RASH
SILVER NITRATE	DERMATITIS,CONTAC...

# RPMS/EHR/User Relationships



# RPMS/EHR/User Relationships



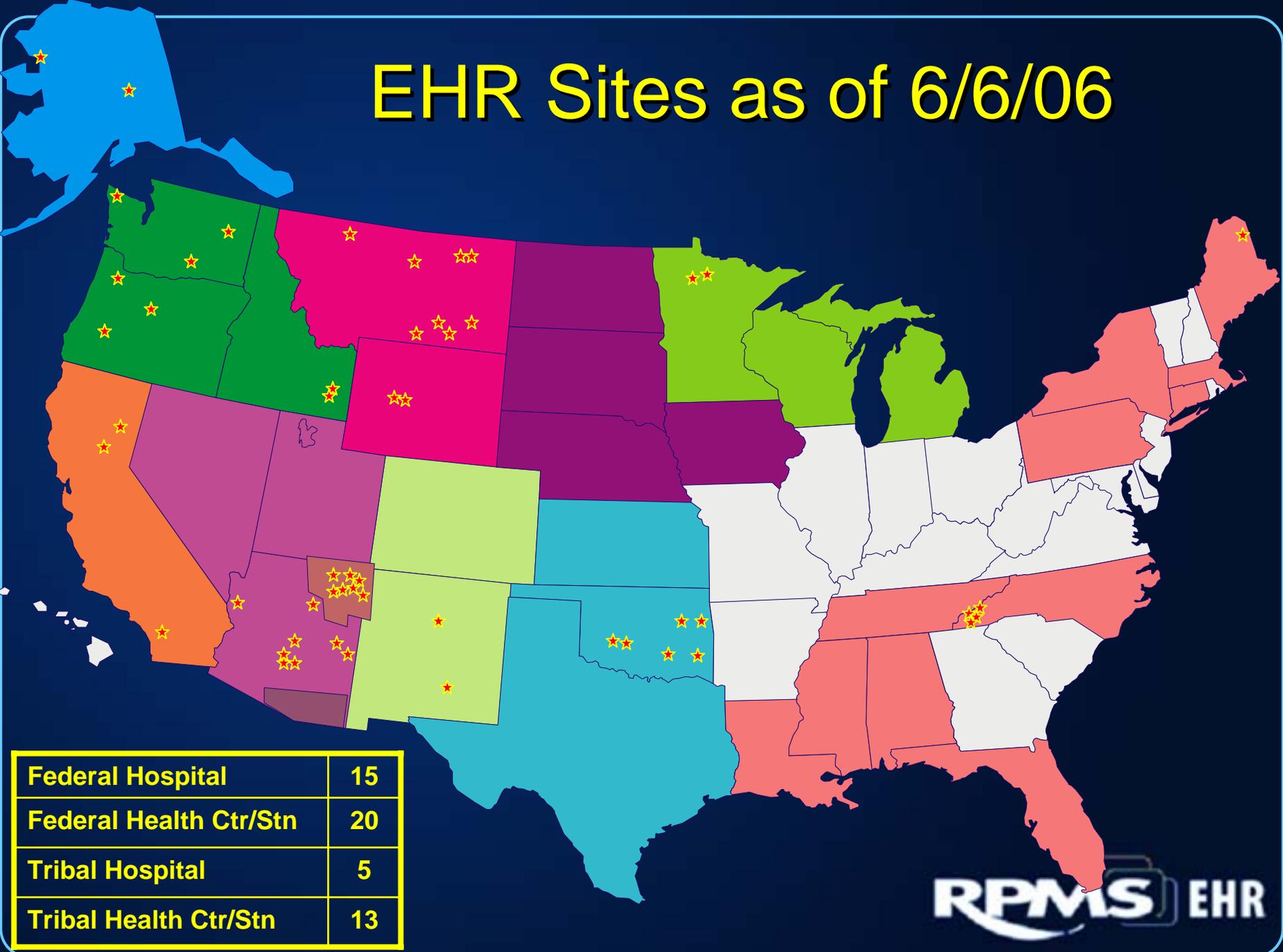
# Advantages of RPMS EHR

- Retains existing RPMS database
  - Users have access to all prior RPMS data
- Same data from EHR and non-EHR sites
  - No interfacing or reformatting of data for national exports
- Extensive customizability at local level
- Full integration of RPMS applications
- Very low cost, no license fees
- Future growth/development
  - Ongoing partnership with VHA, other developers

# EHR Milestones and Status

- RPMS EHR was certified January 2005
- 7 test sites participated in 2004
- Presently ~56 facilities use EHR
- Goal for all Federal sites to be using EHR by end of 2008
- Tribal sites encouraged to use EHR as well

# EHR Sites as of 6/6/06



Federal Hospital	15
Federal Health Ctr/Stn	20
Tribal Hospital	5
Tribal Health Ctr/Stn	13



# Interest in RPMS Outside IHS

- West Virginia Community Health Network
- Immigration & Naturalization Service
- Institute for Healthcare Improvement
- Academia
- Oh, and **NASA** . . . .

**Doc, Jane**  
3 31-Dec-1957 (47) F

**CHEROKEE DIABETES PRINCIPLE 02**  
LAMER, CHRISTOPHER CLAYTON

Primary Care Team Unassigned

Postings WA

**Cover Sheet**

- Overview
- Triage**
- Visit Vitals
- Vitals
- Screening
- Health Promotion**
- Patient Education
- Immunizations
- Visit Codes**
- Problem List
- Diagnosis/POV
- Procedures
- EM Calculator
- Ordered Items**
- Lab Results
- Medication List
- Orders

**Diagnosis/POV** Visit Codes

**ICD Pick-Lists:** Display:  Freq. Rank  Code  Description Cols: 4

<input type="checkbox"/> 001: Acne	<input type="checkbox"/> 005: Tinea Versicolor	<input type="checkbox"/> 009: Rosacea	<input type="checkbox"/> 013: Dermatofibroma
<input type="checkbox"/> 002: Atopic Dermatitis	<input type="checkbox"/> 006: Seborrhea	<input type="checkbox"/> 010: Impetigo	<input type="checkbox"/> 014: Psoriasis
<input type="checkbox"/> 003: Seborrheic Keratosis	<input type="checkbox"/> 007: Benign Nevus	<input type="checkbox"/> 011: Actinic Keratosis	<input type="checkbox"/> 015: Onychomycosis
<input type="checkbox"/> 004: Contact Dermatitis, Unspecified	<input type="checkbox"/> 008: Warts	<input type="checkbox"/> 012: Molluscum Contagiosum	<input type="checkbox"/> 016: Intertrigo

Show All

**Historical Diagnosis** Add to PL Set as POV

Visit Date	POV Narrative	ICD	ICD Name	Facility
05/27/2005	Atrial Fibrillation	427.31	Atrial Fibrillation	Ciha Hospital
05/27/2005	Atrial Fibrillation	427.31	Atrial Fibrillation	Ciha Hospital
05/27/2005	Acute myocardial infarction, unspecified site, initial episode of care	410.91	Ami Nos,init Care	Ciha Hospital
05/27/2005	Family History of Diabetes Mellitus	V18.0	Fam Hx-diabetes Mellitus	Ciha Hospital
05/27/2005	Asthma, unspecified type, with status asthmaticus	493.91	Asthma W Status Asthmat	Ciha Hospital

**Visit Diagnosis:** Add Edit Delete

Provider Narrative	ICD	ICD Name	Priority	Cause	Injury Date	Injury Cause	Injury Place	Modifier	Onset Date	Stage
Acute myocardial infarction, unspecified site, initial episode of care	410.91	AMI NOS,INIT CARE	Primary							

# Risk Mitigation with RPMS

- Typical RPMS configuration
  - RPMS Server (IBM/AIX or Dell/Windows)
    - Usually on site, but some maintained regionally
  - Redundant (shadow) server
    - Usually co-located
  - Daily tape backups
    - Removed and stored off-site
    - Weekly backups stored in bank vault
  - Tape backups DO work to restore system

# Disaster Preparedness with RPMS

- **National and facility-specific RPMS Emergency Management Plans (EMP)**
  - Alternate site specification
  - EMP conditions & implementation procedures
  - Detailed RPMS recovery plans and procedures
  - Post-event analysis and reporting

# RPMS Disaster Experience

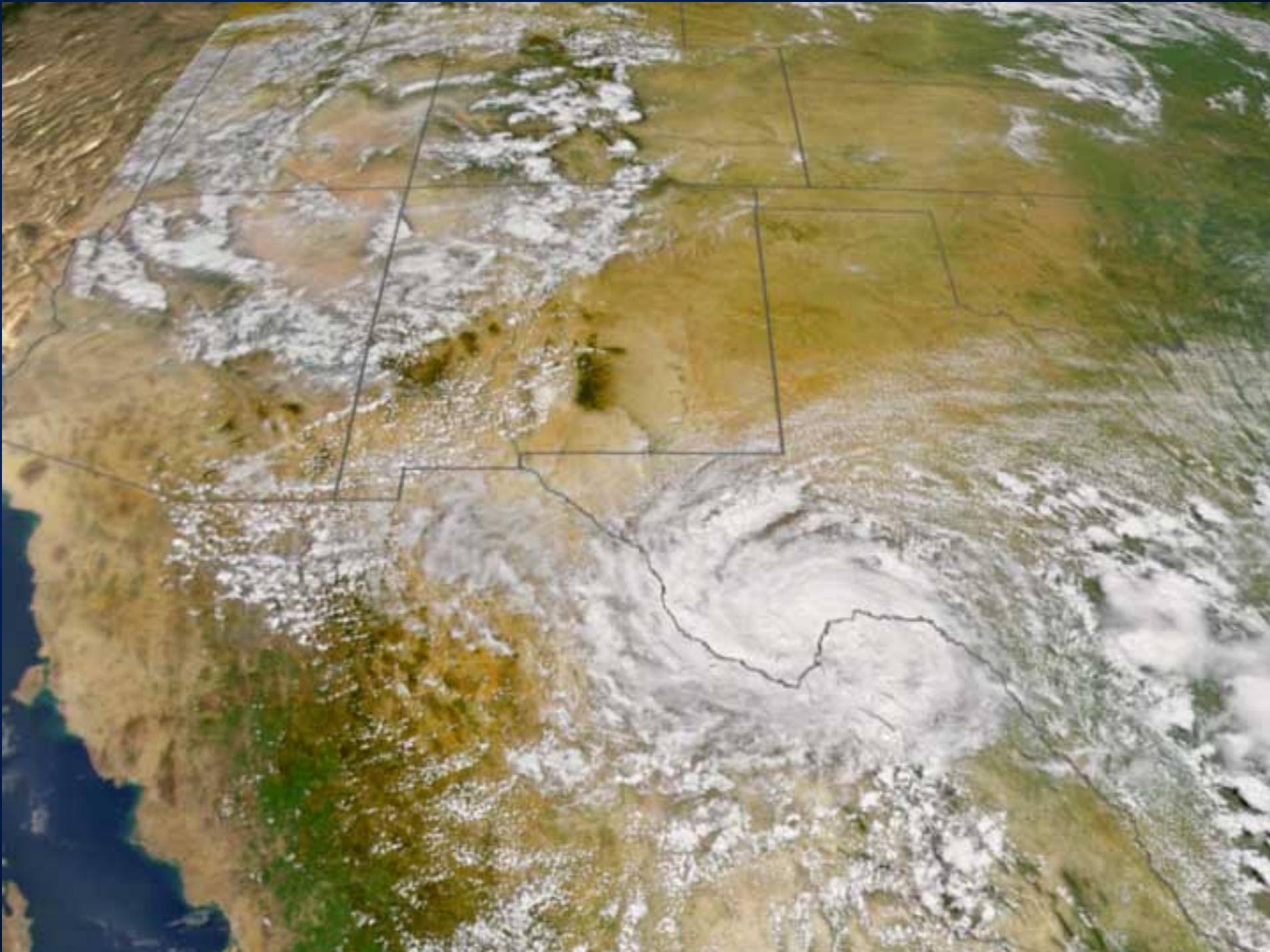
- IHS/Tribal facilities in 35 states
  - Tend to be rural and remote
  - Subject to a variety of natural disasters
    - Midwest: Windstorms and tornadoes
    - Alaska and West Coast: Earthquakes
    - Southwest and Rockies: Wildfires
    - Others
- Major events fortunately rare
  - White Earth MN 2001 – windstorm
  - But occasionally . . . .





# White Mountain Wildfires

- 1999 – Rainbow Fire
- 2002 – Rodeo and Chediski Fires
- 2003 – Kinishba Fire
- All forced evacuations at some level, and all affected operations at Whiteriver Indian Hospital on White Mountain Apache Reservation



# Rainbow Fire – 1999

- Fire started ¼ mile from Whiteriver Hospital
- Evacuated hospital on 30 min notice
  - 17 inpatients airlifted to PIMC
  - Paper medical records attached to patients
  - Remote RPMS access granted to PIMC
- Core staff remained, ER open
- Most servers shut down due to heat
  - RPMS kept active as critical infrastructure

# Rodeo and Chediski Fires – 2002

- Whiteriver accepted ~30 patients from private hospital and nursing home
- Most staff evacuated homes, 70 housed in temporary trailers & govt houses on campus
- Hospital operations continued with major shift in focus
- Access to private hospital EMR granted but foiled by firewall issues
- Straightforward web-based access to private pharmacy records (Walgreen's)

# Kinishba Fire – 2003

- Hospital evacuated but on 2-3 days notice
- 70% of patients discharged, 5 sent to PIMC
- Core ER staff remained
- No disruption to data systems

# Disaster Lessons Learned

- Most patients can be discharged
- Interoperability of HIS would be nice
  - Some systems friendlier than others
- Every disaster is different – response requires both planning and flexibility
- Key to weathering a disaster successfully:
  - It's the PEOPLE

# Back to RPMS and the EHR

**Doe, Jane** PHARMACY 21-Dec-2004 09:30  
 LAMER, CHRISTOPHER CLAYTON

**Contraceptive**

- ORAL CONTRACEPTIVES
- Brevicon 28
- Levlen
- Loestrin FE 1/20
- Loestrin FE 1.5/30
- Norinyl 1/35
- Ortho Novum 7/7/7
- TriLevlen

**Medication Order**

ETHINYL ESTRADIOL/NORETH

[Display Restrictions/Guidelin](#)

Dosage	Complex
1 TABLET LOESTRIN 1/20 FE (2)	
1 TABLET NORINYL 1/35 (28)	
1 TABLET ORTHO-NOVUM 1/35	
1 TABLET BREVICON-28	
1 TABLET ORTHO NOVUM 7/7/7	
1 TABLET LOESTRIN 1/20 FE (2)	
1 TABLET LOESTRIN 1/20 (21)	
2 TABLETS LOESTRIN 1/20 (21)	
1 TABLET NORETHYLLOESTR	

Comments:

Days Supply: 28  
 Quantity: 28

LOESTRIN 1/20 FE (28)  
 TAKE ONE TABLET BY MOUTH  
 Quantity: 28 Refills: 11

LINEZ  
 TAKE ONE TABLET BY MOUTH DAILY  
 Quantity: 90 Refills: 0

\*FERRIC NA GLUCONATE INJ,SOLN  
 12.5MG/ML  
 INJECT 125MG INTRAVENOUSLY  
 WEEKLY  
 Quantity: 1 Refills: 4

BISMUTH SUBSALICYLATE

**Restrictions/Guidelines**

**Oral Contraceptive Comparison Chart**

Product	Estrogen	Progesterin	Androgen
-----			
Monophasic			
Ortho-Cept	++	++++	+
*Levlen	++	++	++
Nordette	++	++	++
Nordette	++	++	++
Lo Ovral	++	++	++
*Demulen 1/35	+	++++	++
*Demulen 1/50	++	++++	++
*Loestrin 1/20	+	+++	+++
*Loestrin 1.5/30	+	++++	+++
Brevicon	++++	+	+
Modicon	++++	+	+
Ovcon 35	++++	+	+
*Norinyl 1/35	+++	+++	++
*Norinyl 1/50	+++	+++	++
Ortho Novum 1/35	+++	+++	++
Ortho-Cyclen	+++	+	+
Ortho Cept	++	++++	+
Desogen	++	++++	+
Ovcon-50	++++	+++	++
*Ovral	++++	++++	+++
Ortho Novum 1/50	+++	+++	++
Biphasic			
Jenest-28	+++	++	++
Ortho Novum 10/11	++++	++	++
Triphasic			
*Ortho Novum 7/7/7	++++	++	++
Ortho Tri Cyclen	+++	+	++
Tri-Norinyl	++++	++	++
*Tri-Levlen	++	+	++
Triphasil	++	+	++
Progesterin only			
*Micronor	None	+	+
Ovrette	None	+	+
-----			

**Estrogen Excess**  
 dys/hypermenhorrea, bloating, edema, headache, migraine, weight gain, irritability, leg cramps, nasuea/vomitting, visual changes

**Estrogen Deficiency**  
 absence of withdrawal bleeding, early/midcycle bleeding, continuous bleeding

# How Can EHR Improve Care?

- **Access to Information**
  - Immediately available, no data entry delay
  - Service Unit wide, even satellite clinics
  - Legible
- **Computerized Order Entry**
  - **Much** less chance for error
  - Order checks for allergies and interactions
  - Complete, up to date medication lists
- **Reminders, Notifications, and Alerts**
  - Abnormal lab results
  - Screening and interventions that are due

# Patient Care Metrics

- Principal reason for EHR – improve patient care
- How do we know we have done that?
- Sites should be identifying important metrics and tracking them
- Ready-made patient care metrics: CRS
- EHR can provide the tools for quality improvement but an active QI program is a must

# Provider Productivity

- All sites see a transient decrease in provider productivity (pts/day) at first
- Typically takes 1-3 months to recover to pre-EHR levels
- Mitigate by staggering implementation, either by provider or by function, or both
- Efficiencies in other areas (phone calls, chart reviews) can improve productivity



Active Only Chronic Only 180 days

Print...

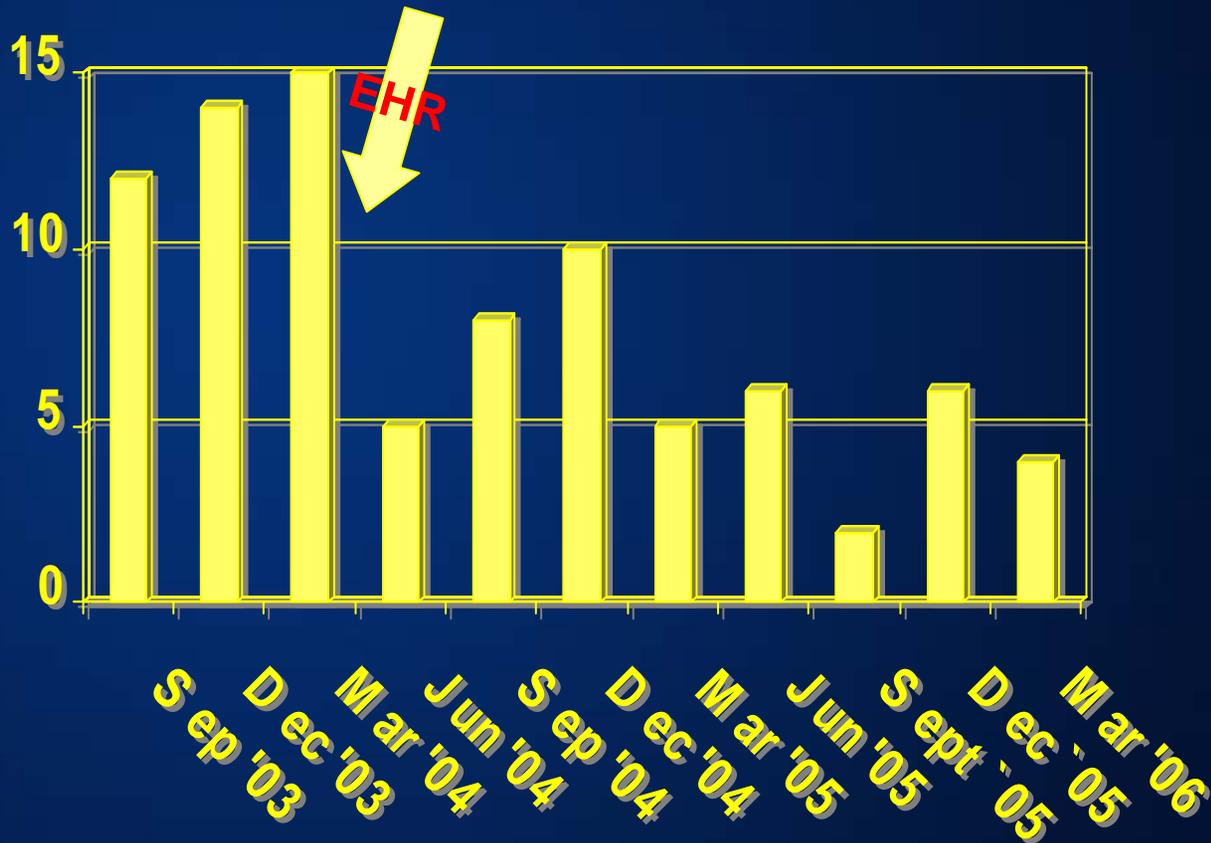
Process...

New...

Action	Chronic	Outpatient Medications	Status	Issued	Last Filled	Expires	Refills Remaining	Rx #	Provider
	✓	FUROSEMIDE 40MG TAB** Qty: 30 for 30 days Sig: TAKE ONE TABLET BY MOUTH EVERY MORNING TO HELP CONTROL BLOOD PRESSURE OR EXCESS FLUID	Not Picked Up	10-Mar-2006		11-Mar-2007	3	1626311	USER,POWER
	✓	FUROSEMIDE 20MG TAB** Qty: 30 for 30 days Sig: TAKE ONE TABLET BY MOUTH EVERY MORNING TO HELP CONTROL BLOOD PRESSURE OR EXCESS FLUID	Expired	31-Mar-2006	31-Mar-2006	30-Apr-2006	0	1626314	USER,POWER
	✓	ACETAMINOPHEN 325MG TAB Qty: 60 for 30 days Sig: TAKE TWO TABLETS BY MOUTH BEFORE MEALS AND AT BEDTIME TO RELIEVE PAIN OR FEVER	Expired	03-Mar-2006	10-Mar-2006	02-Apr-2006	0	1626308	USER,POWER
	✓	LISINAPRIL 20MG TAB** Qty: 30 for 30 days Sig: TAKE ONE TABLET BY MOUTH ONCE EACH DAY TAKE FOR BLOOD PRESSURE	Active	31-Mar-2006	31-Mar-2006	01-Apr-2007	11	1626315	USER,POWER
		DILTIAZEM 30MG TAB Qty: 90 for 30 days Sig: TAKE ONE TABLET BY MOUTH THREE TIMES A DAY	Active	31-Mar-2006	31-Mar-2006	01-Apr-2007	3	1626313	USER,POWER
		NIFEDIPINE 30MG XL TAB Qty: 60 for 30 days Sig: TAKE TWO TABLETS BY MOUTH DAILY TO HELP CONTROL BLOOD	Expired	10-Feb-2005	10-Feb-2005	11-Feb-2006	3	1626307	USER,POWER

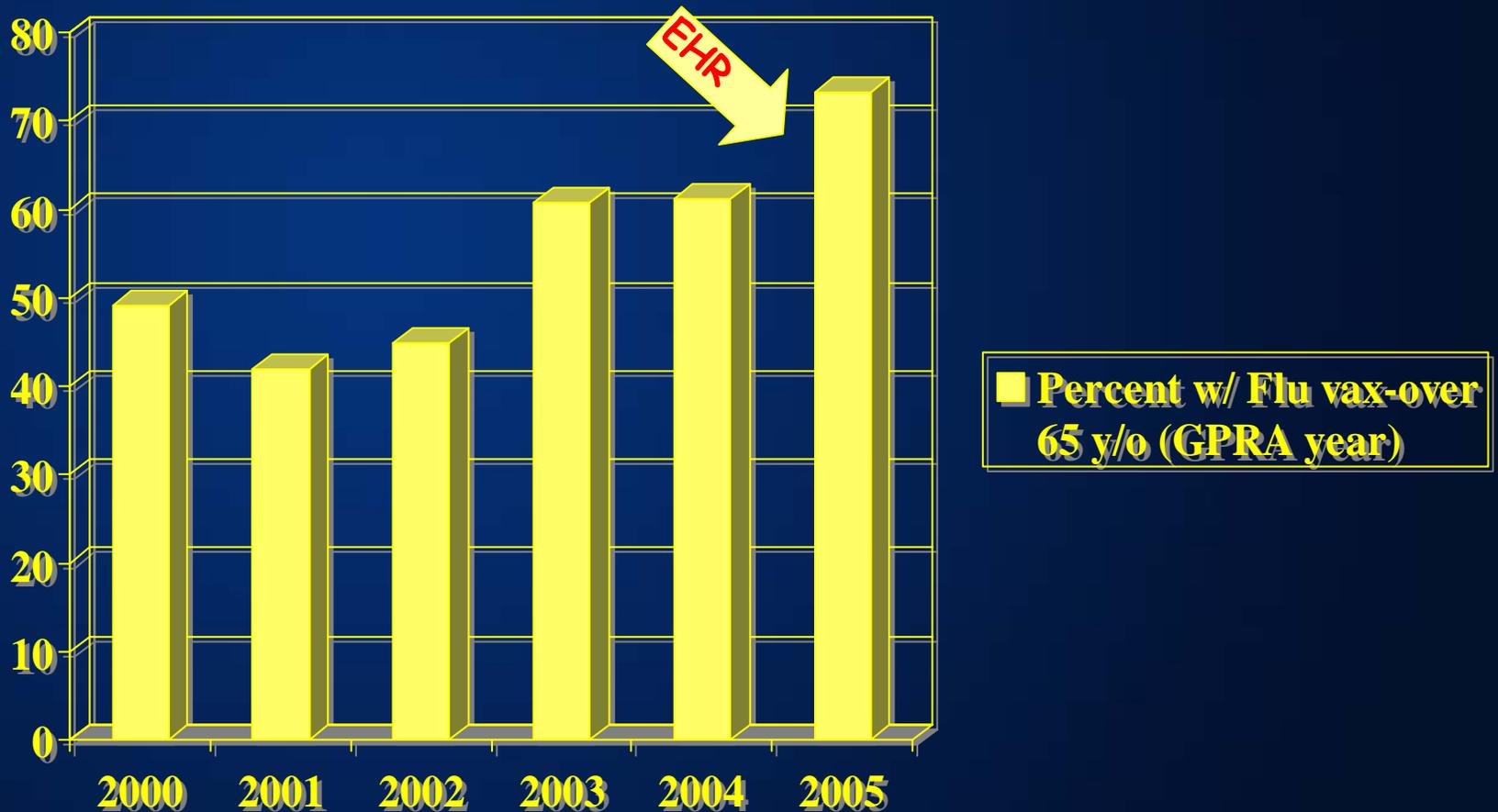
Action	Inpatient Medications	Status	Stop Date

# Medication Errors (Site A)

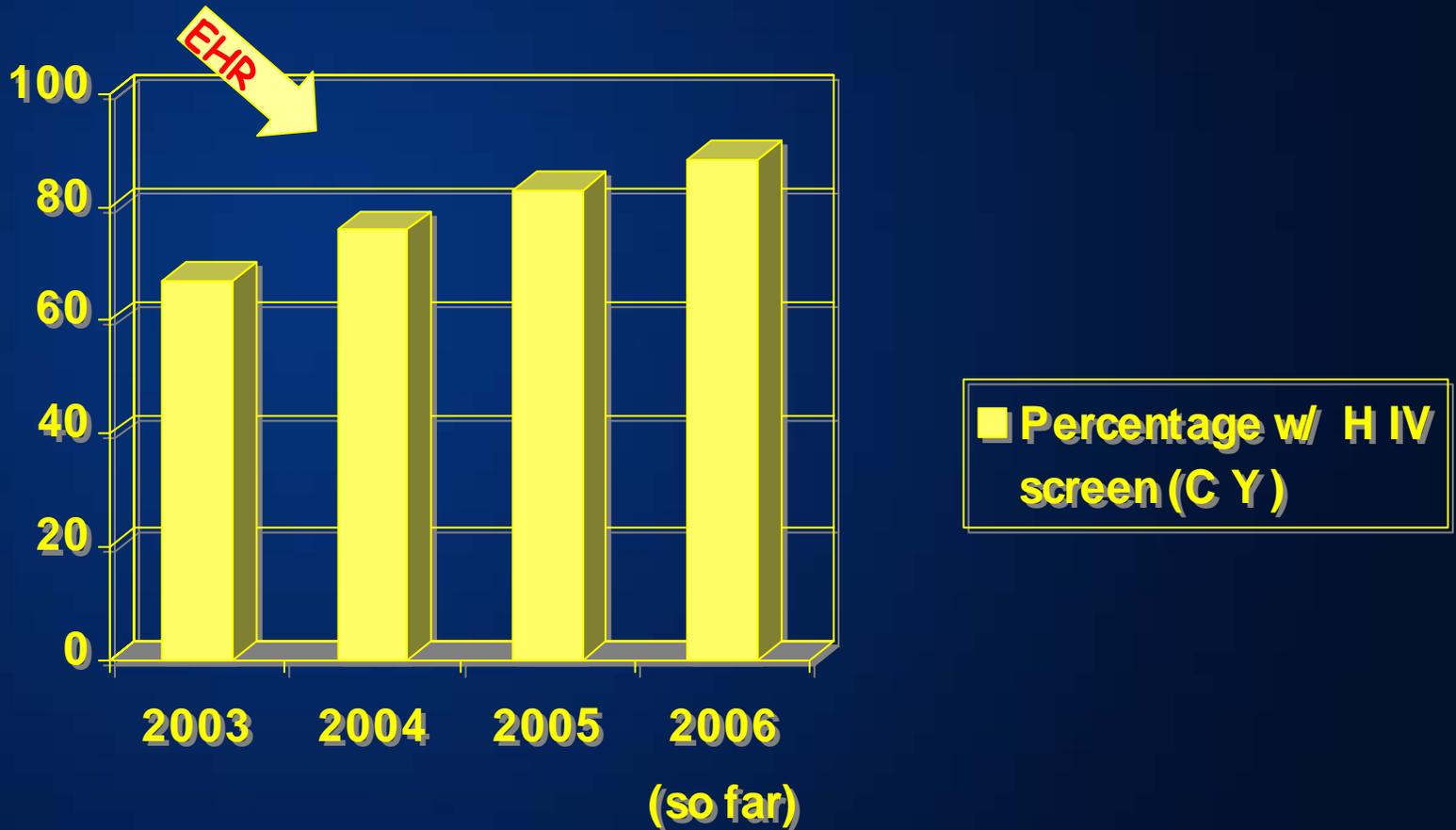


■ E nd of Q tr M ed E rrors

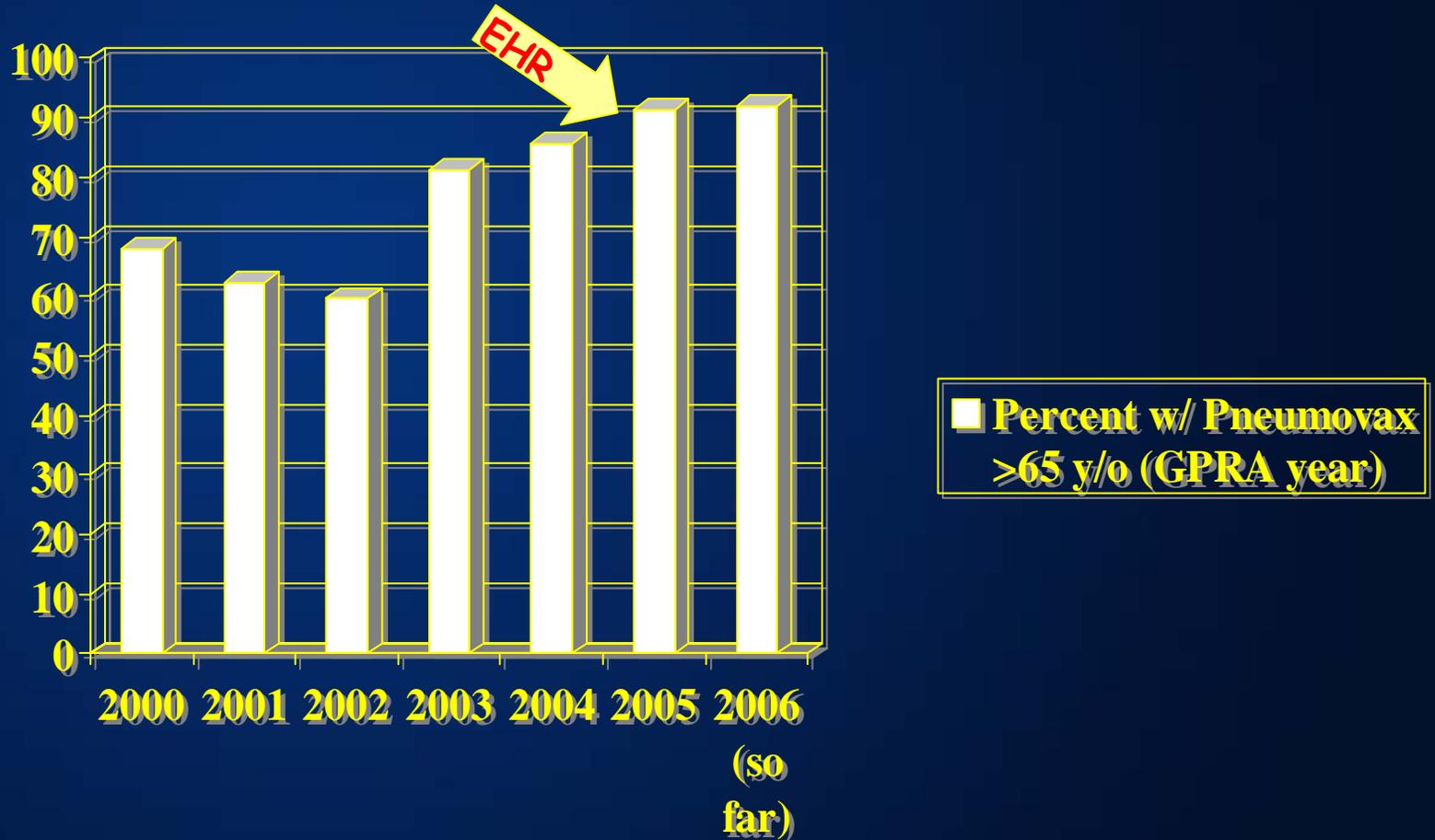
# GPRO Indicator - Flu Vaccine 65+ (Site A)



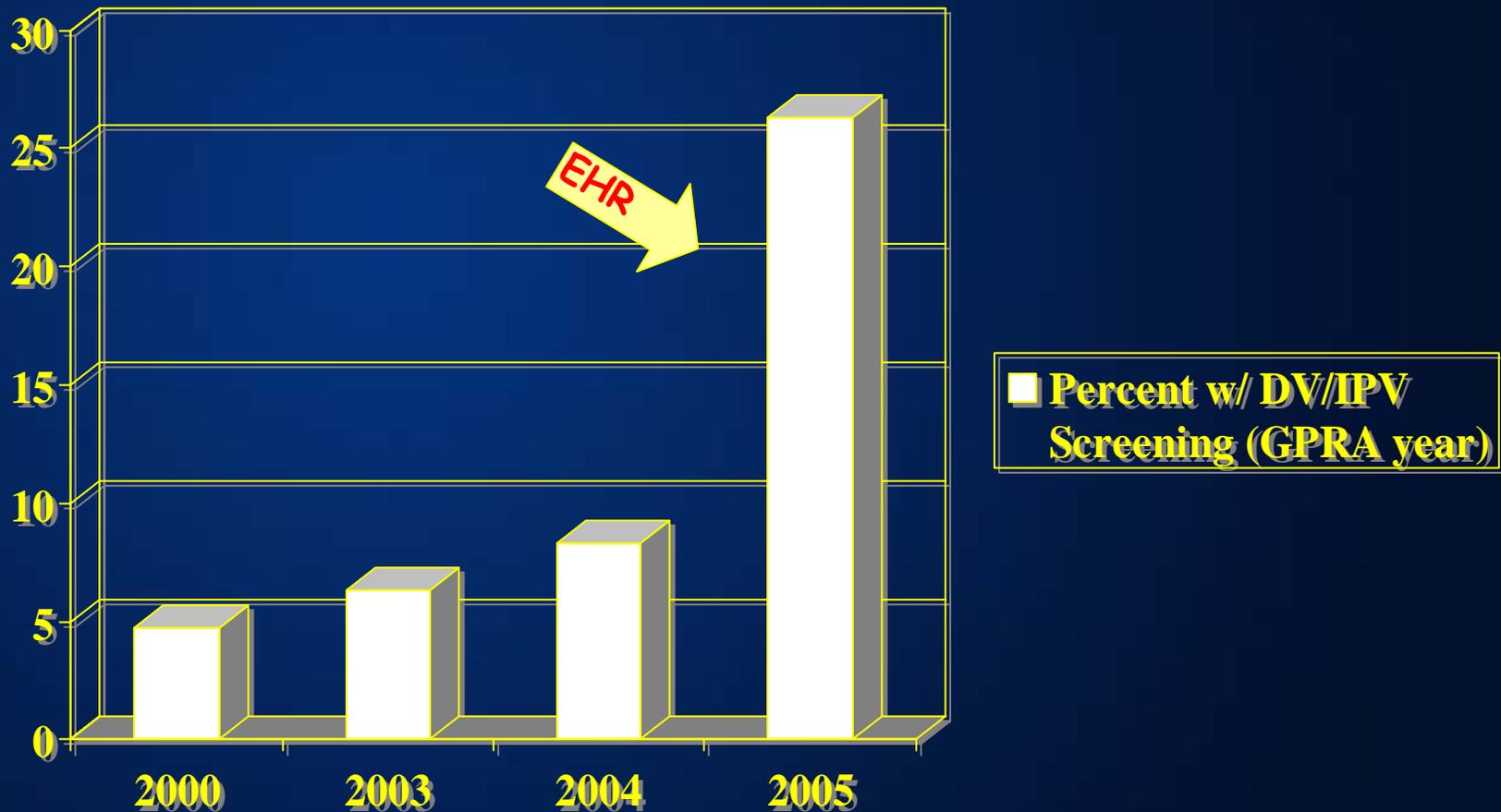
# GPRA Indicator – Prenatal HIV (Site A)



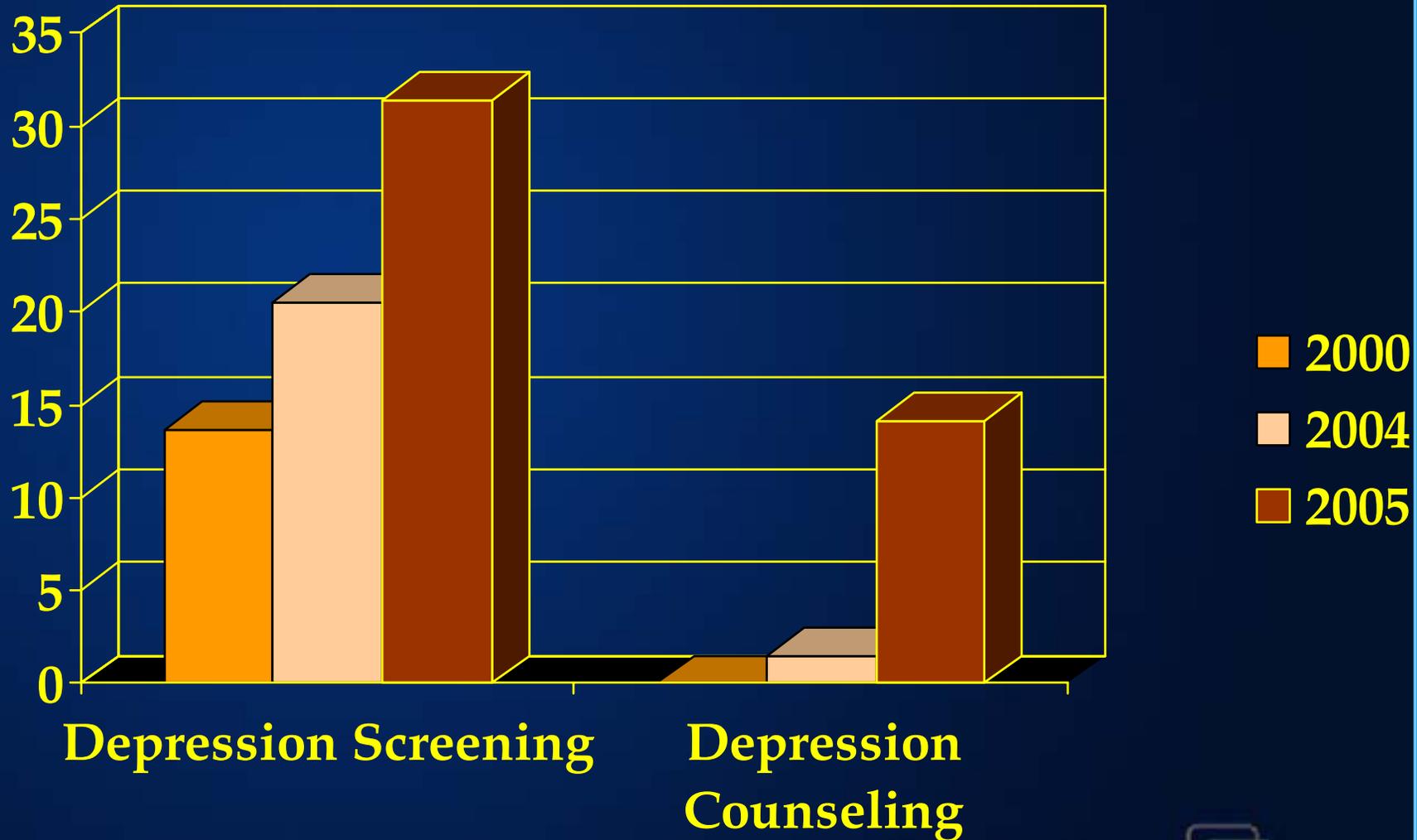
# GPRA Indicator – Pneumovax over 65 y/o (Site A)



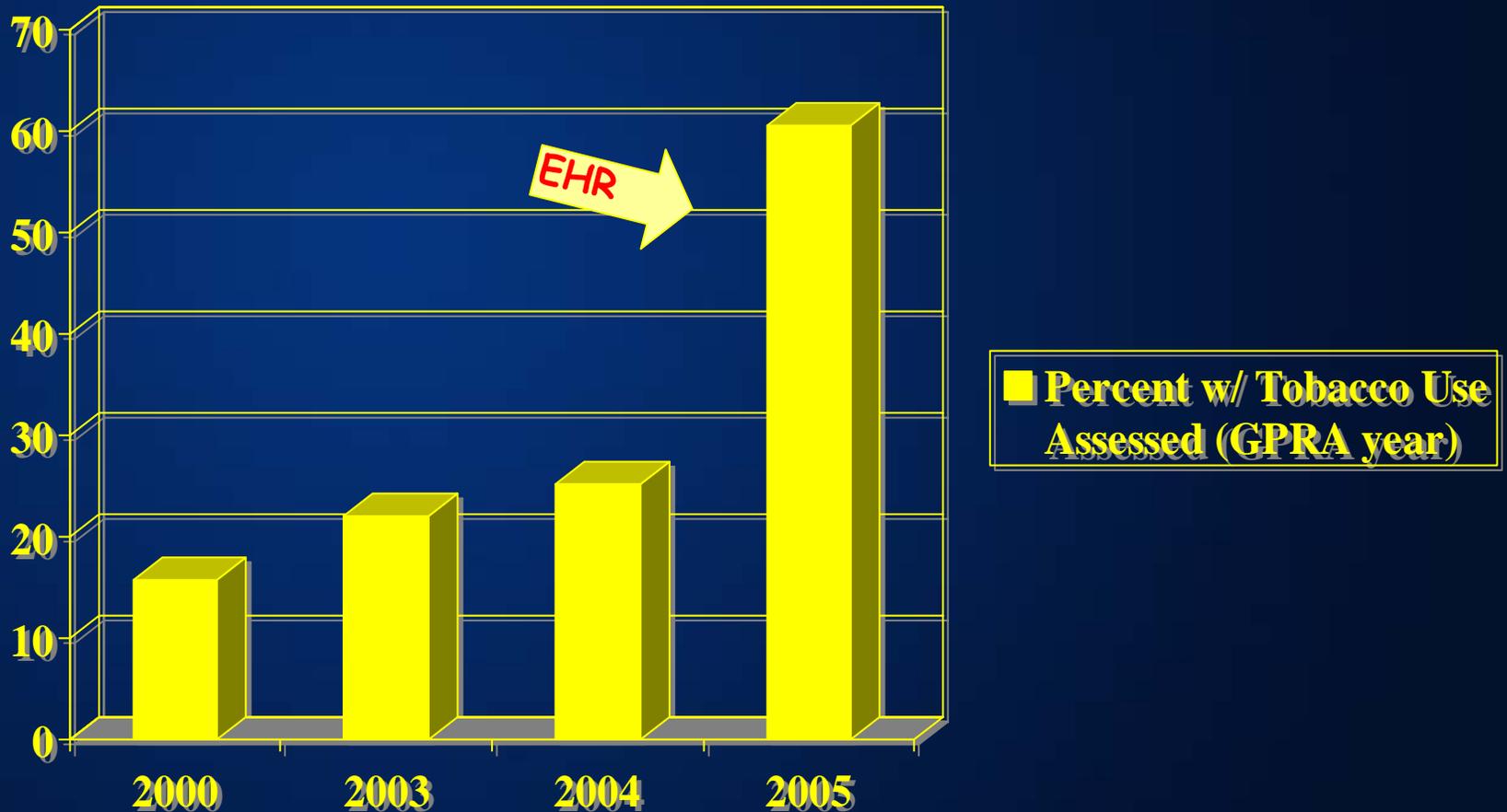
# GPRC Indicator – DV Screen Age 15-40 (Site A)



# Depression Screening (Site A)



# GPRO Indicator – Tobacco Assessment (Site A)

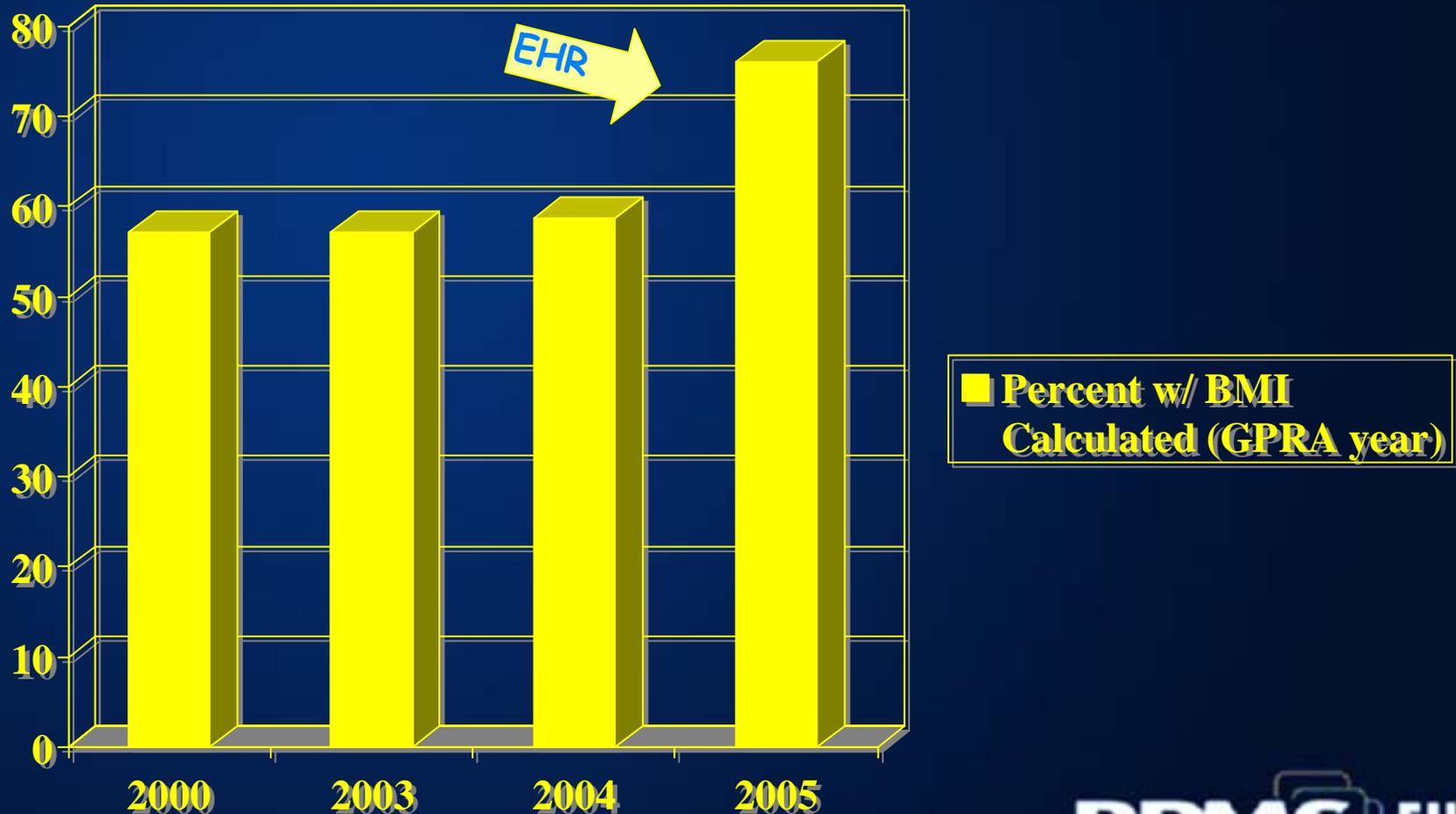


# GPRO Indicator – Medication Education (Site A)

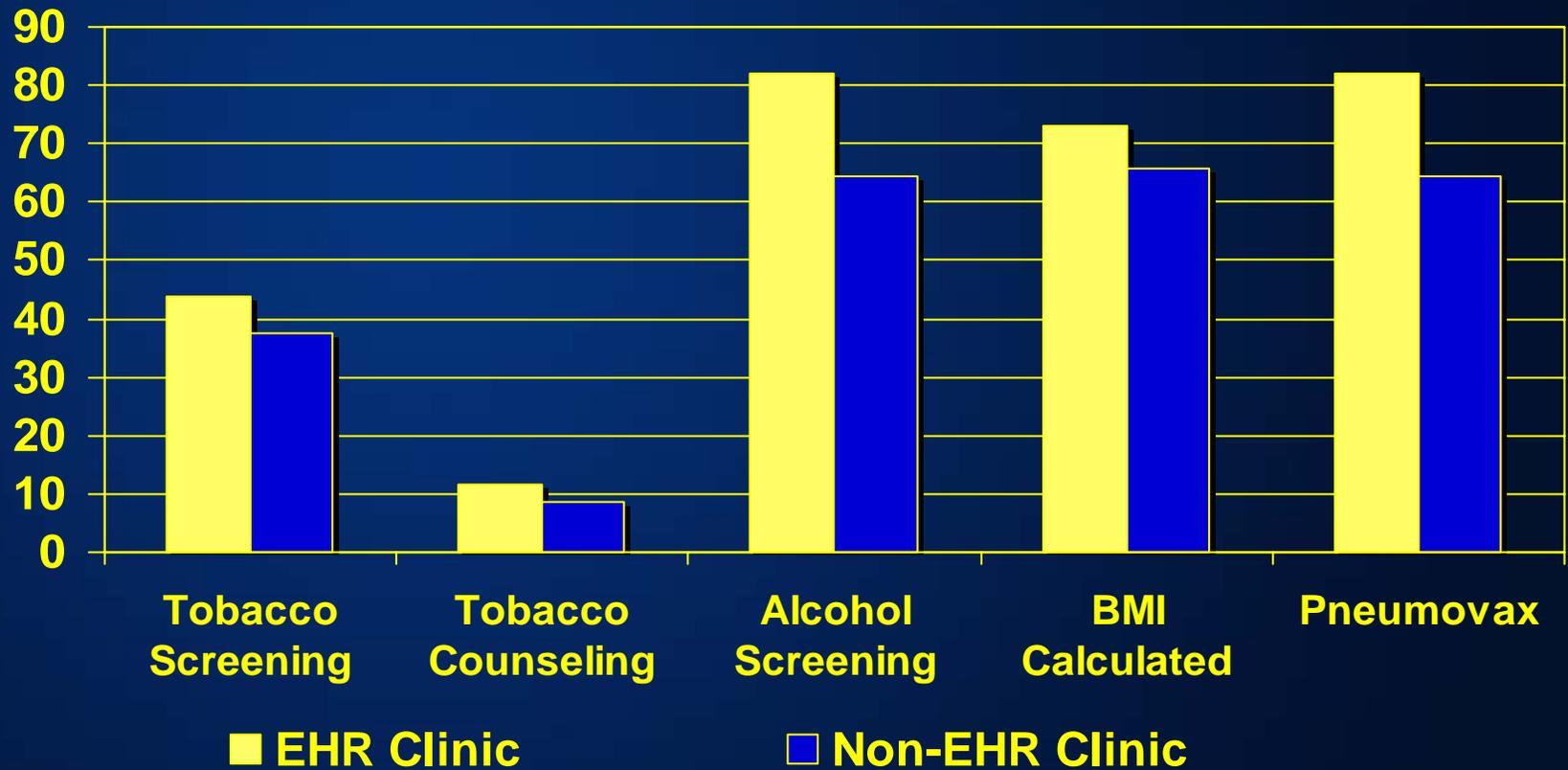


■ M ed E ducation  
(calendar year)

# GPRO Indicator – BMI 2-74 y/o (Site A)



# GPRA Indicators – 1<sup>st</sup> Qtr '05 (Site C)



# Reminders in EHR

**Demo, Female A**  
 21334 10-Aug-1976 (29) F

**Visit not selected**  
 HAGER, MARY G

Problem List	
Problem ^	Date
Asthma	15-Dec-2004
Pregnancy	15-Dec-2004

Adverse Reactions	
No Adverse Reactions Found	

Alerts	
No Crisis Alerts Found	

Medications		
Medication	Status	Issue Date
ACETAMINOP...	EXPIRED	15-Dec-...
ALBUTEROL O...	EXPIRED	15-Dec-...

Status:  All  Active  
 Inpatient/Outpatient:  All  Out  In

Reminders	
Reminder ^	Date
Alcohol Screen	DUE NOW
Blood Pressure	15-Dec-2005 15:17
Cocci	DUE NOW
Dental Screening	DUE NOW
No Allergy Assessment	DUE NOW
Pap Smear	DUE NOW
TEST	DUE NOW
Tobacco Screen	15-Dec-2005 15:16
Weight	15-Dec-2005 15:17

Vital Measurements		
Vital	Value	Date ^
TMP	98.6 F (37 C)	15-Dec-2004...
PU	72 /min	15-Dec-2004...
RS	16 /min	15-Dec-2004...
BP	120/80 mmHg	15-Dec-2004...
HT	66 in (167.64 cm)	15-Dec-2004...
WT	135 lb (61.23 kg)	15-Dec-2004...
PA	3	15-Dec-2004...
BMI	21.79	15-Dec-2004...

Lab Orders	
No Lab Orders Found	

Appointments and Visits		
Appointment/Visit	Date ^	Status
TEST CLINIC	23-Mar-2006 12:15	AMBULATORY
TEST CLINIC	20-Mar-2006 10:56	AMBULATORY
TEST CLINIC	14-Mar-2006 14:46	AMBULATORY
TEST CLINIC	17-Feb-2006 11:44	AMBULATORY

# Available Reminders



View Action

Available Reminders	Due Date	Last Occurre...	Pri...
---------------------	----------	-----------------	--------

Due		Due Date	Last Occurre...	Pri...
	No Allergy Assessment	DUE NOW		
	Alcohol Screen	DUE NOW		
	Blood Pressure	12/15/2005	12/15/2004	
	Pap Smear	DUE NOW		
	Tobacco Screen	12/15/2005	12/15/2004	
	Weight	12/15/2005	12/15/2004	
	TEST	DUE NOW		
	Cocci	DUE NOW		
	Dental Screening	DUE NOW		
	Applicable			
	Not Applicable			
	All Evaluated			
	Other Categories			

Available Reminders	Due Date	Last Occurre...	Pri...
All Evaluated			
Immunization Forecast	04/14/2006	04/13/2006	
No Allergy Assessment	DUE NOW		
Alcohol Screen	DUE NOW		
Asthma Management Plan	04/13/2007	04/13/2006	
Asthma-on steroids	04/13/2007	04/13/2006	
Asthma Severity	04/13/2007	04/13/2006	
Colon Cancer			
Domestic Violence	02/17/2007	02/17/2006	
Height	12/15/2009	12/15/2004	
HepB Adult Immunization	10/13/2006	04/13/2006	
Blood Pressure	12/15/2005	12/15/2004	
DM ACE/ARB			
DM Aspirin			
DM Dental Exam			
DM Eye Exam			
DM Foot Exam			
DM HgbA1c			
DM Microalbumin			
Depression Screen			
Dtap Immunization			
Flu Shot Immunization			
HCT/HGB			
Head Circumference			
Hearing Test			
Height			
HepA Adult Immunization			
HepA Ped Immunization			
HepB Ped Immunization			
Hibbiter Immunization			
High Risk Flu			
High Risk Pneumovax			
IPV Immunization			
Lipid Profile Female			
Lipid Profile Male			
MMR Immunization			
Mammogram			
PPD			

**Clinical Maintenance: Pap Smear**

```

--STATUS--  --DUE DATE--  --LAST DONE--
DUE NOW    DUE NOW      unknown
  
```

Applicable: Due every 3 years for ages 18Y to 64Y within cohort.  
 Patient is at an age to receive a pap smear every 3 years and  
 evidence was not found in the computer that this was done. Patient  
 should receive a pap smear

Font Size: 9

Print... Close

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- Ac
- Dell
- Links
- Media
- Radi...
- Real...
- Vist...
- Work
- Res...
- MSN...
- CNN...
- Calvi...
- time ...

CDC Home Search Health Topics A-Z



# MMWR

Weekly

January 7, 2005 / 53(51):Q1-Q3

## Recommended Childhood and Adolescent Immunization Schedule --- United States, 2005

### Harmonized Childhood and Adolescent Immunization Schedule, 2005

The Advisory Committee on Immunization Practices (ACIP) periodically reviews the recommended childhood and adolescent immunization schedule to ensure that the schedule is current with changes in vaccine formulations and reflects revised recommendations for the use of licensed vaccines, including those newly licensed. Recommendations and format of the childhood and adolescent immunization schedule for July--December 2004 were approved by ACIP, the American Academy of Family Physicians (AAFP), and the American Academy of Pediatrics (AAP) and were published in April 2004 (1). That schedule updated previous ones by adding the recommendation that, beginning in fall 2004, healthy children aged 6--23 months, as well as household contacts and out-of-home caregivers for healthy children aged 0--23 months, receive annual influenza vaccine (2).

The childhood and adolescent immunization schedule for 2005 is unchanged from that published in April 2004 (Figure). In addition, the catch-up immunization schedule for children and adolescents who start late or who are >1 month behind remains unchanged from that published in January 2004 and again in April 2004 (Table). The childhood and adolescent immunization schedule and the catch-up immunization schedule for 2005 have been approved by ACIP, AAFP, and AAP.

**Reminder Resolution: Alcohol Screen**

Check to indicated the results of the CAGE questionnaire.

CAGE 0/4  
 Comment:

CAGE 1/4  
 CAGE 2/4  
 CAGE 3/4  
 CAGE 4/4

Patient had alcohol screening exam done at this encounter.  
 Result of Exam: \*   
 Comment:

Check to indicated alcohol education done at this visit

Educated about alcohol screening  
 Level of Understanding: \*   
 Education duration:   
 Comment:

Educated about the dangers of alcohol/drug addiction  
 Given literature about alcohol/drug use  
 Educated about alcohol and drug addiction being treatable chronic conditions  
 Educated about the disease of alcohol/drug addiction  
 Education on the complications of alcohol/drug addiction

Patient declined alcohol screening and education at this visit.  
 Comment:   
 Reason for refusal:

\* Indicates a Required Field

---

**CLINICAL REMINDER ACTIVITY**

**Alcohol Screen:**  
 CAGE test results  
 CAGE 0/4  
 Patient had alcohol screening exam done at this encounter.  
 Result of Exam: Normal/negative  
 Alcohol education  
 The patient/family was educated about the process of screening for

---

Patient Educations: **ADD-SCREENING**  
 Health Factors: **CAGE 0/4**  
 Examinations: **ALCOHOL SCREENING**

Clear    Clinical Maint    < Back    Next >    Finish    Cancel

# Reminder Dialogs

- Resolves pending reminders
- Execute orders
- Document education
- Creates a TIU document of the intervention

# Reminder Resolution: DM HgbA1c

Diabetic patients should have their hgbalc done yearly. Patient's last  
Hgbalc was Last HEMOGLOBIN A1C 8.4 JAN 31,  
2005@08:15:42

Check below to order hgbalc

\* Indicates a Required Field

CLINICAL REMINDER ACTIVITY  
**DM HgbA1c:**  
**HgbA1c ordered**

Orders: **HgbA1c**

Clear      Clinical Maint

## Order a Lab Test

Available Lab Tests	HEMOGLOBIN A1C
HEMOGLOBIN A1C	Collect Sample: BLOOD (5ml PU)
HEMOGLOBIN A2 BY COLUM	Specimen: BLOOD
HEMOGLOBIN AC <HEMOGL	Urgency: ROUTINE
HEMOGLOBIN AND HEMATC	
HEMOGLOBIN ELECTROPHC	
HEMOGRAM W/DIFFERENTI	
HEMOGRAM W/REFLEX DIF	
HEMOGRAM,	

Collection Type	Collection Date/Time	How Often?	How Long?
Send Patient to Lab	T	ONCE	

Clinical Indication:  
Dm Type 2 Uncntrl

HEMOGLOBIN A1C BLOOD SP ONCE Indication: Dm Type 2 Uncntrl

Accept Order      Quit

**Demo, Female A**  
21334 10-Aug-1976 (29) F

**TEST CLINIC 13-Apr-2006 14:31**  
HAGER, MARY G






Last 100 Signed Notes

PC ACUTE CARE VISIT Apr 13, 2006@14:31  
Vst: TEST CLINIC

Hager, Mary G

- New Note in Progress
  - All signed notes
  - Feb 28, 06 PC ACU
- 
- 

**CLINICAL REMINDER ACTIVITY**

**Alcohol Screen:**  
 CAGE test results  
 CAGE 0/4  
 Patient had alcohol screening exam done at this encounter.  
 Result of Exam: Normal/negative

**Alcohol education**  
 The patient/family was educated about the process of screening for alcohol and other drug related issues to determine an individual's need for further evaluation and referral.  
 Level of Understanding: Refused  
 Education duration: 5  
 Patient declined alcohol screening and education at this visit.  
 Reason for refusal: Refused service

- Due
  -  No Allergy Assessme
  -  Alcohol Screen
  -  Blood Pressure
  -  Pap Smear
  -  Tobacco Screen
  -  Weight
  -  TEST
  -  Cocci
  -  Dental Screening
- Applicable
- Not Applicable
- All Evaluated
- Other Categories

Patient Educations: AOD-SCREENING  
 Health Factors: CAGE 0/4  
 Examinations: ALCOHOL SCREENING

**Demo, Female A**  
21334 10-Aug-1976 (29) F

**TEST CLINIC** 13-Apr-2006 14:31  
HAGER, MARY G

No Postings

**Health Factors:** Add Edit Delete

Visit Date	Health Factor	Category	Comment
12/15/2004	Previous Smoker	Tobacco	
04/13/2006	Cage 0/4	Alcohol/drug	
02/17/2006	Readiness To Learn-pain	Readiness	

**Education:** Show Standard Add Edit Delete

Visit Date	Education Topic	Comprehension	Status	C
02/17/2006	Anemia-Disease Process	GOOD		
12/15/2004	Asthma-Disease Process	GOOD		

**Exams:** Add Edit Delete

Visit Date	Exams	Result
04/13/2006	ALCOHOL SCREENING	NORMAL/NEGATI
02/17/2006	INTIMATE PARTNER VIOLENCE	NORMAL/NEGATI
02/17/2006	DEPRESSION SCREENING	ABNORMAL

**Immunization Forecast:**  
Tdap past due

**Contraindications:** + X

**Vaccinations:** Print Record Due Letter Profile Case Data Add Edit Delete

Vaccine	Visit Date	Age@Visit	Location	Reaction	Volume	Inj. Site	Lot	VIS Date	Administered By
---------	------------	-----------	----------	----------	--------	-----------	-----	----------	-----------------

**Skin Test History:** Print Record Add Edit Delete

Visit Date	Skin Test	Location	Age@Visit	Result	Reading	Read Date	Reading Provider	Administered By
12/15/2004	PPD	Demo Hospital	28 yrs					HAGER, MARY G

# Preparation for EHR

# EHR Planning & Implementation



Please note that this is just a general timeline of how long it might take for your site to implement EHR. Every site will be different, and the amount of time it takes to implement EHR depends upon many factors, including size of the facility, services offered at the facility, current state of RPMS and packages installed and utilized.

\* Most sites contract for external resources to complete pharmacy file preparation.



# Preparation for EHR

- The easy part . . . . .
  - Assess hardware and network needs
  - Acquire and install hardware
  - Install and configure RPMS suite
  - Train on RPMS applications
  
- The hard part . . . . .

# Organizational Transformation

- **Multidisciplinary EHR Team**
  - Includes administration, clinical, HIM, business office, pharmacy, IRM, others
- **Develop shared vision for the role RPMS and EHR will play in supporting care**
- **Examine legacy business processes**
  - Why do we do it that way?
  - How might it have to change?
  - Realign processes to be less paper driven

# Organizational Transformation

- **Departments take ownership of RPMS packages**
  - Assigning user keys and privileges
  - Responsibility for data quality and integrity
  - Running reports
- **Discover the leaders**
  - Who are the natural super-users?
  - Who is most excited, energized, visionary?
  - Assign CAC functions or hire a CAC

# Organizational Transformation

- **Site Metrics**
  - What do we want to improve with EHR?
  - What is at most risk with EHR?
  - Establish baseline and measure continuously
- **Optimize use of current RPMS**
  - Scheduling – no paper appointment books
  - Immunization – point of care entry, no blue sheets
  - Laboratory – no interim/cumulative reports
  - Pharmacy – paperless refill option

# Organizational Transformation

- **Develop plans for documentation**
  - CRS performance measures
  - Who will document what, and where?
- **Implementation plan**
  - Keep it simple at first
  - Start with the easiest locations
  - Start with the easiest functions
  - Create a critical mass of EHR users
  - No turning back – DO NOT STOP the rollout

# Clinical Application Coordinator

- **Highly recommended for all facilities**
  - Part-time to multiple FTE depending on size
  - Area/Regional CAC to support small sites
- **CAC skills –**
  - Clinical background
    - Pharmacy, Lab, HIM, Nursing, etc.
  - Computer skills
  - Good “people” person
  - Good trainer (especially of doctors)

GIVE ME  
MORPHINE!  
GIVE ME SOMETHING  
TO KILL THE  
PAIN! I CAN'T  
STAND IT ANYMORE!

I SEE THE  
COMPUTER  
TRAINING CLASSES  
FOR THE DOCTORS  
HAS BEGUN..

HOSPITAL



# The Role of the CAC

- Setup of EHR
  - Documentation templates
  - Quick orders
  - Locally developed reminders
  - ICD and CPT pick lists (with coders)
- Training of new users
- Refreshers and training on updates
- Troubleshooting and hand-holding



# Special Issues for NASA

- Health Information Management
- Laboratories and the Reference Lab Interface
- Scanning and Imaging

# Health Information Management

- **Current system**
  - Paper-based, decentralized
  - Some disparate electronic systems
  - Little HIM expertise or guidance
- **Implementation of RPMS and EHR**
  - Consolidation & centralization of data
  - Introduction of coded data (ICD, CPT)
  - Blended medical record with electronic and paper components

# Health Information Management

- Health record data
  - Belongs to the patients
  - Is not owned by IT
  - Should be managed by HIM professional
  - Needs policies defining use and access to data, delineation of source of legal record
  - Needs a retention and disposition plan approved by NARA

# Laboratory and Reference Labs

- EHR transmits orders to and displays results from Laboratory package
- Send-outs to reference labs currently come in on paper
- Bi-directional Reference Lab Interface recently released in Lab Patch 21
  - Results from Quest, LabCorp, other labs populate the Lab package

# Scanning and Imaging

- EHR GUI allows text data entry and retrieval from RPMS packages
- Images, drawings, outside documents are not supported
- Requires separate imaging program
  - Scan in documents and link to TIU notes
- VistA Imaging is IHS solution
- Other commercial options may be suitable for some sites

# Consultative Suggestions

- Install currently available RPMS suite
- Select test / early adoption site(s)
- Begin registering patients
  - Consider adopting VHA MPI
- Begin using RPMS applications
  - Immunization package
  - Lab, reference lab interface
- When contracting issues resolved:
  - Implement EHR GUI
  - Begin work on RPMS Occ Med module
- Consider IAA with VHA for VistA Imaging

# Keys to EHR Success - Operational

- Workstations everywhere
- Accessible training database
- Train, Train, Train – department specific
- Implement gradually by function
- Liberal use of Quick Orders
- Identify who enters data and where
- Regular refreshers & updates

# Keys to EHR Success - Leadership

- Executive Leadership with an understanding of the business process need
- Credible, high profile physician champion  
> IDWUINEM <
- HIM engagement and guidance throughout
- Strong CAC support (national)
- Identify local super-users
- Active QI program
- Project Management



Resources for IHS Management

# IHS · EHR Electronic Health Record



[IHS-EHR Home](#)

[EHR Clinical Overview](#)

[EHR Technical Overview](#)

[EHR Walk Through](#)

[Preparing for EHR](#)

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## Welcome to the IHS Electronic Health Record Website

These pages will introduce you to the Indian Health Service's latest medical software application, the IHS Electronic Health Record (EHR). The site is designed primarily for IHS, Tribal, and Urban (I/T/U) Indian health care facilities that are actively involved in implementation of IHS-EHR, or are contemplating doing so in the near future. It provides a variety of information about the EHR product, as well as links to a number of helpful documents.



The Indian Health Service has long been a pioneer in using computer technology to capture clinical and public health data. The IHS clinical information system is called the Resource and Patient Management System (RPMS). Its development began nearly 30 years ago, and many facilities have access to decades of personal health information and epidemiological data on local populations. The primary clinical component of RPMS, Patient Care Component (PCC), was launched in 1984. IHS-EHR represents the next phase of clinical software development for the IHS.

# www.ehr.ihs.gov

In this site we invite you to explore the following pages:

- » **EHR Clinical Overview** - Learn the key capabilities of EHR as seen by the user in clinical practice.
- » **EHR Technical Overview** - Learn how EHR relates to the rest of RPMS, and the technical and hardware specifications required to operate it.
- » **EHR Walk Through** - View the EHR application either through an animated Flash demonstration (with sound) or still pictures and text.
- » **Preparing for EHR** - Learn what facilities can do to begin the process of preparation for this new clinical technology.
- » **Patient Information Management System (PIMS)** - This page describes the new Scheduling and

THE INDIAN HEALTH SERVICE

# Discussion



Superior Health Information Management  
Now and for the Future