The Intersection of Technology, HAART Adherence, and Drug Abuse Treatment

CFAR Network of Integrated Clinical Systems(CNICS): The Use of Real-Time, Patient-Centered, Clinical Metrics

Stephen L. Boswell, MD
President & CEO, Fenway Health
Assistant Professor of Medicine, Harvard Medical School

CNICS

CFAR Network of Integrated Clinical Systems

CFAR
CENTER FOR AIDS RESEARCH
University of Alabama at Birmingham

CNICS

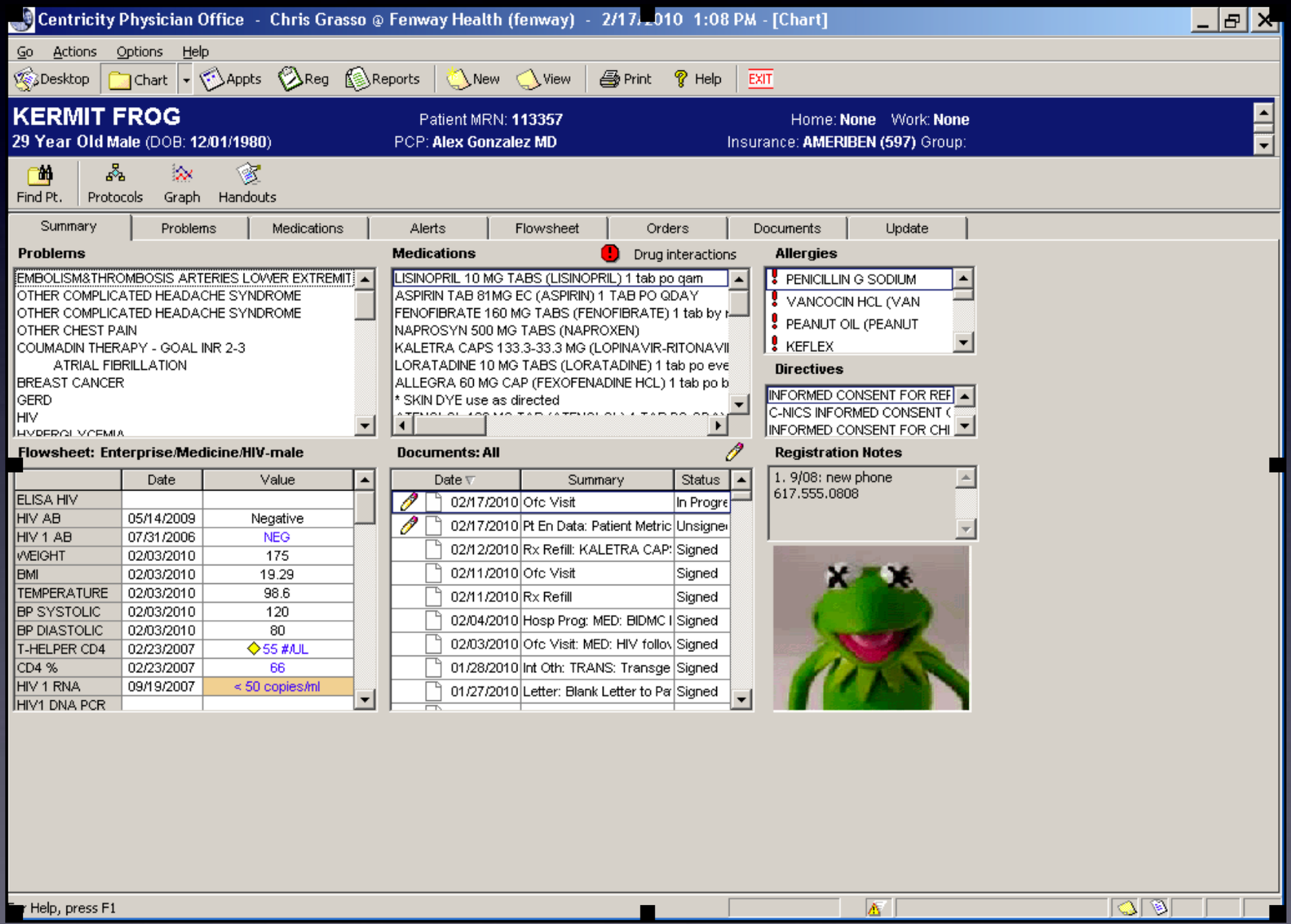
- 9 Sites (UAB, UW, UCSD, UCSF, CWRU, Harvard/Fenway, Johns Hopkins, UNC, Vanderbilt)
- Research elements:
  - Merged data from clinical EMR systems (diagnoses, meds, labs, etc.)
  - Vital statistics (currently active, lost to follow-up, deceased [augmented by US Social Security Death Index])
  - Clinical specimen repository (PBMC’s, cell pellets, plasma)
  - Patient reported outcomes (also called patient-based metrics)

Fenway Health

- Founded 1972
- One of the Largest Providers of Out-Patient HIV services in New England (1500 primary care HIV patients)
- Primary care, HIV care, OB/GYN , mental health (psychiatry, individual and group therapy), substance abuse, dental, optometry, pharmacy
- The Fenway Institute (HIV Prevention Research, Data Center (CNICS, LGBT Population Research Center), LGBT Health Policy, Training (medical students, residents and fellows, mental health professionals, dental, optometry)
- First installed an EMR in July 1997 – Logician/Centricity

Fenway's EMR

GE/Centricity



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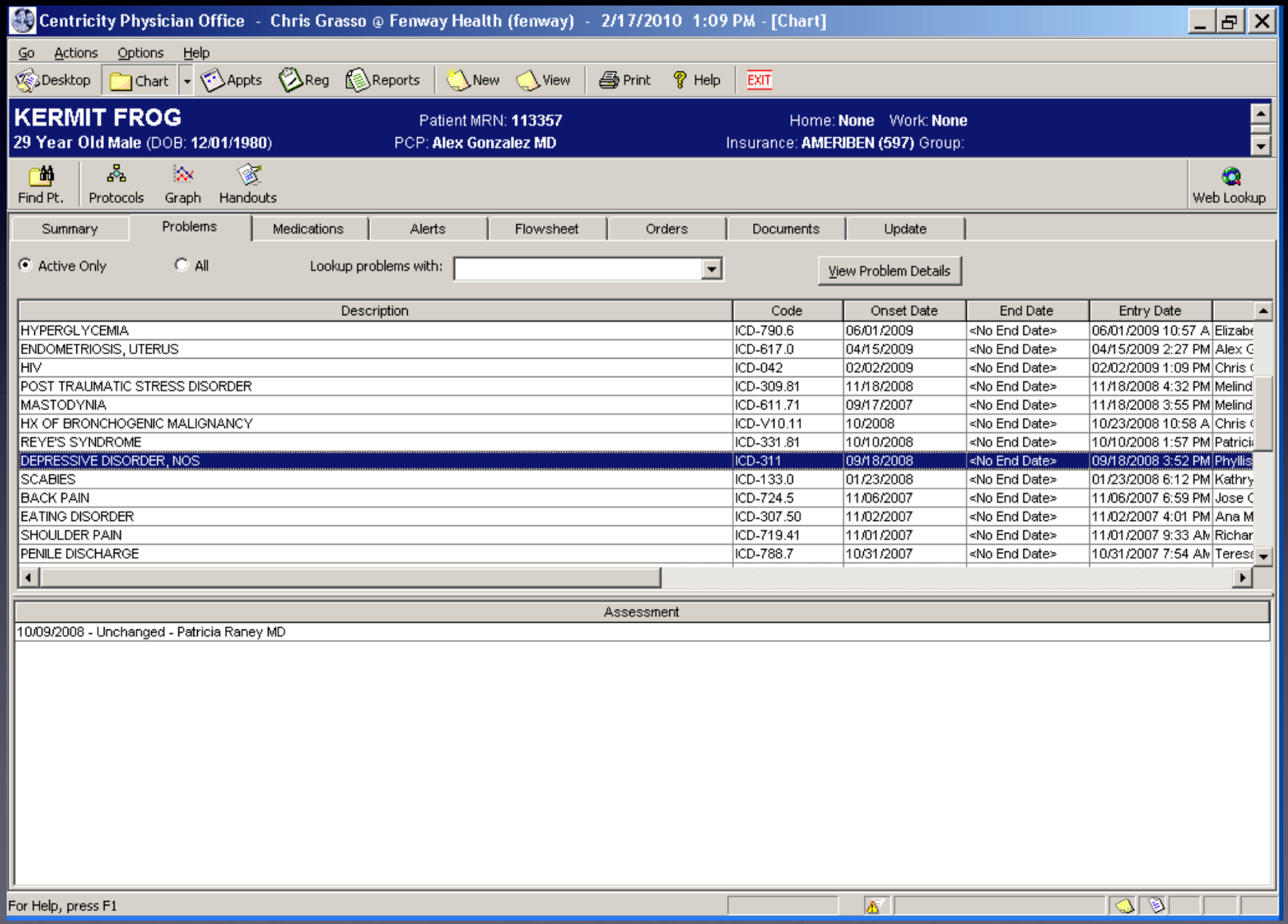

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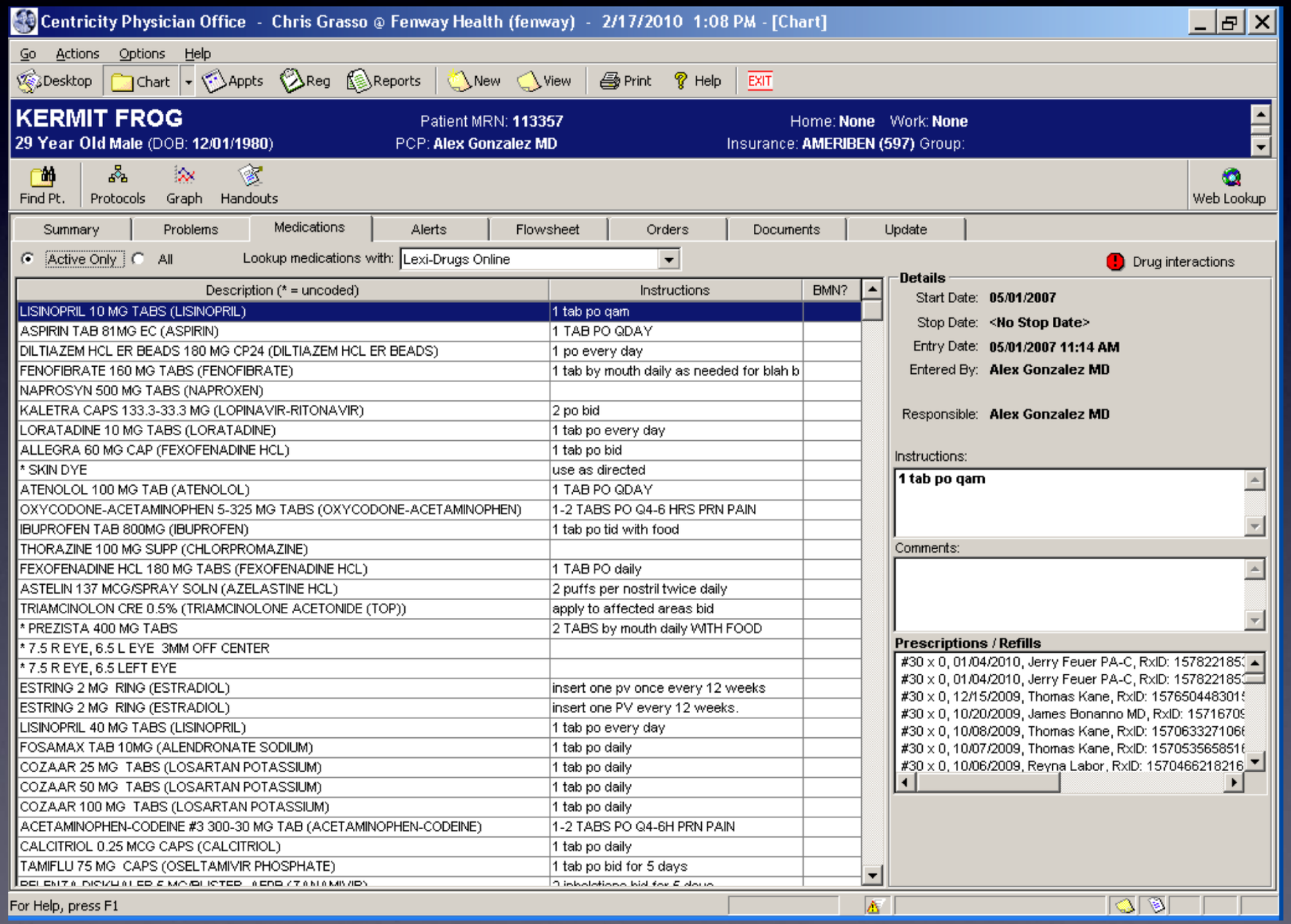

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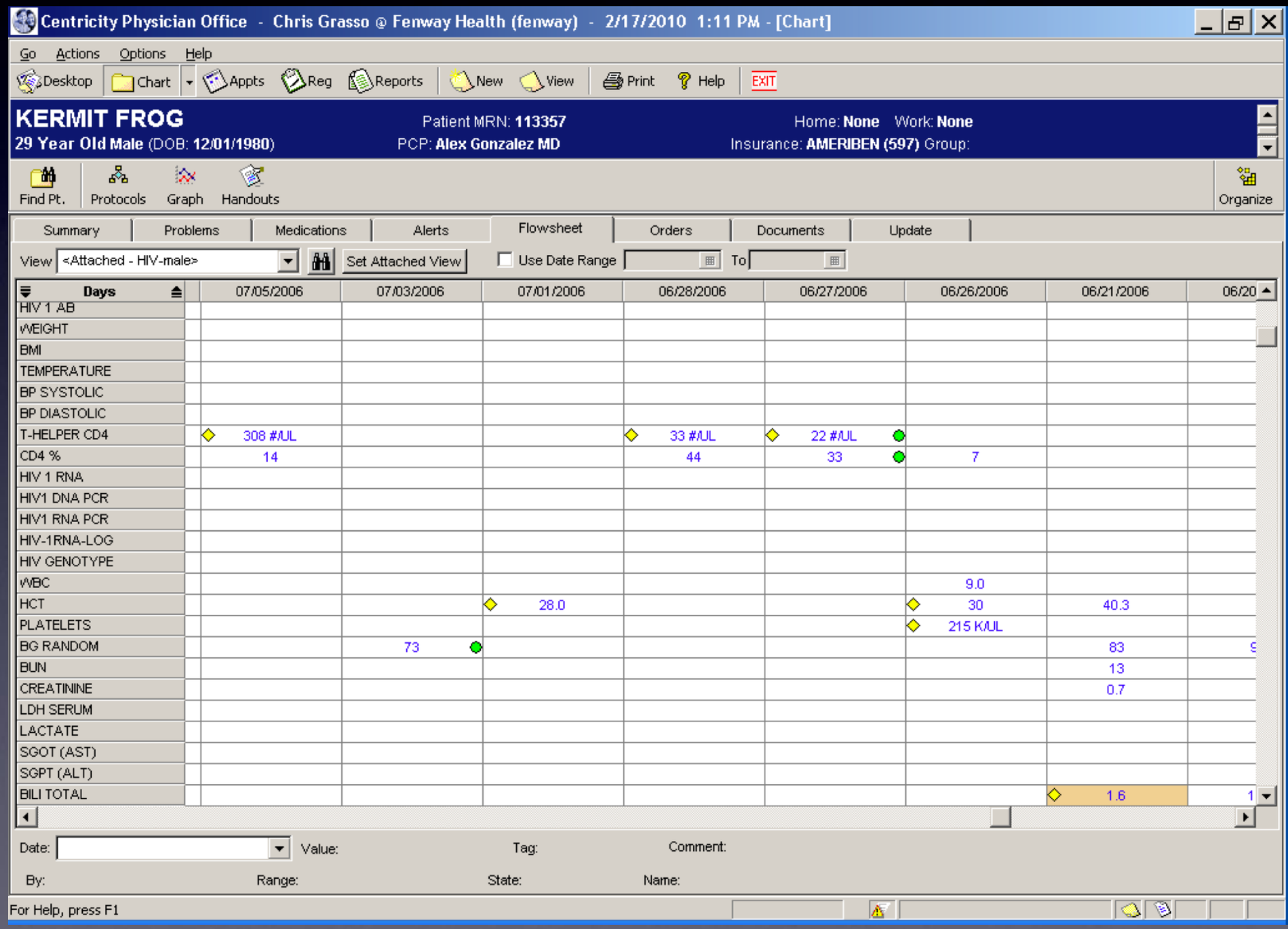
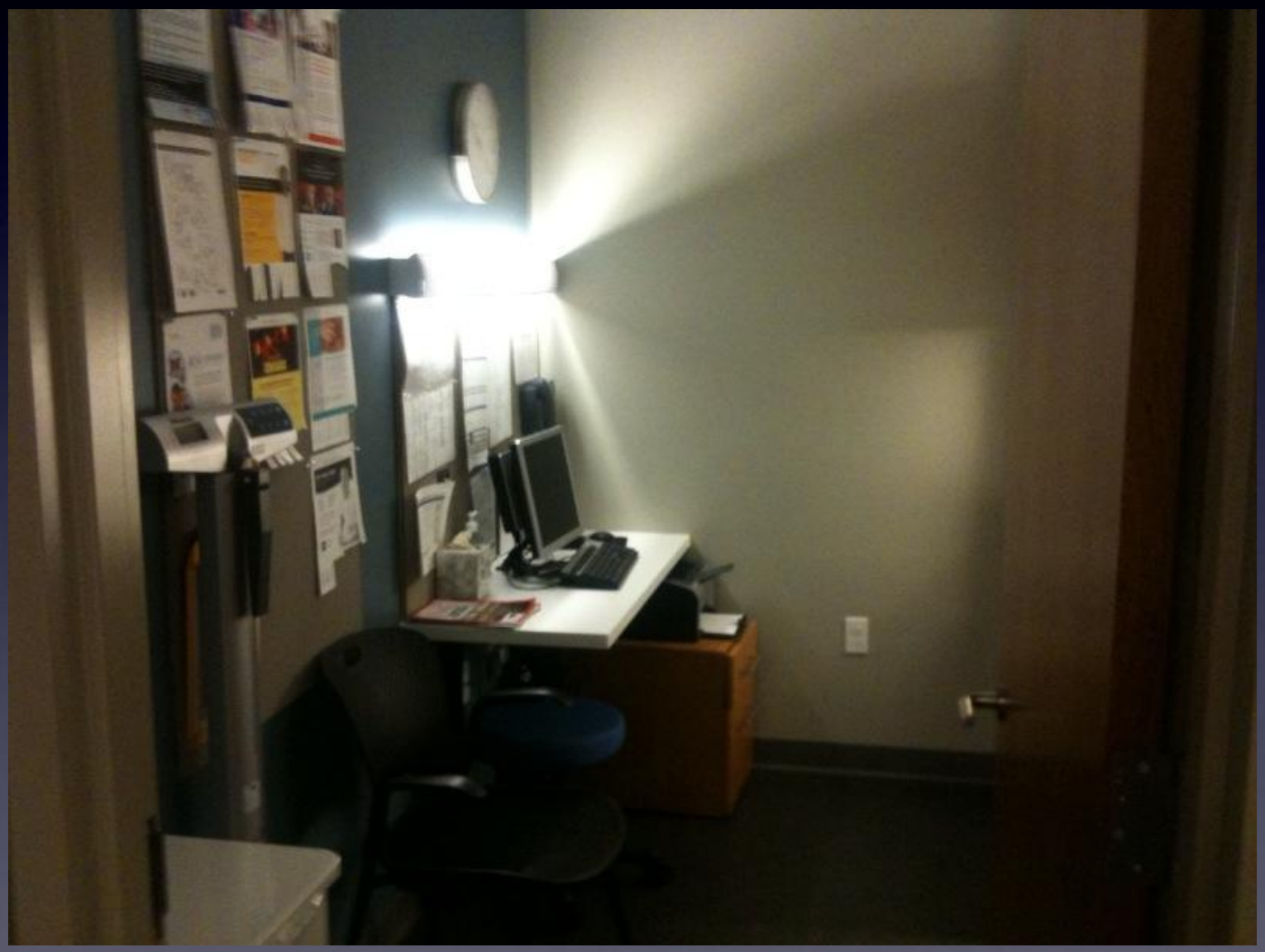


Patient Reported Outcomes Collection

- Tablet PC with touch screen or in-room wired PC
  - Web-based, survey software application over wireless network
  - SSL/TLS encryption
- Interface with one item presented at a time
  - Large, easy to read type and navigation buttons
  - Program prevents duplicate/ambiguous answers, permits mistakes to be easily corrected
  - Automated skip patterns incorporated into questionnaire to omit a sections that are not applicable
  - Spanish version now functioning

Patient Reported Outcomes Collection



Patient Reported Outcomes Collection

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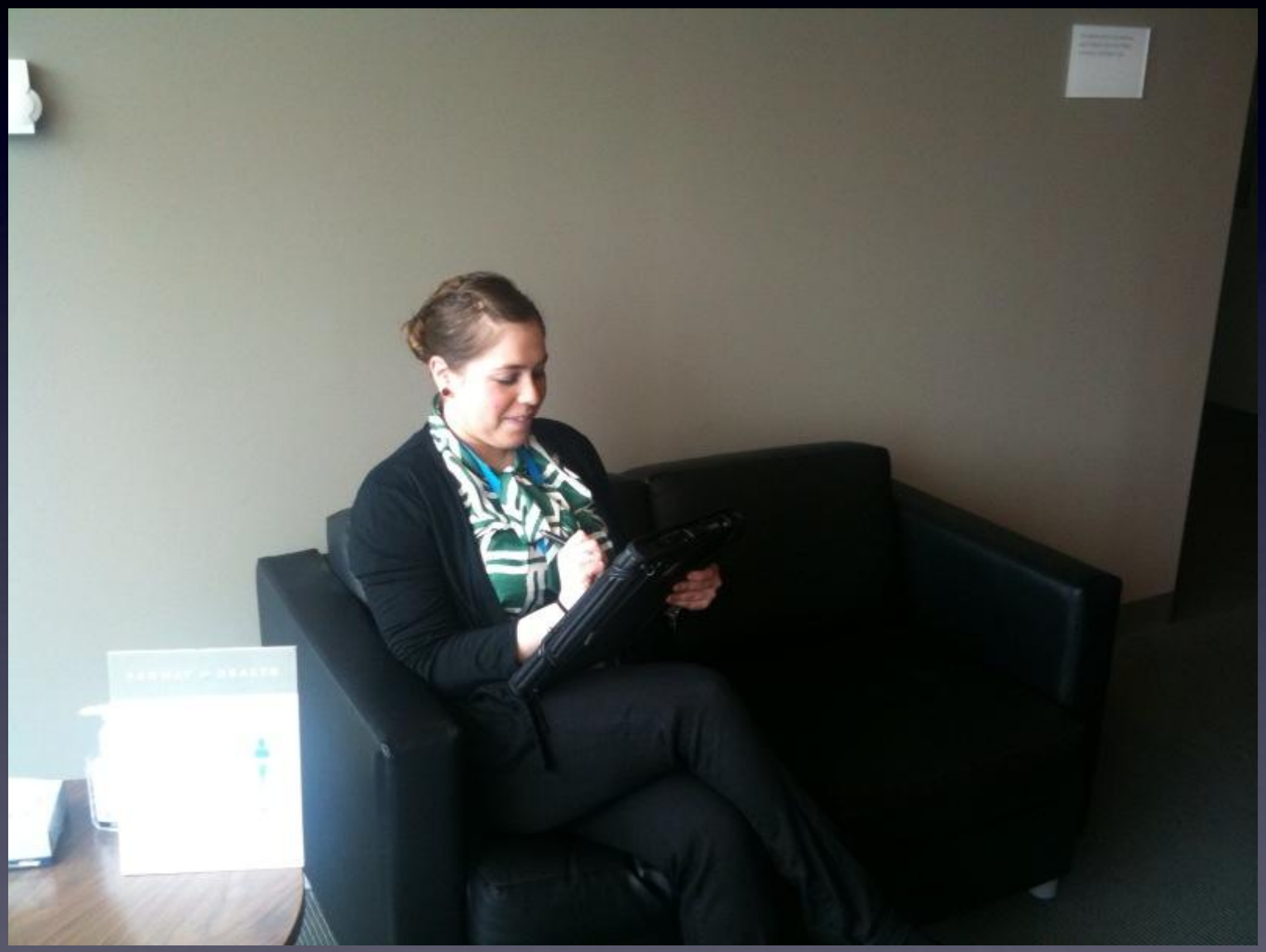


Key Domains

- Body Morphology (FRAM)
- Depression (PHQ-9)
- Anxiety (PHQ)
- Medication adherence
- Drug and alcohol use (AUDIT-C, ASSIST)
- Quality of life (EUROQOL)
- Symptoms
- Risk Behavior

Patient Based Measures Feedback to Providers

Patient-Based Measures Provider Feedback

Name:
Date Completed: 2010-01-13 08:54

Instrument	Interpretation
PHQ-9 Overall depression score last 2 weeks	
6	Mild depression (5-9)
PHQ-9 Suicidal ideation score last 2 weeks	
1	Not at all
Substance use within last 3 months	
Marijuana	
Tobacco use: No	
Alcohol Score (AUDIT-C)	
1	Not at-risk alcohol consumption (<5)
Antiretroviral adherence	
Adherence in the past 4 weeks	Good
Last missed	I never skip medications
High risk behavior-last 6 months	
Anal sex condom use: All the time	
Vaginal sex condom use: never had vaginal sex	
Sharing needles or injection equipment: never used non-medical drugs by injection	

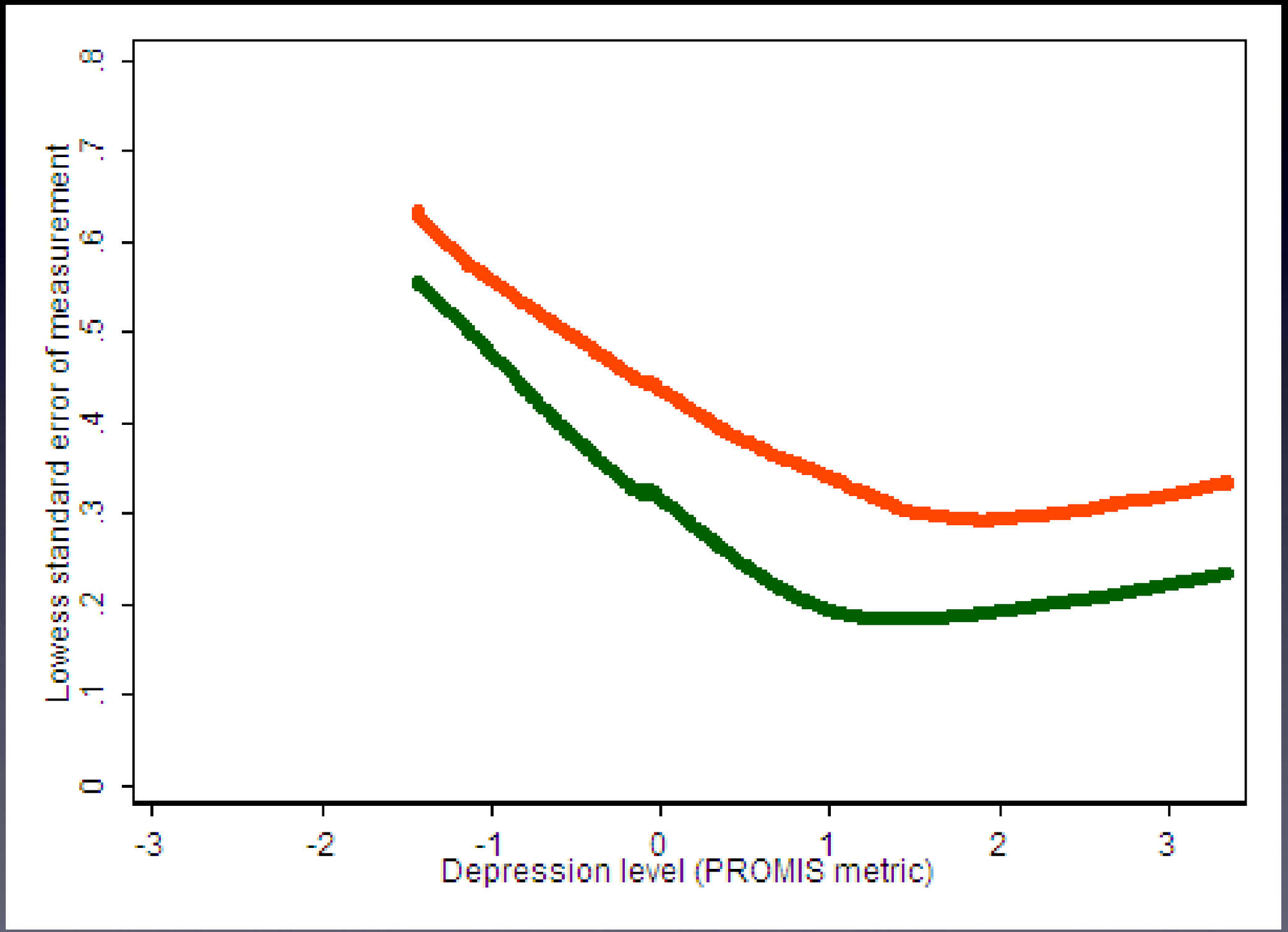
Upcoming Changes

- Computer adaptive testing (CAT)
  - Selects questions based on patient's response to prior items
  - Iteratively estimates a patient's standing on a domain
  - Administers the most informative items
  - Desired level of precision can be obtained using the minimal number of questions
  - Decreased response burden with greater precision

Why do we care about CAT?

- Selects questions based on patient's response to prior items
- Iteratively estimates a patient's score
- Administers the most informative items
- Desired level of precision can be obtained using the minimal number of questions
- Decreased response burden with greater precision!

Precision of PHQ-9 versus PROMIS CAT



Data Quality Assurance

Individual Site Responsibilities

- Each site conducts a detailed audit of data types collected
- Inter-site comparison of data to look for inconsistencies
- Random chart audits
- On-going training of clinicians with EMR access informed by chart audits

Data Quality Assurance

Central Site Responsibilities

- Centralized data mapping specifies how data are being integrated into CNICS standard codes with known and comparable meanings
    - This enables us to integrate comparable data across cohorts with known meaning and content
        - Creates the bridge between CNICS and cohorts in NA- ACCORD and other IeDEA regions•
- Collect measures of certainty for diagnoses and treatment that includes data source and reliability defined hierarchically
- Conduct centralized audits to identify data quality issues
- Feedback loop with cohorts to reconcile data exceptions
- Creation and maintenance of cohort data dictionaries to track meaning of cohort codes and to document their data quality issues

CNICS Data Submission Activity (2009)

- Medications – Diabetes, Hypertension, Hepatotoxic, Lipid lowering
- Diagnoses
  - Substance Use (alcohol, tobacco, etc.)
  - Anxiety, mood disorders
  - Liver and Kidney disease
- Malignancy – comprehensive data collection
- Insurance

Study Aim 2

- To determine the effect on care processes and patient outcomes of integrating PROMIS II CAT PROs into routine clinical care
- Data provided with individually tailored treatment recommendations using a comprehensive health improvement (chronic care) model
- Quality improvement initiatives to involve stakeholders and overcome barriers to routine PRO collection and feedback
- Randomized controlled trial to determine the intervention's impact on process outcomes and clinical outcomes

CNICS Patients by Site (Nov 2009)

CNICS Sites	Patients
CWRU	1,627
Fenway	1,544
Johns Hopkins	4,539
UAB	2,624
UCSD	3,604
UCSF	2,860
UNC	1,278
UW	2,903
Vanderbilt	-
Total	20,979

Questions

- How feasible is it to use such a system among drug-abusing populations with HIV in various settings, e.g. outpatient, FQHC's, NGOs, etc.)
- What principles should guide research priorities on technology in order to achieve a balance between the costs o fresearch and the need to mount interventions
- Do we have a "gold standard" for measuring ART adherence?
- Which groups and approaches are the best candidates for the efficacious use of these technologies?
- What secondary benefits and innovative applications may be developed as a result of adherence-related technologies?

Questions

- What incentives (social/moral, economic) exist for developers/distributors of this technology for use with marginalized populations or in resource-limited settings?
- How do we handle the fact that effective programs and applications which target behavior change often are not operable across other platforms?
- How do we begin to tackle some of the ethical issues inherent in using technologies to affect health behaviors (e.g. HIPAA, surveillance data, and reporting of illegal behavior)