

TESTIMONY
for
**National Committee on Vital and
Health Statistics**

**Subcommittee on Standards
and Security**

May 21, 2003

**Verlyn M. “Pete” Peterson, M.D.
Medical Director, Health Center at Auraria
Associate Professor of Medicine and Surgery
University of Colorado Health Sciences Center
Denver, Colorado**

Health Center at Auraria

- **Metropolitan State College of Denver**
- **Provides healthcare for approximately 30,000 college students from three academic institutions.**
- **Average age = 27**
- **Female to Male ratio = 3:2**
- **Thirteen Clinicians (9.3 FTE) covering 6 specialties.**
 - **Includes 6 mid-level clinicians in primary care**
 - **Approximately 100 patients per day (25,000 visits/year)**

QUESTIONS FOR TERMINOLOGY USERS

1. Terminology Used: Medcin

2. Uses of Medcin in our Clinic

- a. Lab orders and reports (internal and external, e.g., Quest Labs)**
- b. All care provider notes**
- c. Prescriptions**
- d. Patient billing and insurance claims**
- e. Quality Improvement Activities**
- f. Passive Surveillance Studies**

Strengths and Weaknesses of Medcin

- **STRENGTHS**

- **Easily used at point of care** by clinicians as a PMRI terminology capable of documenting the ENTIRE clinical encounter from the patient's arrival at the front desk to checkout with the cashier
- **Robust structured database**
- Is used by clinicians because **the system thinks like the clinician thinks**: Congruent history, physical and laboratory data in clinical note are bundled and linked to diagnosis and treatment plans
- **Semantic hierarchy and terminology** are organized logically and clearly and can be used by entire medical support staff, as well as clinicians

Strengths and Weaknesses of Medcin

- **WEAKNESSES**

- **Biannual updates** by Medcin not always acted upon by the vendors
- **Direct training** by Medcin spotty and clinicians must rely individual vendor's training program.
- **Slow to respond** to changing terminology needs and needs of the clinician, e.g., need an encyclopedic ICD-9-like diagnostic and procedural terminology integrated into the database

Data Analysis Features of Medcin

- **ADVANTAGES**

- Allows clinicians to **effortlessly gather clinically relevant, structured data without additional time or effort** while in the process of documenting a routine clinic note. Such data are useful for:

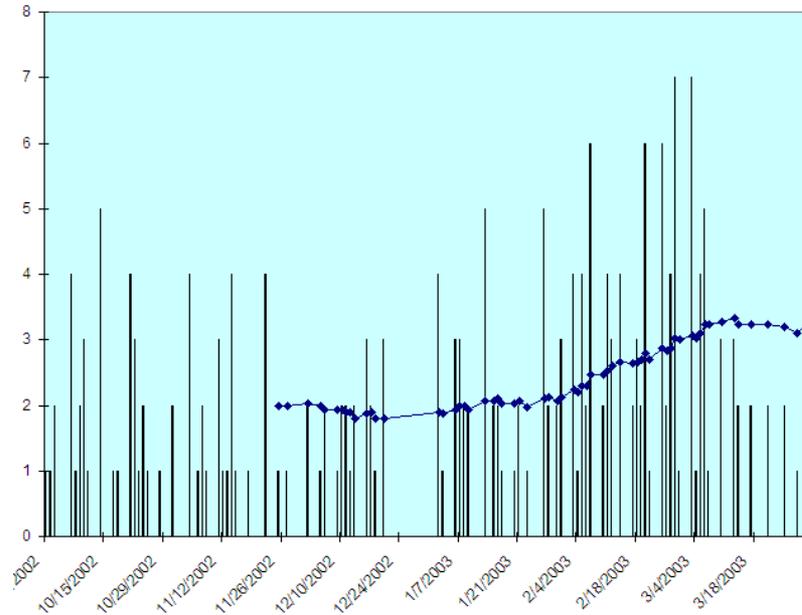
- Characterize patient population to better allocate resources
- Embed activating triggers/reminders/best evidence data
- Conduct clinical Outcomes Studies
- Launch quality improvement projects
 - Monitoring standards of care across clinicians.
 - e.g. Asthmatics on Inhaled Steroids
- Perform passive electronic surveillance of signs and symptoms in order to detect harbingers of new diseases in the clinic.

Data Analysis Features of Medicin

- **DISADVANTAGES**

- Currently **unable to separately bundle data by problem in a patient who presents with multiple problems**, e.g., unable to segregate history, physical, laboratory orders/results, diagnosis and treatment for each problem in a patient with hypertension, diabetes, hypercholesterolemia and hypothyroidism.
- The resulting **note is unnecessarily complex**
- When analyzing data, **it is difficult to link a specific diagnosis with a unique structured finding.**

Disease Surveillance via Electronic Health Records



James O'Connor, M.D.

Verlyn Peterson, M.D.

Terry E. Douglas, BA

TEPR 2003, San Antonio, TX

Strategy for Structured Clinical Documentation

Documentation Paradigm

- Provider-engineered, disease-specific, clinical documentation forms**
 - Universally employed**
 - » On each patient**
 - » By every provider**
- Advantages**
 - Uniform documentation and care**
 - Guarantees a richly documented data base**
 - Forms become familiar and are completed quickly**
 - Provider buy-in occurs up front, because they designed the forms**

SCD Module ("OmniDoc")

The screenshot displays the SCD Module ("OmniDoc") interface. At the top, there is a toolbar with various icons for file operations and editing. Below the toolbar, the interface is divided into several sections:

- HPI | HIS | PE | TESTS | DX | THERAPY**: A navigation bar with tabs for different clinical sections.
- Free Text: HPI**: A section with two radio button options: Yes Reason for Visit: URISX and Yes Other HPI Free Text.
- URI Symptoms**: A section with several radio button options for symptoms: Yes No fever, Yes No earache, Yes No nasal dc, Yes No sore throat, Yes No dyspnea, Yes No cough, and Yes No wheezing.
- MASTER**: A button located to the right of the Free Text section.
- nasal dc**: A list of symptoms with checkboxes: watery, mucinous, yellow, containing pus (purulent), blood-tinged, drip or drainage down throat from above, recurs frequently, lasting more than 3 weeks, from the right nostril, from the left nostril, and from both nostrils.

- **Medicin-based Clinical Notewriter**
- **Produces text note from entries into electronic forms.**
- **System's forms consist of fields tied to vocabulary of 200,000 concepts.**

Study Design

- **Study Period: October 1, 2002 through December 31, 2002**
- **De-identified extraction into separate analysis repository.**
- **Standard Query Language Queries used to evaluate various clinical factors across the population represented in the sample.**

Results: Summary

- **4,923 patient visits**
- **150,349 structured clinical observations (approximately 30 findings per visit)**
- **Structured findings consisted of Symptoms, Physical Findings, Diagnoses, and Therapy terms.**

Results: Most Common Diagnoses for Males

Most Frequent Male Diagnoses (table 1)

10/01/2003 thru 12/31/2003

Description	ICD-9 CM Code	# of Cases
Upper Respiratory Infection	465.9	45
Allergic Rhinitis	477.9	37
Routine Physical	70.0	37
Anxiety Disorder - NOS	300.00	33
Common Warts	78.1	32
Acne	706.1	32
Nevus - Uncertain Behavior	238.2	31
Pharyngitis	462	27
Acute Sinusitis	461.9	24
Esophageal Reflux	530.81	20
Asthma		
Common Cold		
Depression		
Bipolar Affective Disorder		
Depression - Full Remission		
Depression - Moderate		
Genital Warts		
Muscle Spasm		
Sebaceous Cyst		
Lumbago		
Depression - NOS		
Hypertension		
ADHD	314.01	11
Depression - Mild	296.31	10
Gastritis	535.5	9

What common symptoms and physical findings?

Results: Symptom Complex Frequencies

Passive Surveillance of Symptom Complexes (table 6)

10/01/2003 thru 12/31/2003

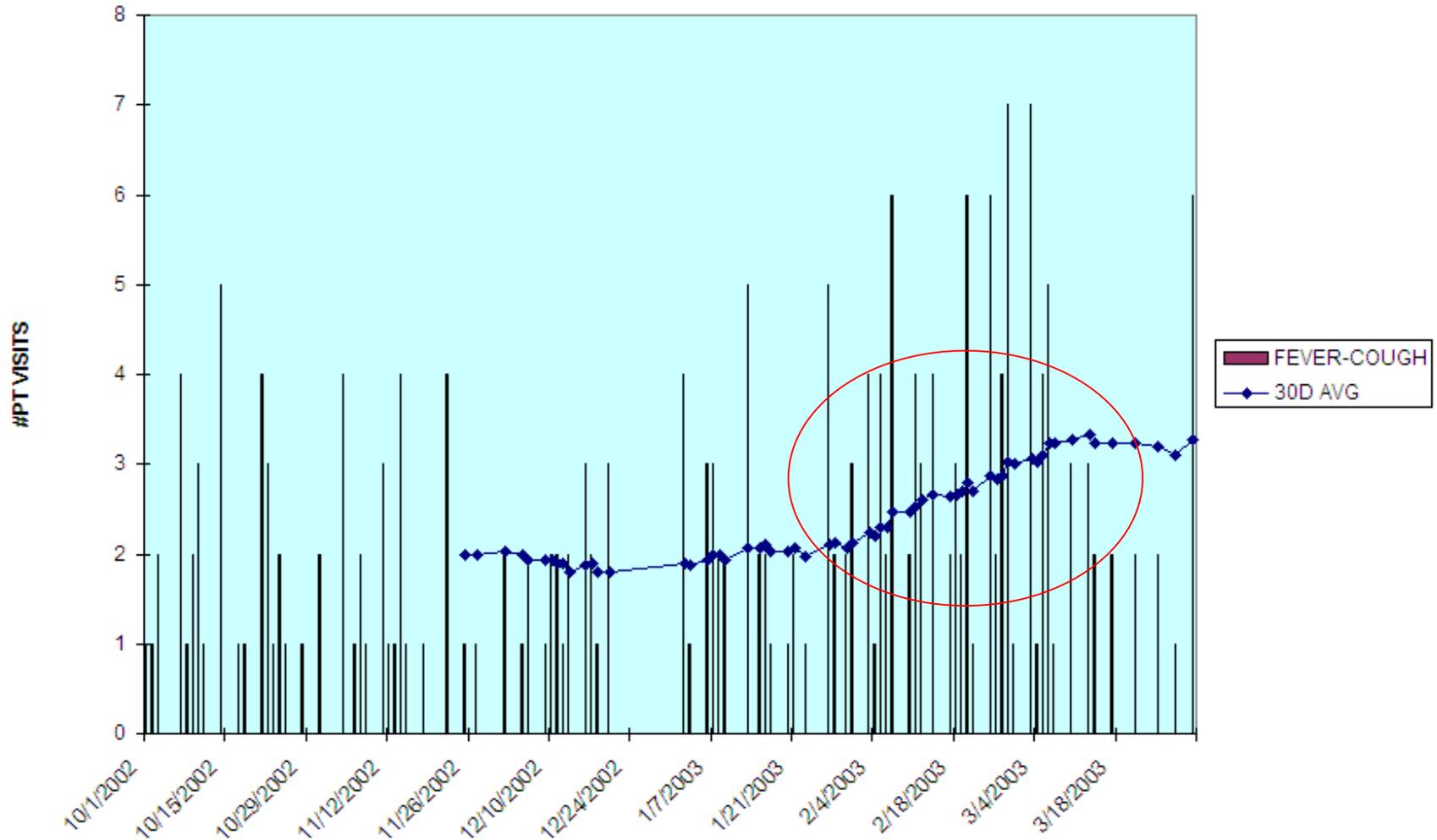
Symptom Complex	# of Patients	Freq./1000 patients	Target Diseases
Fever & Headache	122	58.9	Various infectious diseases
Headache & Neck Stiffness	52	25.1	Various conditions
Fever & Headache & Neck Stiffness	12	5.8	Meningitis
Fever & Rash	1	0.5	Various infectious diseases
Fever & Rash & Headache	0	0.0	N. meningitidis Meningitis
Fever & Cough	82	39.6	Upper Respiratory Infection, Influenza
Fever & Cough & Dyspnea	7	3.4	Influenza, Inhalational Anthrax*
Vision Problems & Difficulty Swallowing	0	0.0	Botulism

*MMWR, 2001; 50 (44):984-6)

Individual Charts can be reviewed electronically by the medical director

Next Step: Time-based Monitoring

FEVER-COUGH



Conclusions Regarding Medcin

- **Medcin vocabulary is a valuable asset for Structured Clinical Documentation.**
- **Reporting possibilities for the clinician are virtually limitless and should facilitate data acquisition in activities ranging from clinical trials to outcome analysis of routine patient care.**
- **The key to successful acquisition of structured data at the bedside will be the creation of documentation tools that are flexible, multipurpose, and adaptable to use by the entire health care team, of physicians, mid-level providers, support staff, and administrators.**

Recommendations: A Clinician's Perspective

- **NO SINGLE STRUCTURED NOMENCLATURE APPEARS TO FULFILL THE NEEDS OF THOSE WHO WISH TO CREATE A STANDARDIZED NATIONAL DATA BASE AND THE CLINICIANS ON THE FRONT LINES WHO WILL GENERATE THIS DATA. THEREFORE, ONE MAY WISH TO:**
 - **Identify strengths of current terminologies**
 - **Identify and correct existing gaps**
 - **Create a hybrid system that will best serve the needs of all parties.**

Original Hypothesis

- Adoption of an **Electronic Health Records System (EHRS)** with **Structured Clinical Documentation (SCD)** in a University Health Clinic will result in data that supports **symptom surveillance** and quality care reporting.