



The Knowledge Inside

Testimony for the Workgroup on Computer-based Patient Records

National Committee on Vital and Health Statistics

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Introduction

- ⇒ **Joan Kapusnik-Uner, Pharm.D.**
 - ▶ Senior Knowledge Engineer- “Vocabulary Projects”
- ⇒ **Current Affiliations**
 - ▶ Associate Clinical Professor, University of California San Francisco
 - ▶ Member of several professional clinical associations, as well as AMIA and HL7
- ⇒ I am pleased and honored to be here to testify



The Hearst Corporation

First DataBank

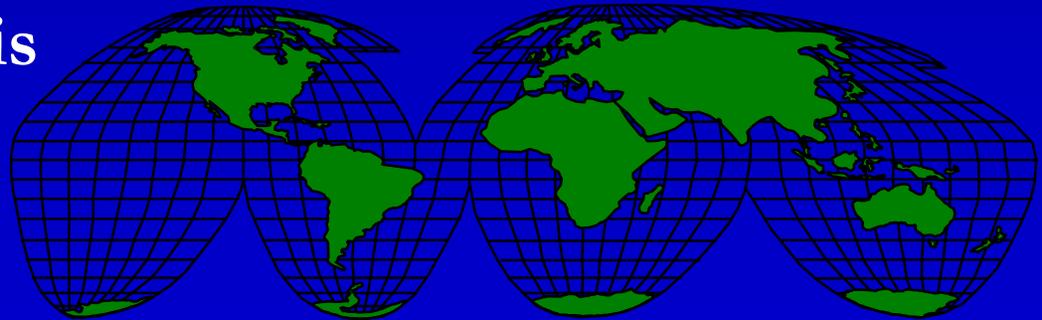
**Drug
Information**

**Medical
Information
QMR**

**Nutritional
Information
Nut5**

First DataBank Overview

- ⌘ Founded 1977
- ⌘ 1980 Division of the Hearst Corporation
- ⌘ 22+ Years of Growth- currently more than 350 employees
 - ▶ Corporate HQs - San Bruno, CA
 - ▶ Indianapolis
 - ▶ St. Louis
 - ▶ Exeter, UK





First DataBank

- **Trusted Source**
- **Proven Source**
- **Immediate feedback loop from a huge international installed base**
- **Long experience and expertise in integrated electronic information**
- **Scope is mostly limited to “drug-related information”**



Our Professional Staff

- ≈ 36 pharmacists, most with advanced degrees (Pharm. D.)
- ≈ Extensive staff of other healthcare professionals including MDs, pharmacy technicians and dietitians





Our Customers



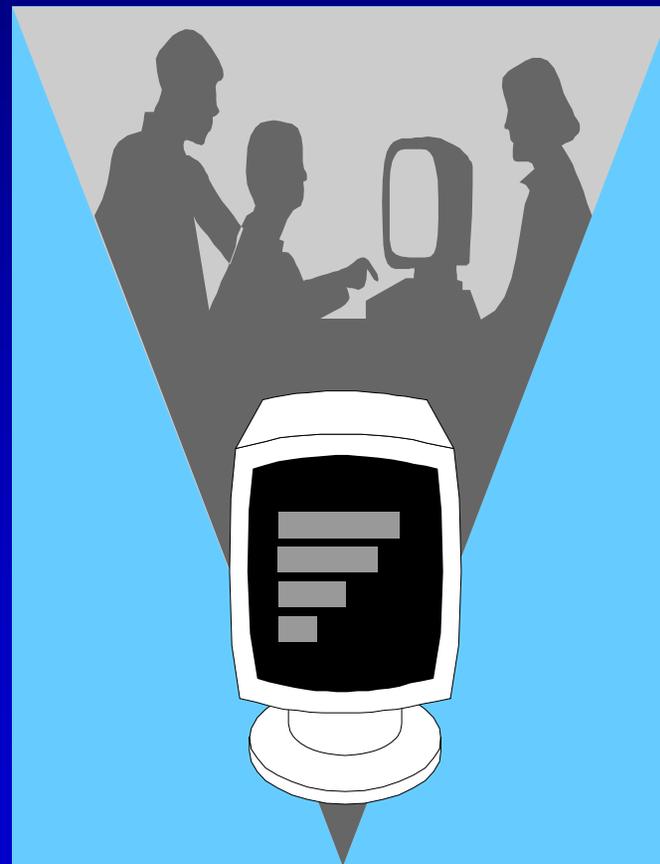
- Major HIS vendors
- Over 4,000 hospitals & HMOs
- Major - Pharmacy Benefit Managers (PBMs)
- Major drug mfgs. and wholesalers
- All 50 State Medicaid Programs
- Major retail system vendors in over 40,000 pharmacies
- Internet Health- we are developing in “WEB TIME” to meet our customer needs

FDB Organization

“Don’t try this at home”

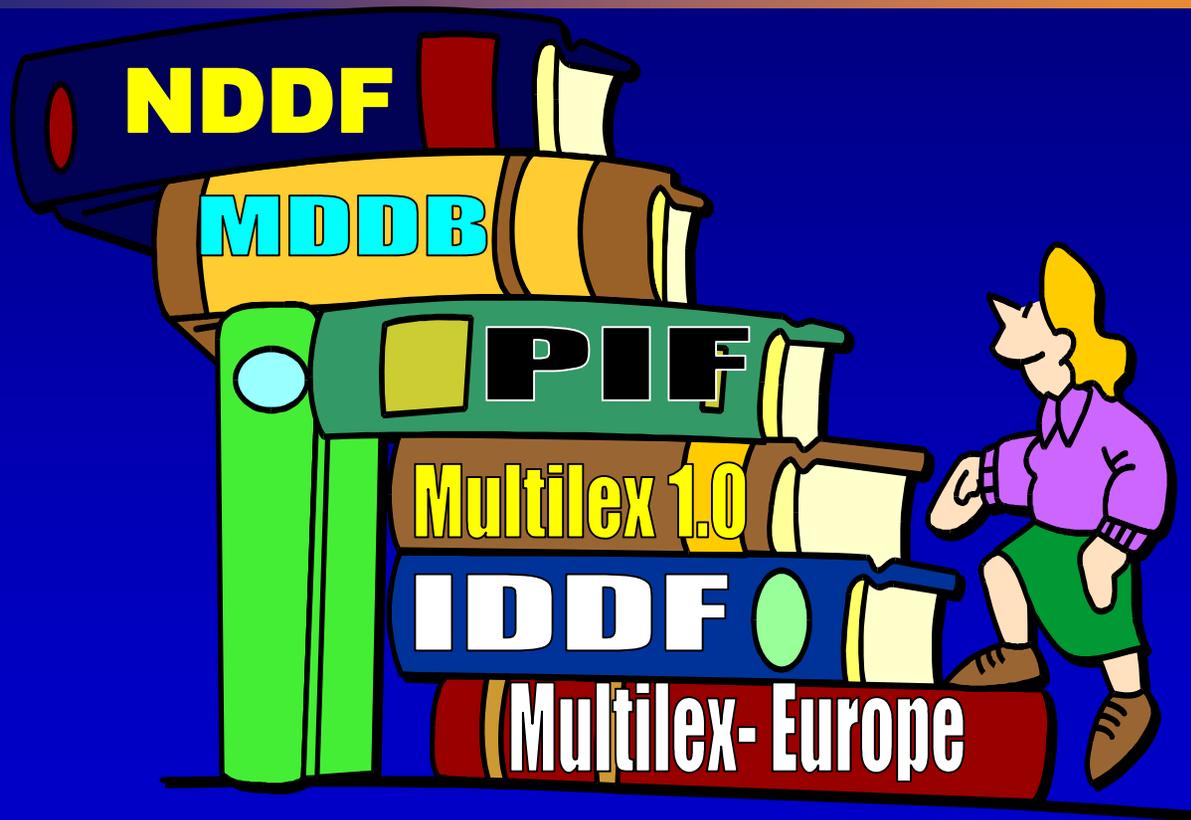


- ◆ More than 350 Employees
 - ◆ Editorial Services
 - ◆ Clinical Services
 - ◆ Customer Service
 - ◆ Account Management
 - ◆ Information Systems
 - ◆ Development Group
 - ◆ Government Services
 - ◆ International Services
- ◆ Continuous Internal Maintenance
- ◆ Customization
- ◆ Update Frequency...Daily
- ◆ Incremental Updates
- ◆ Sustainable Business Model for Future





First DataBank Databases



Internationalization



- ⇒ Native language speakers understand cultural differences in how drugs are used in a specific country... “alternative medicines”
- ⇒ Professionals with first-hand knowledge of national drug compendia or other information resources
- ⇒ Knowledge of Province/Govt. regulatory requirements
- ⇒ Country-specific drug identification elements (DIN, Troquel)
- ⇒ Globally accepted coding schemes (ATC European Article Number, READ, ICD.10) provides consistency in database management across countries for vendors

⇒ **Argentina**

⇒ **Belgium**

⇒ **Australia**

⇒ **New Zealand**

⇒ **South Africa**

⇒ **Japan**

⇒ **China**

⇒ **Canada (3)**

⇒ **United Kingdom (3)**

⇒ **Ireland (2)**

⇒ **Mexico**

⇒ **Germany**

⇒ **France**



Global Government Department

Our Customers Need Medicaid/Medicare Information



- ✧ Maintain electronic version of Medicaid Program formularies including restriction codes
 - ▶ prior authorization
 - ▶ max./min. quantities
 - ▶ refills
- ✧ Historian for drug-related HCPCs (non-oral drugs administered incident to outpatient/non-acute visit) utilized for Medicaid/Medicare billing
 - ▶ effective dates
 - ▶ change information
 - ▶ Create HCPC - NDC mappings
 - ▶ Coverage restrictions codes



Knowledge Bases- MANY Levels of Drug Descriptions (granularity and abstractions)

- Need to address granularity/specificity to support multiple views- changes occur with each new user's requirement

- 
- Manufactured drug- same prescription drug with different administration, formulation, or functionality
 - New drug- examples to include:
 - Patent drug- generic NDC codes
 - Manufactured drug- (“inactives”)
 - Clinical Drug (route and/or dose form)
 - Generic ingredients (active)
 - Multiple drug classification schemes- pharmacological and therapeutic
 - “Order-friendly” Names (DDID)



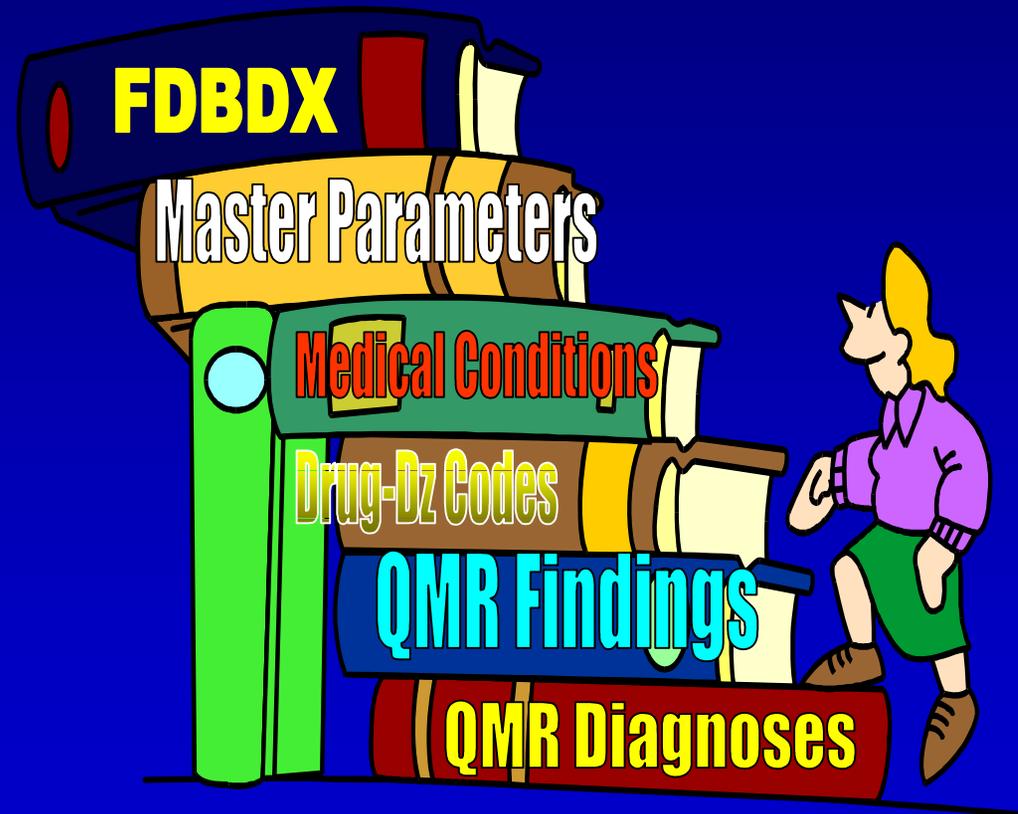
Image/Imprints



- **New Dispenser/Patient Needs**
- **Images**
 - **Front and Back Sides of Product**
 - **JPEG or GIF**
- **Imprint database**

First DataBank's

Internal Diagnoses/Disease Databases



Need to Describe “Disease” Information Relevant to Drugs

Current Clinical Decision Support (CDS) and Future EMR CDS

Indications- Labeled and Unlabeled

- ▶ Assess Appropriateness and Dosing
 - Dose Range Checking
 - Physician Order Entry “SIGS”

Drug Disease Contraindications

- ▶ Lactation
- ▶ Pregnancy
- ▶ Concurrent Medical Conditions

Side Effects

- ▶ ADR monitoring
- ▶ Detection of Iatrogenic Disease



Interoperability

Mapping, Mapping, Mapping...



- Internal...Maintain mappings between local FDB models/terms (i.e. FDBDXs to MC) and adopted interlingua (e.g. ICD9-CM ICD10-CM, LOINC)
- Beta Test with SNOMED-RT

Other Interoperability Solutions Mapping, Mapping, Mapping...



- ⚡ **Drug identifiers “get CUIed” in UMLS 2000**
- ⚡ **Part of Metaphrase™ thesaurus by Apelon (LTI/Ontyx)**
- ⚡ **Partnering with Kaiser to help in SNOMED-RT’s development with the goal of creating new & enhanced drug decision support**
- ⚡ **HL7 RIM drug model enhancements for future mappings**
- ⚡ **Continued participation in NCPDP activities**

FDB Testimony for NCVHS



- ⇒ Congress has charged NCVHS to study the issues related to the adoption of uniform data standards for patient medical record information and the electronic exchange of such information, then report to the Secretary not later than four years after the date of enactment of HIPPA -- that would be August of the year 2000 -- recommendations and legislative proposals for such standards and electronic exchange. (HIPPA, Section 263)
- ⇒ **1. Definitions and requirements for Patient Medical Record Information (PMRI): Define or describe PMRI?**
 - ▶ **A. Why is comparable PMRI required, what functions does it serve?** To allow unambiguous documentation & interpretation of patient data, as well as decision support across systems; allow flexible data aggregation (now and in future ?...) relevant to the clinical & administrative questions to be answered in “Outcomes Studies”

FDB Testimony for NCVHS



- 1B. How comparable does the PMRI need to be for these purposes, i.e., how precise, how accurate? What are the consequences if the PMRI is not accurate? Million Dollar Question...What is “good enough” depends on task at hand and its criticality. Need to interoperate at some level, but not at every level!
- Requirements Phase: Obtain “official use cases”. Perhaps the enumerated “use cases” of the HIPPA-mandated CPR would help to “scope” interoperability issues. Different parties do need different abilities to “lump & split” data (i.e. do queries/data aggregation and decision support at “various” levels of granularity) and at differing times during a patient encounter...

FDB Testimony for NCVHS



- 2. **What medical terminologies for PMRI do you use or include within your systems?**
- We are a vocabulary developer and vendor, but we also develop software and cross references tables utilizing external vocabularies.
- Internal FDB “disease vocabularies” including Drug-Disease Codes; Medical Conditions; Master Parameters; & FDBDXs are mapped to ICD9cm, ICD10cm; & LOINC; and future SNOMED-RT.
- FDB Drug Vocabularies developed include NDDF, MDDDB, PIF and Multilex; and a new Multilex drug model in 2000. Also, we have all of our international databases

FDB Testimony for NCVHS



3. What problems do you have using existing medical terminologies standards for PMRI?

Content: SNOMED-RT is superior to ICD in structure and content; it is hierarchical, has definitions and synonyms. FDB has the need to describe complex concepts, for example a drug's indication... "CMV retinitis in an AIDS patient with a CD4 count $<50/\text{mm}^3$ ". SNOMED-RT terms allow multiple parent concepts and explicit relationships. SNOMED-RT maps very well to the preferred FDB Medical Conditions Database, which is used to do decision support assessments like Pregnancy and Lactation precaution checking or assessments of "drugs to avoid" in a patient with co-occurring illnesses.

FDB Testimony for NCVHS



4. Suggestions?

- *On a philosophical note- Joan thinks that the success of a CPR requires that healthcare providers spend more TIME...at the point-of-care utilizing these new tools and technology. Time is the key element for success that no one seems willing to give? The model of how we take care of patients perhaps needs to change with the new tool set.*
- **With reference to medical terminologies- the government can help to define the CPR' Use cases" or "to set the bar" as it has been described before. Incentives for early adopters is also important.**
- **Support terminology related Outcomes Research in systems that are "interoperating" (i.e. using UMLS CUIs or mappings to SNOMED-RT reference terminology)**
- **Support unique vocabulary initiatives like the Enterprise Vocabulary Server by Apelon (previous known as Lexical Technology)**

FDB Testimony for NCVHS



5. What coordination among medical terminologies and/or message format standards is of value?

- ▶ **A. Crosswalks and mappings?** Internally, FDB has coordinated this for our many customers that need “the generic equivalent” drug level codes that are used for drug utilization review (i.e. drug interaction checking)
 - NDDF GCNSQNs to MDDDB GPIs
- ▶ Mappings to NDC’s for accurate documentation of “what the patient got” ...and billing & outcomes studies
- ▶ Mappings to DDIDs, drug name descriptions for order entry
- ▶ Other mappings to HCPCs, & ASHP’s AHFS classification system
- ▶ ...GOOD mappings take effort! Need dedicated content experts that know the context of the mapping! Kaiser/CAP’s SNOMED-RT CMT project declared an early success...

FDB Testimony for NCVHS



- 5. **What coordination among medical terminologies and/or message format standards is of value?**
 - ▶ **B. Common definitions of terms or concepts?**
 - NCPDP has learned valuable lessons and has been successful. Continue coordination with HL7.
 - HL7- version 3.0 RIM will have drug related concepts that are derived by consensus. Create goods vocabulary standards for proprietary medical terminologies that may be used as RIM concept values or as a code sets
 - ▶ **C. Convergence to a single reference terminology or model?**

Internally, FDB will converge its 3 US databases to Multilex version 1.0 year 2000

FDB Testimony for NCVHS



- 5. What coordination among medical terminologies and/or message format standards is of value?
 - ▶ **D. Development/coordination of reference information models?** Concerns:....Need many domain experts with differing experience? ...Volunteers?... Timely maintenance?... Business model?
 - ▶ *“Valid values should be left between business partners, users & domain experts”*



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- 6. **Are current initiatives to coordinate medical terminologies standards for PMRI adequate?** UMLS 2000 maps all relevant healthcare terminology... including NDDF, MDDB, Multum and Micromedex drug vocabularies. Mapping is at an appropriate clinical level of abstraction (generic salt + route/dose form + strength; digoxin 0.25mg oral tablet).
- 7. **Are there issues related to medical terminologies and message format standards for PMRI that deserve government attention or action?** More fully support the NLM's UMLS project so that it becomes a viable point-of-care product for any use. Support outcomes studies for "early adopters" of reference terminologies



FDB Testimony for NCVHS

First DataBank is Part of the Solution

Continuous Internal Maintenance

Customization

Update Frequency...Daily

Incremental Updates

Sustainable Business Model