

Healthcare in the Information Age

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- “With the advent of new technology, data can be collected in any format, aggregated by the computer and arrayed in any desired output ... collecting masses of data untouched by human thought

1974 - Kerr White
Chairman NCVHS

HEALTH

- WHO

- HEALTH IS A STATE OF COMPLETE PHYSICAL, MENTAL AND SOCIAL WELL-BEING AND NOT MERELY THE ABSENCE OF DISEASE OR INFIRMITY

HIPPOCRATES

– NOTED THAT IF YOU WANTED TO KNOW ABOUT THE HEALTH OF A PEOPLES NOTE

- THE WINDS AND THE CHARACTER OF THE AIR
- THE WATER THAT THEY DRINK
- THE LAY OF THE LAND
- THE HABITS OF THE PEOPLE



PERCIVAL POTTS, MD

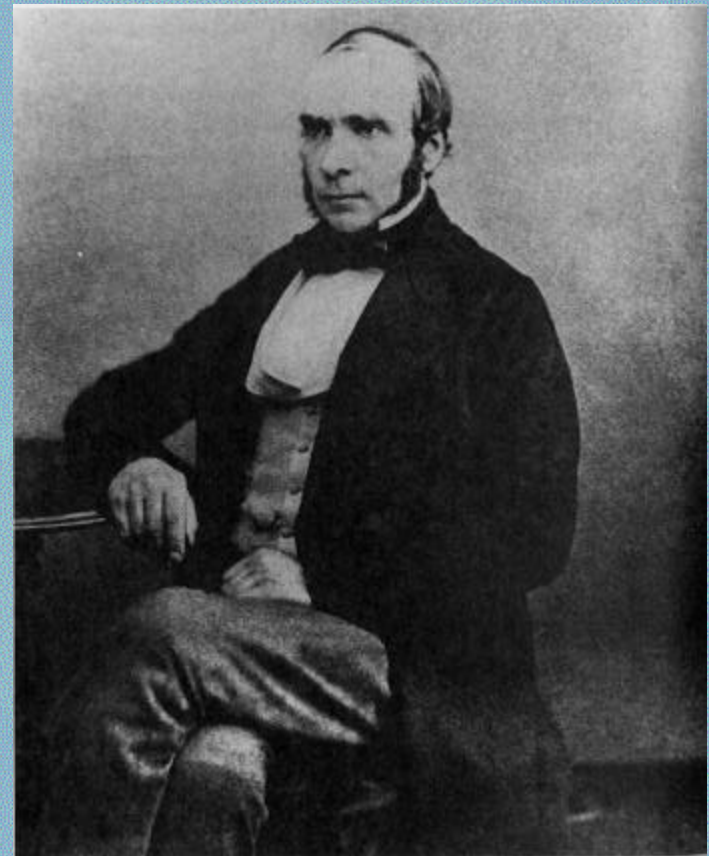
- IDENTIFIED LINK BETWEEN
- OCCUPATION AND CANCER
- RECOMMENDATIONS FOLLOWED?





SNOW ON CHOLERA

- DATABASE ANALYSIS
- GIS SYSTEM
- EPI APPROACH
 - DATA COLLECTION
 - DATA ANALYSIS
 - HYPOTHESIS
 - FORMATION
 - TESTING
 - **ACTION**
 - Guided by knowledge



Classified

Special sections

News / Home

Local

- Chicago
- TribWest
- Lake
- Northwest
- McHenry
- Southwest

Nation/World

Editorials & Opinion

- Voice of the People

People

- Commentary
- Perspective

Columnists

- Steve Chapman
- Bob Greene
- The Inc. column
- John Kass
- Clarence Page
- Mary Schmich
- Dawn Turner

Trice

- James Warren

36 fall ill in E. coli outbreak

At least 12 cases tied to 1 source by health experts

By Karen Mellen
Tribune staff reporter
Published August 17, 2001

Three dozen people in the Chicago area have become ill as a result of exposure to E. coli bacteria since July 1, public health officials said, and DNA testing has linked at least 12 of the cases to a single source.

Among those 12 is a Cook County youth sickened by ground beef bought July 12 in a Dominick's Finer Foods store on Patriot Boulevard in Glenview, state health officials said.

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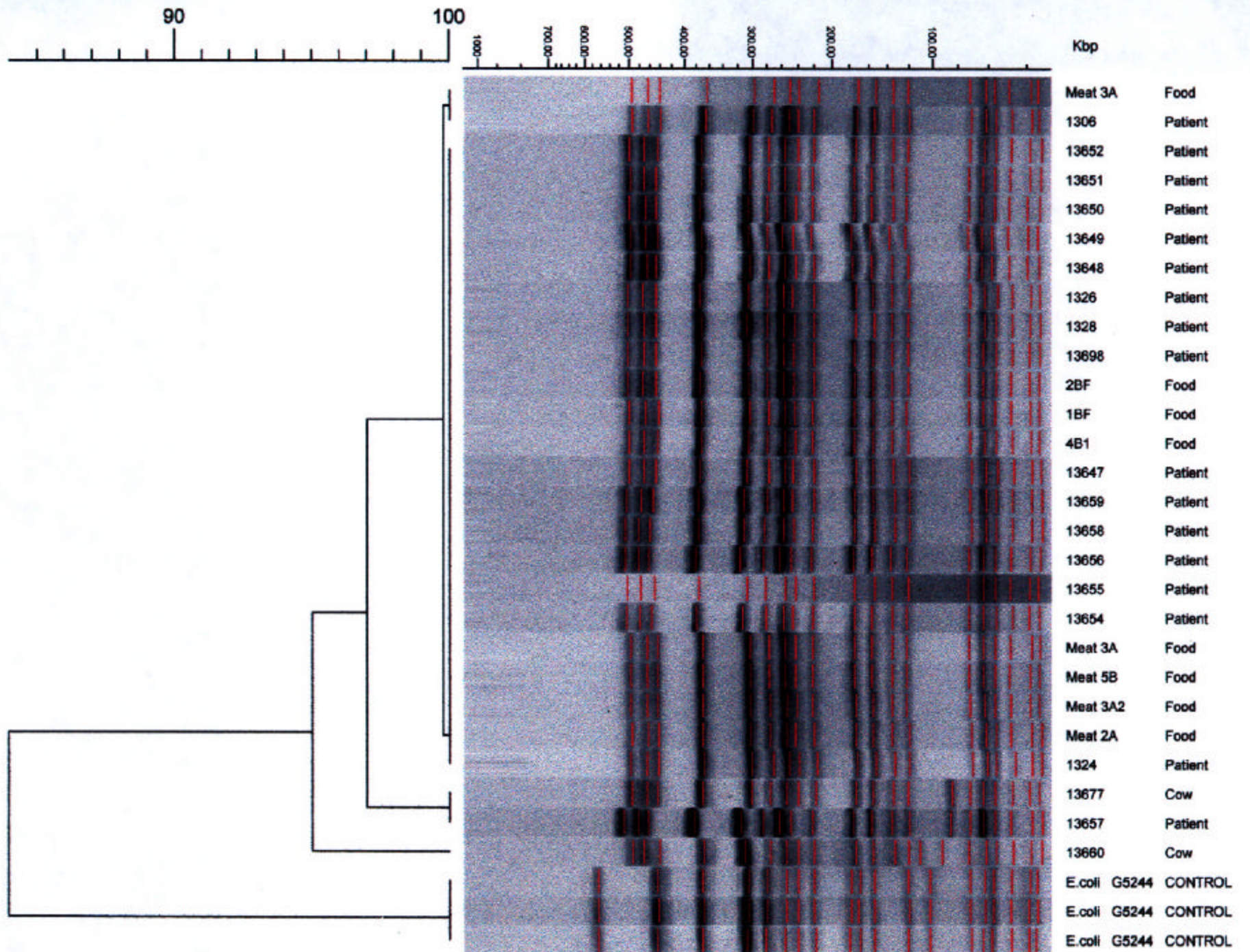
BUY IT OWN IT SELL IT

Although 11 other victims became ill from exposure to E. coli with identical DNA, state health officials could not say Thursday whether they had come in contact with that bacteria through the same store. Tom Schafer, a spokesman for the Illinois Department of Public Health, noted that one of the 11 victims lives in Will County, far from the North

E Coli in Hamburger

- Reports to the state
- HD staff evaluate to determine pattern
- Samples collected
- PFGE run

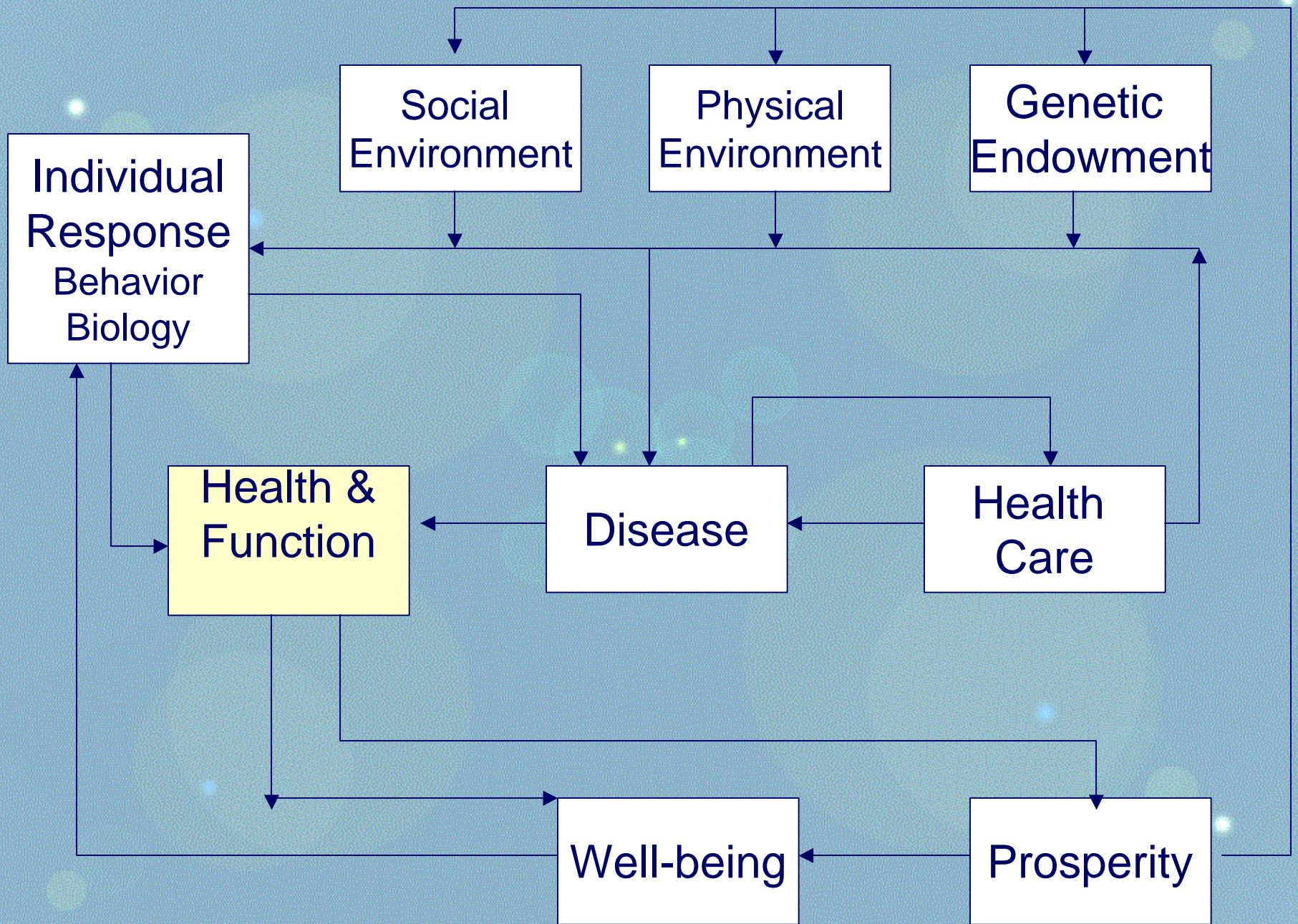




E Coli in Hamburger



- Reports to the state
- HD staff evaluate to determine pattern
- Samples collected
- PFGE run
- Additional samples collected
- Process can take weeks sometimes



HEALTH

- SHARED RESPONSIBILITY
 - HEALTH CARE
 - PUBLIC HEALTH
 - BUSINESS
 - FAITH COMMUNITY
 - OTHERS
 - -IOM 1997 IMPROVING HEALTH IN THE COMMUNITY-A ROLE FOR PERFORMANCE MONITORING

PUBLIC HEALTH AND
MEDICAL PRACTICE
BOTH USE THE SAME
DATA, WE JUST
LOOK AT IT
DIFFERENTLY

-CHRISTINE GEBBIE

The Business of Health

- Helping people stay healthy
- Helping people get better when they are ill
- Helping people live with illness when their illness is chronic
- Helping people manage a changing lifestyle when their illness impairs their functioning

★ based upon work by the Foundation for
Accountability

Health Care Practice is Data, Information & Knowledge intensive

- Collection of Data
 - Physical Exam
 - Lab
- Data with analysis is Information
 - rales, abn chest x-ray
- Information in context with rules
 - bacterial pneumonia treat with Antibiotics

The Goal of Health
Practice is to Make
the ***Right Decisions***
at the ***Right Time***

The Challenge that we face

- “THE MANAGED-CARE-BASED HEALTH SYSTEM IS FAILING. MEDICAL INFLATION IS BACK. CONSUMER DISTRUST, PROVIDER HOSTILITY, COSTLY NEW TECHNOLOGIES AND POLITICAL OPPORTUNISM WILL NO LONGER ALLOW COSTS AND QUALITY TO BE CONTROLLED BY MOST EXISTING MANAGED CARE ARRANGEMENTS”

The Challenge that we face

- “OVERALL, QUALITY HAS NOT BEEN DELETERIOUSLY AFFECTED BY MANAGED CARE, BUT MANAGED CARE HAS NOT SUBSTANTIALLY REDUCED UNSAFE PRACTICES, OVERUSE, UNDERUSE AND MISUSE OF HEALTH CARE”
- PAUL ELLWOOD

Medication Errors

- More than 1 Million Serious Medication errors per year in US Hospitals
 - >50% preventable adverse events
 - 20% of these are life threatening
 - 7,000 deaths - IOM
 - cost \$2,000 per error - \$2 Billion per year

- The Leapfrog Group

Medication Errors

- Illegible handwritten prescriptions
- Serious overdosing from decimal point errors
- Overlooked drug interactions and allergies

- The Leapfrog Group

Computer Physician Order Entry (CPOE)

- Prompts that warn
 - drug interaction
 - allergy
 - overdose
- Information immediately available
- Drug specific info to decrease similar name confusion

- The Leapfrog Group

CPOE

- Boston Brigham and Women's
 - Decrease errors 55%-88%
- Salt Lake City LDS Hospital
 - Decrease errors 70%
- Wishard Memorial Hospital
 - Decrease LOS by 0.9 days
 - Decrease charges by 13%

- The Leapfrog Group

CPOE

- ROI
 - \$2.5 Million to \$7.5 Million the first year
 - Implementation \$2 Million
 - Savings \$5 o \$10 Million
- Estimated to reduce Serious Medication errors by half
- Yet, fewer than 2% of Hospitals have implemented

- The Leapfrog Group



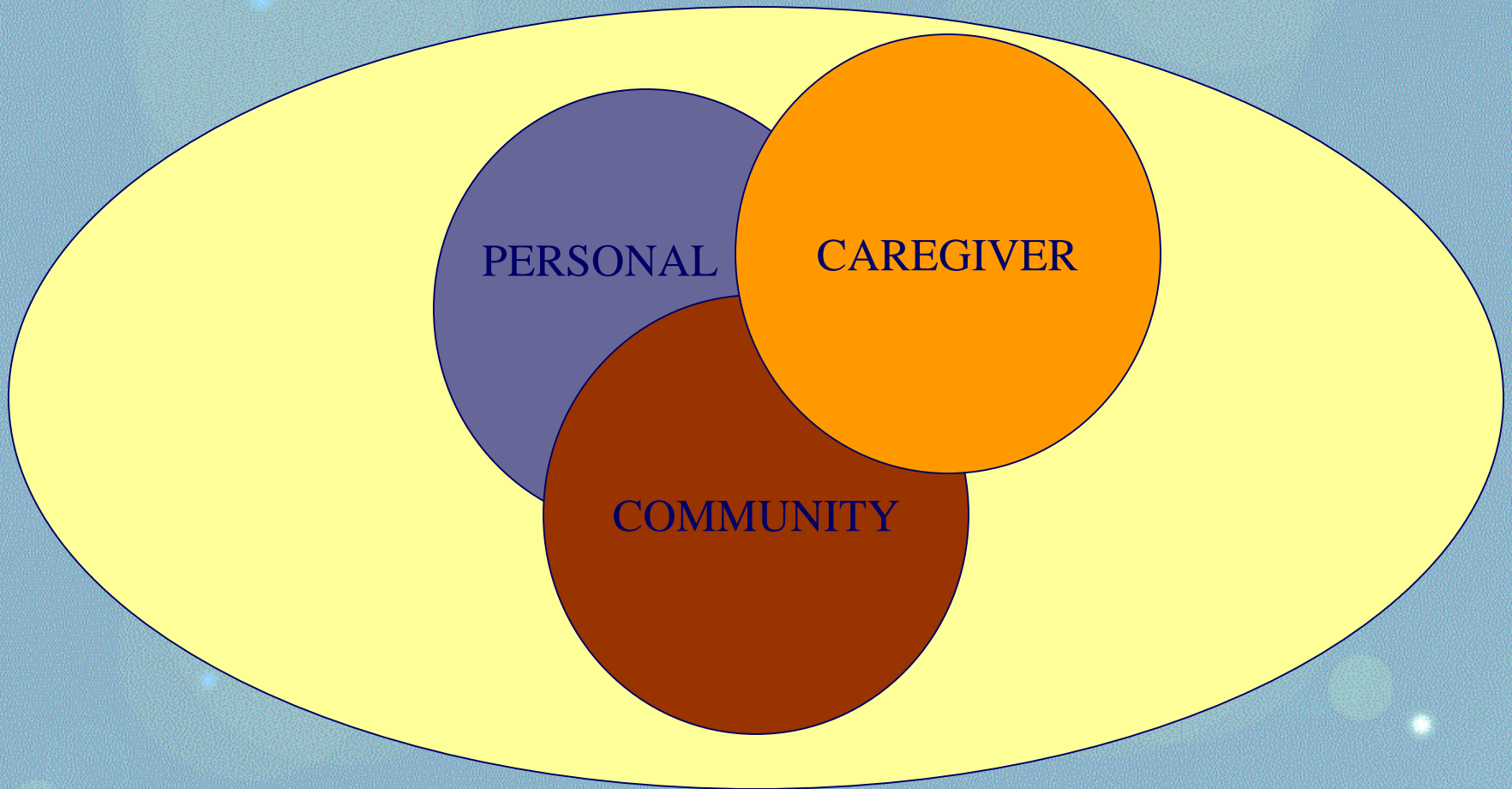




How it could work

- Pt refers to home system about diarrhea
- Physician Identifies Patient with bloody diarrhea
- Positive for E. Coli 0157:H7
- Electronic Notification of PH system
- Outbreak identified
- Home and Providers systems notified
- Additional cases allow rapid identification of source and recall occurs

NHII



A vision for the Future by the NCVHS

NHII

- THE GOAL IS TO PUSH KNOWLEDGE TO THE POINT OF SERVICE (CONTACT)
 - EXPERT SYSTEMS
 - DECISION SUPPORT
 - PRACTICE GUIDELINES

NHII

- The set of technologies, standards, applications, systems, values, and laws that support all facets of individual health, health care, and public health.
- NOT a centralized database.
- Connects distributed health information in the framework of a secure network with strict confidentiality protections.

NHII

Health Data, Information, Knowledge
Continuum

NHII

PROVIDER DATA

Health Data, Information, Knowledge
Continuum

NHII

Health Data, Information, Knowledge
Continuum

ADMINISTRATIVE DATA

NHII

Health Data, Information, Knowledge
Continuum

PERSONAL DATA

NHII

**COMMUNITY
BASED DATA**

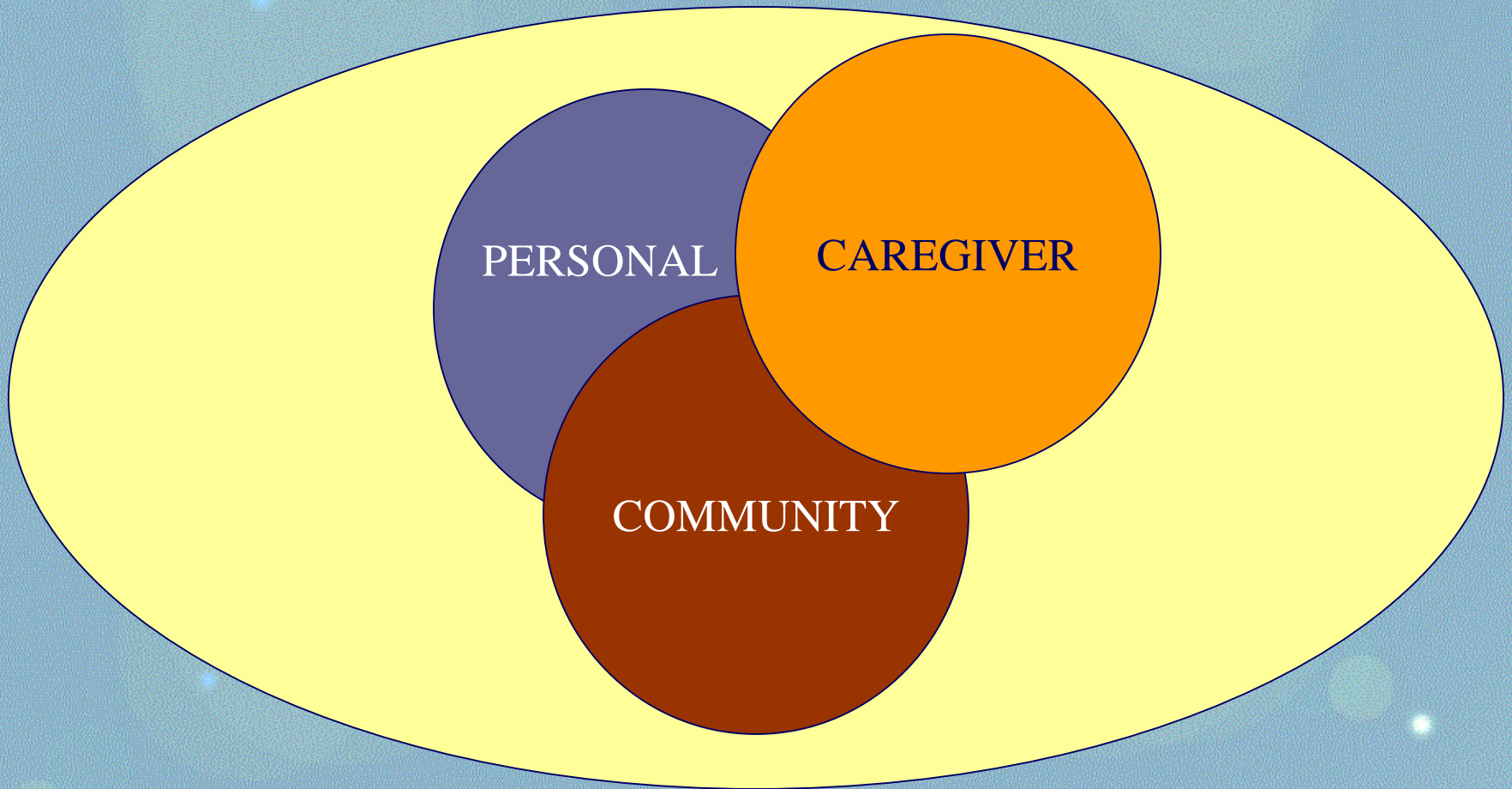
Health Data, Information, Knowledge
Continuum

NHII

Health Data, Information, Knowledge
Continuum

QUALITY DATA

NHII



Personal Health Dimension

- Supports the management of individual wellness and health care decision-making
- Includes a personal health record, created and controlled by the individual or family
- Includes non-clinical information such as self-care trackers, health materials, local public health and health care services

Health Care Provider Dimension

- Encompasses information to enhance the quality and efficiency of health services for individual
- Includes information captured during patient care process
- Integrates clinical guidelines and protocols, specific information from PHD, as authorized, and from Community Health Dimension

Community Health Dimension

- Supports the identification of health threats, assessment of population health status, focussing programs and services, research and evaluation
- Encompasses population-based health data and resources, statutorily authorized data in public health systems and the Health Care Provider Dimension, and other anonymous data

Barriers to a New Vision

- Privacy Protections

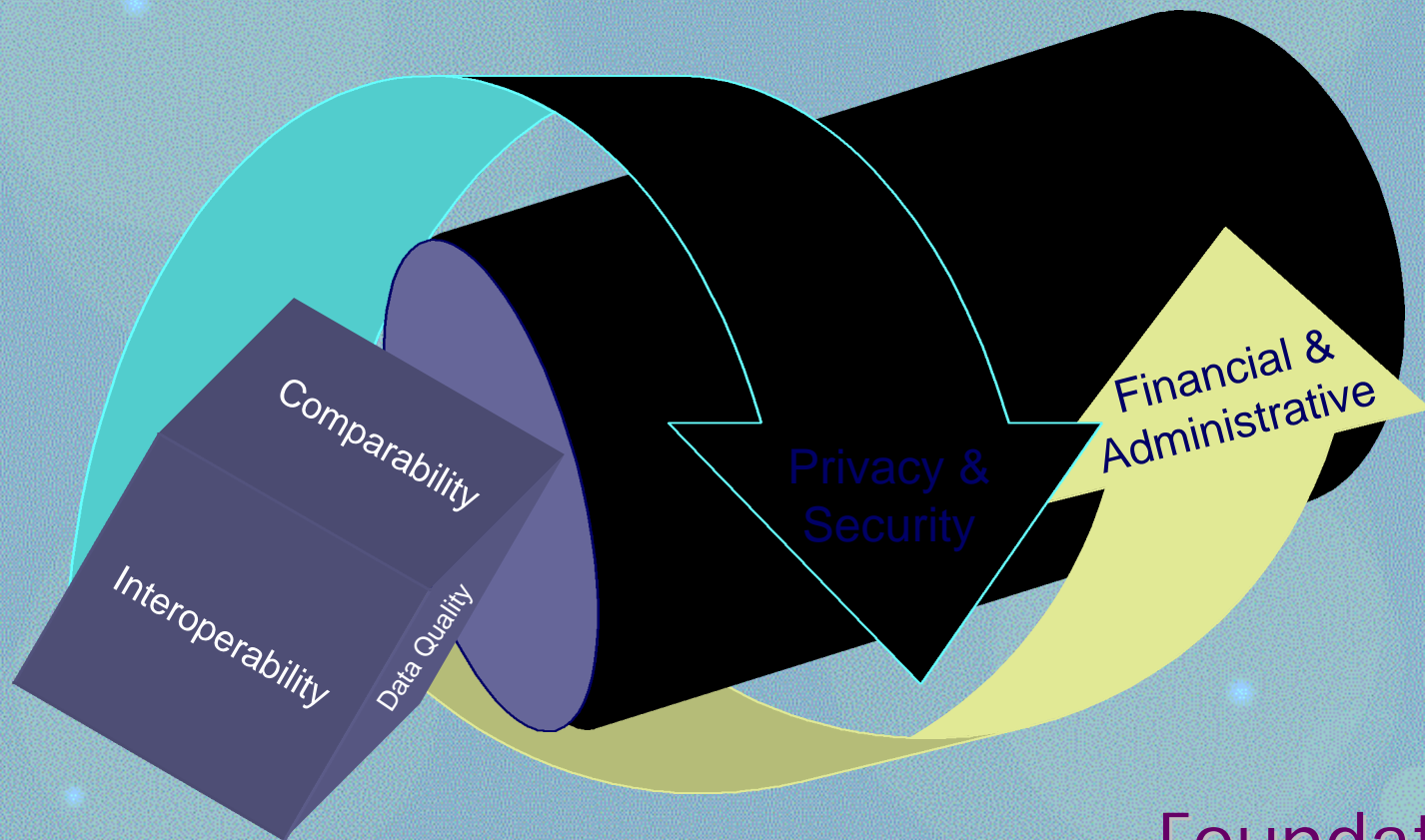
AMERICAN APPROACH

- RESPECT INDIVIDUAL PRIVACY
- ASSURE CONFIDENTIALITY
- ENGINEERED FOR SECURITY

Barriers to a New Vision

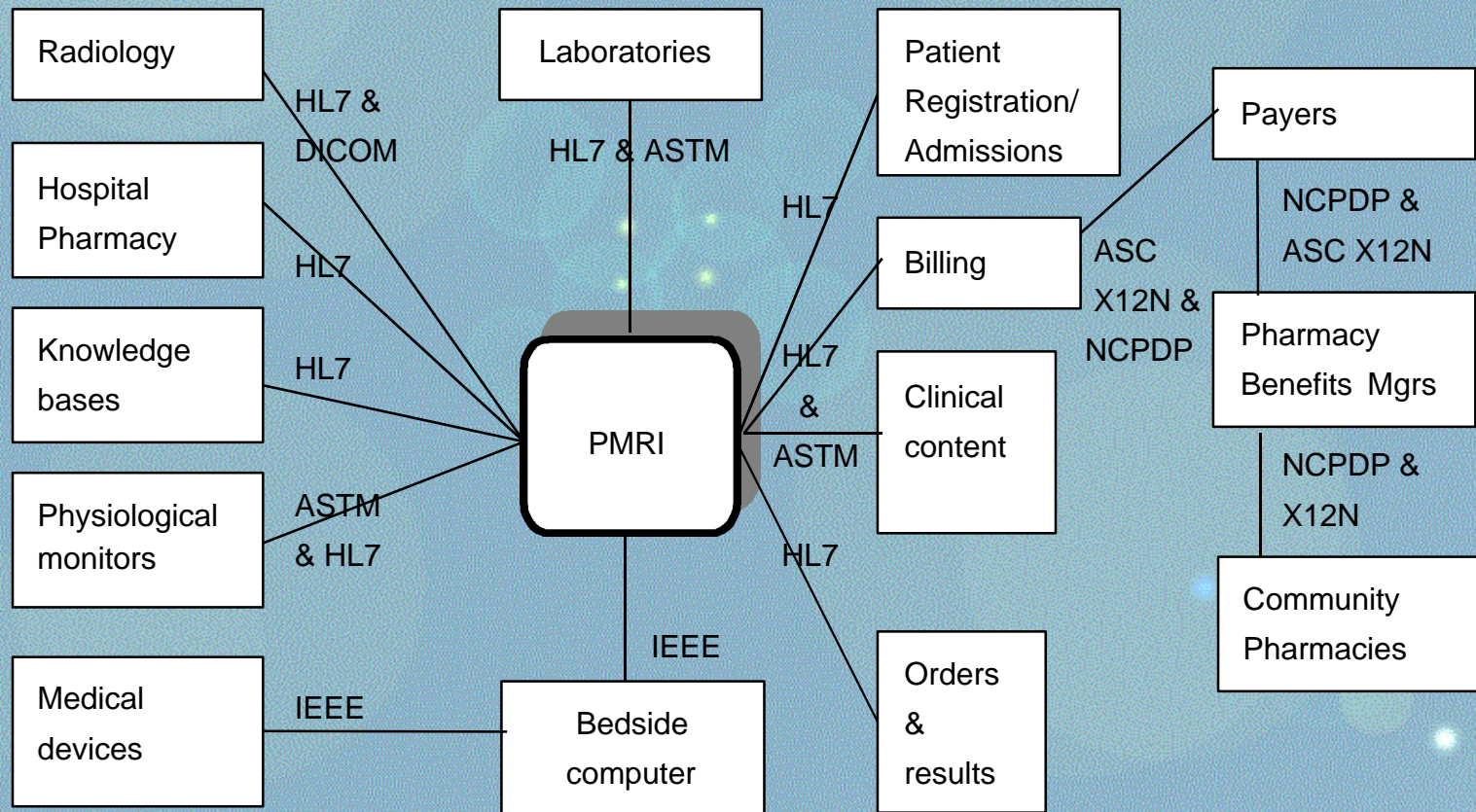
- Privacy Protections
- Standards

The Health Informatics Pipeline



Foundation
HIPAA Standards

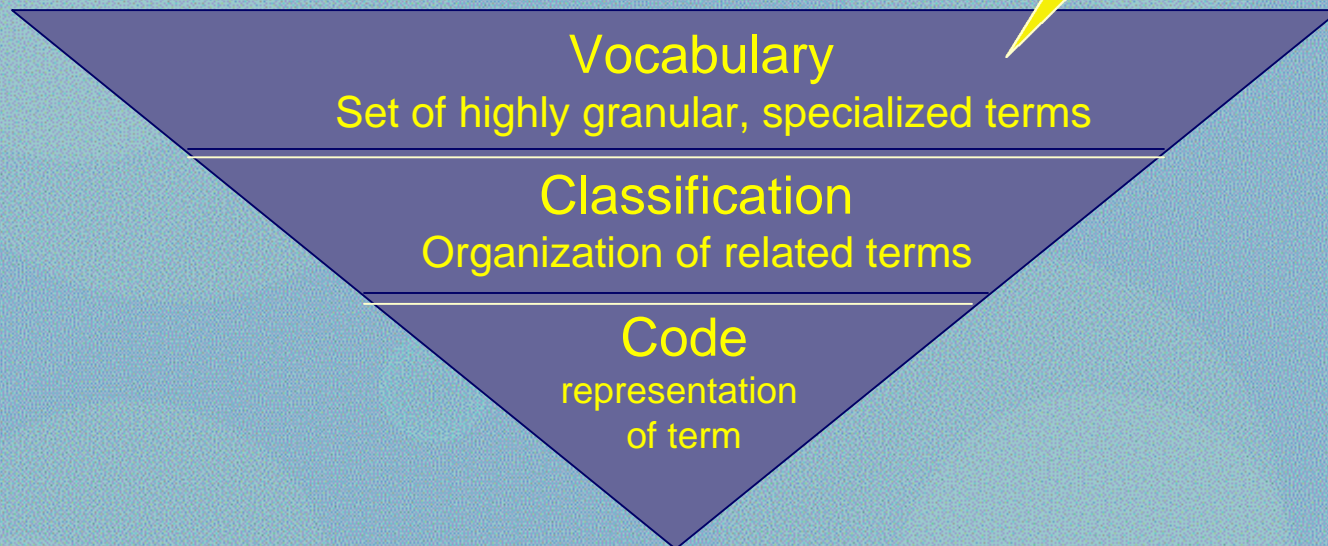
Interoperability Status



(Adapted from Electronic Health Records: Changing the Vision, Eds. GF Murphy, MA Hanken, and KA Waters. Philadelphia: W. B. Saunders Company, 1999)

Comparability Issues

Terminology



- **Comparability requires that the meaning of data is consistent when shared among different parties**
- **Ideally, data should be captured once for patient care purposes at the most granular, or precise level. Data for reimbursement, public health, research, & other uses should be derived therefrom**

Comparability Status

Other Codes

- Health Language Center
- UMDNS (ECRI)*
- DEEDS
- UPN (HIBCC)/UPC (UCC)

Message Specific Codes

- DICOM
- NCPDP
- IEEE
- HL7*
- X12N

Nursing Codes

- HHCC*
- NANDA*
- NIC*
- NMMDS
- NOC*
- OMAHA*
- PCDS*
- PNDS

Diagnoses & Procedure Codes

- Alternative Link*
- CDT-2*
- CPT-4*
- HCPCS*
- ICD-9-CM/ICD-9-V3*
- ICD-10-CM*
- ICD-10-PCS
- ICIDH-2

Convergence

SNOMED RT/
NHS Clinical Terms

Clinically Specific Codes

- DSM*
- Gabrieli
- LOINC*
- MEDCIN
- MedDRA
- SNOMED V3*
- NHS Clinical Terms*

Drug Codes

- First Data Bank*
- Multum*
- NDC

* Fully or partially included in the
UMLS Metathesaurus as of March 1, 2000

Barriers to a New Vision

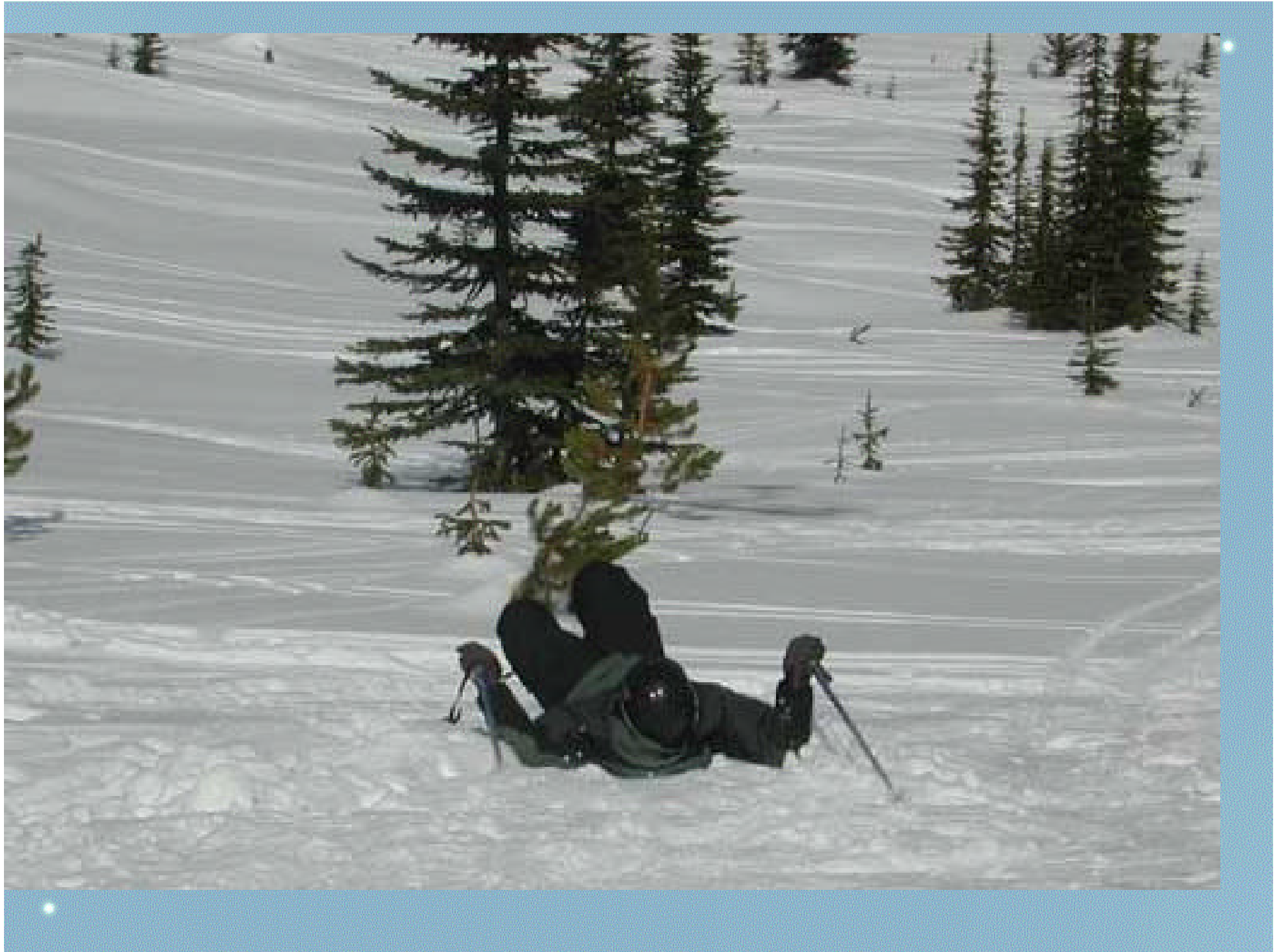
- Privacy Protections
- Standards
- Quality standards for On-line information
- Technology
 - security
 - data entry
- Costs
- Attitudes and practices (confidence)
- Equity

Importance of HIPAA to success

- Foundation of Data Standards
- Foundation of Security
- Privacy will improve acceptability







Speed of success

- Patient Protections
- Leadership at National Level
 - Governmental vs. Private Sector
 - Mandatory vs. Voluntary
- Provider practice changes

