

Chronic Illness Management and Issues Beyond E-Health

Seong K. Mun, PhD

Professor and Director

Imaging Science and Information System Center

smun01@georgetown.edu

Impact of Info. and Comm.

- IT is a powerful driver and facilitator to change and create new products, services, organizations and businesses.
- Encounter between Healthcare and IT is rather new and outcome is uncertain
- Telemedicine and e-health provides excellent case studies

**Telemedicine
@ ISIS Center**

Refugee Health

Global MRI Network: NGI

Congestive Heart Failure: Home

Diabetes Management at Home

Diplomatic Telemedicine in Africa

Telemedicine Demo in Russia

Disaster Relief in Kenya

Medical Education in Latin America: ACTS

Renal Dialysis Center and Home Dialysis

Rural Health: Kidney Stone Disease

Post Surgery Follow Up Support

Telepathology, Tele-echocardiology

Teleradiology: DEPRAD, Bosnia, Hungary, Germany

PACS: Filmless Digital Hospital

Acute Vs. Chronic Illness

- 25% - 30% Cost
- Diagnosis Demanding
- Treatment Focused
- Goal: Cure
- Defined Endpoint
- High Bandwidth: Fast
- Physician Driven
- 75%-70% Cost
- Diagnosis Known
- Treatment Known
- Goal: Manage & Prev.
- Manage the Illness
- Low Bandwidth: Slow
- Patient Orientation

On-Line Virtual Clinic

“Where My Care Team Is Available At My Convenience.”



Surrogate Markers

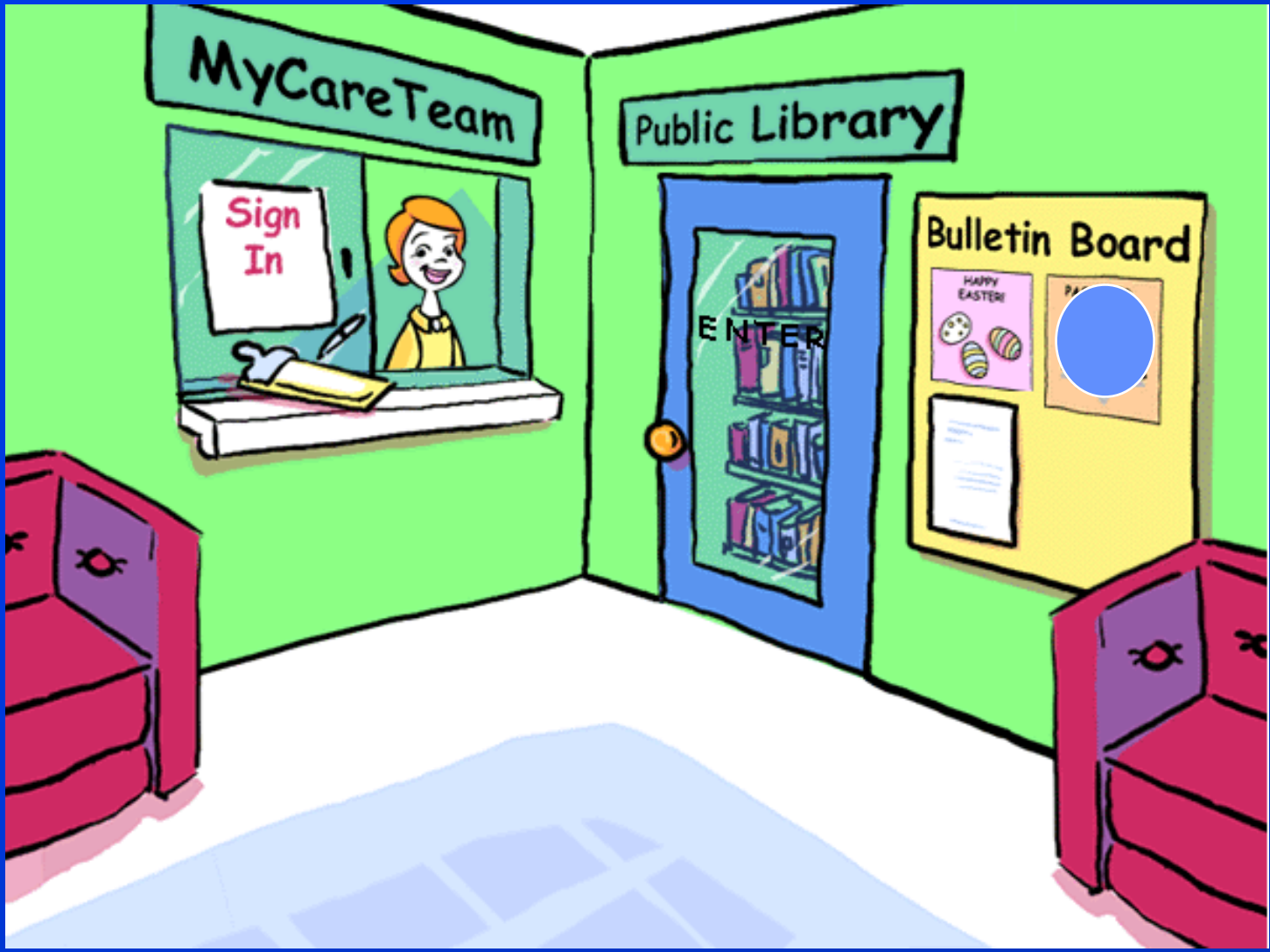
- Blood Sugar Level Measured By the Patient
Instant Fluctuations
- Hemoglobin A1C: Done in the lab
Averaged Over Weeks
“Gold Standard”

How Does Work?

Glucose Meter



- Portable device
- Insulin Type and dosage.
- Stores 250 readings
- Data port



Clinical Trial at VA Boston*

- 104 Patients with Diabetes Mellitus
- HbA1C > 9%
- Control Group and Intervention Group
- 12 Months
- Decline of HbA1C by 2.2%:
Very Significant

*Paul Conlin

Other Clinical Trials

- Georgetown University
- CERMUSA, Johnstown, PA
- Indian Reservations
- Bethesda Naval Hospital (Gestational)

Challenges

- No existing diabetes management programs
- No one is really in charge of diabetes as a primary concern
- Poor technology infrastructure
- Telemed technology is one of many factors necessary for a successful program

Medicare Demonstration Project

- To develop a cost-effective care management program for Congestive Heart Failure Patients
- HCFA minimum standard: demonstrate a 6%-7% reduction in overall cost. HCFA currently spends \$34,000 per year per patient with CHF diagnosis in Washington area
- Key: Home Monitoring and Visiting Nurse
- Goal: Reduction of Hospitalization

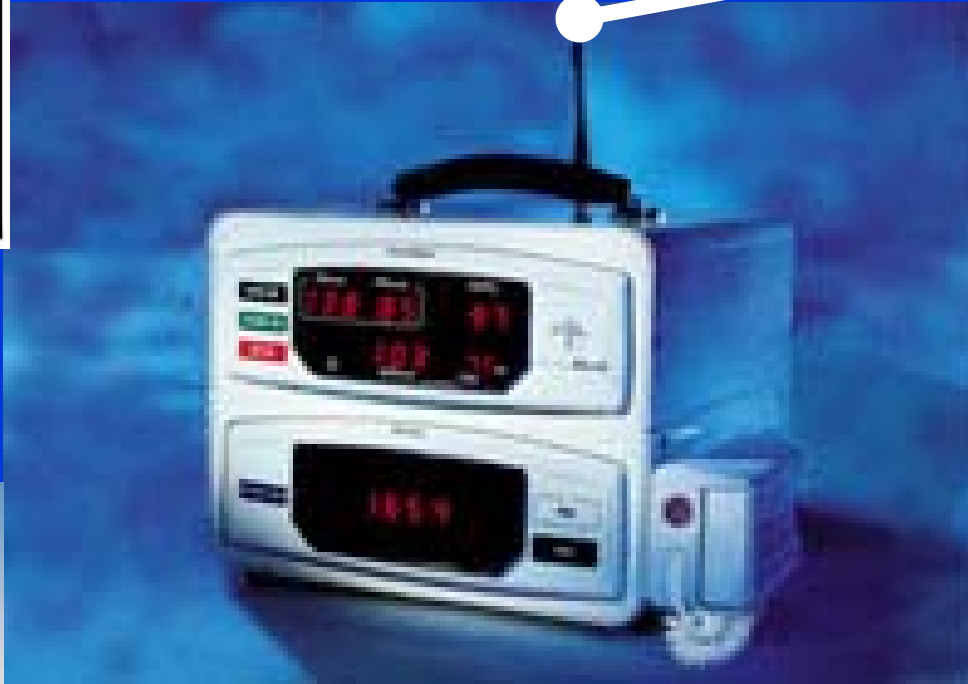
Home Monitoring

- In-home monitors: weight, blood pressure, pulse, and oxygen saturation (pulse oximeter)
- Computer flags abnormal results for care manager to intervene, by phone or home visit.
- Internet-based tracking of all episodes of care

Home Monitoring (Daily)



Scale



Monitoring
Center

Patient Identification and Recruitment

- No systematic Ways to Recruit Patients
- No central place to go
- Physicians are reluctant
 - Un-intended Burden
 - May not help the patients
 - Forms to fill up
 - Randomization Impact

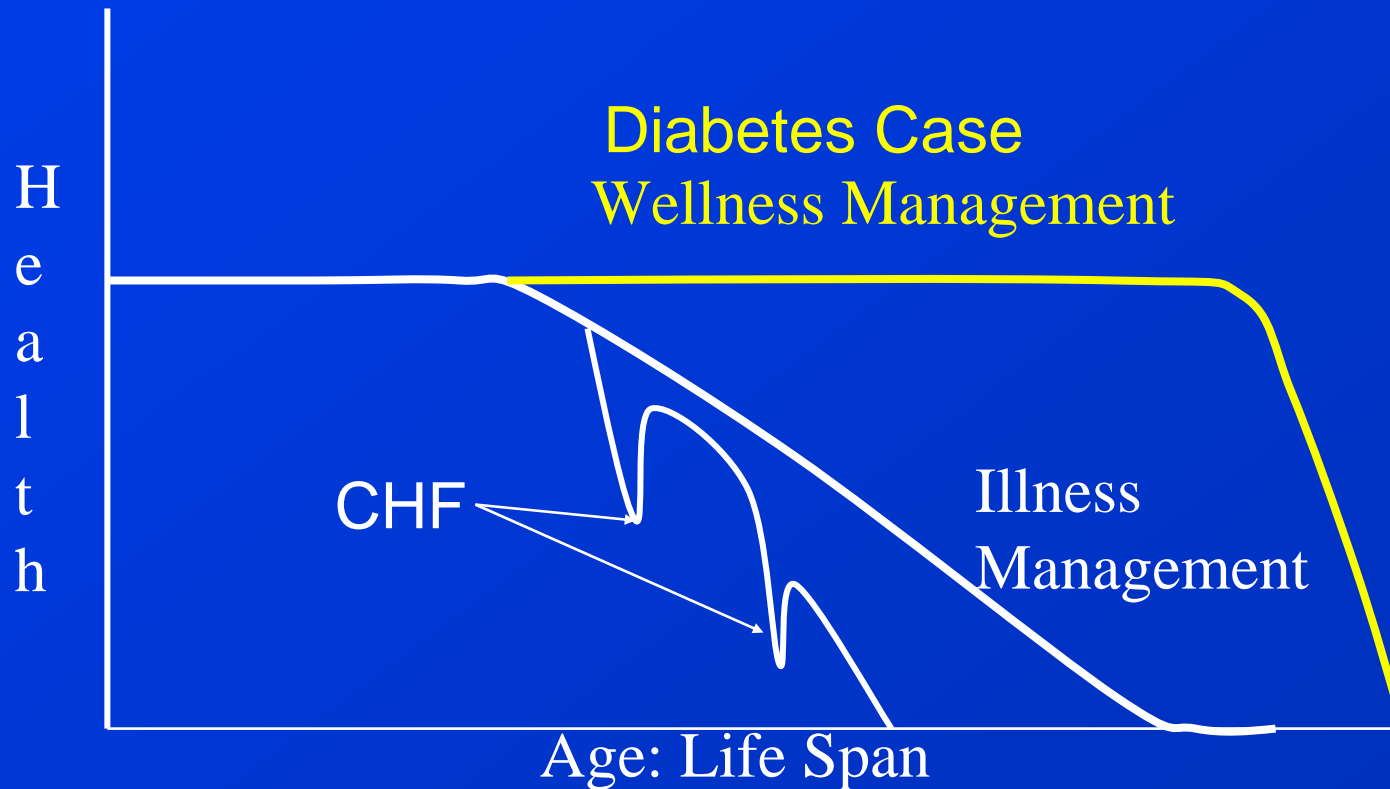
Patient Management

- Multiple Care Providers
- Multiple Prescriptions
- No One In Charge of Whole Person
- Co-morbidity
- Where are the boundaries?

Lessons Learned

- There is a gap between Wellness Management
Sickness Cure.
- Chronic illness is everybody's business but no
one's responsibility except patient's.
- Should Wellness Be Doctor's Responsibility?
- Burden vs. Responsibility
- Incentive for Being Well?

Health Care Models



Looking Ahead

- What happens when the following factors are not problems?

Physician Acceptance

Technology and Bandwidth

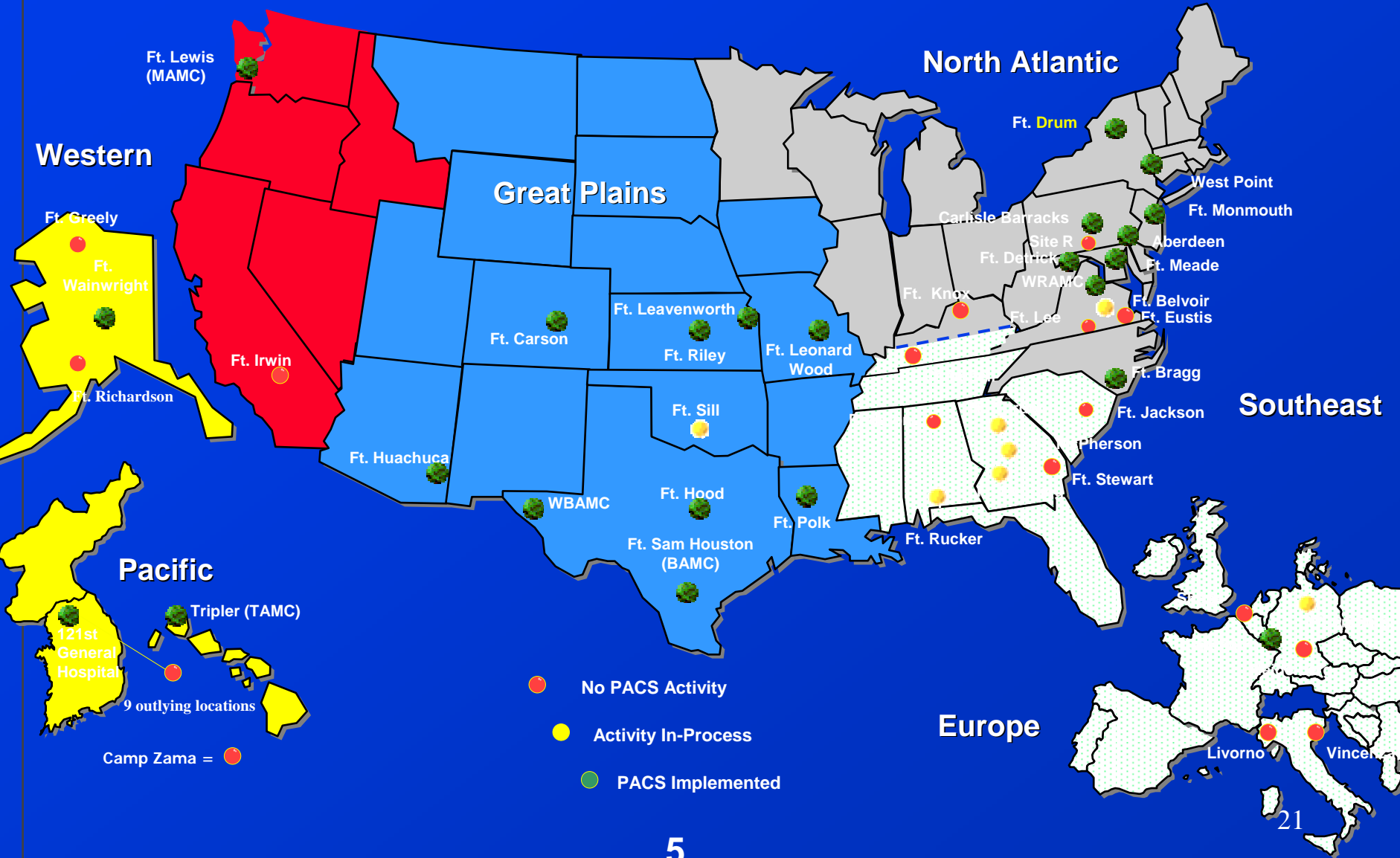
Standards and Interoperability

Reimbursement

PACS Survey 2004

Digital Imaging
Radiology Information System
Hospital Information System
Interaction with New Enterprise

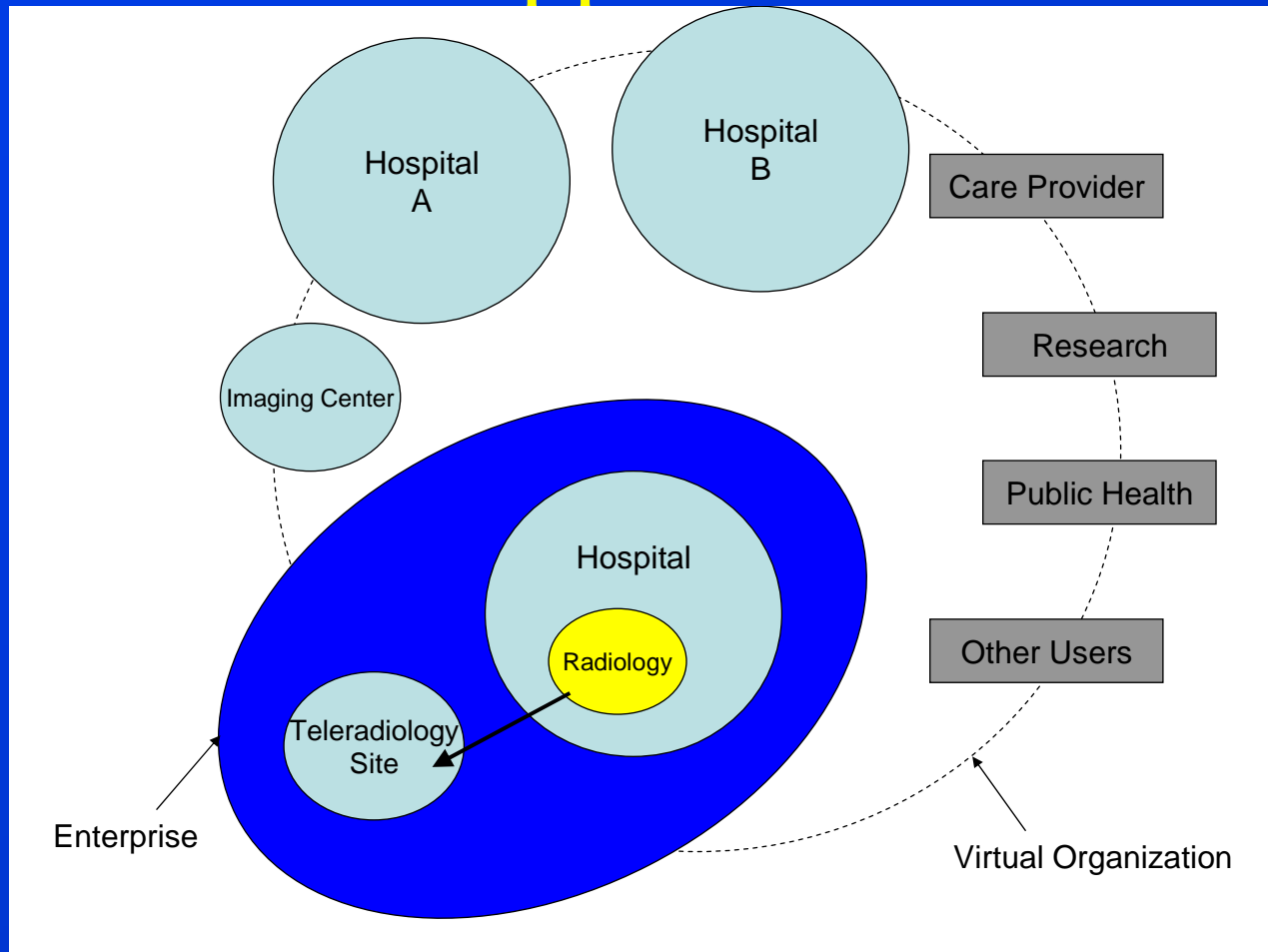
Global PACS Example



New Business Models

- Night Hawks
 - Taking Advantage of Time Difference
 - Virtual Radiology Department/Service
 - New Enterprise: Multiple Boundaries
 - Workload Redistribution
 - Not Point to Point Communication
- Issues external to Department: New Enterprise

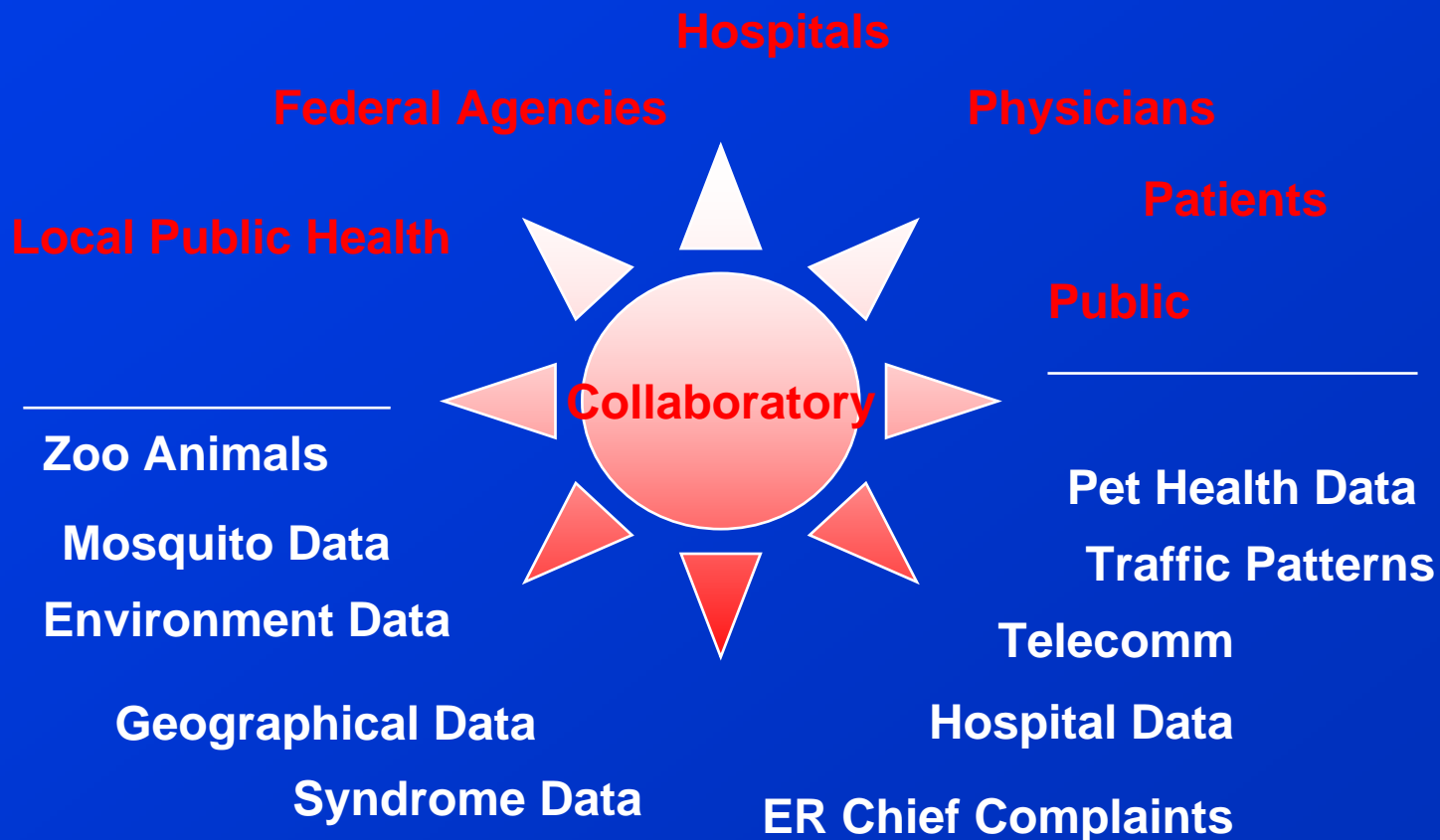
Expanding Enterprise and New Applications



New Info Sharing Environment: Virtual Organization

- Different Organizational Missions & Activities
- Different Operational Environment
- Potential Distrustful Relationships
- Client to Server or Peer to Peer
- Different Rule of Delegation of Authorities and Privileges

Integrated Biodefense Project Sentinel: NLM Support



IT Industry and PACS

- Standard interface of machines
- System Integration
- *Activity* Automation
- IT for Business *Process*
- End to end productivity
- New Business Model
- ACR-NEMA/DICOM
- Filmless Operation
- IHE for Business Process
- Workflow
- Department Productivity
- Enterprise Image Management
- New Business Model?

New IT Tools for better service and improved productivity

Looking Ahead

- Beyond Technology
- Workflow
- Operational Scenario (ConOps)
- New Business Models

Balancing Act?

