Using Patient Centered Technology to Enable Emergency Preparedness

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Summary

➢ What Information is Needed

➢ Current Model of Information Gathering and Retrieval

➢ The Issues

- Privacy
- Security
- Accessibility and Portability
  - Interoperability

➢ Patient Centric Definition

- Patient Centric Technology

➢ Applying This in Emergency Preparedness

Disclosure

- CMO and Principal
  - MediModules, Inc.

Emergency Preparedness

- The Emergency Responder needs three things:
  - Quick access to the medical information
  - Delivery of information by trained professionals
  - Up-to-date information

AHIMA: http://www.myphr.com/your_record/why_start.asp

What is the most vital information?

➢ Name

➢ Date of Birth

➢ Medications

➢ Allergies

➢ Other information that "would be nice" – beneficial but <u>not</u> required for emergency situations
- Problem List (Diagnoses)
- Blood Type
- Next of Kin/Emergency Contact (Name and Contact)

-Rob Brouhard, Director of the Paramedic Training Program
California State University, Stanislaus (2006)

Current Methods of Gathering Information: Limitations

- Paper
  - Static – facility-centric
  - Often is not updated regularly
- Verbal

  - Asking the patient usually does <u>not</u> work
    - At least a 30% variance exists between what the physician prescribes and what the patient/family recalls (www.IHI.org)
- Electronic

  - Also usually facility-centric
  - Unable to be updated by multiple providers at different facilities

What goes into the Perfect System?

➤ Privacy

➤ Security

➤ Accessibility and Portability

➤ Additionally:

- Interoperability

Privacy

The Commandment:

Thou shan't pry into others' PHI

➢ Definition:

- Privacy is based on the societal expectation that we are ethically bound to safeguard Personal Health Information (PHI)
- It is needed to maintain the patient-provider trust – any information given out must be authorized, either implicit or explicit
- HIPAA made this ethical requirement into law with the specific application to PHI

Examples are:

- Allow access only to other providers that are actively caring for the patient
- Electronic: maintaining a password that is not given out

Security

The Commandment:
Thou <u>can't</u> pry into others' PHI

- Definition:
  - Protection of privacy and confidentiality through a collection of policies, procedures and safeguards
    (Shortliffe, 2006)

- This is required whether the system is electronic or paper

- Examples are:
  - Role-based access (nurse vs. provider)
  - Websites: Secure Socket Layer (Encryption)

Security

➢ Method of storage can affect security

- USB versus web-based Personal Health Records (PHR) were compared in terms of security

- 5 of the major USB-based PHR's were tested – all were "hacked" to automatically access secure information on the physician's computer and surreptitiously copy this data to the flash drive

• Alternatively

- The web-based PHR's were not able to be accessed in the same manner

(20 Feb 2007 **Ann Int Med** *146:4*)

Accessibility and Portability

- ➢ System must be accessible from as many locations as possible
  - Paper: stored at one single location
  - Electronic: only a few have web-access – most at available only at the facility
- ➢ Other options is that the system travels with the patient
  - Can travel in the form of paper or "electronically"
    - MyMediList's MediWallet
    - USB-based personal health record

Schematically

Personal Health Information

Privacy

Security

Accessibility and Portability

MyMediWallet™ (a service of MyMediList.com)

RX MEDICATION	DOSE	FREQUENCY
IBUPROFEN	50MG	Every six hours
WARFARIN	2MG	Once daily

NON-Rx MEDICATION	DOSE	FREQUENCY
GINKO	--	Once daily

MyMediWallet™ (a service of MyMediList.com)

My Allergies

NAME	WHAT HAPPENS
AMBIEN	Diarrhea
ATIVAN	Rash
GNC 100	Fever

My PROFILE
Testing, January
123 Any Street, --
12405, Acra, NY
PH: (518) 222 2222
Age : 97 Yrs.

Developed by
MediModules, Inc
www.medimodules.com
Card Printed on Feb 17 2007

Interoperability

➢ In the most functional of systems, the information should interact seamlessly with the other systems

➢ Currently, standards are in existence to help that to happen:

- General: XML and HL7
- Pictures/Radiology: DICOM
- E-Prescribing: NCPDP

The Ideal Path of the Patient

Patient enters Facility

Registration

Doctor's Visit

Discharge from Facility

Patient Medical Record
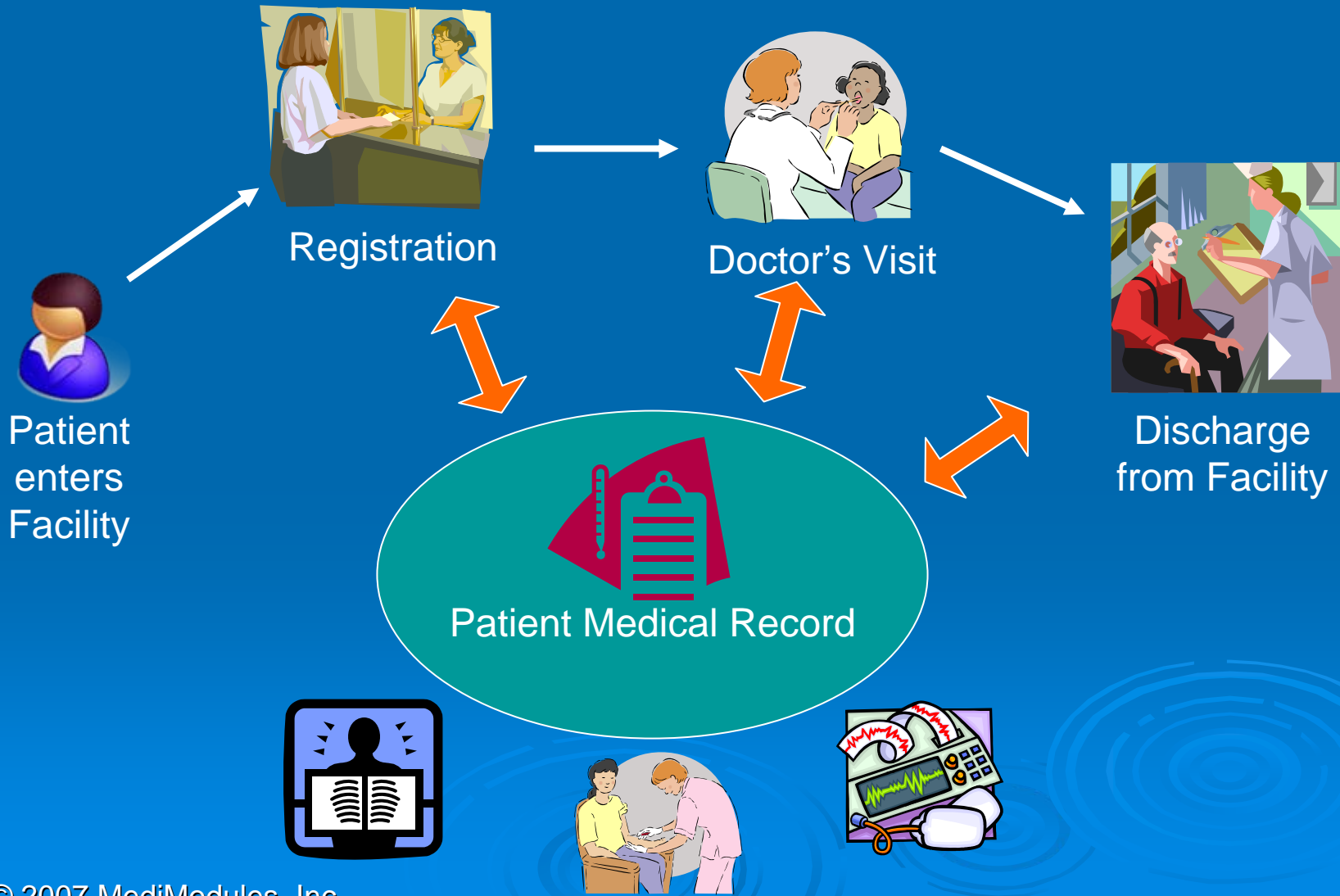
The True Path of a Patient

Emergency Room
at Facility #1

Primary Care at
Facility #2

Along the way,
4 meds added
2 taken away
Patient unsure of
what to take

Rehabilitation
Care at Facility #3

Radiology at
Facility #4

Interoperability

Emergency Room at Facility #1

Primary Care at Facility #2

Rehabilitation Care at Facility #3

Radiology at Facility #4

Where does the patient fit in all this?
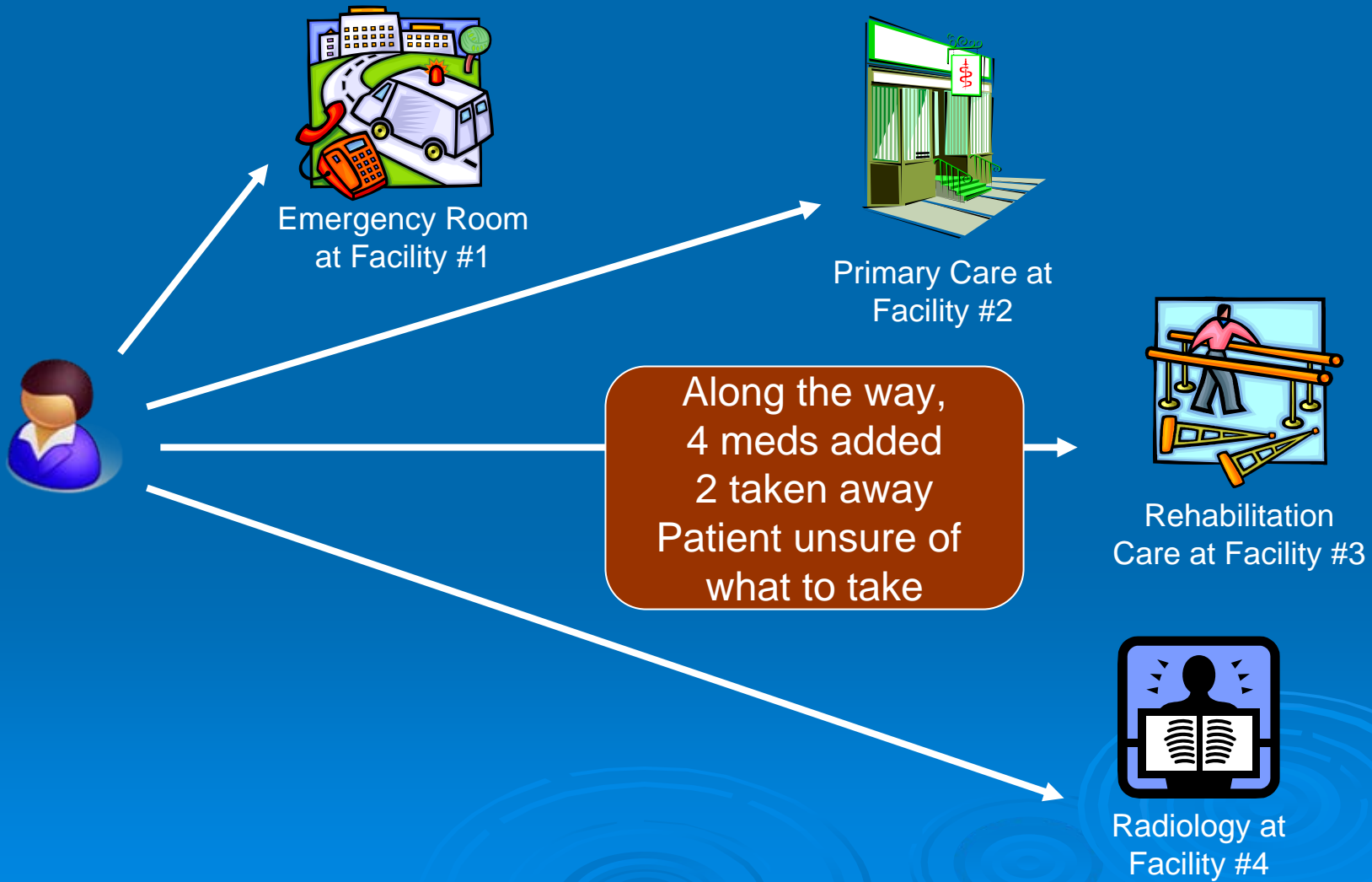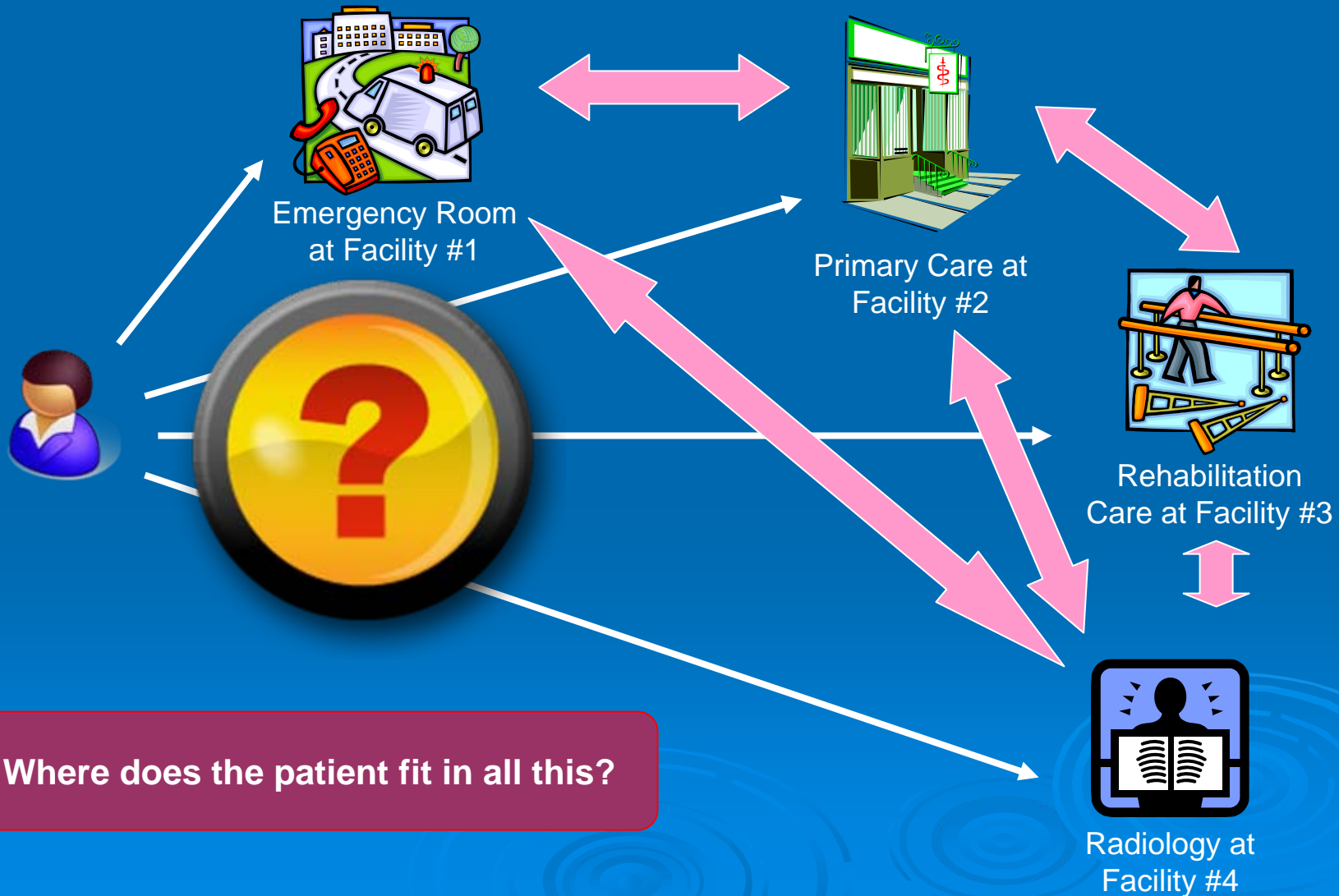
Patient-Centric: Definition

- Shortliffe's <u>Biomedical Informatics</u> (3rd Ed)
  - No definition of "Patient-centric"

- We must look to the literature, government and industry to come up with a definition

Patient-Centric: Definition

- **IOM** (www.iom.edu):
  - "care that is respectful of and responsive to individual patient preferences, needs, and values"
- **AHRQ** (www.ahrq.gov):
  - "patients become active participants in their own care and receive services designed to focus on their individual needs and preferences, in addition to advice and counsel from health professionals."
- **AAFP** (www.aafp.org):
  - "treating patients as partners, involving them in planning their health care and encouraging them to take responsibility for their own health."

Applying this in the digital world:

IBM (Health IT Summit, 2006):

"the ultimate [electronic] patient-centric care – [patient accessed] personalized medicine through information-based medicine."

Interoperability in the Patient Centric Model

Emergency
at F

ary Care at
acility #2

Rehabilitation
Care at Facility #3

The patient can view, edit and add to their healthcare information

Patient-
Authorized

Radiology at
Facility #4
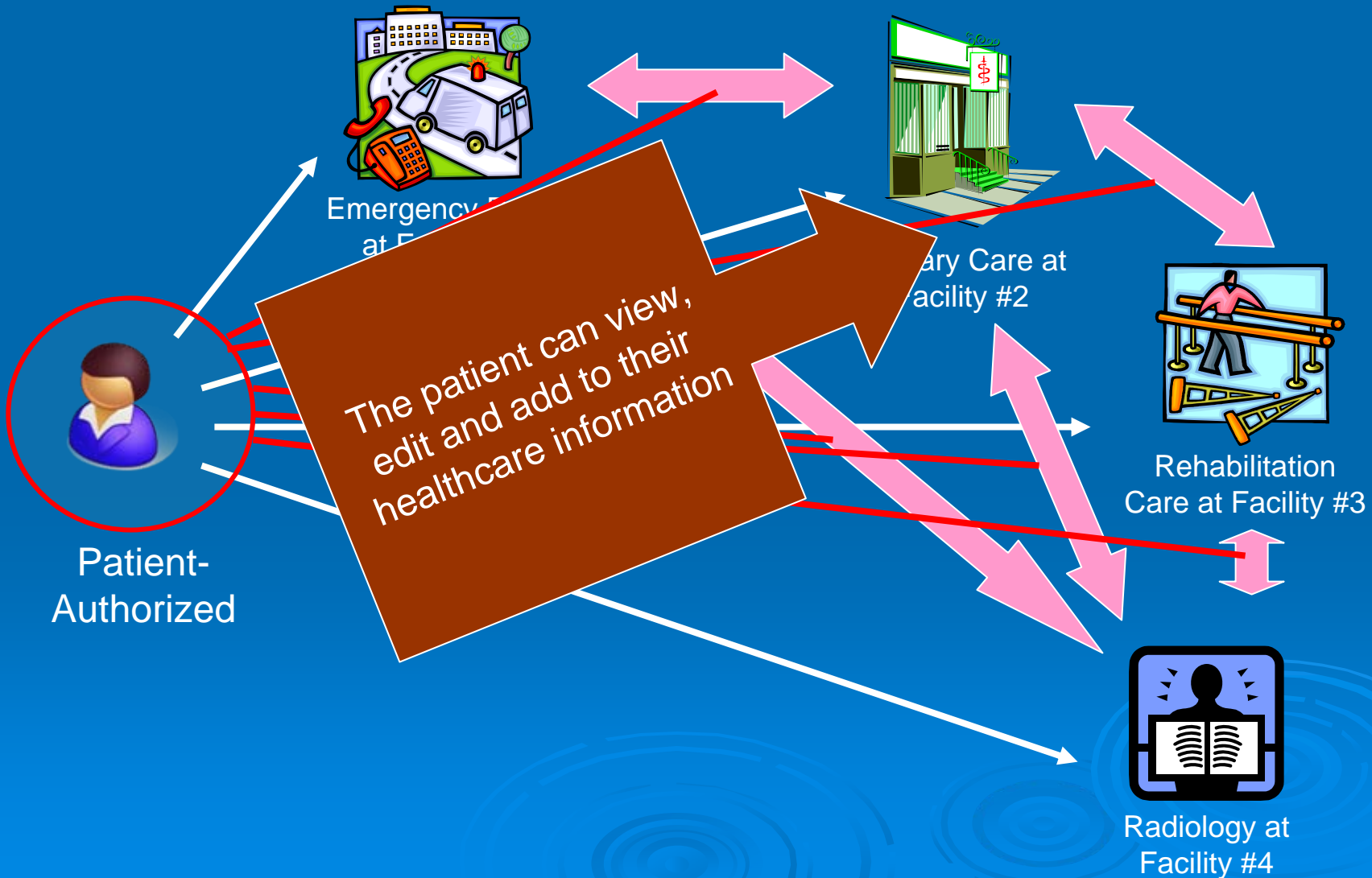
Patient Centric:
Is it Important to the Patient?

➤ Markle Foundation (2006):

- Survey of 1,000 Americans
  - Over 95% of respondents said that doctors and individuals should have access to **all** of an individual's medical records.
  - 66% wanted to have access to their own records electronically.

- Interestingly
  - 80 percent were concerned about identity theft and fraud and that their information could be used without their permission
  - About 75 percent said they felt that the government should help establish privacy and confidentiality standards for electronic health information.

Patient-Centric: Models

- ➢ Some models
  - **Viewing the information**
    - patients having access to information but no ability to edit, no communication
      - Group Health, Incorporated
      - www.myGHI.com
  - **Storing the information (web-based)**
    - Patient controlled access to the information, acts as a storage portal for various aspects of medical care
      - LifeSensor
      - www.LifeSensor.com
  - **Interactive Patient and Provider**
    - Information is under the patient's control, but the provider can access and update the information with 2-way communication
      - Medem, Inc.
      - www.ihealthrecord.org
      - MediModules, Inc.
      - www.mymedilist.org

Example: myGHI

Key points:

- **offers an ability to view all claims related information**
- **No editing of health related information allowed**

Example: *my*GHI

Example: ihealthrecord

➢ What is ihealthrecord?

- The iHealth Record is a secure and confidential, interactive personal record of a patient's medical history. The patient can create, manage and share (with authorized physicians) the personal health information.

- Providers cannot add to the content but recently, they have started using secure messaging and online consultation

Example: ihealthrecord

Key points:

- **offers the ability to enter all of your health related information with patient controlled access**

- **Full editing of data allowed by patient**

- **Has some connectivity with the provider, but not full access**

Example: ihealthrecord

Example: LifeSensor

This is a full scale fee-based PHR that is similar in capability to ihealthrecord.org
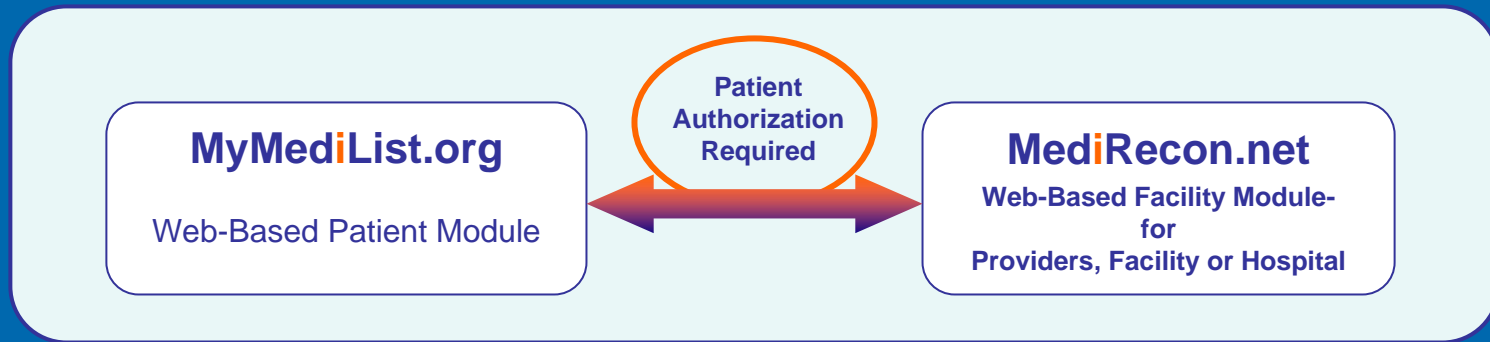
➤ **Key Points**
- **Personal Access Codes**
  - **Allow the provider to view information**
  - **NO editing of the data by the provider**
  - **In an emergency, by using this code, you can grant access to your "emergency" information to the Emergence Responder**

➤ **Internet-based updating**
- **Connect to ancillary systems such as labs**

Example: MyMediList

MyMediList.org

Web-Based Patient Module

Patient Authorization Required

MediRecon.net

**Web-Based Facility Module-
for
Providers, Facility or Hospital**

➢ **Key Points**
- **Patient Centric Model**
  - **Allows the patient and the provider to access the medication and allergy data (problem list in upcoming version)**
  - **All access is explicitly patient authorized**
  - **Has extensive auditing of access as well as print reports**
- **Connects to the Provider**
  - **Using web-based seamless connectivity to the provider, both can update the information, thus ensuring a more recent list**

Example: MyMediList

Example: MyMediList

➢ **If web-access is not available then paper print reports are available**

Allergies

Medication Information

Demographics

Date of Card Printing

Applying this in Emergency Preparedness

➢ The Emergency Responder needs three things:

- Quick access to the medical information
- Delivery of information by trained professionals
- Up-to-date information

AHIMA: http://www.myphr.com/your_record/why_start.asp

Applying this in Emergency Preparedness

➢ Quick access

- Excerpt (*HealthDay News*, 4/26/07):
  - [… **paper medical records** are heavy, and most are stored in a basement or ground floor of a building. "All the records **were easily sitting in foul-smelling water for three weeks**," he said. "They're all lost."
  - Dr. Brooks remembers seeing **refugees** from New Orleans who **did not know what type of cancer they had** or what kind of treatment they had received.
  - [Her hospital]..started developing an electronic records system 15 years ago and, as a result, **information for all 300,000 of its patients was accessible after the storm**.

Quick Access

- Extensive requirements for access will hinder treatment

- Access needs to be quick and easy
    - Patient granted access, such as by a PIN code
    - Patient provided via web-access
    - Patient shows the information to the provider who then gets the access via the web

- This process must occur with both privacy and security in mind

Trained Professionals

- Trained professionals are often available in such time of crisis
  - Volunteer organizations
    - American Red Cross
  - Government
    - FEMA, State-based
- However, the system must be able to handle this access
  - Role-based access
  - Easily setup access

Up-To-Date Information

- Not assessed
  - Harris Interactive (July, 2006)
    - 1,100 adults: 7 percent of U.S. adults use online personal health records
    - Most believe that this was a self selected group, as Harris conducts only online polls
  - Access via provider is only as good as the last visit
  - Access via patient is only as good as when they remembered to last update the information
- This will occur best in the format of a patient and provider controlled system

Conclusion

- Patient-centric technology is becoming increasingly popular
- Ensuring access of vital information to the right people at the right time is a key in the Emergency Response cycle
- Numerous systems exist, each with their own benefits
- Privacy and security cannot be foregone in this process
- The key is to ensure the best possible care for the patient

References

- Shortliffe, E. <u>Biomedical Informatics: Computer Applications in Health Care and Biomedicine</u> (Springer: New York 2006)
- Wight A. and Sitting. D. *Security Threat Posed by USB-Based Personal Health Records* **Ann Int Med 146**:4 314-215 2007
- AHRQ
  - www.ahrq.gov
- Institute for Healthcare Improvement
  - www.ihi.org
- Markle Foundation
  - www.markle.org
- American Health Information Management Association (AHIMA)
  - www.ahima.org
- Harris Interactive
  - www.harrisinteractive.com

Links

Information on Personal Health/Medication Records

http://www.nlm.nih.gov/medlineplus/personalmedicalrecords.html

Research various personal health records (unbiased)

http://www.myphr.com/resources/phr_search.asp

Privacy and Security

http://www.hhs.gov/ocr/hipaa/consumer_summary.pdf (patient)

http://www.hhs.gov/news/facts/privacy.html (provider)

Emergency Preparedness and Personal Health Records

http://www.amia.org/inside/releases/2006/ahima-amiaphrstatement.pdf