



# mHealth enables eCare

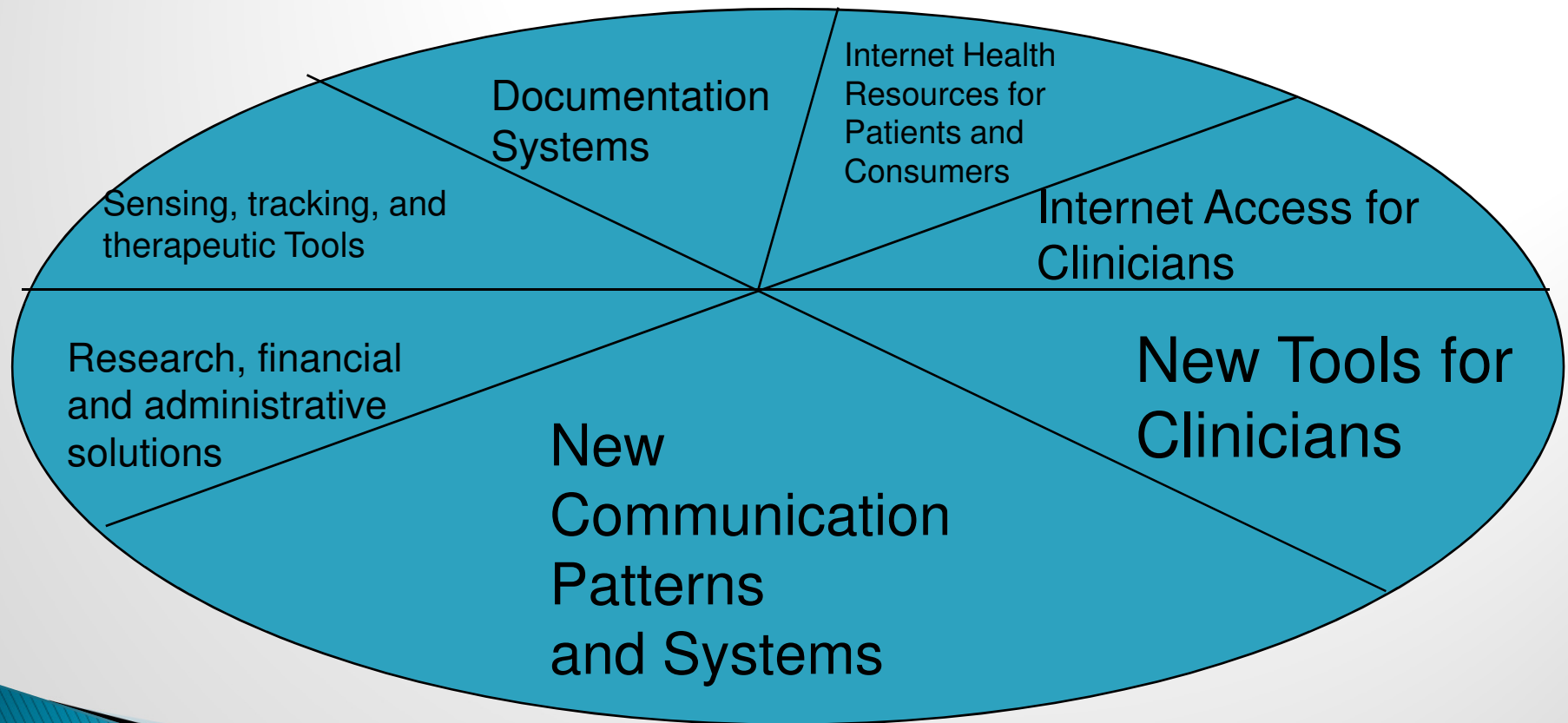
C. Peter Waegemann  
mHealth Visionary and  
Advocate

- One of 20 outstanding people who make healthcare better (*HealthLeaders Magazine*)
- Former chair of 12 standards organizations
- “Father” of ISO TC 215
- “The Ralph Nader of healthcare who tells the truth” (TEPR attendees)
- Author of the book, *Knowledge Capital in the Digital Society*
- International speaker and consultant
- mHealth expert and HIT strategist
- ***Visionary and advocate of mHealth – coined the term “mHealth”***

# What is mHealth?

- ▶ **Clinicians are using mDevices for**
  - Accessing guidelines (formularies and protocols)
  - Accessing reference material
  - Patient communication
  - Medical networking
  - Decision support functions
  - Medical tools
  - Communication with payers
  - Patient documentation
  - Care functions (e-prescribing, lab orders, online booking of hospital beds, etc.)
- + PDA functions
- + Lifestyle functions
- + News
- + eBook functions
- + And more...

# What is mHealth?



# The Internet is empowering patients

- ▶ Reliability of information
- ▶ Sources
- ▶ Patient communities
- ▶ Breaking down language barriers



# Medical Knowledge



**“I already diagnosed myself on the Internet.  
I’m only here for a second opinion.”**

- ▶ Over 70% of patients are getting clinical advice from the Internet
- ▶ But the system should tell the provider what the patient learned on the Internet and from what source
- ▶ The concept of patients advising each other has been very helpful and has great promise.
- ▶ Shouldn't the patient be able to ask the doctor by email or text message? Or better: in a secure app?

# Internet access for clinicians

- ▶ NIH Study in 1995 that no physician can keep up by reading and going to conferences
- ▶ Trust factor
- ▶ The race for Internet recognition: From Medline to Mayo
- ▶ Most information in English
- ▶ In some countries, patients judge their physicians...




# Physician tools

- ▶ Drug formulary apps
- ▶ Reference programs
- ▶ Educational apps
- ▶ Medical tools
  - Patient information and documenting tools
  - Patient monitoring apps
  - Nursing apps
  - Imaging apps
  - Clinical apps
- ▶ Payer tools
- ▶ Decision support tools
- ▶ Patient support tools

# New communication patterns

- ▶ Visits at doctors' offices are complemented by emails, text messages, and app communication
- ▶ Periodic visits are replaced by communication by need
- ▶ Online video visits are still a small percentage

## Main problems:

- ▶ Legislation and protective rules
  - ▶ Payment systems
- 



# Text messaging

- ▶ Appointments
- ▶ Medication reminders
- ▶ General inquiries
- ▶ Administrative questions
- ▶ Non-healthcare related communication
- ▶ Health promotion
- ▶ Patient-initiated communication
  - Need to reschedule appointment
  - Need for prescription refill (?)

How to improve internal communication among physicians, nurses, specialists, others?

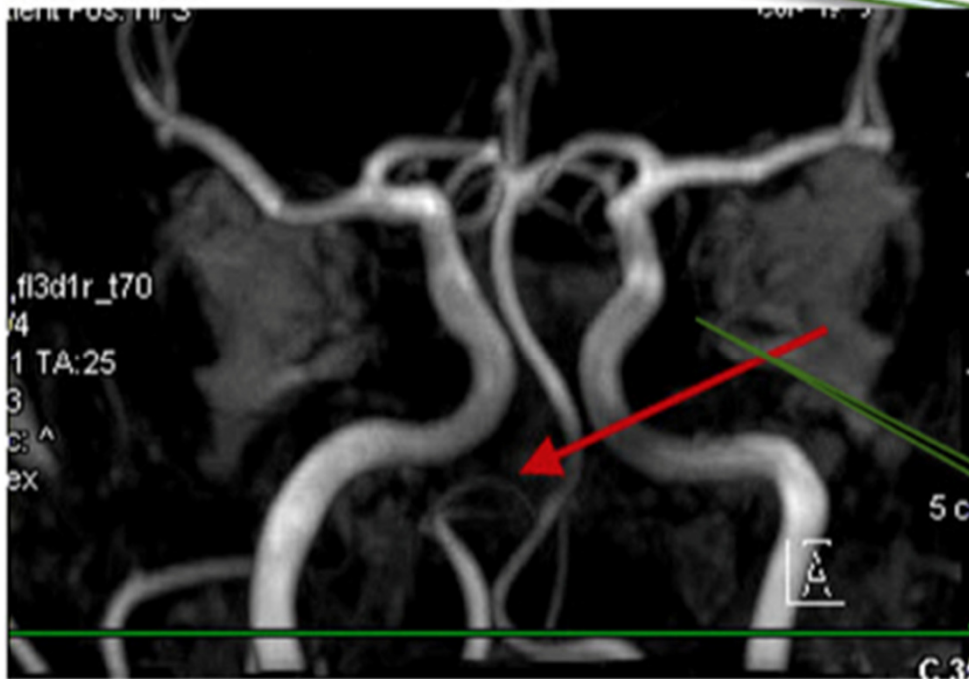
# A typical scenario

**Patient is triaged in an office, in the ED, in the hospital, in an extended care facility, even in the home....**

- **Help is needed from another doctor, specialist, medical staff member**
- **Finding the person(s) that the doc needs help from**
- **Determining the best way to reach them**
- **Efficiently connecting to them**
- **Sharing initial information with them**
- ▶ **Meeting live and viewing/discussing the situation with them**
- ▶ **Making decisions about the situation with them**
- ▶ **Communicating to others (medical staff, families, etc.)**
- ▶ **Documentation and paperwork**
- ▶ **Post discussion actions, next steps**

# How much do clinicians in your facility use digital communication for conference calls?

Let the other person take control and look through shared screens together  
Switch back and forth to look at whatever information, images, or records are on each others' screens  
Engage other clinicians, staff, family caregivers in a multi-person "webinar" to review details of a case and get other opinions.  
Or just to save a lot of phone calls back and forth describing things



Looking at the same MRI scan together online

File Options View Help

Screen Sharing

Stopped No one sees your screen

Show My Screen Stop Showing Screen Give Keyboard & Mouse

Attendee List (1 | Max 16)

Andrew Barbash (Organizer, Pr)

Roger Smith, MD-Radiology

Mary Davis, MD-Neurosurgery

Audio

Audio Mode: Telephone

Dial: 914-3

Access Code: 260-0

Audio PIN: 74

If you're already on the call, press #744

Chat

Invite Others

Credit: Andy Barbash, MD

# Or text to discuss a case?

Google Talk



Andrew Barbash  
HCH-Urgent Neuro Cases

Search bar

- hch.erc
- hcherd
- NCCU
- Richar
- Anna A

Initial contact made when ER doc looks within the Google Chat list and sees "AJBMD available via text chat for acute stroke at my hospital"

Copy of chat also shows up in both sender and receiver email in case missed initial message

Chat with hchei ...

☆ hch: @gmail.com to me [show details](#) 3:22 AM (1 hour ago) [Reply](#)

3:16 AM hcherdoc1: DR BARBASH: THIS IS DR. LOPEZ. I HAVE A 56 YO FEMALE WITH NIH STROKE SCALE = 22 WITH R SIDED HEMIPLEJIA, R SIDED FACIAL PARALYSIS, CONFUSION AND SEVERE APHASIA. S/S STARTED AT 2:00 AM. CT IS PENDING. VSS + MFS =300 MG/DL.  
NAME: TAYLC

3:17 AM MR; 206C : : :  
GOOD GAG REFLEX

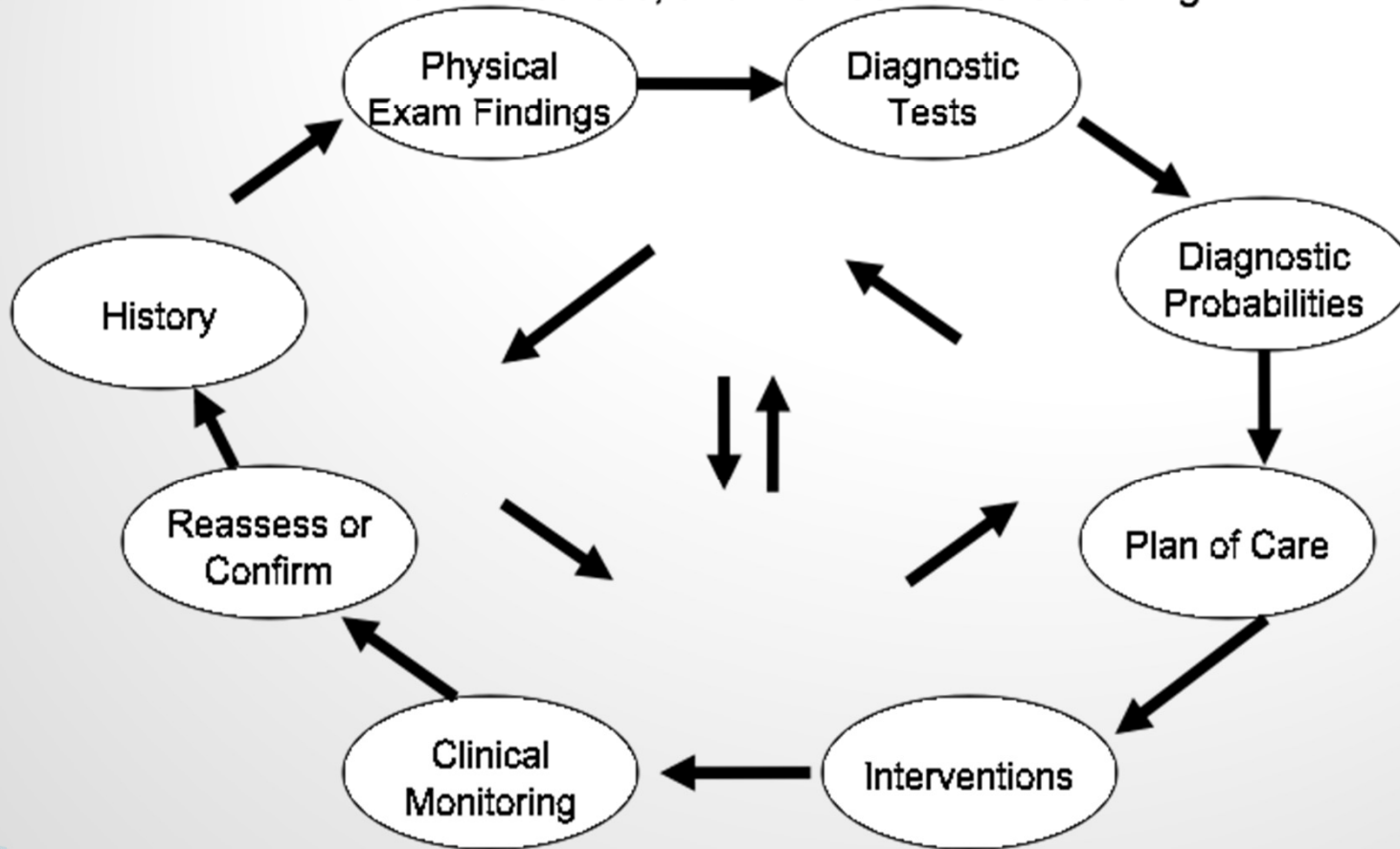
3:18 AM me: I will check ct and vjdeo in soon  
hcherdoc1: OK  
THANK YOU VERY MUCH.

3:22 AM me: gladys--how do they know it suddenly started at 2 AM?--it is so unusual for someone to be awake and normal at 2 am ---did she wake up or was found like this at 2 am?

Credit: Andy Barbash, MD

Every clinic and hospital should examine its internal communication pattern

Virtualizing care with efficient multi-modal communications is key in the modern era. Decision-making is no longer linear. It is now a continuous cycle of exchanges involving many people, information sources, and methods of collaborating



Credit: Andy Barbash, MD

# Research

- ▶ Proving mobile devices to patients in order to collect data
- ▶ Collecting data from physicians and comparing the outcome

# Documentation

- ▶ Documentation takes up a substantial part of the healthcare professional
- ▶ Move toward EHRs – but got only to EMRs
- ▶ Documenting at point of care is a problem
- ▶ Some doctors still do some handwriting



# INFORMATION CAPTURE

## ▶ Variations

- Handwriting
- Dictation and transcription
- Speech recognition
- Direct computer input
- Point of Care
- Hybrids

## ▶ Desirable characteristics

- Ease of use
- Real-time
- Point of care
- Control and access

RBC  
 1/14/80  
 Sp - 114/80      WT - 176#  
 HSENT - TM (-)  
 Temp: Clean & PTA  
 PAIN: GKR  
 Tenderness in abd.  
 Tigo & Dr. Kunitz  
 1/21/94  
 Flu 5x gone  
 Feels well  
 RBC: also Dr. Kunitz  
 MADS: None  
 1/4/95  
 on 11/13/95 had severe chest pain +  
 was by Dr. G. sleep  
 then had pressure in neck (B. Kunitz)  
 manifested 5 vomiting  
 1/6/95  
 HSENT  
 Temp - clean  
 PAIN: no pain - no sub or gallyp  
 A&L: no pain  
 ECG: WNL  
 Dx: Ekt pain/nausea  
 No intermediate symptoms (noisy in abd.)  
 PAIN: admit telemetry  
 Dr. Kunitz

Real-time, point-of-care information capture!!!

Is such documentation acceptable anywhere else?

- Legibility
- Structure
- Meaning
- Completeness

## A TEST

frequent

*frequent or  
pregnant?*

sourture

*routine or  
positive?*

Heparin 10000u.

*1000u or  
10000?*

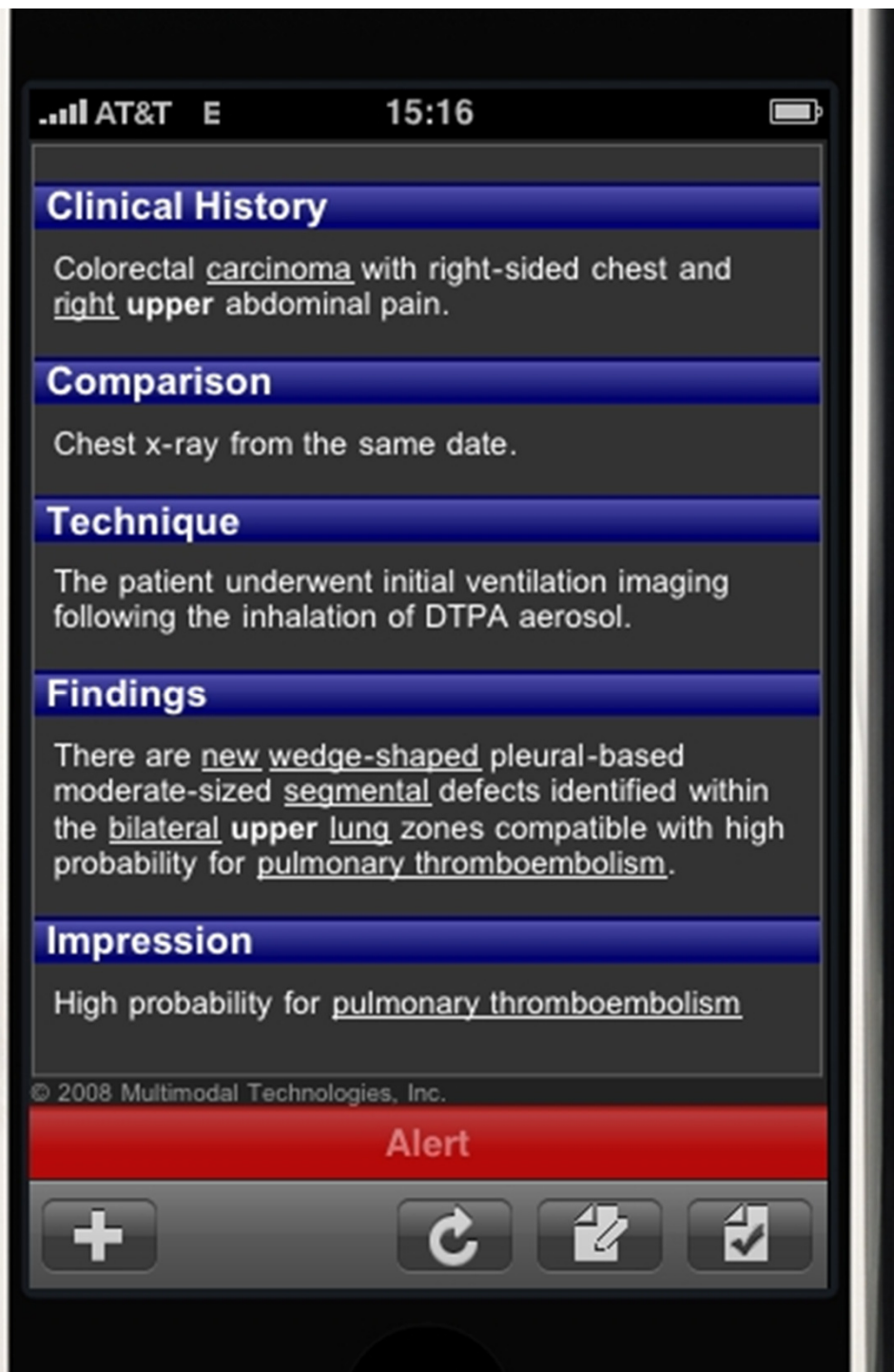
Hypertension.

*hypertension  
or  
hypotension?*

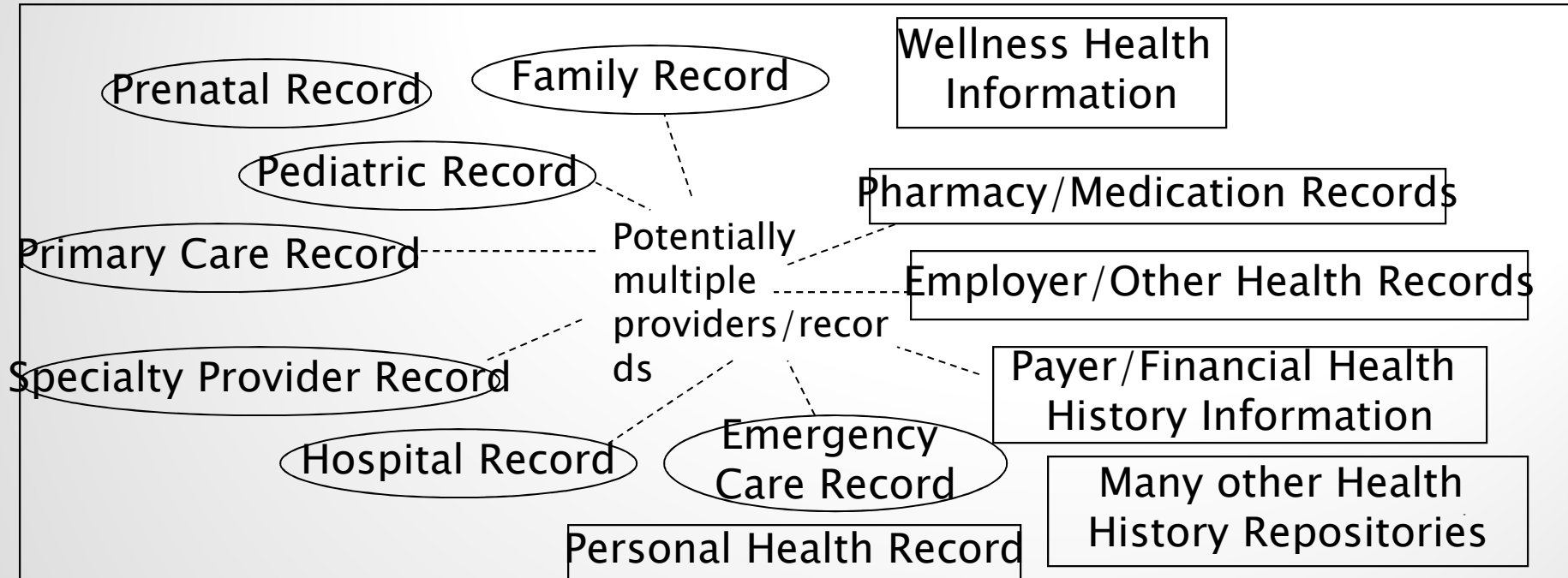
Negative

*negative or  
hepatitis?*

As such recordings will be integrated with online protocols (new and existing), a new process of electronically enabled care will emerge



# Parts of a Patient's Medical Record May Be in Many Places

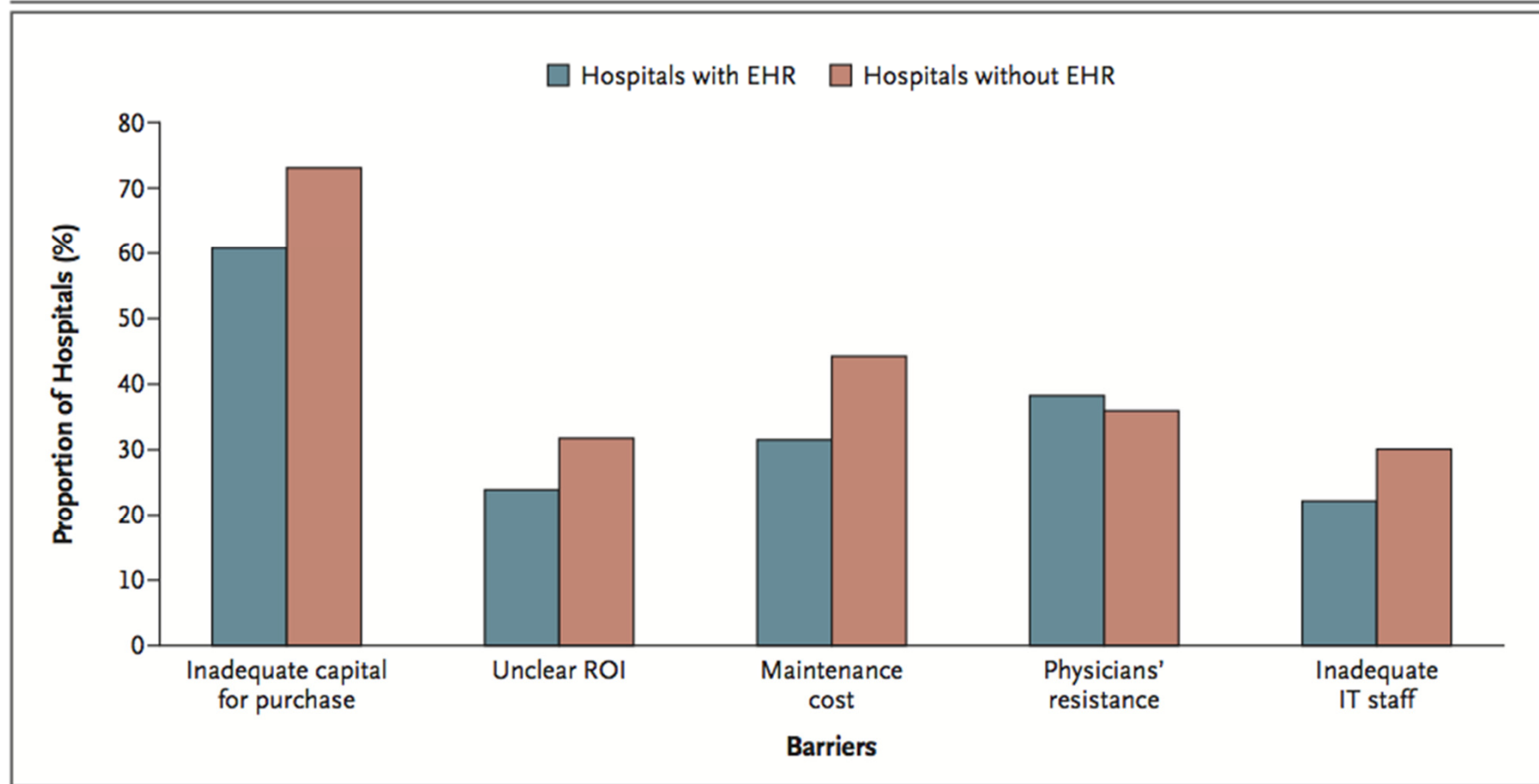


## Questions:

- Should there be one database?
- If a network is created, which information is to be exchanged?

# EHR Adoption – after 20 years

## Major Perceived Barriers



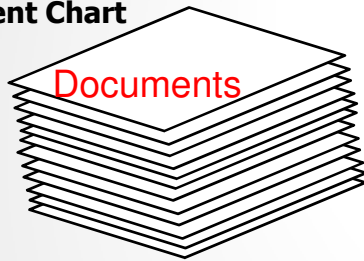
Source: Jha, Ashish K., M.D., M.P.H. et al., "Use of Electronic Health Records in U.S. Hospitals," The New England Journal of Medicine, 360; 16, April 16, 2009, p. 1635.

Credit: TechNova Consulting LLC

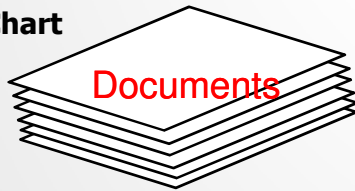
# TRADITIONAL APPROACH

## Documents to Data

Inpatient Chart



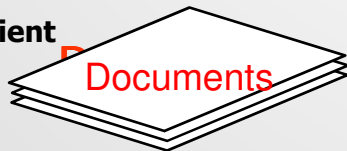
Clinic Chart



Consult Note



PHR/Patient



### DATA

#### PROBLEMS

3/11/04 Myocardial Infarction – Anterior Septal  
9/18/92 CVA– Right Middle Cerebral Artery Infarct

#### MEDICATIONS

Atenolol 25mg po bid (3/12/04) Last Fill 3/1/05  
Coumadin 5mg qd M/W/F (3/1/05) Last Fill 3/1/05  
Coumadin 7.5mg T/Th/Sat/Sun (3/1/05) Last Fill 3/1/05

#### LABORATORY OR OTHER RESULTS

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#### ENCOUNTER DOCUMENTATION

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#### ETC.

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# NEW VISION

## Data to Documents

**DATA**

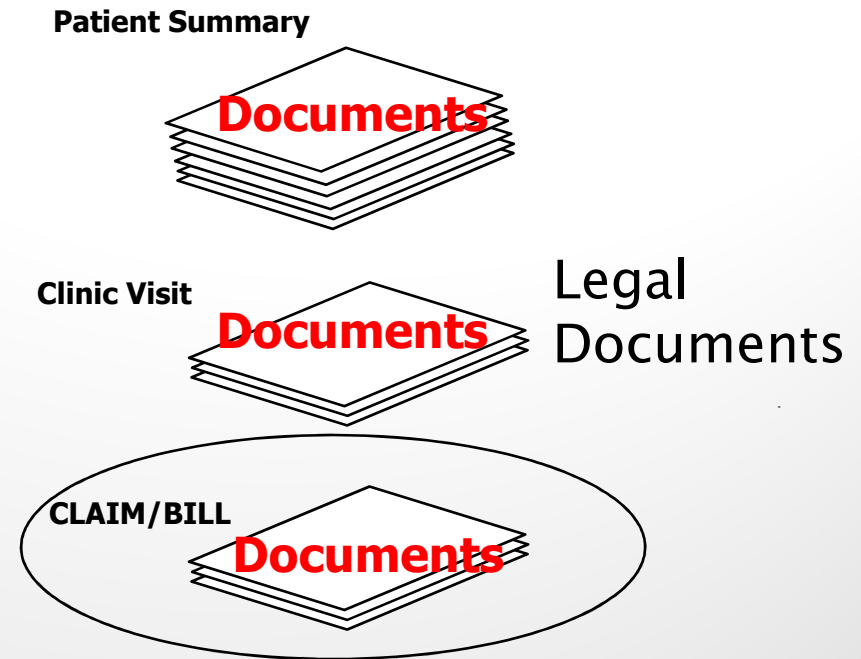
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**LABORATION RESULTS**  
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**HOSPITALIZATIONS**  
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**ETC.**  
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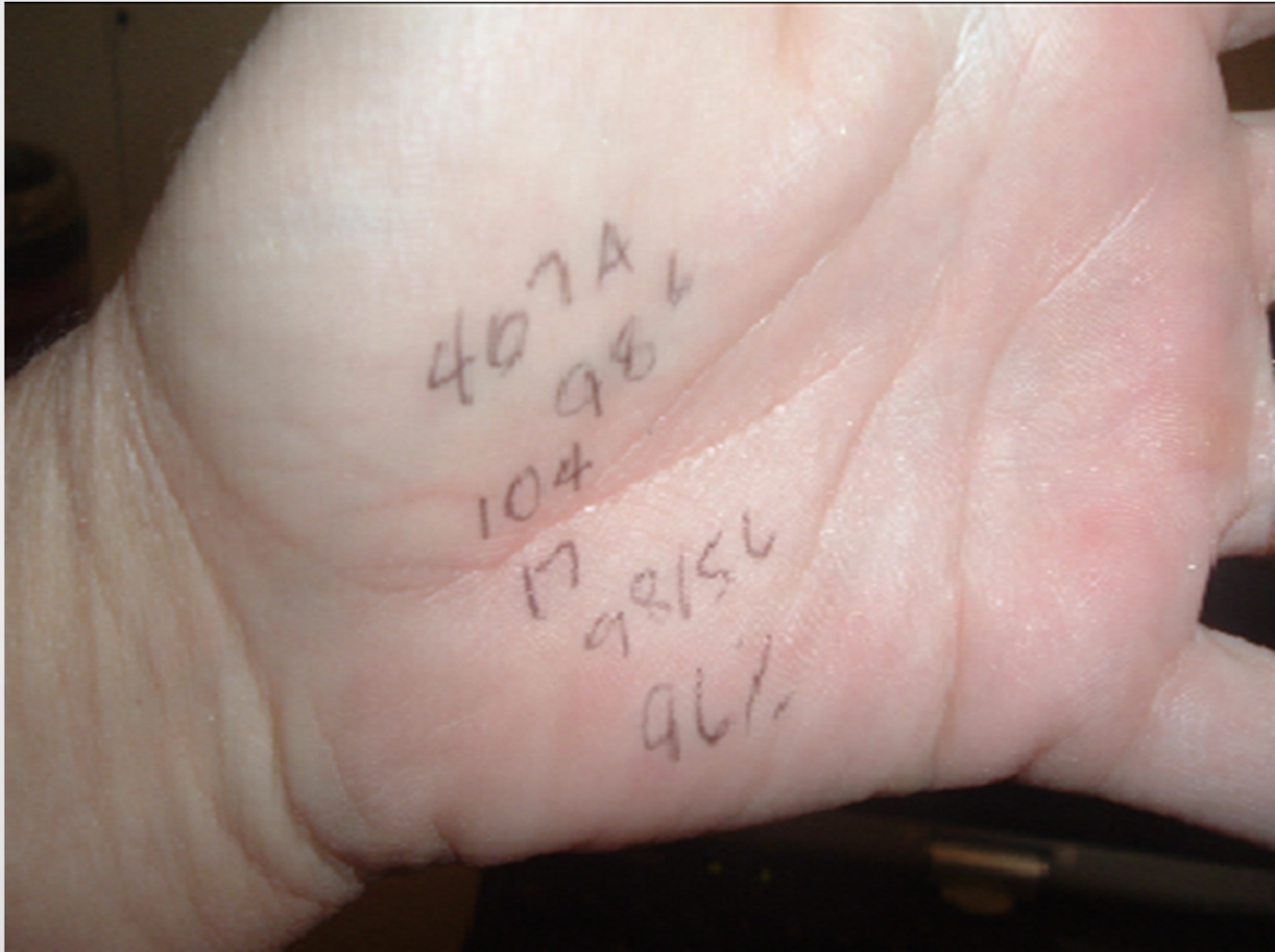
# Types of Communication

1. Patient to provider (pre-engagement)
  - a. General inquiry
  - b. Appointment
  - c. Insurance coverage or cost
2. Provider-patient interactively
  - a. Appointment confirmation/reminder
  - b. Reason for visit: Agenda
  - c. Referrals and other care management communication, e.g. 'How r u?'
  - d. Other
3. Patient education

How to get physicians, nurses and other practitioners to document at the point of care?

418 98  
117 20  
114176 RA  
92

419 99  
96 18  
112162



407A6  
98

104

17  
98/56

96%

403

97<sup>9</sup>

76 18

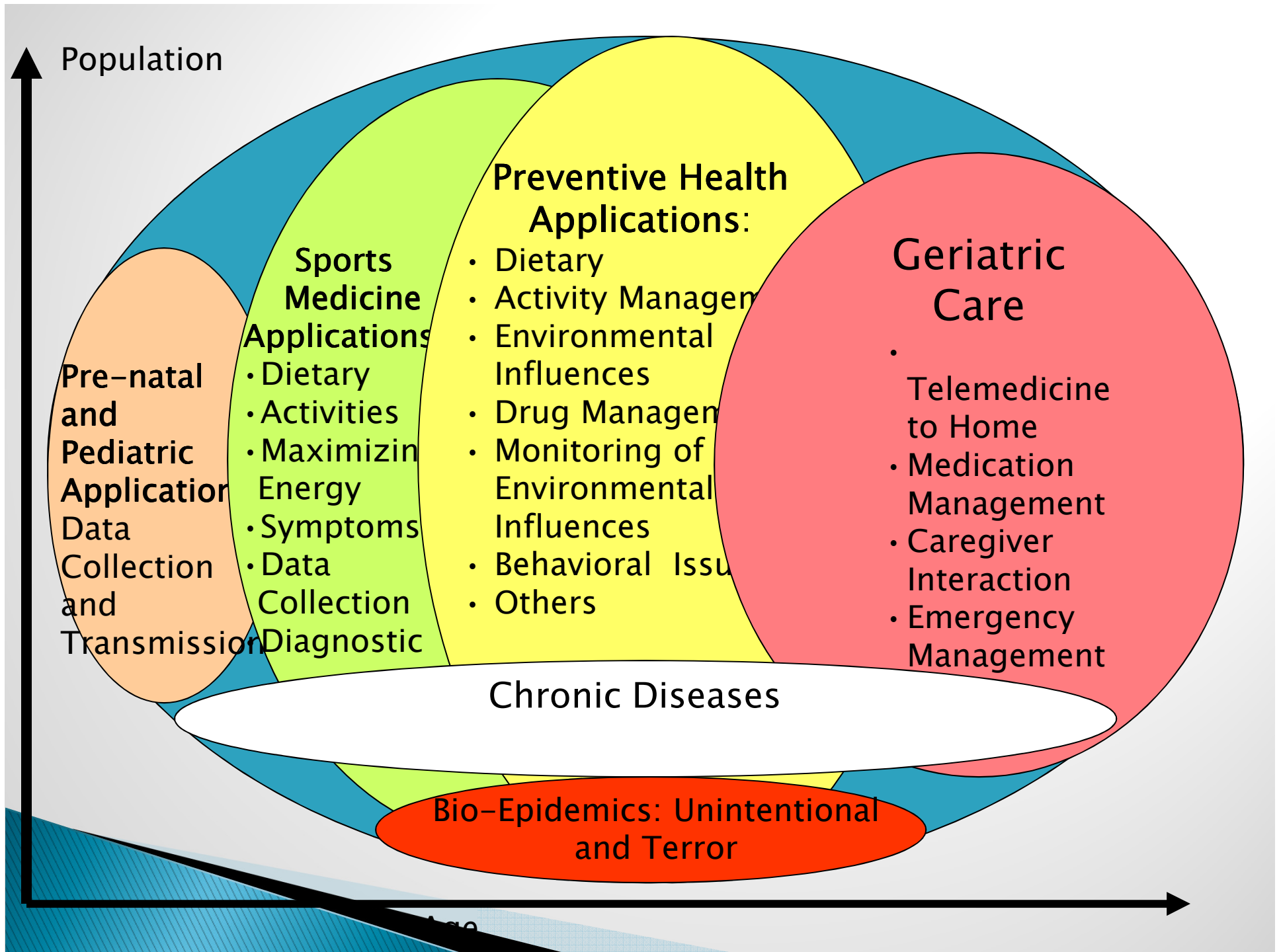
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Is there an approach to disease management that is more effective and reduces costs?

**Answer: Communication-based Disease Management**

# Saving money, providing better care through communication-enhanced disease management

- ▶ Diabetes
- ▶ Hypertension
- ▶ Asthma
- ▶ Dermatology
- ▶ Others





# Thank you

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[www.waegemann.net](http://www.waegemann.net)



Available as ebook or  
paperback from  
[Amazon.com](https://www.amazon.com)

# Questions?