BHealth Management
Helping Your Organization Help Others

The Past, Present and Future of Healthcare Informatics

Step into the Time Machine

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Parallel Universes

- **The healthcare's system and the evolution of informatics in the system**

COMPARED TO:

- **My personal experience with health care informatics**

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Lessons we'll learn

- **We've come a long way**

- **We've got a long way to go**

- **Many of our colleagues got stuck in the sixties, in more than one way**

- **If I can keep up, anyone can – Even a blind squirrel….**

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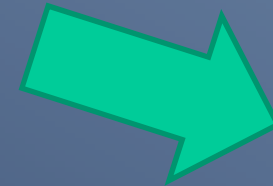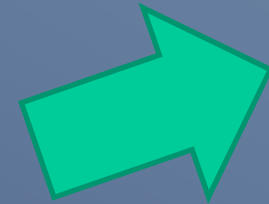
History of Healthcare Informatics

- **Many of the first efforts to use computers in healthcare were conducted by the federal government:**
  - ❖ **Dental studies (early 50's)**
  - ❖ **Robert Hedley was responsible for conducting a study of the use of computers in healthcare and biology**
  - ❖ **That study prompted the National Institute of Health to expend over $40 million between 1960 and 1964 on regional bio-medical research facilities.**
  - ❖ **One of the early uses of computers in medicine was to quantify and classify human movements. These studies were conducted on IBM 650, 1620, and 7040 machines.**

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History

- **Most early computers used punch card tabulating systems.**

- **Punch cards began being used for programming of computers in the early 1950's.**

- **Despite the cost and size (think large-room size) these computers were fairly common in business and academia by the mid-fifties.**

- **IBM launched its last punch-card system in 1960.**

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History

- **Medical use of computers was primarily limited to University medical centers and large hospital systems.**

- **Punch cards yielded to programming languages and the most prominent clinical language was the Massachusetts General Hospital Utility Multi-Programming System (MUMPS).** *I'm not making this up.*

- **One of the descendants of MUMPS is the VA electronic medical record system, VistA (one of the first EMR systems in the country).**

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History

- **In 1963 the University of Illinois built its first transistorized computer – ILLIAC**
- **The transistor age made computers smaller, faster and more accessible to more hospitals**
- **Still very little penetration to community healthcare**

BUT

They started my own journey into healthcare informatics

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The start of my own journey

- **ILLIAC**

- **Annual field trips to U of I during junior high and high school always included a visit to the U of I Coordinated Science Laboratory to watch ILLIAC in action**

- **Those visits and a profound love of science fiction lead to my visions of the potential utility of information technology**

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History

- **Skip to the 80's**
- **Advent of the personal computer**
  - ❖ **Tandy's TRS 80**
  - ❖ **IBM PC**
  - ❖ **DEC Rainbow**
- **PC's were more accessible in:**
  - ❖ **Price**
  - ❖ **Size**
  - ❖ **User-friendly**
- **MS DOS operating system became ubiquitous and allowed the development of a plethora of programs, some of which pertained to healthcare.**


1981: IBM 5150

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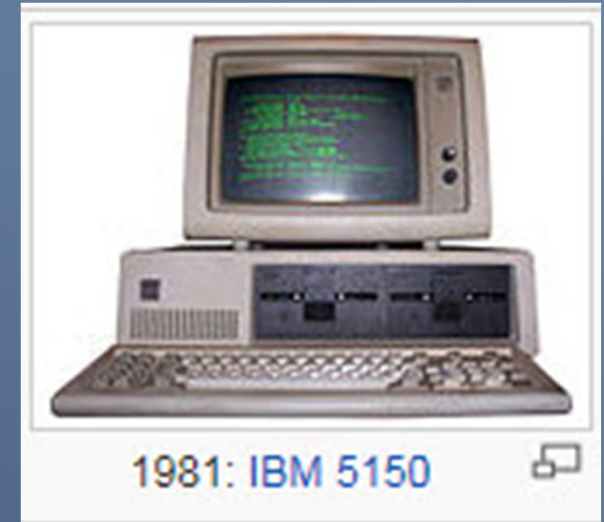
My personal history

- **In 1983 I was recruited to start a new psychiatric rehabilitation progra[m] here in Maryland**
- **I was the first staff and there wasn't sufficient funding to hire a bookkeeper or administrative assistant**
- **My one condition to take the job and relocate was the purchase of a P[C] DEC Rainbow**
- **My first experience with hardware and software**
  - ❖ **Accounting**
  - ❖ **Word processing**
  - ❖ **Spreadsheet**
  - ❖ **Database**

- **Our little organization was one of the first community mental health programs in the state to have computing capability.**
- **I'm not sure I or the organization would have survived without our PC**

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History

- **PC's transformed community health practices by allowing for electronic:**
  - ❖ **Scheduling**
  - ❖ **Patient demographic and contact information**
  - ❖ **Storage of information regarding medications**
- **The 80's became the decade of "The Spreadsheet"**
  - ❖ **Accounting**
  - ❖ **Billing**
  - ❖ **Patient data**

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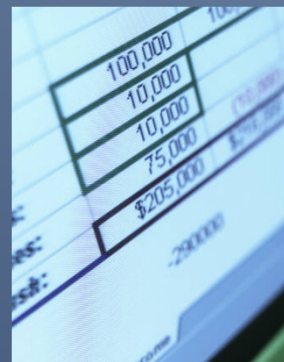
History

The 80's brought on the era of linked PC's (networks) allowing hospitals, practices and community health programs to put computers at all desks.

The mid-80's brought the advent of Windows, a new operating system, that was a faster operating system and allowed for the easier creation of compatible programming.

In the late 80's we began to see rudimentary electronic medical record (EMR) systems based on relational databases – pretty expensive.

As mentioned before the VA was one of the early adapters of EMR's. The system is utilized nationwide and allows for the sharing of medical information on veterans throughout the nation.

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History

- As with early computer utilization, EMR's began to show up in university hospital and large private hospital settings first.
- Hospitals began to see efficiencies due to:
  - ❖ Reduction in errors
  - ❖ Reduction in time looking for information
  - ❖ Faster turnaround in billing and payment
  - ❖ Facilitation of communication about patient issues

The Nineties

- **Windows 95**

- **Intel Pentium processor**

- **CD ROM drive**

- **Laptops made healthcare IT portable but more vulnerable**

  - ❖**12,000 laptops are lost each week in US airports alone**

  - ❖**Remember VA stolen laptop? 26.5 million military and veteran identifiers lost**

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My History

My organization was one of the first adapters of EMR's in the mid-90's.

I was one of the first behavioral health executives to own a handheld (Palm Pilot) in the mid-nineties.

Predicted that handhelds and cell phones would become one unit (Blackberry's, I-Phones, Droids)

One of the first Blackberry owners among my behavioral health colleagues

In a 1996 speech to the membership of the International Association of Psychiatric Rehabilitation Services about the future of Psychosocial Rehabilitation Services I predicted that patient records would ultimately be stored on handhelds

Credible Behavioral Health software introduced that technology in 2000 and we became their first MD customer

In a tour of an emergency room in Baltimore I saw the use of a handheld. ER docs used handhelds to communicate status of patients they treated. Results were displayed on a "war board" at the ER nursing station.

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History
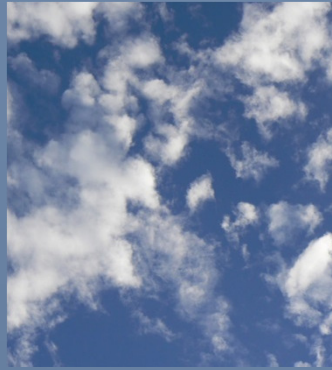
- **The Internet and the Cloud**
  - ❖ **Web-based electronic medical record systems have made the service more accessible to many more providers.**
  - ❖ **Encryption of data processes are extremely reliable.**
  - ❖ **Web-based systems eliminate need for costly hardware and costly installation of updates.**
  - ❖ **Downside – intermittent loss of internet access**

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Now

- EMR systems are ubiquitous in hospitals and are probably second or third generation systems.

- Patient data is real-time.

- Billing audits are in-the-moment.

- Bar-coding updates material and medication inventory and patient billing automatically.

- Imaging is digital and immediate.

- Bed management is handled electronically. Queues are updated automatically.

- Document management has allowed hospitals to go virtually paperless and search time for documentation has been reduced dramatically.

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Now
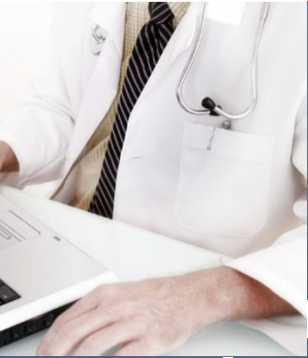
munity health providers have been slower to adopt EMR's.

- Cost has been a barrier.
- The lack of office expertise has been a barrier.
- Frankly, their has been a significant pushback from doctors. Some doctors have said they would close their practices before implementing an EMR.
- Those doctors that have implemented EMR's for their practice have mixed feelings about the change:
  - ❖Some love it and understand the efficiencies
  - ❖Others think it is a nuisance and a burden

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Now

- **What market segment is way behind?**
- **Community behavioral health providers – mental health and substance abuse providers**
- **Don't know what they don't know**
- **Believe cost is a barrier**
- **Don't understand potential ROI**
- **Don't understand potential positive impact on quality of care**

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A GLIMPSE AT THE FUTURE

Exchange of information

❖ **Legal, instant exchange of PHI between mutual providers**

❖ **In office results of lab work**

❖ **Variety of scans available in PHP offices with immediate results (think Star Trek)**

❖ **Patient portals on MD and insurance company websites offering account information and up-to-date health record**

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Future

- **PCP's will be alerted immediately upon patient admission to emergency room.**
- **Drug interactions, allergic reactions will flash immediately upon entering an e-prescription.**
- **Know Fitbit? Think of a sub-cutaneous nanobot that would:**
  - ❖ **Track vitals (blood pressure, temperature, etc.)**
  - ❖ **Sense increase in white blood cell count (infection), drop in RBC (anemia), etc.**
  - ❖ **Monitor sodium/potassium balance, trace minerals.**

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Future

- "Bodybot" would transmit information to your own cloud-based, secure account that you could access on your phone, wrist watch, google glasses, car windshield, bathroom mirror, etc.

- Alerts would sound if results are out of your pre-programmed limits.

- Your PCP would also have access to the account (with your permission) and alerts would blast on the PCP's "war board".

- A trained tech would man "war board" and respond appropriately.

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Implications for improved Informatics?

- **Faster transmission of critical data – in time.**
- **Care coordination will benefit greatly from shared data.**
- **Data management improvements will save countless hours.**
- **Clinical response time will improve dramatically.**
- **ER usage will drop.**
- **Mortality will drop.**
- **Cost will drop.**

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THANK YOU!
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