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# Safeguarding Patient Information: Real Life Experiences

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# Cedars-Sinai: Overview

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- Not-for-profit academic medical center
- Established in 1902 and located in Los Angeles, California
- 866 licensed beds, Level 1 Trauma Center
- Primary service area includes 3.3 million people
- Focus on patient care, education, and translational research

## Focus on Healthcare Delivery

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On average, every day we serve:

- 233 Emergency Department Patients
- 76 Emergency Department → Inpatient Admissions
- >735 Inpatients
- 18 OB Deliveries
- 120 Operative Procedures
- 44 CVIC/E.P. procedures
- 4 Level 1 Trauma Patients
- 25 Acute Rehab patients
- >1400 Outpatients Visits and Procedures



## Focus on Research

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### Translational Research

- Ranks among the nation's top independent hospitals in National Institutes of Health (NIH) funding
- More than 400 Cedars-Sinai faculty members and 470 research staff
- Offers PhD in Biomedical Science and Translational Medicine
- More than 1,180 active sponsored research projects
- More than 1,900 research papers appear annually in peer-reviewed journals



## Focus on education

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### Major Training Center

- More than 500 residents and fellows in graduate medical programs, with fellowships in 80 specialties and subspecialties
- Home to one of California's largest internal medicine residency programs with 140 residents
- Supports more than 600 medical student rotations annually
- Clinical programs for nursing students affiliated with more than 15 universities and colleges

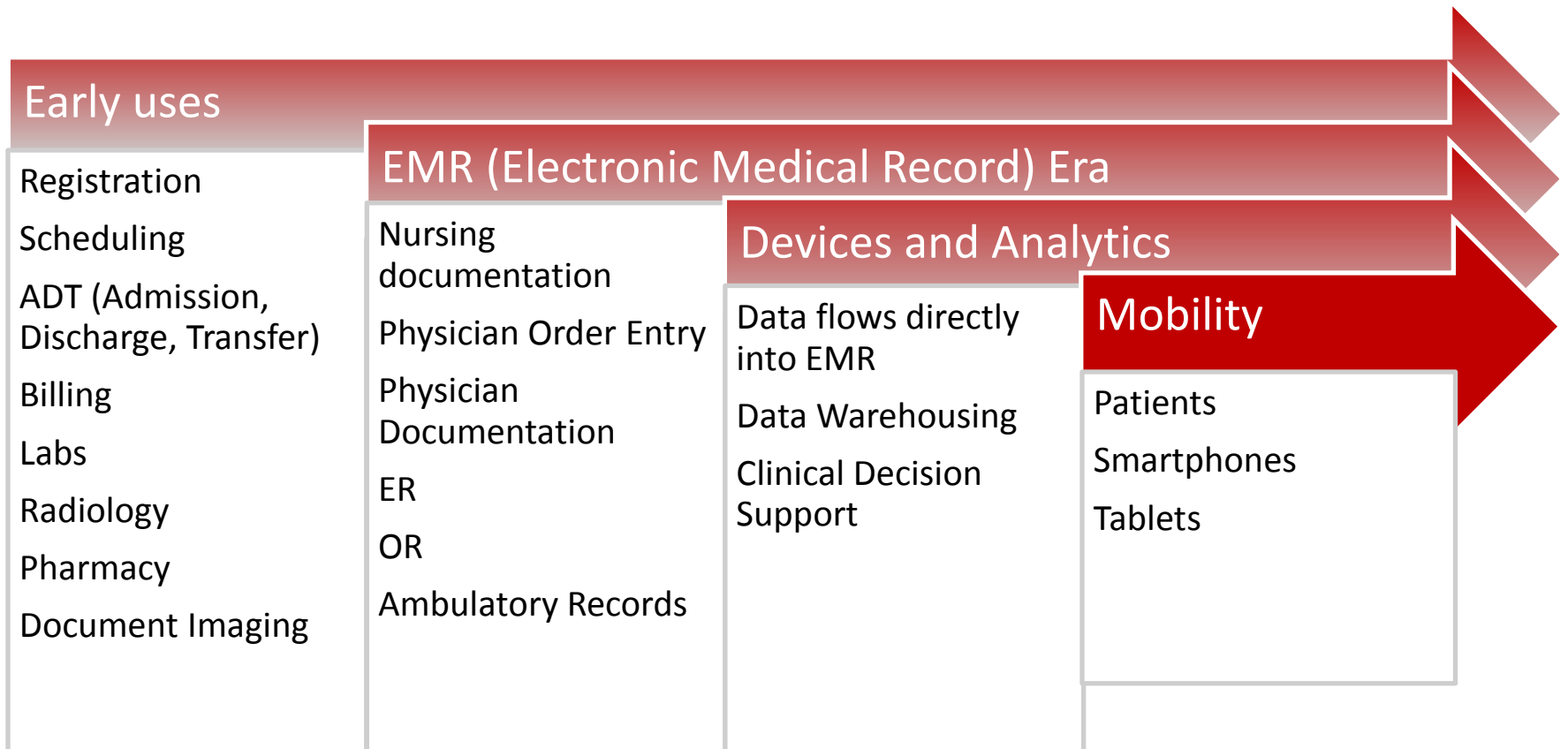


- We have great people in IT
  - Voted one of Best Places to work in IT for 6 years running! (2009-2014)
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# Evolving use of Information Technology in Healthcare

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# What's inside?

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- Desktops
- Laptops
- Smartphones
- Tablets
- USB Drives
- Cloud Storage Services

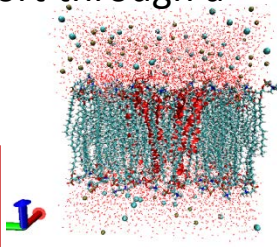
BYOD Devices  
BYOD Services  
BYOD Applications





# The Wild, Wild West of Research

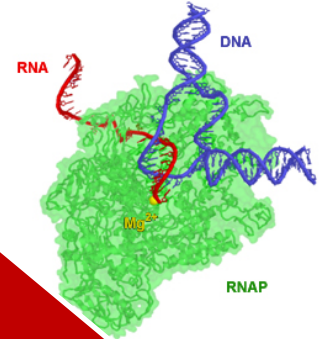
Modeling ion transport through a cell membrane



400+ node High Performance Computing Cluster



Genomics



## Research

- Funding from grants
- Keep 'till it stops working
- Computers imbedded in instruments
- One-of-a-kind configurations
- Assets move with a grant
- Decentralized workforce management

## Rest of Cedars-Sinai

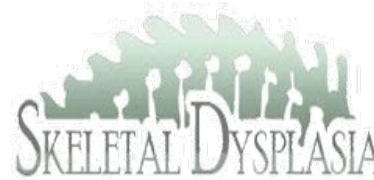
- Funding from operational budget
- Upgrade every few years
- Easy to identify computers
- Deploy standard image
- Assets remain at Cedars-Sinai
- Centralized (mostly) workforce management



Translational Research Informatics



MS PROGRAM



CEDARS-SINAI

## By the Numbers

**804** breaches of protected health information since 2009

**29,276,385** patient health records affected by breach since 2009

**7,095,145** patient health records breached in 2013

**137.7%** increase in the number of patient records breached in 2012-2013

**85.4%** percent of the total records breached in 2013 resulted from the 5 largest incidents

**4,029,530** records breached in the single largest incident

**83.2%** of 2013 of patient records breached in 2013 resulted from theft

**22.1%** of breach incidents in 2013 resulted from unauthorized access

**35%** of 2013 incidents were due to the loss or theft of an unencrypted laptop or other portable electronic device

**~ 20%** of PHI breaches have involved a business associate each year from 2009-2013

[www.redspin.com](http://www.redspin.com), Breach Report 2013: PHI



# External Threats

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## Hacker group Anonymous targets Children's Hospital - The ...

[www.bostonglobe.com/.../hacker...children-hospital.../sto...](http://www.bostonglobe.com/.../hacker...children-hospital.../sto...) The Boston Globe ▾

The infamous computer hacker network known as Anonymous has taken aim at Boston Children's Hospital over the child-custody case involving Justina ... Hacker group Anonymous targets Children's Hospital ... Globe Staff April 24, 2014 ...

## Heartbleed Exploit Linked to Community Health Data Breach

[threatpost.com/heartbleed-exploit-linked-to-community-health-data-breach](http://threatpost.com/heartbleed-exploit-linked-to-community-health-data-breach) ▾

Aug 20, 2014 - Hackers involved in the Community Health Systems data breach used a Heartbleed exploit to access the provider's network and steal 4.5 ...

## Hackers Breach Security of HealthCare.gov - NYTimes.com

[www.nytimes.com/.../hackers-breach-security-of-health...](http://www.nytimes.com/.../hackers-breach-security-of-health...) The New York Times ▾

Sep 4, 2014 - Hackers downloaded malicious software onto a test server, but did not ... of the government's health insurance marketplace, HealthCare.gov, ...



# HIPAA eliminated consent and privacy

**1996** Congress passed HIPAA, but did not pass a federal medical privacy statute, so the Dept. of Health and Human Services (HHS) was required to develop regulations that specified patients' rights to health privacy. **Public Law 104-191**

*"... the Secretary of Health and Human Services shall submit to [Congress]...**detailed recommendations on standards with respect to the privacy of individually identifiable health information.**"*

**2001** President Bush implemented the HIPAA "Privacy Rule" which recognized the "right of consent". HHS wrote these regulations. **65 Fed. Reg. 82,462**

*"...a covered health care provider **must obtain the individual's consent**, in accordance with this section, prior to using or disclosing protected health information to carry out treatment, payment, or health care operations."*

**2002** **HHS amended the HIPAA "Privacy Rule", eliminating the right of consent.**  
**67 Fed. Reg. 53,183**

*"The **consent provisions...are replaced** with a new provision...that provides regulatory permission for covered entities to use and disclose protected health information for treatment, payment, healthcare operations."*

Patient Privacy Right, Deborah C. Peel, MD – April 9<sup>th</sup>, 2014



## Key threats defining the landscape

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External Interested parties

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Service Provider Vulnerabilities

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Big Data = Big Problems

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Mobile Apps

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Encryption breaches

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CEO, Board, and Public are watching

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Skill Gaps

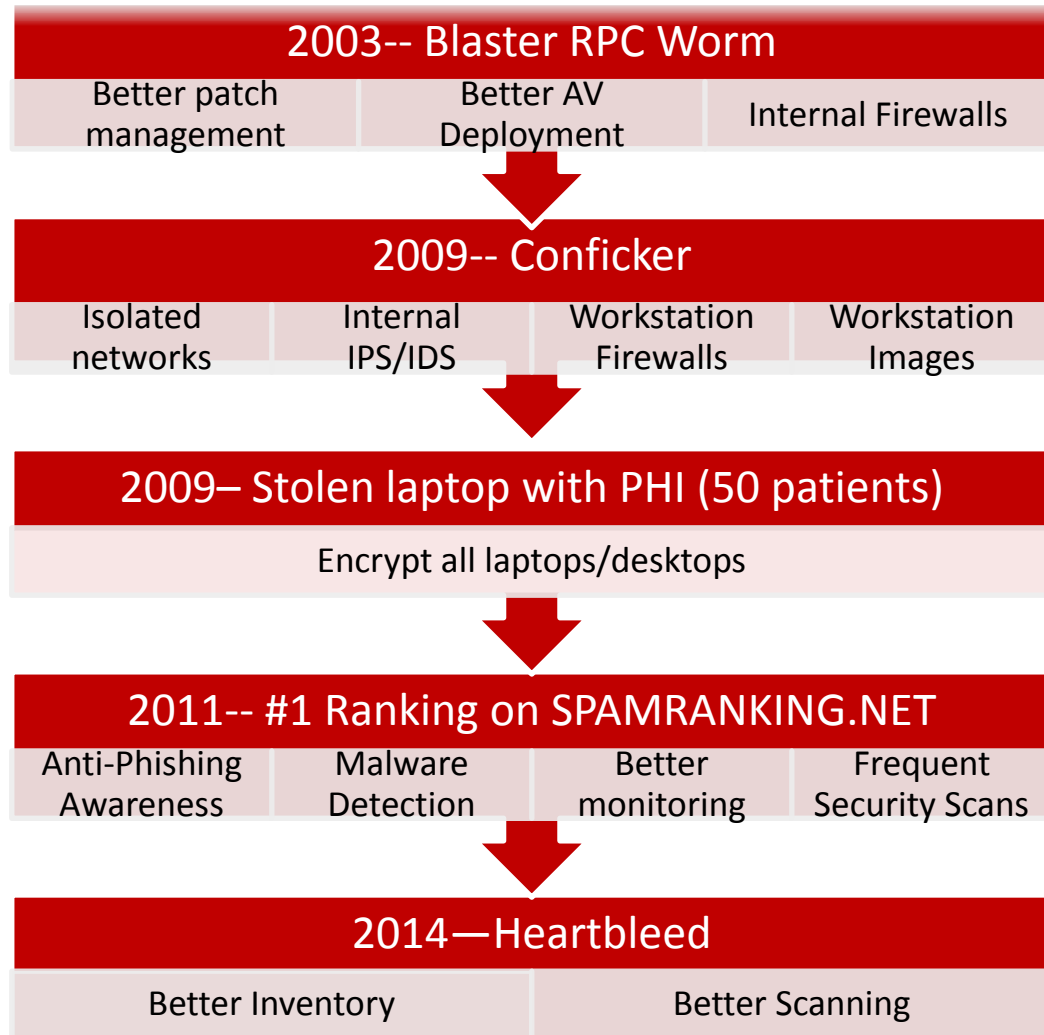
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Human Factors



# “Sentinel Events” @ Cedars-Sinai

Major events that shaped our current security architecture



## What do we need to do?

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- End user security awareness
- Craft and enforce an encryption policy
- Deploy intrusion detection and prevention
- Perform regular vulnerability assessments
- Apply comprehensive patching
- Leverage third party resources



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- Role based security
  - Limit PHI use by design
  - Develop pattern and exception reporting
  - Make security an application and device requirement





## What do we need to do?

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- Same commitment for patient privacy and security as safety
- Enterprise answer can't start with "no"
- Be agile
- Encourage reporting
- Not all breaches are equal
- Enable proactive auditing



# Questions

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