



# PATIENT PRIVACY AND SECURITY IN EHEALTH

Dr. Güney GÜRSEL

Department of Medical Informatics

Gulhane Military Medical Academy

Ankara/Turkey

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**IMPORTANT**



“Privacy is not something that I'm merely entitled to, it's an absolute prerequisite”

Marlon Brondo



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- eHealth?
- Privacy?
- Security?
- Patient Privacy and Security?





- Use of information and communication technologies (ICTs)
- to improve health care
- Used interchangeably with Health Informatics.
- in the intersection of
  - medical informatics
  - public health
  - business





# Medical Informatics

- Interdisciplinary field
- manages and organizes use of computer technologies
- to improve health care
- Used interchangeably with Health Informatics





- Freedom from interference or intrusion,
- The right "to be let alone"
  - Warren & Brandeis, 1890



- *Informational Privacy*
- The right to control of access to personal information
  - Moor 1989







- Degree of resistance to, or protection from a threat
  - wikipedia
- Safety or Security?



- ***Informational Privacy***
- The right to control of access to personal information
  - Moor 1989



# Patient Privacy and security

## DEFINITION



- Privacy and security are two different things.
- They are used together as a repetition for patient data.
- In healthcare, these two terms are used together as a concept.
- In which 'Privacy' refers to what is going to be protected
- 'Security' refers to how it will be protected,





- “ Whether oral or recorded in any form or medium, that
- is created or received by
  - a health care provider,
  - health plan,
  - public health authority,
  - employer,
  - life insurer,
  - school or university,
  - or health care clearinghouse; and

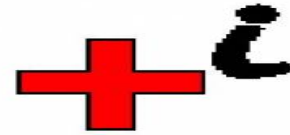




○ relates to the past, present, or future physical

- or mental health
- or condition of any individual,
- the provision of health care to an individual,
- or the past, present, or future payment for the provision of health care to an individual.”

- HIPAA, 1996



Health information

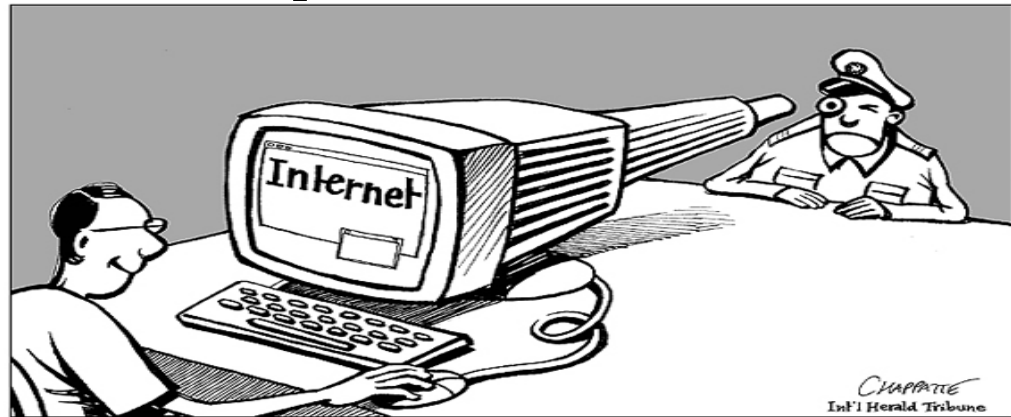


# SCOPE

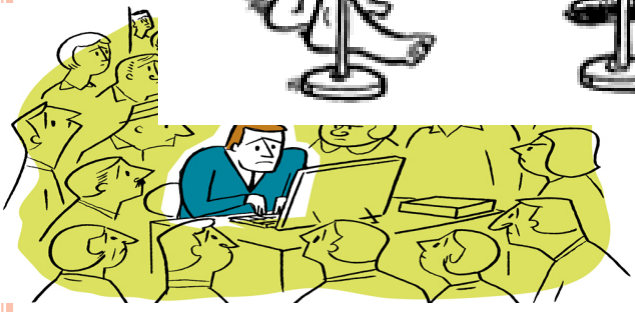
## PATIENT PRIVACY AND SECURITY



- Privacy refers to a general and wide issues
- Private life
- Personal life space shared/independent
- House
- Communication
- Social life
- ....
- ....
- Our scope is limited to electronically stored patient health information.



information  
personal  
identity  
users  
public  
human  
rights  
act  
people  
Seattle Post-Intelligencer  
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Seattle Post-Intelligencer

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# WHAT IS IN DANGER

- In December 2012
- Two Australian radio DJs called a hospital in England
- identified themselves as Queen Elizabeth and Prince Charles
- about a celebrity patient who had been admitted for pregnancy complications







# WHAT IS IN DANGER



"UNDER PRIVACY RULES, I CAN'T TELL YOU ANYTHING ABOUT YOUR CONDITION. YOU'LL HAVE TO FIND OUT YOURSELF FROM A MEDICAL WEB SITE."



**! DANGER**



# Patient Privacy

- Health information privacy ;  
is an individual's right to control :
  - the acquisition,
  - uses,
  - or disclosures of his or her  
'IDENTIFIABLE' health data

- National Committee for Vital and Health Statistics (NCVHS)













# INDIVIDUALLY IDENTIFIABLE HEALTH INFORMATION (IIHI)



- (A) Names;
- (B) All geographic subdivisions
- (C) All elements of dates (except year) for dates directly related to an individual, including birth date, admission date,, discharge date, date of death; and all ages over 89 and all elements of dates
- (D) Telephone numbers;
- (E) Fax numbers;



# INDIVIDUALLY IDENTIFIABLE HEALTH INFORMATION (IIHI)



- (F) Electronic mail addresses;
- (G) Social security numbers;
- (H) Medical record numbers;
- (I) Health plan beneficiary numbers
- (J) Account numbers;
- (K) Certificate/license numbers;
- (L) Vehicle identifiers and serial numbers, including license plate numbers;



# INDIVIDUALLY IDENTIFIABLE HEALTH INFORMATION (IIHI)



- (M) Device identifiers and serial numbers;
- (N) Web Universal Resource Locators (URLs);
- (O) Internet Protocol (IP) address numbers;
- (P) Biometric identifiers, including finger and voice prints;
- (Q) Full face photographic images and any comparable images; and
- (R) Any other unique identifying number, characteristic, or code





# SECURITY AND PRIVACY VIOLATION TRENDS

- Advanced persistent threat (APT)
- Malicious attackers
- Data Breaches
- Infinitely distribution possibility of electronic data
- Identity theft
- Ubiquity of digital and mobile devices
- Mistaken dependency on technology







- Loss of money
- Loss of reputation
- Loss of time spent recovering from
- Harm to health
- Even death







# IDENTITY THREATS

- Leaving credentials on public computer
- Sharing passwords
- Insiders mis-use identities to obtain reimbursement (insurance fraud)
- Insiders/outside mis-use identities to obtain medical services (identity theft)





# ACCESS THREATS



- Outsiders may break into Patient records, which may lead to embarrassment
- Modification of health records(mistakenly/intentionly)
  - Patient himself
  - Outsiders
  - Insiders



# DISCLOSURE THREATS

- Data at rest, in the system
- Data at rest, in the mobile devices
- Data in transit



# DISCLOSURE THREATS



- Inadvertent disclosure due to
  - Sharing passwords
  - File-sharing tools
  - Malware
- Intentional disclosure
  - For profit
  - For malice





## ○ Authentication

- Authenticating the Patient
- Authenticating the provider
- Authenticating devices

## ○ Anonymity

## ○ Consent Management

## ○ Access Control





- Auditing
- Data integrity
- Secure Transmission
- Device presence





- Health Insurance Portability and Accountability Act (HIPPA)
- Health Information Technology for Economic and Clinical Health (HITECH) Act
- Healthcare Information Management Systems Society (HIMSS) privacy and security toolkit





## Laws & Regulations



- Enacted in 1996 and updated regularly
- HIPAA privacy rule applies to all forms of patients' PHI, whether electronic, written, or oral
- HIPAA security rule is applied to EPHI only
- Three safeguards for security
  - Administrative safeguards
  - Physical safeguards
  - Technical safeguards





- Enacted in 2009
- Strengthened HIPAA's privacy and security guidelines
- Enforces the healthcare organizations to report
  - immediately breaches that affect 500 or more people mandatorily both to HHS and the media
  - less than 500 individuals are supposed to be reported to the HHS on annual basis

# HITECH

Health Information Technology  
for Economic & Clinical Health Act



# Laws & Regulations



- HIMSS has a toolkit for privacy and security
- Includes 11 major categories, such as;
  - Introduction/Concepts: Basic Foundation Knowledge
  - Laws/Regulations: Local, state, federal, and international
  - Best Practices: Industry produced guidelines
  - Case Studies, Use Cases, Forms and Formats: Real world experiences
  - Personal Health Records: P&S issues unique to PHR
  - ...



# Laws & Regulations



## ○ Data Directive

- 1995 Directive on protection of individuals
- 2002 Directive on the protection of privacy in the electronic communications sector
- 2007 Working Document on the Processing of Personal Data Relating to Health in Electronic Health Records

## ○ The Prague Declaration -2009



# Laws & Regulations



- 2007 Working Document (Data Directive)
  - Explicit Consent
  - Vital Interests
  - Health Professionals (preventive medicine, medical diagnosis)
  - Public Interest



Laws &  
Regulations



## ○ The Prague Declaration

- Patient safety and empowerment
- Paying close attention to “legal and ethical issues”
- intent of EU Health Ministers to pay close attention to matters of patient privacy.

Dr. Güneş GÜRSEL  
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# Summary



ALL PATIENTS  
HAVE  
RIGHTS...



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**SENSITIVE  
DATA**



# BEWARE...





Thank You For  
Your Patience

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