Patient safety, Privacy and Security
Agenda

- Background
- Patient safety Definitions
- Medication Errors: Rate, Causes and Impact
- How will HIT help?
- Privacy, Security and Confidentiality
- Security: key concepts and issues
- Public concerns
Physiological

Safety

Love/belonging

Esteem

Self-actualization

- breathing, food, water, sex, sleep, homeostasis, excretion
- security of: body, employment, resources, morality, the family, health, property
- friendship, family, sexual intimacy
- self-esteem, confidence, achievement, respect of others, respect by others
- morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts
- Self-actualization
Patient safety

- A new healthcare discipline that emphasizes the reporting, analysis, and prevention of medical error that often lead to adverse healthcare events.

- From patient's perspective: primary safety goal is to prevent accidental injuries.

  Safety is “Freedom from accidental injury”
4th Century B.C **Hippocratic Oath** "prescribe regimens for the good of my patients according to my ability and my judgment and never do harm to anyone". *(First: do no harm)*

In 1984 Harvard Medical Practice Study (MPS) found that 3.7 of every 100 inpatients suffered an Adverse drug event (ADES) during their hospital admission. This results were largely confirmed by a second large study in Colorado and Utah (using 1992 data).
ADES were Commonly related to:

Medication use (19.4%), wound infections, operative complications, and diagnostic mishaps.

- 71% of adverse events resulted in a disability lasting less than 6 months.
- 3% in a permanently disabling injury.
- 14% led to death.
- **69% of all injuries were preventable (adverse events attributable to errors).**
Patient safety became a front matter after the release of an Institute of Medicine (IOM) report in 1999 (*To Err Is Human*) which stated that **44,000 to 98,000** people die in hospitals each year because of preventable medical errors.

**1.3 million injuries per year**
IF medical errors were included among leading causes of death ??
- Hospital-based errors alone is the fifth leading cause of death in the United States.

- Exceed the deaths attributable to motor vehicle accidents (43,458), breast cancer (42,297) and AIDS (16,516).
47% of public is concerned about errors in hospitals
(Kaiser/AHRQ, 2000)
Medication Error, Adverse Drug Event, and Adverse Drug Reaction

To Err Is Human (IOM, 1999, p. 28):

An error is defined as the failure of a planned action to be completed as intended (i.e., error of execution), or the use of a wrong plan to achieve an aim (i.e., error of planning).

An adverse event is an injury caused by medical management rather than the underlying condition of the patient.
Medication Error, Adverse Drug Event, and Adverse Drug Reaction

☐ The Committee on Data Standards for Patient Safety expand these two definitions to embrace acts of omission. (IOM, 2004, p. 30, 32):

An error is defined as the failure of a planned action to be completed as intended (i.e., error of execution), or the use of a wrong plan to achieve an aim (i.e., error of planning). An error may be an act of commission or an act of omission.

An adverse event results in unintended harm to the patient by an act of commission or omission rather than by the underlying disease or condition of the patient.
A medication error is defined as any error occurring in the medication use process (Bates et al., 1995a).

An adverse drug event is defined as any injury due to medication (Bates et al., 1995b).

An injury includes physical harm (for example, rash), mental harm (for example, confusion), or loss of function (for example, inability to drive a car).

Medication errors and adverse drug events have multiple sources.
Medication errors are preventable

☐ Most medication errors do not cause harm. Some do cause harm depending on whether an injury occurred or not (Gandhi et al., 2000). These are:

1- Potential adverse drug events
2- Preventable adverse drug events

☐ Potential adverse drug events are events in which an error occurred but did not cause injury (example: the error was detected before the patient was affected, or the patient received a wrong dose but experienced no harm) (Gandhi et al., 2000).
- Adverse drug events can be:
  1. **Preventable** (for example, a wrong dose leads to injury)
  2. **Non-preventable** (for example, an allergic reaction occurs in a patient not known to be allergic)

- Non preventable adverse drug events are also often termed **adverse drug reactions** (Gandhi et al., 2000)
Relationship among medication errors, adverse drug events, and potential adverse drug events.

The World Health Organization has defined an adverse drug reaction:

“Response to a drug that is noxious and unintended and occurs at doses normally used in man for prophylaxis, diagnosis, or therapy of disease or modification of physiological function” (WHO, 1975). This definition excludes injuries due to drugs that are caused by errors as a result.

Drug safety researchers use the term adverse drug event to include both adverse drug reactions (which are non preventable), and preventable adverse drug events (Bates et al., 1995b).

From the safety perspective: Preventable adverse drug events are most important because they are known to be preventable.
Medication error rates are important for measuring the scope of the problem:

Confusion exists about the most fundamental issue in quantifying medication errors:

1- No broad definition of medication errors exist
One definition is any inappropriate use of a drug, regardless of whether that use resulted in harm (Nebeker et al., 2004). Other definitions include only medication errors that have the potential to produce harm (Lesar et al., 1997).

2- Varying methodologies used to identify errors.
Errors rates depend on the thoroughness of the error detection methods that are used (Gandhi et al., 2000).

3- Medication error rates are quoted in varying ways
Errors per order/dose/opportunity, errors per 1,000 patient-days, and errors per 1,000 patient admissions.
Medication errors occur at all stages:

<table>
<thead>
<tr>
<th>Process</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribing</td>
<td>39%</td>
</tr>
<tr>
<td>Transcribing</td>
<td>11%</td>
</tr>
<tr>
<td>Dispensing</td>
<td>12%</td>
</tr>
<tr>
<td>Administering</td>
<td>38%</td>
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</tbody>
</table>

In 1995, Leape and colleagues reported that medication errors occur at different concentrations depending on the stage of the medication or prescribing process. Most medication errors occur during physician ordering (39%) and medication administration (38%).
1- Illegible handwriting

Plendil??? Isordil???

Some of Medication Errors Causes
2- Abbreviations
“U” for the word “unit was misread as a zero which led to a patient receiving a ten-fold overdose of insulin.

The common abbreviation for “hydrochloorthiazide 50 mg” was misread as “hydrocortisone 250 mg.”
Some of Medication Errors Causes

3- LASA Drugs (Look Alike- Sound Alike Drugs)

25% of all reported errors are linked to LASA confusion

Example:
Antibiotic Tequin ??? Tegretol a drug used in epilepsy???

Anticoagulant Coumadin??? Avandia (used in the treatment of diabetes ???)
4- **Health Literacy**: Some medication errors occur because patient misuse of a drug.

- Most of errors have in common impaired access to information and could be eliminated by computerized provider order entry (CPOE).
High proportion of preventable ADEs are caused by system errors

Some of the most common system failures are:
1. Defects in drug knowledge dissemination
2. Dose and identity checking
3. The availability of patient information
4. Order transcription
5. Allergy defence system
6. Medication order tracking
7. Communication

All have in common impaired access to information.

This group of system failures accounted for 78% of the errors identified, and could be eliminated by computerized provider order entry (CPOE).
Impact:
IOM Report: Preventing Medication Errors (2006) found that:

- One medication error occurs per patient per day in hospital care

- ADEs associated with medication error are considered preventable.

- 1.5 million preventable ADEs occur each year in USA
  - **Hospital care**: 380,000-450,000 in hospitals for $3.5 billion
  - **Long-term care**: 800,000 preventable ADE
  - **Ambulatory care**: 530,000 in Medicare ambulatory patients for $887 million
No one makes an error on purpose.

Lucian Leape
Everyone makes dumb mistakes every day.
The problem is not bad people.
The problem is that the system needs to be made safer.
Key messages of To Err Is Human:

There are serious problems with the quality of health care delivery; problems stem primarily from poor health care delivery systems, not incompetent individuals; and that solving these problems will require fundamental changes in the way care is delivered.

The Quality Chasm report (IOM 2001) and the later IOM report, Patient Safety: Achieving a New Standard for Care (IOM, 2004) emphasized the need for an information infrastructure to support the delivery of quality health care and to provide real-time access to complete patient information and decision-support tools for clinicians and their patients, to capture patient safety information of care, and to make it possible to use this information to design even safer delivery systems.
**How will HIT help?**


**Recommendations**

1. All health care organizations should immediately make complete patient-information and decision-support tools available to clinicians and patients.

2. Health care systems should capture information on medication safety and use this information to improve the safety of their care delivery systems.
How will HIT help?


3. Health care organizations should implement the appropriate systems to enable providers to:
   ✓ Have access to comprehensive reference information concerning medications and related health data.
   ✓ Communicate patient-specific medication-related information in an interoperable format.
   ✓ Assess the safety of medication use through active monitoring and use these monitoring data to inform the implementation of prevention strategies.
   ✓ Write prescriptions electronically by 2010. Also by 2010, all pharmacies should be able to receive prescriptions electronically. By 2008, all prescribers should have plans in place to implement electronic prescribing.
   ✓ Make effective use of well-designed technologies, which will vary by setting.
How will HIT help?

- Safe medication use requires that clinicians synthesize several types of information, including knowledge of the medication itself, as well as understanding of how it may interact with coexisting illnesses and medications and how its use might be monitored.

- It is almost impossible for health care providers to have current knowledge of every medication they prescribe. Several electronic supports can help providers absorb and apply the necessary information.

- Errors need to be reported and analysed if improvements in care are to be achieved.
How will HIT help?

- All prescribers should use point-of-care reference information.

- **Electronic prescribing is safer** (Bates et al., 1998): It eliminates handwriting and ensures that the key fields (for example, drug name, dose, route, and frequency) include meaningful data.

- Computerization enables the delivery of clinical decision support (Evans et al., 1998), including checks for allergies, drug-drug interactions, overly high doses, and clinical conditions, assist with calculations as well as suggestions for appropriate dosages given the patient’s level of renal function.

- Electronic medication administration records, can improve documentation of what medications have been given and when, as well as machine-readable identification, such as bar coding.
How will HIT help?

- **Improve communication**: What has been done and by whom

- **Improve accessibility**
  - Paper records unavailable 1/3 of the time.
  - Physicians spend 20-30% of their time searching for and organizing information.

- **Improve information retrieval**
  Impossible to store all needed clinical information in a physician’s head. The power of interoperable health care data was demonstrated after the devastation of Hurricane Katrina. Pharmacy chains were able to make patients’ medication lists available quickly to care providers, and states with immunizations registries were able to retrieve immunization records, enabling the enrolment of children in new schools.
How will HIT help?

- **Quality**
  - Increased adherence to guidelines
  - Low cost way to diffuse evidence-based best practices
  - Enhanced surveillance and monitoring Medication errors

- **Efficiency**
  - Decreased utilization of care
  - Make the right thing the easiest to do
Examples of HIT

- EHR, Electronic health record
- CPOE, Computerized physician order entry
- Smart IV systems
- Bar coding
- Telemedicine
- Automated drug delivery systems
Evidence of Reduction in Errors

- CPOE reduced medication errors by 80%
- CPOE reduced serious medication errors by 55%

Evidence of Reduction in Errors

- Mullett 1
  - Stand alone anti-infective CDSS in PICU
  - 59% decrease in the rate of pharmacy interventions for wrong drug doses

- Potts 2
  - CPOE and medication ordering errors in PICU
  - Medication errors reduced by 96%
  - Near misses reduced by 41%

Evidence of Reduction in Errors

Proportion of doses exceeding recommended maximum

Reference: Teich Archives Int Med 2000;160:2741
Evidence of Reduction in Errors

Orders for drugs to which patient is allergic

Excess drug dosages

Antibiotic-susceptibility mismatches

ADEs caused by antiinfective agent

Reference: Evans NEJM 1998;338:232-238

Effect of an antibiotic advisor
Privacy, Security and Confidentiality
Oath of Hippocrates

“All that may come to my knowledge in the exercise of my profession or outside of my profession or in daily commerce with men, which ought not to be spread abroad, I will keep secret and never reveal.”
Protection of privacy and confidentiality through policies, procedures and safeguards.

Process or means of ensuring that access to, or usage of, protected data is appropriate.

Protection of your personal information.
Privacy

- The desire of a person to control the disclosure of personal health information
- Right to keep things to yourself
- Deals with the question of what is appropriate
- Deals with denying access to or use of protected data to anyone but its owner
Confidentiality

- The ability of a person to control release of personal health information to a care provider under an agreement that limits further release of that information
- Right to keep things about you from being disclosed to others.
- Obligation of the holder of information to protect the person’s privacy.

*Confidential information* includes sensitive or secret information & info that if Disclosed could be harmful or prejudicial.
Disclosure

- Transfer of information from one individual to another

- If the data owner has effectively defined it as "private." The institution hosting the data should then apply the appropriate means to secure the data so that they are not disclosed.
- Ability to trace actions back to individual.

- Ensures that users are responsible for their access to and use of information based on a documented need and right to know.
Availability:

- Denotes the consistency with which a system (e.g., a Web site) is ready to perform its function (e.g., make data accessible).

- Accurate, up-to-date information is available when needed at appropriate places.

- Insure access, prevent loss or to recover data.

- A system that is designed to operate with little or no downtime (e.g., by introducing, mirroring, and monitoring) is regarded as a high-availability system.
Data cannot be modified without authorization

Preservation of content when date is read, written, copied.

The system’s ability to ensure that once information has been entered into it, an attempt to retrieve that information will produce the same data that were entered or their intended compilation.
Non-repudiation

- Confirms both transmission and reception of a message.
- Repudiation of submission: sender prevented from denying they have sent a document.
- Nonrepudiation of receipt: receiver prevented from denying they received the document.
- **Audit trail**: records system activity

- **Security logs**: track logins, failed logins, times, dates, data accessed, changes made.
Security Issues

- **Identification**: assertion of who someone is. Who is the user? **Username**

- **Authentication**: act of verifying a claim of identity. Can he prove that?
  - Something you know -- password
  - Something you have – card, security token
  - Something you are – retina, fingerprint

- **Authorization**: what resources they are permitted to access and what actions they will be allowed to perform? Is the user allowed to do what he intends to do? **His Role**
Security Issues

- **Single Sign on**: allows user to sign on ONCE and access multiple components or applications. *increase efficiency*

- **Automatic time out**: logs user out after predefined period of inactivity. *prevent unauthorized access to data.*
Privacy VS Common Good

Two point of view

- **First**: despite the importance of personal privacy, there are some instances when the common good of society outweighs it, such as in bio surveillance (Gostin, 2002; Hodge, 1999)

- **The other**: personal privacy trumps all other concerns (Consumer Reports, 2006)
  
  www.patientprivacyrights.org

Stolen VA laptop – with data of >1 million veterans, recovered without apparent access (Lee, 2006)

10% of hard drives sold by a second-hand retailer in Canada had remnants of personal health information (El Emam, 2007)
**Public is concerned**

- **Ethically**: privacy and confidentiality are considered to be rights.
- Information revealed may result in harm to interests of the individual.

- **Harris Interactive, 2005**
  - 70% somewhat or very concerned that sensitive health information might be leaked due to inappropriate security.
  - 82% desire tools to track their own information and assert privacy rights from start.
The California HealthCare Foundation (CHCF2005)

- 67% very concerned about privacy of their medical records
- 52% very concerned that their employers might misuse their medical information (use health information to limit job opportunities)
- One in eight patients reportedly engaged in behaviour to protect personal privacy, presenting a potential risk to their health.
Flow of information in health care many points to “leak”

**Direct patient care**
- Provider
- Clinic
- Hospital

**Support activity**
- Payers
- Quality reviews
- Administration

**“Social” uses**
- Insurance eligibility
- Public health
- Medical research

**Commercial uses**
- Marketing
- Managed care
- Drug usage

(Rindfleisch, 1997)
Paper security is significant problem:

- Difficult to audit trail of paper chart
- Fax machines are easily accessible
- Records frequently copied for many reasons
  - New providers, insurance purposes
- Records abstracted for variety of purposes
  - Research
  - Quality assurance
Health Insurance Portability and Accountability Act (HIPAA)
Scenarios for Health IT

The following five scenarios, based on fictitious, but realistic, patient encounter situations, are intended to illustrate the impact that healthcare information technology can have on outcomes, and to demonstrate the complex relationship between the cost of healthcare and the quality of healthcare.

For each scenario, two possible outcomes are described, one based on use of advanced health information technology, and one in which health IT is not used.

The potential impact of health IT on patient safety and cost of treatment is described for each scenario.
Scenario 1 – A 911 Call

A 75 year old female calls 911, complaining of dizziness, and feeling faint.

An ambulance is dispatched to her home address. When they arrive, she is unconscious.
Possible Outcome with Advanced IT

EMTs use a Personal Digital Assistant (PDA) to query the woman’s medical history, following their “break the glass” protocol.

They find a longitudinal EHR for the woman from another hospital in the same Regional Health Information Organization (RHIO), which indicates that the woman is diabetic, has poor vision and a history of repeated diabetic coma due to incorrect insulin dosage.

With this information, the EMT personnel are able to quickly stabilize the woman’s condition.

She regains consciousness on the way to the hospital, where she is admitted for a short period for observation.
Possible Outcome \textbf{without} Advanced IT

EMTs have no way of knowing what caused the episode of unconsciousness.

The woman is transported to the hospital and enters the emergency department unconscious.

Her condition is not correctly diagnosed until laboratory tests reveal that she is suffering from hypoglycemia.

She is admitted for an undetermined length of time.
Summary – Scenario 1

- Impact on Patient Safety
  ◦ Without the ability to access patient records online, it would take longer to obtain diagnosis, possibly worsening the patient’s condition. Not having a medical record available to the EMT team would increase the possibility of an incorrect/delayed diagnosis and possible incorrect treatment. No consent form was obtained before she regained consciousness, increasing possibility of legal liability.

- Impact on Cost
  ◦ Additional testing needed to diagnose her condition would add to total cost of hospitalization.
Health IT Needed to Support this Scenario

Health IT needed to support this scenario would include:

- Electronic Health Records (EHR) made available regionally via RHIO, or globally via NHIN.
- Wireless connectivity for PDAs or similar devices available to EMT personnel.
- A “break the glass” protocol enabling healthcare providers to access personal health information in emergency situations.
Scenario 2 – Hospitalization

While in the hospital, it was noted that the patient was dehydrated. An IV drip was administered to treat this condition.
A checklist procedure was followed during the IV insertion, ensuring that proper hand washing procedure was followed, a sterile field was maintained during the procedure, and that the patient was in the proper posture for IV insertion.

Use of the checklist was noted in the electronic medical record.

The keyboard used for data entry was of a special pathogen-resistant material, and was properly sanitized on a regular schedule.
Possible Outcome **without** Advanced IT

No checklist procedure was followed.

The patient contracted a hospital-acquired infection, due to failure to follow proper hand washing procedure.

The source of the infection may have been a computer keyboard used by many of the floor nurses.

The patient required additional aggressive treatment with antibiotics to cure the infection, prolonging her hospital stay.
Impact on Patient Safety
- The patient acquired an infection as a result of her hospitalization, endangering her health and requiring a longer stay.

Impact on Cost
- The longer hospital stay and the need for additional treatment and drugs increased the cost of her hospitalization.
Health IT Needed to Support this Scenario

Health IT needed to support this scenario would include:

- Use of checklists documented in the electronic medical record
- Use of health IT hardware (keyboard) designed for use in a clinical environment
Scenario 3 – Documenting Diagnosis and Treatment

The patient’s diagnosis and treatment are recorded.
Possible Outcome with Advanced IT

Patient orders are entered in a timely fashion by a physician using a Computerized Provider Order Entry (CPOE) system with an easy-to-navigate user interface, and all billable procedures were coded correctly using ICD and CPT codes.

The hospital IT network is robust and secure, having implemented industry standards for reliability, availability, and security, as well as a well-defined backup schedule and a disaster recovery plan.

The patients’ preexisting conditions – diabetes and vision difficulties – are correctly coded as “present on admission.”

Reimbursement proceeds without complication. The physician consults a decision support system, which warns the physician that Orinase (tolbutamide), which the patient has been taking along with insulin, may be contributing to her hypoglycemia.

He changes her medication to one of the newer drugs, and recommends regular visits by a home healthcare nurse to check on her blood sugar levels and insulin dosage as part of her discharge plan.
Possible Outcome without Advanced IT

The physician, who dislikes the complicated user interface of the online patient charting system, fails to document necessity for tests, resulting in rejected claims.

No discharge plan is created, leading to confusion about the patient’s discharge date, and she is sent home before her medication is properly reviewed. The patient is discharged with the same medication regimen that led to her hypoglycemic condition.

During the course of the patient’s treatment, a network failure occurs in the hospital IT system, caused by a virus invading the system as the result of an employee using the system for unauthorized access to an insecure site.
Impact on Patient Safety
- Lack of a post-discharge plan and failure to change the patient’s medication puts her at high risk of repeated hospitalization.

Impact on Cost
- Tests and pharmacy orders lost as a result of the network failure result in missed reimbursement.
Health IT Needed to Support this Scenario

- Health IT needed to support this scenario would include:
  - Use of a CPOE system with a user interface specifically designed for clinical use for entering physician orders
  - Health IT network design based on industry standards for reliability, availability, and security
  - Well thought-out plans for backup of critical data and disaster recovery
  - Use of a decision support system to correlate drug interactions with patient history
Scenario 4 – Patient Discharged and Billed

The patient is discharged and returns home. The costs of her hospitalization and treatment are billed.
Possible Outcome with Advanced IT

Since the patient’s identity and medical history were available in the online EHR when the patient was admitted, her admissions record contained her insurance information (Medicare Parts A and B, plus supplemental healthcare insurance).

Her diabetic condition was noted, and her diet adjusted accordingly by Food Service. Her billing correctly represented only her copayment; Medicare and her supplemental insurance covered the rest.

Medicare claims were submitted electronically and promptly paid.
Possible Outcome without Advanced IT

Incomplete information was available when the patient was admitted. The patient’s diet was initially incorrect, as the Food Service staff had no way of knowing that this patient was diabetic.

The patient was disoriented upon first regaining consciousness, and mistakenly gave a prior address as her current address, so the initial CMS reimbursement claim was denied.

Even after the address was corrected, CMS rejected the claim for treatment related to the hospital-acquired infection.

The patient’s medical bill was sent to the wrong address and her supplemental insurance was not taken into account.

This resulted in delays in obtaining reimbursement, and an excessive charge to the patient.
Impact on Patient Safety

- The patient’s recovery could have been hindered by an incorrect diet.

Impact on Cost

- Initial rejections and delays in processing claims increased the costs of processing the insurance claims for the hospital. CMS no longer pays for treatment for hospital-acquired infections, reducing the hospital’s ability to recover the costs of the patient’s hospitalization. Failure to note supplemental coverage resulted in an excessive charge to the patient.
Health IT Needed to Support this Scenario

- Health IT needed to support this scenario would include:
  - Longitudinal EHR with accurate patient information
  - Ability to bill CMS electronically
Scenario 5 – Patient Follow-Up

Patient is discharged and returns home.
The patient returns home fully recovered with her diabetes under control.

As a result of changes to her medication, she has no further episodes of unconsciousness.

A home healthcare nurse visits periodically to monitor her self-administration of insulin, checks her blood sugar levels, and adds the information to her patient record using a PDA device.

She is able to absorb the costs of her hospital stay without difficulty.
The patient has repeated episodes of diabetic coma, due to the adverse effects of her prescribed medications and her difficulty in administering a correct dosage of insulin.

As a result of her hospital overcharge, which she did not contest, she has difficulty paying her bills. Her family, concerned that she does not seem to be improving, begins to investigate her treatment at the hospital, and discover that she acquired an infection while in the hospital.

They file a lawsuit, and the hospital is required to pay a large settlement and undergo re-accreditation.
Impact on Patient Safety
- Without advanced IT capabilities, the patient’s treatment plan was a complete failure. The underlying causes of her hypoglycemia were never discovered, and no attempt was made to follow up on her status. Her initial condition continues to recur, and there is no improvement in her overall health.

Impact on Cost
- The consequences of not implementing an advanced health IT system are enormous for the hospital. Costs of treating the patient were excessive, due to lack of proper patient identification at admission, and an extended stay to treat the hospital acquired infection. Since her original condition was not adequately diagnosed and treated, she will continue to require periodic hospitalization. No reimbursement could be obtained for the hospital acquired infection. And the lawsuit filed by the patient’s family impacted not only the hospital’s bottom line, but its reputation for quality as well.
Health IT Needed to Support this Scenario

- Health IT needed to support this scenario would include:
  - Ability to monitor patient progress electronically using home healthcare nurses with PDAs
Can Health IT Improve Quality and Restrain the Rising Costs of Healthcare?

There is considerable evidence that implementation of advanced healthcare IT can result in improvements in patient safety and quality. A study conducted by the Healthcare Information Management Systems Society in 2006 showed strong correlation between adoption of advanced healthcare information technology and improved patient outcomes.[1]

Implementation of healthcare IT can not only improve patient outcomes and quality of healthcare, but also restrain the rising costs of healthcare by reducing the number of days patients spend in hospitals, eliminating unnecessary laboratory procedures by providing more accurate patient information, and reducing the costs of medical errors that result in additional treatment and litigation. We can not only improve the quality of healthcare through implementation of advanced IT capabilities, but also make healthcare more affordable for all.

Questions?
Thank You!