



The Role of HIT in Quality and Patient Safety

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THREE QUESTIONS

- Can health information technology (HIT) help in deciding the right thing?
- Can HIT help in doing things in right way?
- Can HIT help in preventing adverse events to happen?

INTRODUCTION

Theoretically, health information technology (HIT) has the potential to improve quality of care and patient safety through:

- Help providers to **share information** quickly,
- **Monitor compliance** with treatment guidelines,
- **Measure** and improve staff own performance,
- Facilitating evidence-based **decision making**,
- **Minimizing error** due to human factors, especially medication errors.
- Enhancing the tracking, reporting, and aggregation of patient data (**KPIs**).
- Increases **patient-centered care**:
 - Encouraging patients to be more involved in their care.

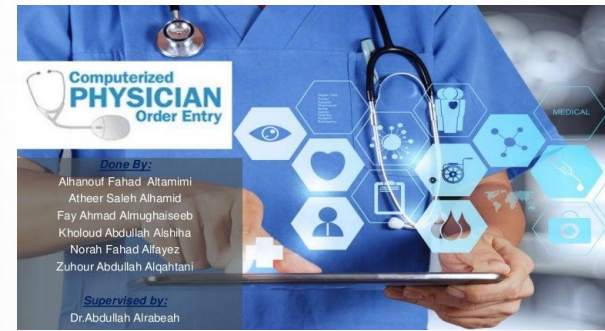
INTRODUCTION (Cont.)

- Recent published articles on the use of HIT to improve quality & patient safety focused on four main areas:
 - **Medication errors** [one third of all inpatient hospital adverse events]
 - **Diagnostic errors**
 - **Transfusion safety**
 - **Adherence** with evidence-based care (clinical guidelines)

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The Impact of Different HIT Systems on Quality and Patient Safety

1- E Prescribing

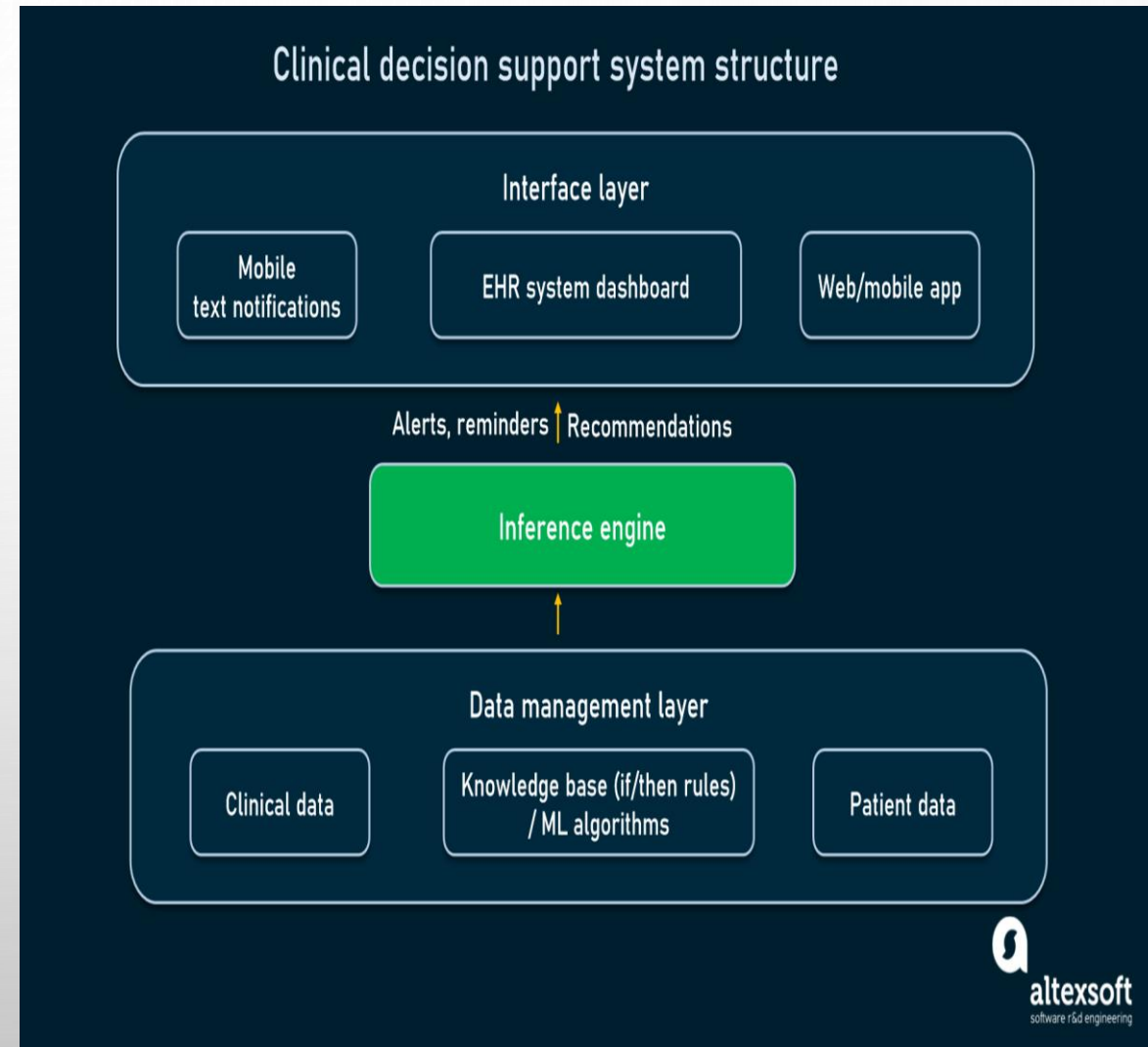


- Computerized physician order entry systems (**CPOE**) were originally developed to improve the safety of medication orders,
- More modern systems allow electronic ordering of tests, procedures, and consultations.



2- Clinical Decision Support(CDS)

- CDS provides the healthcare professional with information that is intended to enhance the decision through using a range of tools to enhance decision-making and the clinical workflow.
- These tools include:
 - Notifications, alerts and reminders to care providers and patients, clinical guidelines, condition-specific order sets, clinical summaries, documentation templates,
 - Investigation and diagnostic support are among other tools



3- Sign-out and Hand-over Tools

These applications are used as **standalone or integrated with the eMR** to ensure a structured transfer of patient information during healthcare provider handoffs.

S **Situation:**
I am (name), a nurse on ward (X)
I am calling about (child X)
I am calling because I am concerned that...
(e.g. BP is low/high, pulse is XXX temperature is XX, Early Warning Score is XX)

B **Background:**
Child (X) was admitted on (XX date) with
(e.g. respiratory infection)
They have had (X operation/procedure/investigation)
Child (X)'s condition has changed in the last (XX mins)
Their last set of obs were (XXX)
The child's normal condition is...
(e.g. alert/drowsy/confused, pain free)

A **Assessment:**
I think the problem is (XXX)
and I have...
(e.g. given O₂/analgesia, stopped the infusion)
OR
I am not sure what the problem is but child (X)
is deteriorating
OR
I don't know what's wrong but I am really worried

R **Recommendation:**
I need you to...
Come to see the child in the next (XX mins)
AND
Is there anything I need to do in the meantime?
(e.g. stop the fluid/repeat the obs)

Ask receiver to repeat key information to ensure understanding

The SBAR tool originated from the US Navy and was adapted for use in healthcare by Dr M Leonard and colleagues from Kaiser Permanente, Colorado, USA
If you require further copies quote SC043

4- Bar Code Medication Administration(BCMA)

- Electronic systems that integrate electronic medication administration records (eMAR) with **bar code technology**.
- These systems are intended to prevent medication error by ensuring that the **right patient** receives the **right medication** at the **right time**.



5- Barcoding for Safe Transfusions

- Barcoding can alleviate the risk of labeling errors in transfusions by reducing the potential for human error in the validation processes.



6- Retained Surgical Items Prevention Technology

- There are various technologies that include: bar coding and radiofrequency (RFID) tagging of surgical items.



7- Smart Pumps

- Intravenous infusion pumps that are equipped with medication error-prevention software.
- This software alerts the operator when the **infusion setting is set outside** of **pre-configured safety limits**.



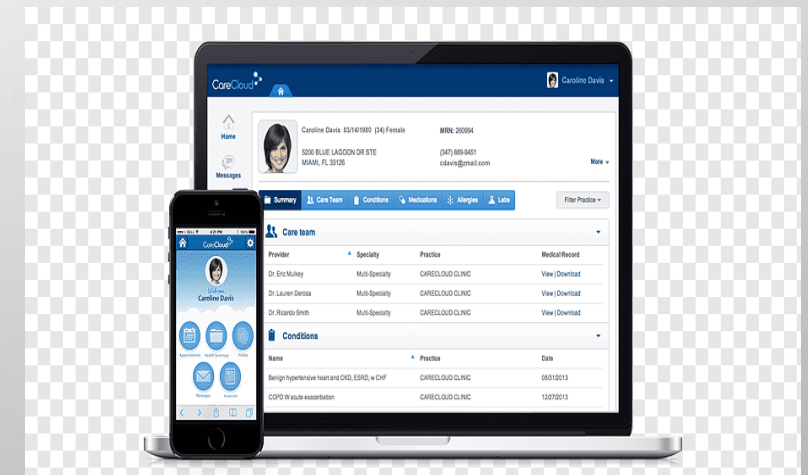
8- Automated Dispensing Cabinets (ADC)

- (ADC) are electronic drug cabinets that store medication **at the point of care** with controlled dispensing and tracking of medication distribution.
- ADC have been successfully used to **minimize the workload on the central pharmacy** and keeping better track of medication dispensing and patient billing.



9- Patient Electronic Portals

- A patient portal is a secure online application that provides patients access to their personal health information and 2-way electronic communication with their care provider using a computer or a mobile device.
- Numerous studies have shown that patient portals **improve outcomes of preventive care and disease awareness and self-management.**
- However, there is **no evidence that they improve patient safety outcomes.**



10- Synchronous Telemedicine

10-1 **Virtual visits** are real-time 2-way audio/video communication between a healthcare provider and a patient.



10-2 **e-consultation** is an electronic communication between the patient's primary care clinician and a specialist using a secure communication platform, without the need for referring the patient.



SYNCHRONOUS TELEMEDICINE

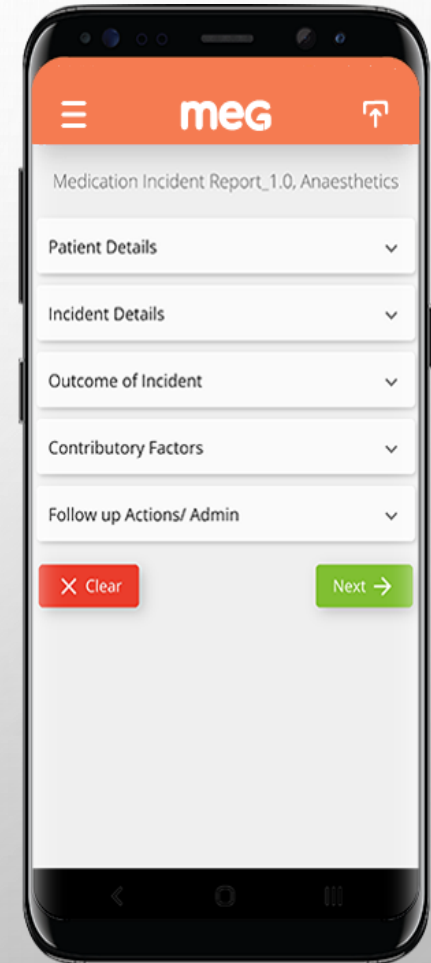
10-3 Remote patient monitoring

10-4 Patient data management system (PDMS) are systems that automatically retrieve data from bedside medical equipment. The data is subsequently summarized and restructured to help healthcare providers in interpreting the data.



11- Electronic Incident Reporting

- They are web-based systems that allow healthcare providers who are involved in safety events to **voluntarily report** such incidents.
- It can be integrated with the (EHR) to enable abstraction of data and automated detection of adverse events through **trigger tools**.
- Electronic incident reporting systems potentially have the following advantages;
 - Standardize reporting structure,
 - Standardize incident action workflow,
 - **Rapid identification of serious incidents and trigger events**, while automating data entry and analysis.



CONCLUSIONS

Health information technology may **improve patient safety through**

- **reducing medication errors,**
- **reducing adverse drug reactions and**
- **improving compliance to practice guidelines.**

However, studies did not find any impact on overall mortality.

SUM UP

- Computerized physician order entry (CPOE) and CDS are probably one of the most beneficial HIT for improving patient safety.
- In addition, Remote Patient Monitoring (PDMS), and Automated Dispensing Cabinets (ADC) seem to improve patient safety in critical care setting.

SUM UP

- Currently, there is insufficient evidence to reach a conclusion on **patient safety outcomes** for the following HIT:
 - Electronic sign-out and hand-over tools,
 - Smart pumps,
 - Bar-code medication administration,
 - Retained surgical items detectors,
 - Patient portals,
 - Telemedicine and
 - Electronic incident reporting.
- However, there is evidence that **the above technologies seem to improve healthcare processes (quality)**.

SUM UP

- **Telemedicine** technology seems to improve clinical outcomes for certain medical conditions and seems to **enhance accessibility to healthcare services and foster patient-physician collaboration.**
- The impact of telemedicine on **patient safety does not seem to be very clear.**

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Finally

Technology would have limited impact without meaningful **cultural changes** **at all levels** to implement the benefits offered by current or future technologies

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THANK YOU