

Electronic Health Records in our Hospital Environment

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PHARMACY

SHAPING THE FUTURE



Agenda



- **Background and Benefits**
- International Successes
- E-ICU concept
- Challenges
- Roles, Responsibilities and Accountability



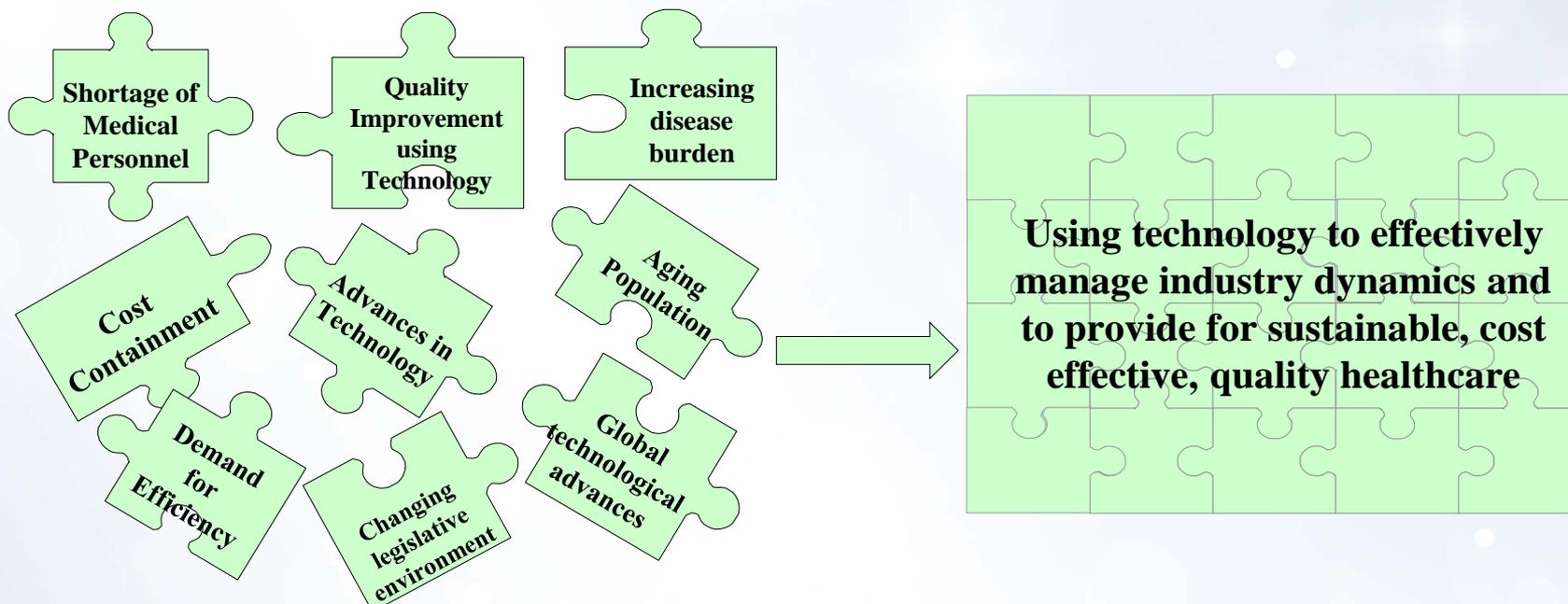
Why an electronic health record (EHR)?

- An electronic health record (EHR) is a digital version of a patient's paper chart/file. EHRs are real-time, patient-centred records that make information available instantly and securely to authorized users.



- EHRs typically consist of a patient's medical history, diagnoses, medications, treatment plans and care records, allergies, radiology images, and laboratory test results.
- All healthcare professionals should maintain records of the patient care activities that they perform.
- While traditionally this has been a requirement from a medico legal perspective, it is recognised that good record keeping supports evidence-based healthcare and facilitates audit and quality monitoring, which has become of increasing significance in many healthcare economies.

The dynamics of healthcare in South Africa requires innovative thinking to drive sustainable, cost effective, quality care



- The **critical shortage of qualified medical personnel** in South Africa provides a significant challenge to provision of quality healthcare
- Increased demand for **efficiency** in the global and local economic environment and ROE pressures to ensure business sustainability
- Alignment with the Market Inquiry into cost drivers within the private healthcare sector to improve **affordability** and access.
- Requirement for technology to **support increasing complexity** of healthcare and quality improvement programmes as well as improved management reporting
- Older patients with a **higher acuity**
- Requirement to improve **patient safety and outcomes**. Prescribing, dispensing and administration errors in hospitals are a reality
- Development and adoption of **new technology** in the global healthcare environment and advances in electronic patient record and associated functionality (HIS + CIS). Alignment with the NDOH eHealth Strategy for South Africa.

Benefits of an electronic solution in hospitals

Prescribing

- Patient prescription record always available (problem with physical R_x chart)
- Allows prescribing from remote terminal/sites as well as at the bedside
- Facilitates ability to deliver expert professional care remotely
- Allows access to electronic patient records
- Provides prescribers with access to decision support
- Provides prescribers with access to laboratory results when prescribing
- Facilitates prescribing of generic medication to reduce cost of care
- Improves efficiencies by reducing need for call backs to prescribers
- Reduces medication prescribing errors and other adverse drug events
- Removes the need to rewrite medication charts with the potential for transcription errors

Dispensing

- Complete history of medications and patient profile available for evaluation of prescription
- Removes the problem of illegible prescriptions
- Supports direct communication of prescriptions to pharmacy
- Reduced dispensing errors and other adverse drug events
- Clear audit trail for changes to medication
- Provides an opportunity for pharmacist interventions/suggestions to be highlighted to prescribers and nursing staff
- Opportunity to supply on line patient medication information

Benefits of an electronic solution in hospitals

Administration

- Supports improved prescription turnaround times and availability of drug for timeous administration
- Removes the problem of missing or illegible drug charts
- Provides prompts when doses are due/ for discontinuation of drugs
- Allows easy review of previous medication history
- Improves information available for administration
- Solution for recording of patient clinical data from devices/equipment
- Less nursing documentation/administration time: more time to focus on nursing
- Facilitates use of order sets or combinations of drugs in pre-specified packages
- Reduces misinterpretation of prescriber intentions/instructions
- Improves communication between different departments and care settings
- Facilitates improvements in work processes and efficiency

Patient Records

- Patient records easily archived and retrievable compared to scanning
- Reduces missing or incomplete patient documentation
- Provides audit trail of changes to patient documentation
- Facilitates identification of each individual prescriber to allow follow up on queries
- Facilitates confidentiality of patient information
- Provides controlled access to view patient information remotely
- Facilitates review of previous hospital visits and treatment history

Management Reporting

- Facilitates implementation of, compliance to and reporting of specific, internationally recognised, evidence-based intervention programs that enhance patient safety and constitute current best practice in hospital care
- Facilitates antimicrobial stewardship interventions and reporting
- Decision making backed up by suitable information resources
- Proactive management of medication incident trends
- Reduction in utilisation of paper
- Facilitates increased utilisation of bar coding for patient and drug identification

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What is being done internationally?

By 2004-2005, more than half of healthcare providers in Sweden, the United Kingdom, the Netherlands, and Australia were already using HER

(Ash & Bates, 2005; Podichetty & Penn, 2004).

Studies have shown that along with the improvement in quality, efficiency, and effectiveness, many medication errors, which are the most common cause of preventable injuries in hospitals, can be prevented by such EHR systems

(Torda, Han, Scholle, 2010; Poon, E. G., Blumenthal, D., Jaggi, T., Honour, M.M., Bates, D. W., & Kaushal, R. 2004).



Medication errors

- Approximately 200,000 people die every year in the United States as a result of preventable medical errors.
- The majority of medical mistakes happen when the physician orders services and prescriptions for the patient. Physicians using a paper prescription pad often do not have legible handwriting, and prescriptions often are not able to be read by the individuals who process and prepare them for the patient. (Andel, C., S. L. Davidow, M. Hollander, and D. A. Moreno. "The Economics of Health Care Quality and Medical Errors." *Journal of Health Care Finance* 39, no. 1 (2012): 39–50.)
- An EHR system solution has been shown to decrease the number of medication errors in a hospital, enhance patient safety, and decrease preventable medical errors.



It is widely accepted that electronic prescriptions lead to lower medication prescription errors

Medication Prescription Error Analysis in Computerized and Paper-Based Units

	Computerized unit		Paper-based unit	<i>P</i>
Total prescriptions (<i>n</i>)	1,286		1,224	NS
Total MPEs (<i>n</i>)	44	←	331	<0.001
% MPEs	3.4		27.0	<0.001
Minor MPEs	9		225	<0.001
Per 100 orders	0.7		18	
Intercepted MPEs (<i>n</i>)	12		46	<0.001
Per 100 orders	0.9		3.8	
Non-intercepted potential ADEs (<i>n</i>)	21		48	<0.001
Per 100 orders	1.6		3.9	
Total ADEs (<i>n</i>)	2		12	<0.01
Per 100 orders	0.15		1.0	
Intercepted MPEs and serious MPEs	35		106	<0.001
Serious MPEs	23		60	<0.001

ADE, adverse drug event; MPE, medication prescription error; NS, not significant

Source: Ghent University Hospital Belgium (Centricity Critical Care, GE Healthcare) Published Critical Care, 2006

It is widely accepted that electronic prescriptions lead to lower medication prescription errors

Press Release Date: March 21, 2011



E-Prescribing Helps John Hopkins Reduce Medication Errors

Coupling an electronic prescription drug ordering system with a computerized method for reporting adverse events can dramatically reduce the number of medication errors in a hospital's psychiatric unit, suggests new Johns Hopkins research.

"Medication errors are a leading cause of adverse events in hospitals," says study leader Geetha Jayaram, M.D., M.B.A., an associate professor of psychiatry and behavioral sciences at the Johns Hopkins University School of Medicine. "With the use of electronic ordering, training of personnel and standardized information technology systems, it is possible to eliminate dangerous medication errors."

The findings, published in the March issue of *The Journal of Psychiatric Practice*, outline how the 88-bed psychiatric unit at **The Johns Hopkins Hospital in Baltimore went from a medication error rate of 27.89 per 1,000 patient days in 2003 to 3.43 per 1,000 patient days in 2007, a highly significant rate reduction.**

Jayaram noted that during the study period, there were no medication errors that caused death or serious, permanent harm. Medication errors, which can be lethal, are known to be caused by illegible handwriting, misinterpretation of orders, fatigue on the part of medical personnel, pharmacy dispensing errors and administration mistakes. A pharmacy may misread what a physician has written or give the wrong medication or the wrong drug dose to a patient.

The computer program used in the psychiatric department, and hospital-wide at Johns Hopkins, also includes integrated decision support for drug dosage selection, drug allergy alerts, drug interactions, patient identifiers and monitoring — things that can be lost with a manual system that relies on layers of human beings to ensure the correct decisions are made, Jayaram says. The more the number of steps involved in the process, the greater the likelihood of mistakes

"Having something typed eliminates bad writing — and most errors — immediately," she says. "It's a good reason for going electronic."

Agenda

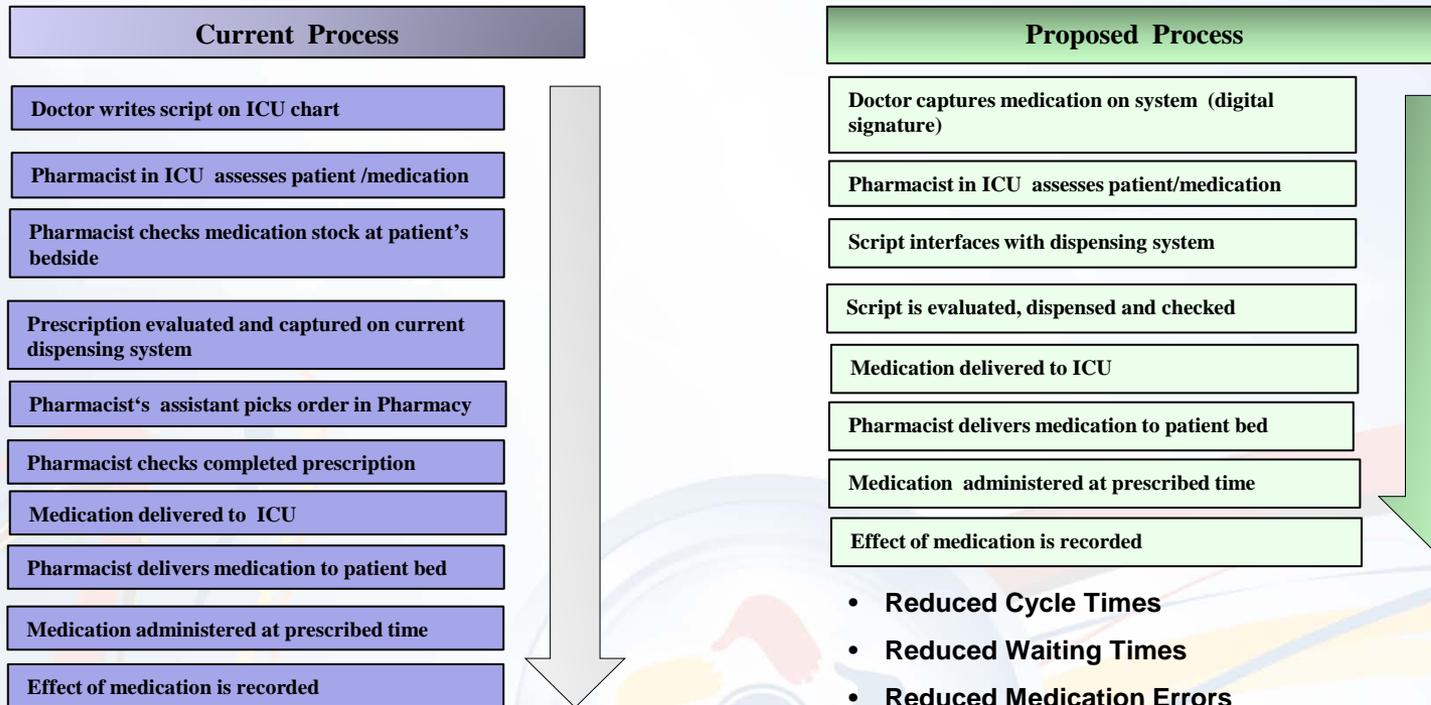


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Life Healthcare E-ICU Concept

- Life Healthcare has developed an **electronic ICU concept** in order to move toward a **paperless system to improve clinical outcomes, operational efficiencies and introduce predictive analytics**
- The system automates the various aspects of delivering care in the ICU setting and impacts the doctor, nurse and **patient experience**
- Information is captured and available on a real-time basis, which allows an **increased focus on patient care rather than manual administrative tasks , thereby improving clinical outcomes and reducing inefficiencies**
- The ability of doctors to prescribe electronically is an essential part of this concept



E-ICU Pilot



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Current legislation does not allow for electronic prescriptions and electronic signatures on prescriptions

Medicines and Related Substances Act, 1965 Regulation 28 (MRE41)

Ethical Rules of Conduct for Practitioners registered under the Health Professions Act, 1974

ETHICAL RULE 17

Issuing of prescriptions (1) A practitioner authorized in terms of the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965), to prescribe medicines shall issue typewritten, handwritten, computer-generated, pre-typed, pre-printed or standardized prescriptions for medicine scheduled in Schedules 1, 2, 3 and 4 of the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965), subject thereto that **such prescriptions may be issued only under his or her personal and original signature.**

(2) A practitioner authorized in terms of the Medicines and Related Substances Act, 1965, to prescribe medicines shall issue **handwritten prescriptions for medicine** scheduled in Schedules 5, 6, 7 and 8 of the Medicines and Related Substances Act, 1965, under his or her **personal and original signature.**

PARTICULARS WHICH MUST APPEAR ON A PRESCRIPTION OR ORDER FOR A MEDICINE

- (1) Every prescription or order for a medicine must be written in legible print, typewritten or computer generated and **signed in person by a medical practitioner, dentist, veterinarian or authorised prescriber or in the case of an order, an authorised person.**
- (2) In the case of a faxed, e-mailed, telephone or electronic transmission by other means of a prescription or order, the pharmacist must verify the authenticity of the prescription or order.
- (3) A **permanent copy of the faxed**, e-mailed, telephone or other electronic transmitted prescription or order referred to in sub regulation (2) must be made for record purposes.
- (4) The faxed, e-mailed, telephone or other electronic transmitted prescription or order should be followed by the **original prescription** or order within 7 working days.

The Good Pharmacy Practice Standards within Pharmacy Act Regulations are currently informed by the Medicines and Related Substances Act, and section 2.7.1.1(a)(iii) stipulates the requirements for electronic prescriptions as per the MRSA.

Factors to consider when implementing EHR

• Content issues

- Can patient information be efficiently and legibly accessed and retrieved?
- Does documentation indicate the exact date and time of the recording of the event and the name of the documenter? Is this information viewable and/or printable?

• Format issues

- Can the record be brought to paper in a readable format?
- If alerts and reminders are part of a legal medical record, are they viewable and/or printable?
- How will you integrate paper from outside the facility? Will it be scanned immediately or kept in a temporary paper folder for a period of time?

• Policies and Procedures

- Is workflow management redesign required?
- Do organizational policies need revision in response to issues identified with going paperless?
- Address retention for electronic records. It is critical to verify how long documents or data is readily available from various systems. How long will data be kept online? After archiving, how will it be retrieved?

• Interfaces

- Plan for interfaces (e.g., lab, radiology, dispensing system). How often is information transferred to other systems? What is the reconciliation process?
- Is there an interface between the main drug list and the EHR system?

• Network reliability

- Medical grade network upgrade required
- What is the downtime (manual backup system) policy and procedure? Will documents completed while the system is down be part of the legal medical record? Will they be scanned into the record?

• Hardware

- Define the backup process, including media, retention, and rotation cycle.
- Define the disaster recovery process and the acceptable downtime.
- Consider budgetary issues for your department (e.g., additional printers, supplies, personal computers).

• Access and Confidentiality

- Security and scope of access per user. Introduction of highly secure digital signatures .
- Should nurses and other caregivers be restricted to viewing only the patients on the unit where they are assigned?
- What about physician access to records when they are not recorded as a treating physician (e.g., consultants, referring physicians, physicians doing committee reviews)? Can any physician on staff have access to any patient record?
- Level of computer literacy of staff



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Role players

Clinicians

Radiology
Lab Results
Clinical Content
Patient History
Medication orders

Nursing

Nursing care plans
Administration
Review drug orders
Record vital signs
Nursing notes

Medical Devices

Bedside devices
and monitors

Patient registration/admission

Billing

Clinical data and knowledge base



Hospital Pharmacy

- Dispense medication orders
- Clinical data/medication therapy review/reconciliation
- Interventions

Ten rights and responsibilities

- Uninterrupted access to records
- No missing data
- Succinct patient summaries
- Ability to override computer-generated interventions
- Rationale for clinical decision support
- Reliable performance measurement
- Safe electronic health records
- Training and assistance
- Compatibility with real-world clinical workflows
- Facilitation of communication, coordination and teamwork

(D.F. Sittig, PhD, H. Singh, MD MPH “Rights and responsibilities of users of electronic health records” Canadian Medical Association Journal 2012

Shared responsibility

It remains the responsibility of all stakeholders to:

- Protect personal information via secure access to patient data
- Ensure input of accurate, quality information into the system
- Ensure timeous recording of vital signs and clinical interventions
- Ensure dispensing and administration of the correct medication and to reduce medication related errors

In an effort to improve clinical outcomes, increase patient experience and increased quality care



Pharmacy responsibility highlighted

- Pharmacy professionals are responsible for the **completeness, accuracy and timeliness of medication related information** on EHR systems used in the EHR setting, if they are able to make entries to the record.
- Pharmacy professionals would be expected to be **alert to any obvious errors** or discrepancies in the record, according to their qualifications and experience.
- If a pharmacy professional identifies an error in an existing EHR, and they have write access to the record, they should **correct the error and amend the record** appropriately after consulting relevant healthcare professional.
- Pharmacy staff should **review information** that may be feasibly accessed in order to reach a professional decision, according to their professional judgment.
- Pharmacy professionals should use the most **appropriate information sources** to support their professional decision making.

Accountability

There are three important concepts in law concerning the generation and subsequent use of electronic records of patient care and professional activity:

- Confidentiality
- Consent
- Liability



Confidentiality

Code of Conduct in terms of the Pharmacy Act 53 of 1974: A pharmacist must respect the confidentiality of information acquired in the course of professional practice relating to a patient and may not disclose such information except under certain prescribed circumstances.

and

The Protection of Personal Information Act, No 4 of 2013 promotes the protection of personal information by public and private bodies.

The Act recognises that:

- Section 14 of the Constitution of the Republic of South Africa, 1996, provides that everyone has the right to privacy;
- The right to privacy includes the right to protection against unlawful collection, retention, dissemination and use of personal information.



Consent

According to the POPI Act section 11.1(a)

Consent, justification and objection

11. (1) Personal information may only be processed if—
(a) the data subject or a competent person where the data subject is a child consents to the processing;

- The POPI act requires healthcare professionals to obtain a patient's consent to store information about them to support services provided, stating the purpose for which the information is being collected.



Liability

- Records of patient care and treatment have traditionally played a major part in providing evidence of appropriate patient care in situations where allegations of negligence are made. Similar legal principles to paper based records.
- It is the legal responsibility of each medical professional to ensure confidentiality of login details as they will be liable for all activities performed with that user name.
- In a medico-legal case, if a medical professional works outside of scope, provides inaccurate or fraudulent information, did not consult the information provided or did not act with the best interest of the patient as a priority, they could be charged with gross negligence and legal action taken:
 - Civil action - loss of support, bodily injury, financial losses, etc.
 - Inquest hearing – review of evidence compared to “what a reasonable person would have done in the same situation” and possible criminal charges if found guilty
 - Regulatory body inquiry – suspensions, fines, etc.



Risk

Liability

- As pharmacists take on new roles, and provide clinically-focused professional services, they will need to make appropriate documentation of patient care interventions in order to account for their professional decision making.
- Pharmacists should bear in mind that there is an equal liability associated with not comprehensively recording details of care provided, and should ensure that all information is recorded that will defend their professional decision-making.
- Pharmacists should bear in mind that if they choose not to view a patient's records stored on the EHR system or not to contact a doctor to ask for the medical records to be checked, then, were the patient then to come to harm or subsequently complain because of an issue that arose as a result, it might be difficult to defend the case

