THE SIGNIFICANCE OF ELECTRONIC MEDICAL RECORDS (EMR) IMPLEMENTATION DURING COVID-19 OUTBREAKS

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Abstract: *The current healthcare framework should be adapted to enhance its efficiency, while also achieving a reduction in healthcare expenditures. By putting modern technology into practice, healthcare providers' workloads will be reduced, information accessibility and flexibility for licensed professionals will increase, and patients will be better equipped to control their lifestyle and health. Having Electronic Medical Records (EMR) and other digital technologies removes the barrier of physical location to care delivery and knowledge exchange. Since so many patients have been admitted during this pandemic and some are being advised to self-quarantine indoors, EMR may be employed in particular to control the symptom history and analysis.*

Keywords: *healthcare, electronic medical records, digital technologies.*

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Introduction

The adoption of IT in the health industry has resulted in several advancements. One of the most significant was adopting electronic medical records (EMRs) in place of paper hospital data. The Office of the National Coordinator for Health Information Technology (ONC) describes EMR as a digital alternative to paper or chart records in hospitals containing patients' healthcare records in a single application (Garrett & Seidman, 2011). Precisely EMR is an electronic version of a patient's health information system that contains precise test results, clinical observation data, billing information, symptomatic reports, and even minute measurements obtained during a hospital stay (Paxton, Niculescu-Mizil & Saria,2013). The complete EMR system installation will include hardware, software, training, and support for the EMR.

Larry Weed developed the EMR idea at the end of the 1960s to create a digital database that would enable third parties to solitarily validate medical test. Weed has a vision centered on the control of health-related information. This framework was also referred to as information systems developed in healthcare services. Shortly afterward in 1972, the Registries Institute established the first electronic medical record system and was accepted as a significant progression in healthcare practice. When web-based applications came into practice in early 2000, the need became evident for developing electronic medical recording systems via remotely hosted systems. During the term of office of President George W. Bush, the budget for IT programs in health care doubled along with the need for electronic record systems to be implemented throughout the industry. The US Recovery and Reinvestment Act (ARRA) endorsed Obama's mandate to offer additional funds and incentives to health workers implementing EMR systems.

Under the Sixth Malaysia Plan, the Hospital Information System (HIS) was scheduled to be implemented in Malaysia in 1993 (Nor Bizura, 2010). As a result, the Malaysian government provided funding for IT initiatives in public hospitals, such as the installation of the EMR system. Selayang Hospital and Ampang Hospital are two government hospitals in Malaysia that use EMR systems to manage their filing systems, however, they are still in the early stages of development. In the next future a digital transformation needs to take place in the Malaysian healthcare system in the form of an electronic lifetime health record to strengthen the public and private healthcare sectors (Ahmad, 2024). According to Health Minister Datuk Seri Dr. Dzulkefly Ahmad, electronic medical records (EMR) for each citizen are essential for creating a single master patient index that allows access to medical records across all Malaysian healthcare facilities (Ahmad, 2024).

Electronic documents are subject to computation and computer science, as well as the preservation of medical records. The Electronic Medical Record (EMR) is a summary of medical records of patients based on a computer. The term EMR has been extended to include systems that monitor other related medical data (such as registration, clinical laboratory results, pharmacy, nursing and kitchen). Based on earlier studies (MOH, 2006) an EMR facilitates:

- Clinical personnel can securely track patient data anywhere
- Automatic monitoring of interactions between medications and allergies
- Integration of clinical outcome reports and monitoring
- Comprehensive enrolment in primary and specialist treatment
- Contact mobile, ambulance and emergency services
- Computerized entry of tests and prescriptions through health practitioner order
- Sending and displaying test findings
- 24-hour medical reports available at the care point

- Precise and complete insurance company claims processing
- Immediate accessibility for all potential users, for example, the telecommunications workers, pharmacists and clinical outcomes reporting teams

With an electronic medical record (EMR), a doctor may fully comprehend a patient's medical history, potentially reducing medical errors by looking for drug overuse, overdoses, or overtreatment. A nurse does not need to wait for the diagram to be physically transferred to view the same patient's history simultaneously. The EMR is available 24 hours a day and can be accessed by more than one user at the most critical time available even from remote locations it is still readable. According to one study, doctors who used EMRs reduced their medical loss ratio by 9.4% and their overall malpractice costs by 16.3% (Anderson M., 2002). EMR systems have become temporarily accessible and have taken the lead in the health sector system in recent years, encouraging the sharing of patient data amongst healthcare facilities, lowering health-related misconceptions, and improving healthcare operations and decision-making (Ayanso, Herath, & O'Brien, 2015).

EMR systems offer advantages such as enhancing and promoting patient care and increasing efficiency albeit lowering costs (Stanberry, K. 2011). Many state and federal security agencies may have enthusiasm for a major medical history of populations in certain regions in the event of possible bio-warfare and pandemics. One example may be looking at drug patterns for patients in a given area and, most importantly, finding the source of the outbreak or spread of disease. This is very crucially needed especially the COVID-19 pandemic outbreak.

Covid-19 Outbreak

On 12 January 2020, a cluster of cases of viral pneumonia in Wuhan, People's Republic of China (PRC) reported Corona Virus Disease 2019 (COVID-19) known as a new pneumonia disease that emerged in Wuhan (Secon et al., 2020; WHO, 2020) before becoming an outbreak globally. This new virus spreads extremely fast because of its new character and the natural immunity to it was absent up until now. The WHO announced Covid-19 virus outbreak is a pandemic in March, with over half a million people infected by the end of the month and almost 30,000 deaths. As of 6 January 2021, Malaysia has recorded 125,438 cases. Ministry of Health reported that a total of 24,347 of these are currently classified as active or infectious cases.

Due to the rapid spread of viral outbreaks, a nationwide lockdown has been implemented, encouraging "social distancing" among the populace in the hopes that the curve will flatten. Acute respiratory distress syndrome, acute stroke, myocardial infarction, renal failure, shock, and even death are among the potentially fatal consequences that might arise from it, in addition to the typical moderate upper respiratory tract infection symptoms. Although COVID-19 fatality ratios can differ across countries, they are far higher than their predecessors, such as Severe Acute Respiratory Syndrome Corona Virus (SARS CoV) and Middle Eastern Respiratory Syndrome Corona Virus (MERS CoV) (CORONA VIRUS, 2020; WHO, 2003; MERS-CoV, 2020).

The first imported COVID-19 case from Wuhan, China was reported in neighbouring Singapore on January 23, 2020, making the COVID-19 menace more apparent in Malaysia. Less than 48 hours after the first case was reported in Singapore, Malaysia declared the first positive case of COVID-19 on January 25, 2020. Wuhan, China, was the source of this imported case (MOH, 2020). In the six days that have passed since the initial case, there have also been eight positive instances in total. All of these cases were imported from China. On February 3, 2020, it was

revealed that the first Malaysian to test positive for COVID-19 was someone who had previously traveled to a neighboring nation for a business meeting that a Chinese group was attending (Ahmad, 2020).

Movement Control Orders (MCOs) were implemented on March 18, 2020, with the goal of assisting the Ministry of Health in containing the virus's spread and preventing fatalities. The MCO imposes restrictions on people's travels inside and between nations. The MOH's Director-General emphasized that the order was enforced following the Police Act of 1967 and the Prevention and Control of Infectious Diseases Act of 1988 and that it also had the potential to stop the infection from spreading (Bernama news, 2020). This was a significant step because the situation in China showed that it was possible to suppress the pandemic by isolating the infectious population and distancing themselves from society (WHO, 2020).

The Significance Of Emr Implementation During The Covid 19 Pandemic

EMR and other digital technologies remove the barrier of physical location to care delivery and knowledge exchange. This lowers the potential risk of COVID-19 exposure for patients, making it safer for medical professionals to treat patients and enable innovations like telehealth. Because of non-emergent illnesses, medical care has been restricted to what emergency services can provide. When a patient has questions based on clinical grounds, they must receive accurate information. According to recent research conducted in India, between March 23 and April 19, 2020, patients in the center of excellence of a multi-tier ophthalmology network based in India underwent teleconsultations as part of a cross-sectional observational hospital-based study (Das, Raji & Vaddavalli, 2020).

The patient's clinical data was gathered by a browser-based electronic medical record system (eyeSmart EMR) that was deployed throughout the network. This allows doctors and hospitals to focus more on communication, decision making and information sharing, and most importantly, reduces the exposure of the care team to COVID-19. Testing protocols and physician access to the EMR enabled the call center to effectively handle many calls during the quarantine period in India. Based on this finding, teleophthalmology uses digital EMR infrastructure dedicated to providing patients with remote care, allowing rapid response to the epidemic. Therefore, these noteworthy findings have provided valuable insight into the capacity to manage patient follow-up from remote or distant locations in the future or as a pre-emptive measure against any potential pandemics.

Aside from that, several medical clinics have restricted access to in-person visits since the Covid-19 outbreak. This puts the patient in a position to receive appropriate care while preventing a significant patient backlog after lockdown limitations are lifted. A thorough guideline for the quick deployment of telemedicine during a pandemic is therefore highly pertinent. The EMR can facilitate the conversion of large specialty clinics into a department-wide telemedicine network. A study (Smith et al., 2020) claims that they have a tool-sharing implementation guide that has made it possible for telemedicine to be swiftly integrated into expert practice in academic settings across all departments. These tools include the EMR framework, the MyChart application (powered by Epic), and video-calling services like Google Duo (Google LLC), FaceTime (Apple Inc.), Doximity, and Skype (Microsoft). The result shows that the patient's access to high-quality care has improved, lowering the risk of contracting infectious viruses like COVID-19. Thus, it has shown how versatile and effective EMRs provide benefits that can allow practitioners to work safely during a pandemic.

The prioritization of the implementation and documentation of Electronic Medical Records (EMR) is essential, especially in the context of the COVID-19 pandemic. This focus ensures that the management system operates efficiently and effectively addresses particular challenges, including the introduction of new guidelines and the constraints of reduced staffing, which are critical for mitigating the spread of the virus. By minimizing errors and optimizing both time and costs, EMR systems can provide significant opportunities for growth and scalability within healthcare practices. The practitioner would be more productive and more accurately reimbursed during the epidemic if they understood and tested these.

According to a study by Wang et al. (2020), it is possible to analyse the relationship between a patient's favourable prognosis and survival rate using data from the EMR system. The research examined the connections among ethnicity, age, and the rates of COVID-19 diagnoses and in-hospital mortality. Additionally, it evaluates the significant correlations between various factors and hospital mortality. The findings underscore the development of a prognostic tool designed to prioritize patients who are at the highest risk. The outcomes of this research are valuable for informing stakeholders about which COVID-19 patients are most vulnerable to adverse outcomes and for assessing the implications for their survival. These strategic and operational advantages indicate that Electronic Medical Record (EMR) systems function as decision-making instruments rather than merely repositories of data.

The COVID-19 outbreak has made the benefits of the EMR more important than ever. Rather than providing physicians with an intuitive platform for updating their medical records, electronic medical record (EMR) systems offer more clarity, dependability, and convenient data retrieval for use or sharing. According to Coma Redon et al. (2020), recent research has demonstrated that healthcare retrieves patient records up to a specific length of the framework from data stored in the EMR system as a result of a misdiagnosis of COVID-19 that was initially believed to be influenza. The analysis indicates that some researchers have speculated that unrecognized cases of COVID-19 may have been misclassified as known influenza prior to the initial case reported in Spain

Catalonia benefits from its specialized hospital-based system, which collects samples from severe influenza cases in hospitals. This existing database encompasses more than 85 percent of the Catalonian population, facilitating the diagnosis and identification of excess influenza cases across different age groups. The daily incidence of influenza cases recorded in primary care databases was sourced from the electronic medical records, as is routinely performed for the repository during the diagnostic process. The objective of this research was to globally assess the excess influenza cases in Catalonia, categorized by age, and to analyse their relationship with the diagnosed COVID-19 cases. Monitoring excess influenza cases can serve as a valuable metric for tracking potential future COVID-19 outbreaks and other competing viral epidemics. Implementing comprehensive monitoring of excess influenza cases through primary care electronic medical records (EMR) could facilitate the early detection of new disease outbreaks, including COVID-19 and other influenza-like illnesses (ILI), thereby enhancing the efficiency of public health responses and testing initiatives.

It is imperative that coordinated, integrated therapy be provided at a time when the COVID-19 epidemic may be placing additional strain on the healthcare system. Time savings are made possible by EMR's increasing adaptability as well as its prompt and user-friendly documentation feature. Since so many patients have been admitted during this pandemic and some are being advised to self-quarantine indoors, EMR may be employed in particular to

control the symptom history and analysis. While the Electronic Medical Record (EMR) system does not inherently enhance or diminish the security of health data, it facilitates easier access to essential patient information. This improved accessibility allows for more efficient retrieval of stored records, minimizing the potential for human error. According to research conducted by Nalleballe et al. (2020), de-identified data from COVID-19 patients was obtained through TriNetX, a global health collaborative platform that gathers real-time EMR data from a network of healthcare organizations. In a study involving 40,469 COVID-19 positive patients in the United States, it was found that 22.5 percent exhibited neuropsychiatric symptoms associated with the virus. This aligns with several minor studies that have been published earlier (Mao et al., 2020; Helms et al., 2020). The data from these patients suggest that early identification and management of neuropsychiatric symptoms could significantly reduce overall morbidity and mortality. To deliver superior healthcare services, it is essential to leverage Electronic Medical Records (EMR) within the healthcare system by conducting analyses of the stored data to improve our prognostic capabilities.

According to the research has been done by Abdullah et al. (2022) in Malaysia, the implementation of Health Information Systems (HIS) in Ministry of Health (MOH) hospitals is crucial, especially for managing infectious diseases like COVID-19. The HIS module currently in use at the hospital is sufficient, as it aligns with current treatment practices followed by healthcare professionals. However, limitations in hardware and internet connectivity at the hospital have reduced the system's efficiency and affected the treatment process. Reopening hospitals requires improved planning and management, including selecting a system to manage clinical and health information. Additionally, HIS policies and guidelines should be provided to users to ensure the continuous security of patient data. To ensure the system remains reliable and compatible, regular reviews of the existing HIS are essential.

Conclusion
The current healthcare system needs to be modified to increase its effectiveness and decrease costs at the same time. Adopting state-of-the-art technology can improve information accessibility and flexibility for professionals with the necessary licenses, increase healthcare delivery productivity, lessen the burden on care providers, and provide patients more choices over their lifestyle and health. An intriguing observation is that, Electronic Medical Records (EMRs) are available 24/7 from both local and distant places, and unlike traditional paper papers, they may be accessed concurrently by numerous users. Patients will no longer need to continually provide comprehensive medical histories and details about their current treatments, which could lead to mistakes due to forgetfulness or time limits. Electronic medical records, or EMRs, have been shown to increase service quality, decrease the incidence of adverse drug reactions, and standardise clinical procedures in addition to drastically reducing hospital stays. These benefits result from the EMR's simple access to critical data, which highlights potential drug interactions and promotes a more standardised approach to patient care, thereby streamlining decision-making. Additionally, by eliminating the uncertainty associated with handwritten notes and prescriptions that are generally present in traditional paper records, the usage of EMR can reduce medical errors.

by lower personnel, the management system is guaranteed to function properly and efficiently, which is essential for containing the virus's spread. EMR systems can offer major prospects for expansion and scalability within healthcare practices by reducing errors and optimizing time and expenses.

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