Embracing Information Technology to Improve Quality of Health Care in Kenya

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Policy Brief

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Introduction

Computerised Physician Order Entry (CPOE) is an application that enables health care workers to enter medical orders into a computer system that is located within an inpatient or ambulatory setting. CPOE replaces traditional methods of placing medication orders, including written (paper prescriptions), verbal (in person or via telephone) and fax. Most CPOE systems allow health care workers to electronically specify medication orders as well as laboratory, admission, radiology, referral, and procedure orders. CPOE allows the computerised entry of healthcare provider instructions and helps eliminate errors at every step in the medication process, thereby improving patient outcomes, saving on time, and limiting unnecessary spending of resources (Gandhi et al., 2003).

Hospital CPOE systems are widely regarded as the technical solution to medication ordering errors, the largest identified source of preventable hospital medical errors (Kidholm et al, 2012). Evidence shows that many medication errors, which are known to be the most common cause of preventable injuries in hospitals, can be prevented by CPOE systems (Koppel et al., 2005). CPOE systems help reduce errors related to poor handwriting or transcription of medication orders.

Published studies report that CPOE reduces medication errors by up to 81 percent. The New England Journal of Medicine June 19, 2003 indicated that, despite the well-documented ability of information technology to reduce medical errors and pinpoint where potential safety problems are likely to occur, hospitals and physicians worldwide remain reluctant to adopt CPOE systems to date. This is largely because of the disruption to existing care settings and the cost of implementing CPOE systems (Massaro, 1993).

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In the United States, fewer than five percent of hospitals have fully implemented these CPOE systems (Wood 2013). This concurs with Osheroff et al (2005), who found that in spite of its effectiveness at preventing serious medication errors, only 10–15 percent of hospitals in the US use them. In 2005, the US reported 98,000 deaths and many more injuries resulting from medical errors, which have made patient safety a top priority in the country's healthcare system. In 2008, 34 percent of US acute-care hospitals had CPOE systems, but the extent to which clinicians used them varied markedly. Of the nearly 1.76 billion medications ordered in US hospitals in 2008, only about 26 percent were processed using CPOE.

Key Messages

- Kenya has no policy to promote and guide the adoption of information technology (IT) in the health sector, despite IT having great potential to improve the quality of health care service provision.
- Specifically, computerised patient order entry (CPOE) improves patient safety and eliminates risks associated with medical errors. In addition, CPOE increases adherence to guidelines for care, improves surveillance and monitoring of patients, and saves time.
- In Kenya, a few private hospitals have been implementing CPOE in both ambulatory and hospital setups for management of patients (including Mater, Nairobi and Aga Khan). Mbagathi Hospital is the only public hospital that has piloted CPOE in its casualty section.
- Kenya's Ministry of Health should develop a policy guideline for the adoption of IT including CPOE in health facilities as part of its efforts to improve quality of care and to save lives.
- There is also need for implementation research on adoption of CPOE systems in public health facilities to provide evidence on the impact of such systems as well as lessons on how best such systems can be adopted in public facilities.

In South Africa, MEDITECH provides a comprehensive and integrated electronic health record (EHR) system designed to help organisations increase patient safety, streamline processes and improve communication across departments and care teams. Hospitals and other care facilities using MEDITECH benefit from products designed to meet the needs of clinicians and staff throughout the care continuum, including physicians, nurses, pharmacists, radiologists, laboratory technicians, business office personnel, executives, human resource managers and financial staff. For this system, all applications are fully integrated, facilitating the seamless exchange of demographic, clinical and financial information between departments and care teams (MEDITECH, 2012). It is however not clear from the literature if public hospitals in South Africa have adopted CPOE systems.

In February 2014, Ghana, in collaboration with the World Health Organization introduced an electronic medical records system into the country's public hospitals. The system, called MedSpina, was developed with Africa in mind and was tested for three years at the Diabetic Clinic of the Korle-Bu Teaching Hospital, considered the premier hospital in Ghana and affiliated with the medical school of the University of Ghana (Peters, 2014).

In Kenya, there is no policy to guide the adoption of CPOE. Even then, a few private hospitals have been implementing CPOE in both ambulatory and hospital setups for management of patients. These hospitals include the Mater Hospital, Nairobi Hospital, and Aga Khan Hospital, among others. Among public hospitals in the country, only Mbagathi Hospital has piloted CPOE in its casualty section (Kathini, 2012). In order to improve patient care and reduce injuries and medication errors in Kenya, there is need to put in place a policy to guide the adoption of CPOE in health care facilities.

Methodology

Literature search of databases and a desk review were conducted to gather information about hospitals in Kenya that used CPOE and experiences of countries that are implementing similar technologies in health care provision.

Discussion of Policy Options

The findings of a study conducted in US hospitals showed that processing drugs via CPOE decreased the likelihood of drug error by 48 percent. The results estimated the reduction in drug errors for one year, and found that more widespread use of computerised entry could have a big impact on reduction of drug errors. Given the degree of CPOE adoption and use in hospitals in 2008, there was an estimated 12.5 percent reduction in medication errors, or approximate 17.4 million medication errors were averted in the US in one year (Sittig, 1994).

A study conducted in Mbagathi District Hospital showed that utilisation of CPOE in the hospital was low as it was only installed in ambulatory care (Kathini, 2012). The study further revealed that there were many barriers to the utilisation of CPOE in the hospital including lack of training for staff, power outages, slow Internet, and lack of antivirus software, which often resulted in CPOE system failure. The study was small scale and the authors chose to concentrate on the section on information-intense versus technology-focused impacts. Therefore, the study did not measure the impact of the CPOE system in reducing medication errors or associated injuries and deaths in the hospital. This points to need for more research in Kenya to understand how CPOE systems would work in the context of public sector health facilities and their impact.

Recommendations

The results above indicate that CPOE systems have the potential to reduce medical errors and consequently reduce injuries and deaths resulting from them. Efforts to strengthen Kenya's health care system need to consider adoption of CPOE systems in public health facilities, which are used by most Kenyans. The adoption of this policy needs to be accompanied by necessary resources to implement it since CPOE systems are expensive both in terms of installation, building capacity for their usage and maintenance. However, the return on this investment in terms of reducing injuries and saving lives justifies the investment. Specifically, the results in this Policy Brief point to the need for:

- Implementation research in Kenya to demonstrate the impact of the adoption of CPOE systems in public health facilities on the healthcare system and health outcomes in Kenya. This research will also generate lessons for informing Kenya's efforts to adopt CPOE systems in public health facilities.
- A national policy guideline to promote and guide CPOE adoption and use as part of efforts to improve health outcomes in the country.

Image: Intel Free Press/Flickr

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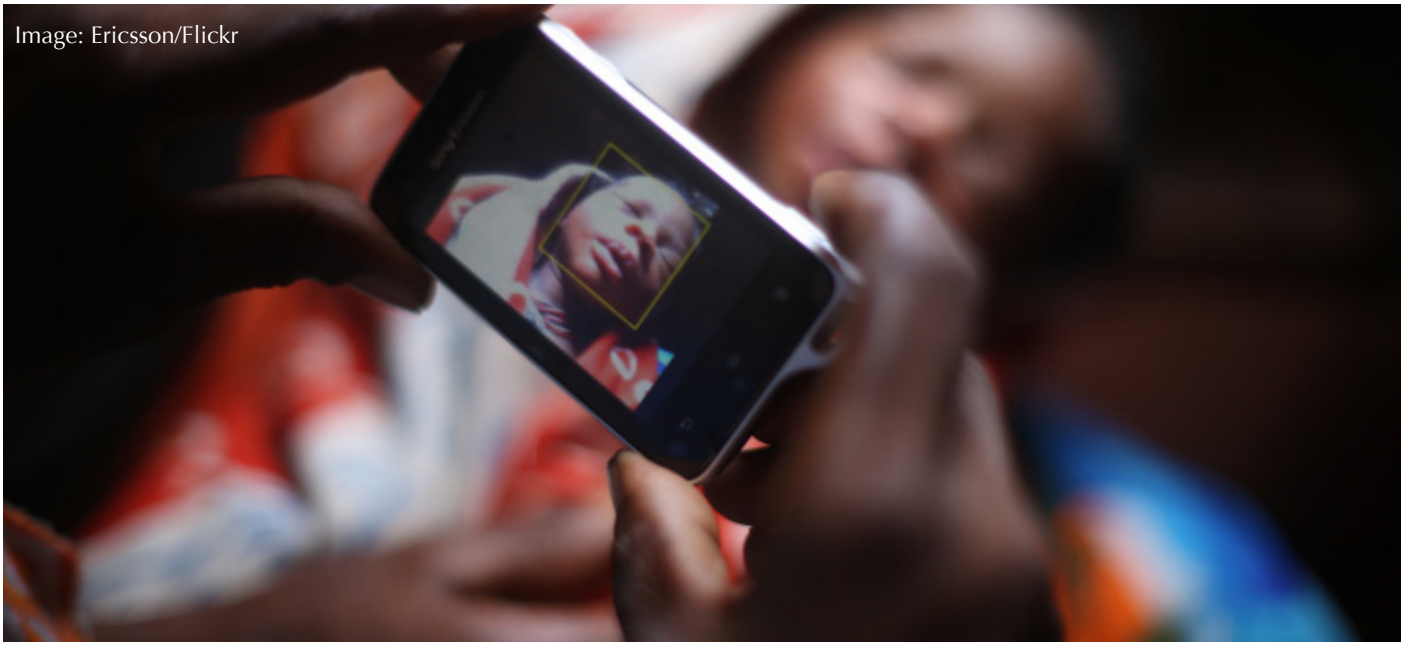
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