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From the Desk of the Editor

Creating Paperless Hospital in Bangladesh is no longer a dream but a challenging reality

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Paperless management has recently become a popular slogan for hospitals in developing countries because of newer development in information technologies. Now a days it is no longer a slogan but a challenging reality which is yet to be materialized. Paperless is a concept where currently used 'paper-based' will be replaced by using digital resources as a means of information. This paperless concept is a new effort from using paper for documentation to reduce paper waste and overcome environmental problems caused by wasteful paper products. Some institutions are interested in using this concept of a paperless environment because paperless system is a very effective strategy for storing and managing considerable information.[1]

During last several years medical sector across the world began using the concept of paperless as an effort to digitize the environment of a medical institution. In several studies, positive indicators have been demonstrated through technology, which can carry out the medical record and document management through the automation system. Because it is the speed and improvement of service quality using a paperless system which reduces missing information from a large amount of data available at the medical institution.[2]

Electronic Medical Record (EMR) of the patient is the backbone of paperless concept. It is also called Electronic Patient Record or EPR. In western countries paper based medical record systems are rapidly replaced by the EMR because of its many advantages. It enhances the management and the use of medical information for providing better health care delivery. It reduces amount of hard copies and also work load of managing those hard copies. This makes the system easy to access and provide better platform to understand the condition of the patient. These systems are widely being used in the hospitals of many countries.[3]

It is widely accepted that the EMR has the potential to become the back bone of electronic information and communication system in the health care sector. With the assumption that EMR systems can improve both the quality and the effectiveness of health care delivery, health care provider organizations in high income countries have invested in development and deployment of EMR systems.[4] It is known that EMRs provide, instant access to patient history and test results. They also have reduced duplication of tests, better coordination among care team and finally easy integration with diagnostic labs, pharmacies, and other departments[5].

The basic feature and objective on which paperless operates, aim towards the goal of minimizing the usage of hard copies. All medical records and reports can be saved as soft copies in an electronic format. Eventually all the data are stored on the server and data banks. These data are easily accessed with the help of internet and proper operating system. Paperless hospital as such aims to store the data on the server and access them easily as needed.[3]

One study reported observation on an emerging paper less hospital where comparison of EMR stage was made with no EMR stage. It was observed in that study that the inpatient mortality rate and 14-day readmission rate during the full EMR stage were reduced compared with those during the no EMR stage. The postoperative 48-hour mortality rate of the surgical patients also decreased during the full EMR stage. However, the risk of 14-day readmission during the partial EMR period was higher than that during the no EMR period. The study claimed that development and application of EMRs resulted in significant benefits in terms of healthcare quality[6].

Paper based hospitals are popular among certain health care workers who question if there is any advantage of paper less over paper based. According to one observation paper-based hospital management requires no internet or software to view or create records. Some clinicians may find the "tangibility" of paper records more comfortable. and documents can be handled and stored without specialized technical knowledge[7].

On the other hand, people who appreciates advantages of paperless hospitals claim easy access of the medical record information. Using server for reducing the administrative time to manage and file the medical records also reduces the time of data entry. It is also claimed that human errors including misinterpretations of illegible handwriting is eliminated and history of drug allergy will also alert the physician. Finally, the data or EMR is secured in paperless system and can only be accessed by authorized person[3].

According to Sheblaq et al [7] there are some noticeable disadvantages of paper base. According to this author, because records are physically stored they are difficult to access quickly or remotely. Hand written notes can often be illegible, misread, or can be lost. They require large amounts of physical space and become labor-intensive to manage. Fire, water, pests can damage them or sometimes they can be misplaced. As a result, delays occur due to searching for misplaced charts or while sending records to other providers. According to another study[8] paper documents constitute an information security hazard. A misplaced patient information sheet or chart causes an untraceable breach of confidentiality because those paper documents have no secure proof of audit by those who have seen the document.

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Similarly paperless hospitals have some disadvantages like paper based hospitals. The paperless cannot be implemented in the area with irregular electric supply. It also cannot be implemented where there is low level of internet access impairing data storage in the server. Computer illiteracy of staff in a paperless hospital and high cost of set up of infrastructure for paperless hospital are other important drawbacks[1]

Use of EMR is not above criticism and it has some validity which needs to be addressed. According to Hill et al[9], on an average, nurses and doctors spend 50 percent of their workday treating the screen, not the patient. The increased work burden associated with EMRs is one important factor for physician burnout. According to this study on an emergency room, doctors putting information into the computer consumed more of their time than any other activity. The study used a "click" of the computer mouse as the standard of measure. It showed that a doctor needed to make six clicks of the mouse to order an aspirin, eight clicks to get a chest x-ray, 15 clicks to provide a prescription etc. Over 40% of a typical 10-hour emergency room shift was devoted to data entry by using 4,000 clicks of the computer mouse according to this study.

In spite of above mentioned criticism there are several positive experiences from a good EMR. These are: I) meticulous patient documentation, II) common templates and order sets, III) disease coding and billing, IV) regulatory compliance, V) prevention of medication errors, VI) clinical pathway utilization, VII) optimized workflow, VIII) medico-legal defensibility, IX) adaptive learning capability, X) simplicity, XI) multiple input interfaces (notes, voice transcription, drawings, etc.) XII) incorporation of clinical images, XIII) seamless connectivity with clinical investigation platforms, XIV) input speed at the point of entry, and most importantly, XV) data compilation for analysis and research. All these above are possible with time-efficiency, and a user and patient friendly interface[10].

EMR of tomorrow consists of data tailor-made to the specific context, combined with decision-support systems. Scanning historical data is a step in this direction. But when EMR system is composed of a large part of scanned images it imposes a limit to its potential. Scanning the paper-based medical record can be easy and fast way to become paperless but one should understand that primary goal of paperless concept is something else. Scanning is only needed for historical data and old treatment files[3].

Barriers to EMR implementation in an aspiring hospital include organizational components like time management, lack of infrastructure, lack of staff, staff resistance, lack of IT personnel, staff competency, lack of staff coordination, possible loss of productivity, changeover of information, lack of a trainer on EMR, lack of management support etc[11].

Often an aspiring paperless hospital cannot handle or ignore the probability of a network or other system outage. As such paper back-up processes are essential to ensure continuity of care and avoid lapses in care during unexpected system downtime. Historically some institutions often had formal processes for immediate reversion to paper-based systems when EMR went down or during regularly practiced downtime drills[8].

Creating a paperless hospital in a resource-limited setting like Bangladesh requires careful planning to overcome high costs for infrastructure and training. A successful strategy involves starting with a minimal viable product (MVP) and gradually implementing technology, focusing on robust, user-friendly systems that address local needs and can be maintained with limited resources. Key steps should include choosing a hospital management system with appropriate essential features, and a phased implementation approach.

For Bangladesh, challenges in implementing paperless hospital include allocation of cost for computers, tablets and reliable power backups. The challenges also involve extensive and repeated training on new hardware and software as staffs may have diverse back grounds keeping in mind that entering data digitally can take time away from direct patient care potentially reducing patient and customer satisfaction.

It has been observed that one the primary challenges for efficient EMR implementation in Bangladesh is to achieve computer literacy of the user nurses and doctors. In our country computer literacy among nurses is inadequate and reliable statistics are not available. Computer literacy among doctors is generally good, with high usage for personal, academic, and professional purposes, though formal training is often lacking. Most medical professionals and students use smartphones and the internet daily, and there is a strong desire for more formal training to improve their skills. While they are familiar with basic tools like word processing and search engines, many lack advanced skills in areas like spreadsheets or data analysis software. According to a study done by Chowdhury et al[12] medical students in a teaching hospital in Bangladesh had an average 61.8% computer skill, mostly used for personal purpose (69.6%). All medical students used internet almost every alternative day and 35.7% used it for email & browsing only.

Is Bangladesh now seriously aiming towards paperless future? The answer is 'No'. Govt. run hospitals are significantly lagging behind in this respect. Paperless concept has only been undertaken by a few corporate hospitals in recent years. Unlike Govt. run hospitals, most of the private clinics and hospitals in the Dhaka city are using their own database system for patient health records. According to Haque et al [13] Several hospitals including Ever Care Hospital, Square Hospital, United Hospital, Medinova hospital and Popular diagnostic center and hospital etc are using their own database system for patient health records to keep it for their future purpose and to find out patients' previous health records easily. Medical records department of most of the private hospitals in Dhaka are known to scan paper documents and save into the data base. Recently United Hospital, Asgar Ali Hospital, Square hospital are known to have introduced paperless OPD which also offers paperless prescription service for their out patients.

Unico Hospitals, Dhaka a newly inaugurated corporate

hospital has embarked on an ambitious project which aims at becoming first ever completely paperless hospital in the country. Its OPD/ER, in-patient units, critical care units, laboratory and radiology dept., operating rooms and other services are currently actively pursuing EMR system and relying less on paper documentation. For example Radiology dept. uses one hundred percent PACS (Picture Archiving and Communication System) instead of printing films. Patients usually get radiology images in pen drives (or films on request) once they get discharged. A hospital like Unico hospitals will be truly paperless once it will utilize the true potential of EMR systems with all contemporary patient data produced electronically.

In conclusion: what should be the strategy for successful implementation of paperless hospital in Bangladesh? Our hospitals should start with a pilot project to implement MVP before a full roll out of paperless services. We should focus on core functions like patient records, billing and communication with the staff to address the most critical needs and involve staffs in planning and implementation process to address their concern and encourage adoption. Finally aspiring hospitals in Bangladesh will have to develop a comprehensive and ongoing training program to ensure that all staff are comfortable with the new technology and processes.

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