Electronic Health: Hospital Information System Downtime

Khalil Rizk, MHA, CPHQ, CPHRM, CPPS

Introduction

It is true that we should provide the best possible patient care in our hospitals and other healthcare organizations. It is equally important to document the proceedings of care in a chronological and uninterrupted manner. So we have to maintain a patient/medical/health record to provide the compilation of the patient's health and medical history. Of course the patient record serves many other purposes including the legal aspects of care. It is the main reference to determine the quality of care provided. The patient record could either be paper-based where all hardcopies are compiled together in one file or, a softcopy saved on hospital information systems. With the advances in the information technology, the trend is moving in one direction whereby more and more healthcare organizations have implemented a total or partial electronic health record.

The transition from paper-based to electronic health/medical record carries with it a new set of challenges and requirements to ensure the availability and integrity of the record at all times. One of the major challenges is how to maintain the same level of care while the information system is down.

What is Downtime?

When the hospital information system is not functional to provide patient information to the end-users for one reason or another, this situation is called downtime which could be either planned or unplanned. In this case, the hospital should implement a mitigation plan to ensure continuity of patient care and to describe the recovery procedures to get the system working again. The downtime events may pose patient safety risk and disruption of operations. In the case of paper-based patient record, the problem of downtime might be faced when the record is not available to the end-users in time due to misplacement or loss. So the patient safety risks are much reduced and might impact the individual patient only rather than the entire organization.

Most hospitals have implemented one type or another of a hospital information system. There is a wide spectrum of system implementation starting from a business module and ending with a fully integrated system including all hospital services and an electronic patient/health record. As more and more hospitals transition to different levels of electronic information systems, the impact of downtime is becoming more challenging and potentially significant if the downtime is wide-spread and stays for a long period of time. Hospitals may be in danger of permanently losing patient information if systems are not in place to copy and archive the data. Planned and unplanned downtime procedures should be implemented to ensure business and patient care continuity; and downtime recovery tactics and data backup to prevent data loss and maintain integrity.

Roger Collier describes the events that could take place during downtime: "hospitals get backed-up because patients can't be registered or discharged. Communication between departments becomes difficult, as does ordering medication and getting test results back from labs. Perhaps the most difficult task to perform well is billing for all services rendered. When using a backup paper system, a lot of the little things that usually enter the system with a touch of a button go unrecorded". (1)

What should be Done?

Preventive measures should be taken to reduce the impact of downtime on patient care and to minimize the time duration when the electronic patient/health records are not accessible. For this purpose, a contingency plan should be developed by the hospital and tested periodically. The main objectives of the contingency plan are aimed at mitigating the patient risk during downtime.

Nikola Baumann, Director of the Central Clinical Laboratory and Central Processing at Mayo Clinic, provides seven tips for mitigating patient safety risk during information technology downtime in the laboratory. (2)

1. Establish clear criteria for activating the downtime recovery procedure
2. When lab systems go down, have a procedure for mass, proactive communication to all sites of care
3. Ensure that supervisors or leads in the lab are guiding workflow during downtimes
4. Focus on completing stat orders and communicating critical results
5. Specify clear criteria for ending the downtime procedure
6. When systems are reactivated, close the communication loop by letting sites of care know that lab results are now available in the HER
7. Find time to debrief to analyze downtime performance and make improvements for next time

The downtime plan should also be shared with patient care areas and staff should be trained on the procedures to be followed when the information system is not activated. The procedures should be tailored to each clinical area within the hospital to ensure continuity of care. Contingency procedures could mean that hospital staff should use paper records for temporary documentation of care. In this case, paper records should be uploaded to the main electronic system once it is activated again either by re-entering the information or by scanning the records.

Downtime plans and procedures should include systems for backing up, recovering, and maintaining data. Disaster recovery systems are typically located at remote locations to recover data that may have become corrupted or unintentionally deleted. Hospitals should test their data recovery plans at least once a year. However, simple backups should be tested at least once a quarter and whenever there is a major hardware or software change in the backup system.

Hospital Accreditation Standards

Hospital accreditation bodies have spelled out standards to ensure the integrity of patient records during the downtime of the electronic health information systems. Let's take a quick look at 2 hospital accreditation standards applicable in Lebanon namely the Accreditation Standards for Hospitals in Lebanon, Ministry of Public Health, January 2019 Edition and, the Joint Commission International Accreditation Standards for Hospitals, 6th Edition in July 2017. It is clear that both accreditation standards require hospitals to implement a program for managing the patient information during planned and unplanned downtime. (3,4)

Accreditation Standards for Hospitals in Lebanon	Joint Commission International Accreditation Standards for Hospitals
IM 6. The operation of the management information system is maintained at the period of expected and unexpected downtime.	**Standard MOI.14:** The hospital develops, maintains, and tests a program for response to planned and unplanned downtime of data systems.
Guiding Measures: 6.1. The organization has an implemented process for data and information backup. 6.2. Hospital staff is informed and trained on the procedures and forms to be filled during downtime period. 6.3. Patient's information is documented during the downtime period. 6.4. The downtime system is tested for its effectiveness, reports are evaluated to identify the deficiencies and improvements are made accordingly.	**Measurable Elements:** ME.1. The hospital develops and maintains, and tests at least annually, a program for response to planned and unplanned downtime of data systems. ME. 2. The hospital identifies the probable impact that planned and unplanned downtime of data systems will have on all aspects of care and services. ME.3. The program includes continuity strategies for the provision of ongoing safe, high-quality patient care and services during planned and unplanned downtime of data systems.

	ME.4. The hospital identifies and implements downtime recovery tactics and ongoing data backup processes to recover and maintain data and ensure data integrity. ME.5. Staff are trained in the strategies and tactics used for planned and unplanned downtime of data systems.

Typical Downtime Plan for Hospitals

Policy statement: To provide a framework to identify and implement continuity strategies during planned and unplanned downtime, ensuring uninterrupted safe patient care.

Main points:

• Definitions of planned and unplanned downtime • Activation of planned or unplanned downtime procedure • Communication during downtime • Patient registration, admission, transfer, and discharge procedures • Billing procedures • Inpatient care areas including critical care units • Patient care orders	• Medication management • Diagnostic investigations (Laboratory, Radiology, etc.) • Operating room functions • Emergency department activities • Workflow in the outpatient clinics • Workflow in other support services during downtime • Staff training needs • Testing and evaluation of the downtime plan • Downtime recovery tactics and data backup

Conclusion

There is no acceptable reason to justify a breakdown in the continuity of patient services or loss of data that might put patients at risk due to unavailability of the hospital information system. The expression of “I’m sorry, our system is down” does not stand as a plausible excuse. (5) It is critical for hospitals to have an effective response plan for mitigating the impact of downtime.

References

1. Roger Collier: Electronic medical records: preparing for the inevitable crash, CMAJ. 2014 Apr 15; 186(7): 493.: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3986310/
2. Mitigating Patient Risk During IT Outages. Seven Tips to Ensure Your Laboratory Is Ready, https://www.aacc.org/Publications/CLN/Articles/2013/april/PSF-Outages.aspx
3. Joint Commission International Accreditation Standards for Hospitals Including Standards for Academic Medical Center Hospitals, Management of Information Chapter, 6th Edition | Effective 1 July 2017
4. Accreditation Standards for Hospitals in Lebanon, Information Management Chapter, Ministry of Public Health, January 2019 Edition
5. Adoption & Implementation News, EHR Downtime: What to Do When an IT Disaster Strikes https://ehrintelligence.com/news/ehr-downtime-what-to-do-when-an-it-disaster-strikes/