



Perils of Being Paperless

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So, you've decided to join the digital revolution and go paperless – but are you really ready? Do you believe your downtime processes and procedures are robust enough to handle the pressure? For a quick gut check, ask yourself how your organization would respond to the case studies below.

Case 1: Casualty of Construction

A backhoe inadvertently chomps through the main T1 fiber for the data center. Immediately the alarms start to ring in IT as personnel scramble to identify the problem. The fiber cut all communication with the data center for three hospitals for 10 hours, one of which was paperless.

Dr. Bryan was just finishing a harrowing shift in the Emergency Department. One more patient to review and then he was out of there! He goes to click on the lab results to check a potassium level, but nothing happens. His screen is totally frozen in spite of his 100 mouse clicks. He turns around to ask the nurse who throws up her hands and informs him “computers are the bane of human existence” and storms off. He has the unit clerk call the lab who informs her they have no access either.

Meanwhile, Nancy, a nurse on the psychiatric floor had just entered the last of her charting. It had been a really tough morning with two busy patients in restraints, two in isolation, one down for a procedure and one discharge. It was the first time she had a chance to catch up on her charting of five patients. Feeling a sense of relief, she leans back in her chair to stretch as she waits for the screen to indicate her save is complete. An unfamiliar pop-up box displays on her screen as she sits bolt upright and reads “Unable to connect to the database server. Please hit enter to re-submit or cancel to end the transaction.” Frantically, she hits the enter key, but to no avail. Her screen is now frozen. As she looks around the nurse's station, she notices the same look of dismay on everyone's face as she realizes she is going to lose even more time away from her patients to re-document. There was no way she was going to be able to get home on time today!

At the same time, the flight team had arrived to transport a critically ill infant. They were waiting on the paperwork to be printed and they would be on their way. Nothing would print, they had to leave with a shell of a chart, the nurse's handwritten notes was the best he could get, and the promise to send the data as soon as possible.

As care providers around the institution scramble to care for their patients without access to any information, one of the worst parts of the drama unfolds. In order to obtain lab results, they realize they will need to re-stick their patients to get readings off the actual lab instruments.

Less than one week later...

Case 2: Twitchy Switch

Same data center as before, but now with newly repaired T1 and plans for redundancy. A switch on the router becomes corrupt and is no longer able to direct data flow effectively. Streams of data begin backing up which knocks out the router which cascades into a complete network failure – again. Unfortunately, it took over 4 hours to find the problem and another 4 to fix it.

Case 3: Squirrel Catches Fire

Another day; different facility, a squirrel merrily makes its way across a power line until it suddenly burst into flames and lands on a very well manicured cluster of shrubs outside the “state of the art data” center. The shrubs proceed to catch on fire and blow up the transformer, creatively concealed behind the shrubs. The explosion triggers an emergency shutdown of the data center. All systems down until EMS personnel called that all is clear.

Case 4: Broken Mirror

If it is seven years of bad luck to break a regular mirror, imagine the consequences of breaking a database mirror and not being able to rejoin.

It started off as a lovely fall day; people traipse into work. A “simple” storage access network (SAN) move was scheduled for that day. It was to be “transparent” to the end-users. They would keep the system up, break the mirror, move one entity - then the other, rejoin the mirror and voila! The SAN was for their main Admission, Discharge, Transfer (ADT) system, clinical orders, laboratory system, radiology transcription system, and clinical financials.

Everything was going fine until they tried to rejoin the mirror and discovered one side of the mirror was corrupt. In their efforts to rejoin the mirror, the other side was corrupted. No one readily knew how to fix it – including the vendor.

This not only caused a 20+ hour downtime for current state, but the solution involved rolling back over 6 hours of transactions *prior* to the downtime. Teams were emergently deployed to back enter all ADTs, lab and radiology orders and synchronize their results, back enter all clinical orders, reconcile all charges. It took months to get the financials cleaned up.

Case 5: Disaster is Imminent! (or so they said...)

Weather “experts” called for the hurricane to track towards a community hospital and the decision was made to evacuate. Patient data had to be printed off for transfers to receiving institutions which quickly became a bottle-neck. A limited few knew how to print, and there weren’t enough printers anymore. After everyone was successfully transferred, the hurricane changed course and all were safely returned.

Continuity of Care in a Digital Age

With more patient data being migrated to an electronic data repository, what happens when you can’t get to it? What happens when you need hardcopies?

System downtimes are never pleasant, but the more you rely on an EMR for patient care, the more dangerous they can become. As an organization, thoroughly assess all points of failure in your EMR for risk and mitigation. If all your power lines are buried, odds are you don't need to prepare for a squirrel catching on fire, but think through any potential physical threats to your data center facilities, or if running remote – your connections to them.

Case	Summary	Mitigate
Construction Casualty	Total Network Failure: In the blink of an eye, a hospital had no access to patient results, clinical documentation, transcribed documents, and historical radiographic images; In addition, their Emergency Department which was fully CPOE had no access to previous orders or their status. This was an incredibly risky time for practitioners and their patients. Going paperless in an environment without redundancy for major data lines combined with a lack of a downtime system, specifically a solution devised to accommodate network failures, puts your organization at extremely high risk for a bad outcome.	<ol style="list-style-type: none"> 1. Redundancy in your network solution 2. Downtime solution which can function offline
Twitchy Switch	What Started As A Partial Became A Total Network Failure: Failure to detect a bad switch created a cascade which resulted in a complete failure. This was an issue that could have been detected with proper monitoring. It was complicated by poor vendor support and a failure to arrive onsite in a timely manner.	<ol style="list-style-type: none"> 1. Proper monitoring tools 2. Aggressive vendor contracts 3. Adequate and trained staff to monitor
Squirrel Catches Fire	Emergency Data Center Shutdown: This is a slight possibility but should still factor into your decision to go paperless. Natural disasters or ones caused by fuzzy creatures can shut your data center down.	<ol style="list-style-type: none"> 1. Consider remote hosting or a redundant data center 2. Downtime solution which can function offline
Broken Mirror	Critical System Outage: The decision to not have a downtime in the “best interest of the end-users” resulted in the organization’s longest downtime ever. It is difficult to take down mission critical systems. You will always suffer the wrath of your end-users. It is essential to not let them talk you out of industry best practices.	<ol style="list-style-type: none"> 1. Before moving any hardware, consider the downstream effects of what the worst thing possible – not probable - will be. 2. Follow best practices 3. Downtime solution which can function offline

<p>Disaster is Imminent! (or so they say...)</p>	<p>Printing When Paperless: Until RHIOs are fully realized, you will likely need to reproduce key sections of a patient’s chart. During this disaster, personnel struggled to generate the correct data and get it printed. Nurses were stuck standing by the printer waiting for their reports – hoping they didn’t have another patient’s information stuck in the middle of theirs. When your workforce adapts to being paperless, printing becomes awkward and end-users often forget how to print off a chart.</p> <p>Even if you can negotiate a secure electronic exchange of data, there may be a need for the receiving facility to require hardcopies. Access to electronic data may not be practical for facilities receiving an influx of patients and staff. In addition, medical transport personnel should have pertinent data at their fingertips in the event the patient’s condition changes during transport.</p>	<ol style="list-style-type: none"> 1. Create a report to print the required elements of a patient’s chart. Make it accessible to run for one or many patients with as little navigation required as possible. 2. Install a high-speed printer in your medical records department to assist in mass printing. 3. Work with receiving facilities to receive data on electronic media or through secure data transmission.
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Summary

If you do not have a downtime solution which functions offline, carefully evaluate your intention to go paperless. Look at all points of failure in your overall system to see how you will work around them. Address any needs which require a hardcopy solution. Above all, make sure your workforce is downtime ready. This is a good practice whether you are paperless, paper-light, or not. Consider adding downtime drills to skills fairs for the clinicians and competencies for your IT departments to keep everyone prepared.

If you would like more information about downtime procedures for any of your HIT system please call us at 610-444-1233 or email us at vcs@getvitalized.com