

Top 10 IT Trends To Watch In Healthcare

George Pashardis

VP Healthcare

ePlus Technology, inc



Healthcare

(What's Happening?)

Healthcare IT Transformation

← THE NEXT GENERATION OF SECURE DIGITAL-AGE HEALTHCARE →

Yesterday

Paper Driven Processes
Hardcopy only and stored manually. Written prescriptions manually walked to Pharma.

Today

Electronic Driven Processes
Electronic records transform care from client/server environments to new web architectures. Complexity increases e.g. 1000's of servers, 1000's of network devices. Data explosion.

Virtualization and Mobile Devices/IoT
Exploding complexities as servers and devices virtualize and move about at will between data center and cloud. A much more dynamic environment to secure.

Tomorrow

Artificial Intelligence and Machine Learning
Greater visibility and improved collaboration. Expansive amounts of valuable data and the context into which to introduce the technology. Driving toward intent-based security.

5G

(Is 5G the future?)

- A few years away from being a 5G world.
- We do live in the world of mobile applications and we all need data faster!
- 5G brings Faster Speeds, widespread connectivity and faster networks (near-real-time)



What does this mean for the Healthcare Industry?

- Allows hospitals to see their digital transformation goals fully realized.
- Will connect people to information and machines to machines in near real-time.
- 5G will bring us into a future where real-time exchange of data needed for complex applications and internet of things (IoT) enabled automation will truly be achieved.
- Healthcare is adopting IoT capabilities such as wearable trackable devices and sensor driven medical devices faster than any other vertical.
 - ❑ Because of the large data in near real-time, 5G will improve *Patient Care* and *Boost Efficiency*.

“5G will make a big impact in the Healthcare space compared to other verticals”.

Interoperability Technologies

Defining Interoperability in the Health Ecosystem

“In healthcare, **interoperability** is the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged”.

Why is it important?

Interoperability is so **important** because it ensures that doctors, surgeons, and other medical providers have the information that they need in order to provide sufficient care.

- **Interoperability** remains an ongoing challenge as organizations look for ways to exchange data within healthcare systems and externally with other data partners.
- **Interoperability** isn't only about data exchange but it's about data consumption and being able to use the data in a meaningful way.
- You can have all the connectivity in the world but if you're not able to deliver information into a clinical workflow of those who need it or would use it then you shouldn't even bother.

“Interoperability is about how to make data consumption easier and more usable in practical, meaningful ways”.

Blockchain

What is really fueling blockchain in healthcare?

- **Blockchain** promises to secure patient data, improve supply chain, solve interoperability and transform electronic health records.
- **Blockchain Technology** has the potential to transform healthcare. It will absolutely place the patient at the center of the healthcare ecosystem.
- **Blockchain** MUST be adopted by the EMRs first – *My Opinion!*

“Imagine a platform that will make it easy to transfer data between an insurance company and a health system (which may improve claims adjudication) or a platform that gives patients more control over their own data”.

– *Blockchain will improve efficiencies and will support better health outcomes for patients.*

Consumerism/Digital Transformation

Why is it important?

A digital platform is a key component to a hospital especially when there is so much competition, but it must be flexible, easy to use and most importantly scalable for growth.

“Its about personalizing the healthcare experience”.

It is very important to “Innovate from Within”.

- Many healthcare organizations have turned to digital transformation – *BUT some have a long way to go*
- Increase patient engagement and enhance their experience – Customers today expect convenience
 - Developing applications to help patients find a destination within a hospital
 - Pay their bill
 - Schedule appointments
 - Engage in a video telehealth visit.
- Digital Transformation enhances patient experience, improves efficiency and in some ways increases revenue for the hospital.

“During a new age of healthcare consumerism, engaging patients in their own healthcare by personalizing the experience is a strategic initiative for healthcare executives”.

Virtual Reality

Why VR?

Healthcare patients are more involved in the decision of where they receive care than at any time in recent history.

“Patients choose organizations that employ technologically sophisticated diagnosis and treatment methods”.

Benefits

- Virtual Reality (VR) and Augmented Reality (AR) technologies are making a big push into several areas of patient care, including surgical specialty.
- VR systems can be used to combine radiological scans from MRIs, CTs and X-Rays into 3D constructs that surgeons can use to improve communication and procedural understanding with the patient.
- Surgeons can also use the system in the surgical suite to review their surgical plan.
- Another area where VR is beginning to become used is for treatment for some mental health disorders. VR is used to help patients overcome fears and is being studied for the possible reduction in pain medications, including lower opioid prescribing.
- Virtual Reality (VR) and Augmented Reality (AR) has been proven in some surgical specialties.

Telemedicine

Increased Interest in Telemedicine in 2019. Why?

The Centers for Medicare & Medicaid Services (CMS) made recent changes to policies and reimbursement for telemedicine.

***CMS is a federal agency within the US Department of Health and Human Services

Lots of Telehealth Vendors out there:

Cloud-based solutions are Best

- ✓ They integrate with clinical workflows and documentation which provide improved experiences for both patient and provider.
- ✓ Benefits patients without access to high speed internet connections by providing them with access to virtual visits.
- ✓ Positive impact to care givers and reduces the frustration felt by many due to documentation and poor video connections.

“This is a technology that will continue to evolve and improve with adoption from greater numbers of clinicians over the next few years. The coming availability of 5G networks will further improve the experience by adding better speed and reliability”.

IoT

IoT in Healthcare?

In a healthcare environment, the IoT devices take on special duties, transferring physiological information from connected medical devices such as EKG machines, IV pumps and other radiological devices like portable X-Ray machines.

-
- Connected devices have become such an integral part of our daily existence that we often don't recognize the sheer numbers and integration points until a device fails.
 - The range of devices seen in healthcare environments is vast, with each intended to improve *Patient Outcomes* and *Patient Experience*.

Positive: The usefulness of IoT devices in healthcare is undeniable

Negative: The risk to information security is often a secondary consideration.

“By taking a risk-based approach to IoT, organizations can improve integration of these devices into their environments in a secure manner”.

Cloud

Healthcare in the Cloud

- Healthcare, as an industry, has been somewhat resistant to fully embrace the possibilities of Cloud technology.
- Reasons vary from security concerns to infrastructures that are simply not ready to support it.
- Cloud is important for the future of healthcare because it allows hospitals to be closer to their consumers/patients thus improving *Patient Experience*.
- The healthcare vertical is ready to make some significant investments to reduce the footprint of on-premises data centers but for many, the move is primarily about cutting costs.
- By 2022 most healthcare organizations will begin moving the majority of applications and infrastructure over to the cloud, leaving <20% on premises.

Artificial Intelligence



Leverage Big Data,
technology, people,
and intellectual
property to own the

**Consumer
Experience**

Those Who Thrive in
the next 10 years will
be Organizations
That...

Artificial Intelligence (AI) has been top of mind for most healthcare executives for some time. It has finally found its way into many applications, from patient-facing and imaging to advanced analytics.

“AI” brings Better Clinical Outcomes

- Hospitals today have so much data that they don't know what to do with it.
 - As consultants it is our job to help healthcare institutions leverage data to solve new problems, improve patient experiences and reduce costs.
- AI and machine learning applications bring a lot of confusion to the healthcare space as far as to what extend it should be deployed.
- While core technologies are still evolving in healthcare, AI has already done wonders for healthcare.
 - AI has improved the healthcare experience
 - Differentiated automation from human touch
 - More and more people are submitting their genetic and genomic information to direct to consumer companies that may improve long-term care or life insurance.

“There are still questions to be answered as AI makes itself into our lives such as questions on security and privacy BUT given the future of healthcare we cannot advance healthcare without AI innovation”.

“AI” being outside your Comfort Zone

- Get your Teams uncomfortable and get them educated.
- Partner with Strategic Vendors/Peers.
- Target Departments in Hospitals:
 - Radiology, Oncology, Cardiology, Pathology, IT (EMR, Data Repositories)
- Who do you talk to?
 - CIO, Chief Data Officer, Data Owner, LoB Executive or Director, Data Scientist

Example Questions:

- Does your organization have a Big Data initiative?
- Do you have a group working on Analytics, Data Science or Business Intelligence?
- Do you have large data sets, like images or video?
- What Dashboards are you interested in seeing?
- Has the business been asking IT for GPU-enabled servers?

Integrated Healthcare Solutions: See below for case result descriptions		HEALTHCARE BUSINESS OUTCOMES				
		BETTER PATIENT SATISFACTION	ELEVATED PATIENT OUTCOMES	INCREASED REVENUE / REDUCED COSTS	IMPROVED EFFICIENCY	ENHANCED COMPLIANCE
USE CASES	AUTOMATED CODING	✓		✓	✓	✓
	BED UTILIZATION	✓	✓	✓	✓	
	EARLY SYMPTOM DETECTION	✓	✓			
	FALL RISK DETECTION	✓	✓	✓	✓	
	HANDWASHING (STAFF HYGIENE)	✓	✓	✓	✓	✓
	SOCIAL MEDIA MONITORING	✓	✓			✓

USE CASES

</> : AUTOMATED CODING

- ✓ **PATIENT SATISFACTION** – Proper coding can result in improved billing accuracy and compliance with insurance coverage benefits. With patients taking on a greater level of ownership and involvement with the costs, automation and analytics used in the billing functions will reduce patient frustration often encountered with cryptic or obscure services on bills they receive.
- ✓ **REVENUE / COSTS** - Automated review and analysis of structured and unstructured data of patient records to identify correct billing and capture services rendered
- ✓ **EFFICIENCY** – Produce bills more quickly, improving AR days
- ✓ **COMPLIANCE** – Maintain coding practice compliance with corporate and government requirements. Audit coding to identify and avoid fraud.

🛏️ : BED UTILIZATION

- ✓ **PATIENT SATISFACTION** – Reduce “ER holds” due to bed availability.
- ✓ **PATIENT OUTCOMES** – Better understanding of patient discharges and bed availability. Get patients into the right bed based on reported condition/symptoms presented.
- ✓ **REVENUE / COSTS** – Improve acuity, reduce length of stay
- ✓ **EFFICIENCY** – Improve acuity, reduce supply costs, ancillary staffing needed for ER holds

🔍 : EARLY SYMPTOM DETECTION

- ✓ **PATIENT SATISFACTION** – Reduced mortality rate, reduced length of stay helps patients get back home where they are comfortable more quickly.
- ✓ **REVENUE / COSTS** – Reduce readmission rates that result in non-billable care, penalties.
- ✓ **PATIENT OUTCOMES** – Leveraging data from internal and external sources and applying specific algorithms, create predictive models for acute conditions (respiratory failure, heart failure, heart attack, pneumonia) and chronic conditions (diabetes, kidney disease, hypertension). Development of personalized (precision) medicine; customized drug dosage, frequency based on genetic markers.

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	SOCIAL MEDIA MONITORING	✓	✓			✓

USE CASES - CONTINUED

FALL RISK DETECTION

- ✓ PATIENT SATISFACTION – Avoid pain and injuries associated with falls.
- ✓ PATIENT OUTCOMES – Reduce unintended complications resulting from falls, avoid potential increased duration of patient stay.
- ✓ REVENUE / COSTS – Avoid costs associated with falls, most of which are not reimbursable.
- ✓ EFFICIENCY – Reduce acuity, 1-to-1's, by applying predictive algorithms, motion sense/motion capture to identify predictors of unwanted patient movement resulting in falls.

HANDWASHING (STAFF HYGIENE)

- ✓ PATIENT SATISFACTION – Patients feel more comfortable and at ease when they see staff adhering to cleanliness standards.
- ✓ PATIENT OUTCOMES - Reduced preventable hospital-acquired conditions
- ✓ REVENUE / COSTS – Reduced length of stay, costs associated with unbillable hospital-acquired conditions, avoiding penalties.
- ✓ EFFICIENCY - Reduced length of stay, staffing requirements, supplies, bed availability
- ✓ COMPLIANCE – Comply with federal, state, and local regulations regarding preventable hospital-acquired conditions

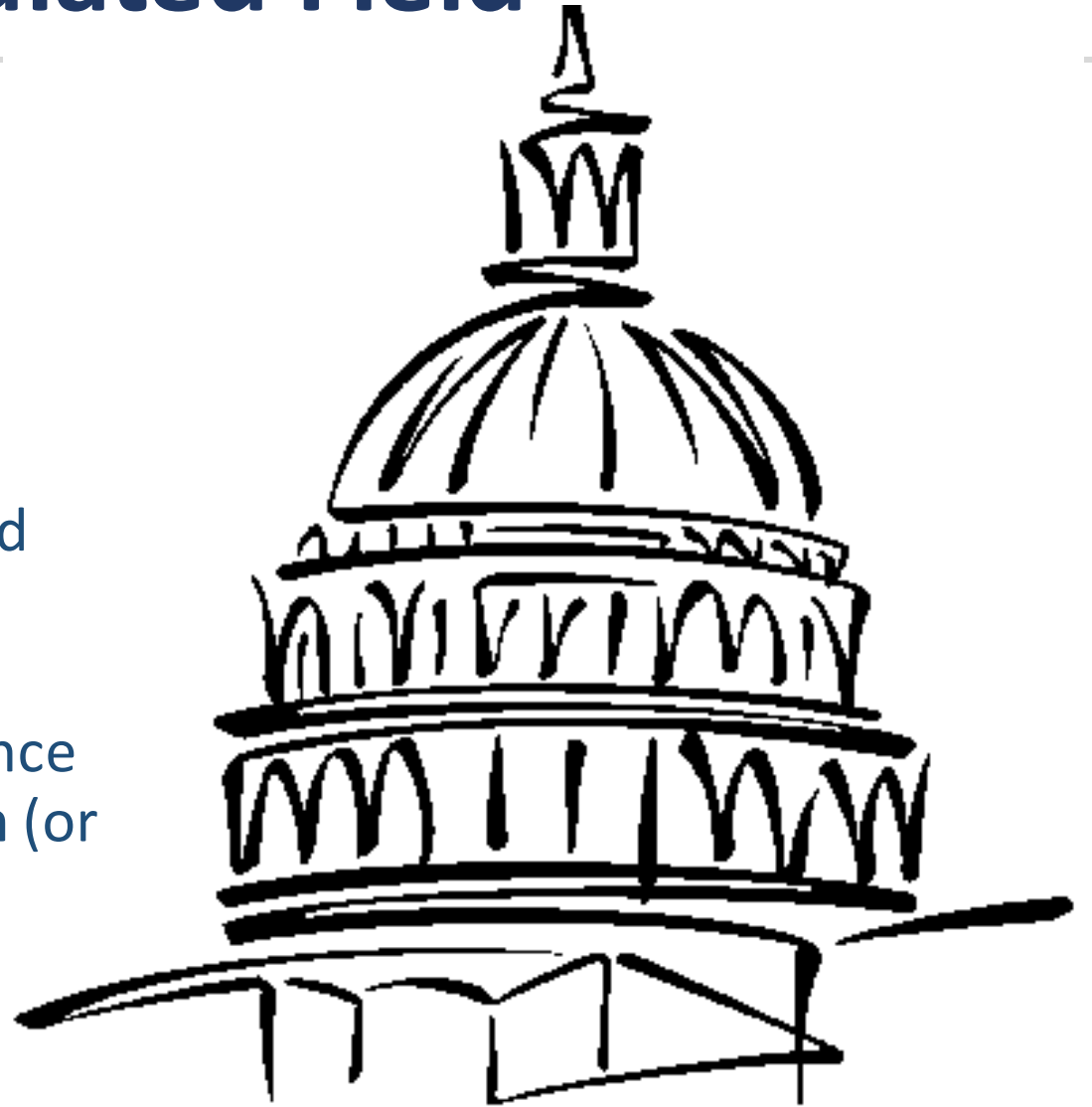
SOCIAL MEDIA MONITORING

- ✓ PATIENT SATISFACTION – Identify patient or family member experiences not captured through patient satisfaction surveys. Use for follow-up action items: service recovery, recognition/coaching, service improvements, facility/environment changes.
- ✓ PATIENT OUTCOMES – Monitor patient health indicators. Identify and enact proactive outreach or services if permitted.
- ✓ COMPLIANCE – Identify potential intentional or unintentional disclosure of protected or confidential information. Early breach detection.

Cybersecurity

Healthcare is a Highly Regulated Field

- HIPAA
- HITECH Act
 - HIPAA Omnibus Rule
 - Breach Notification Interim
- Payment Card Industry Data Security Standard (PCI DSS)
- **HIPAA Violations** are expensive. Penalties for noncompliance based on the level of negligence can range from \$100 to \$50,000 per **violation** (or per record), with a maximum penalty of \$1.5 million per year for **violations** of an identical provision.



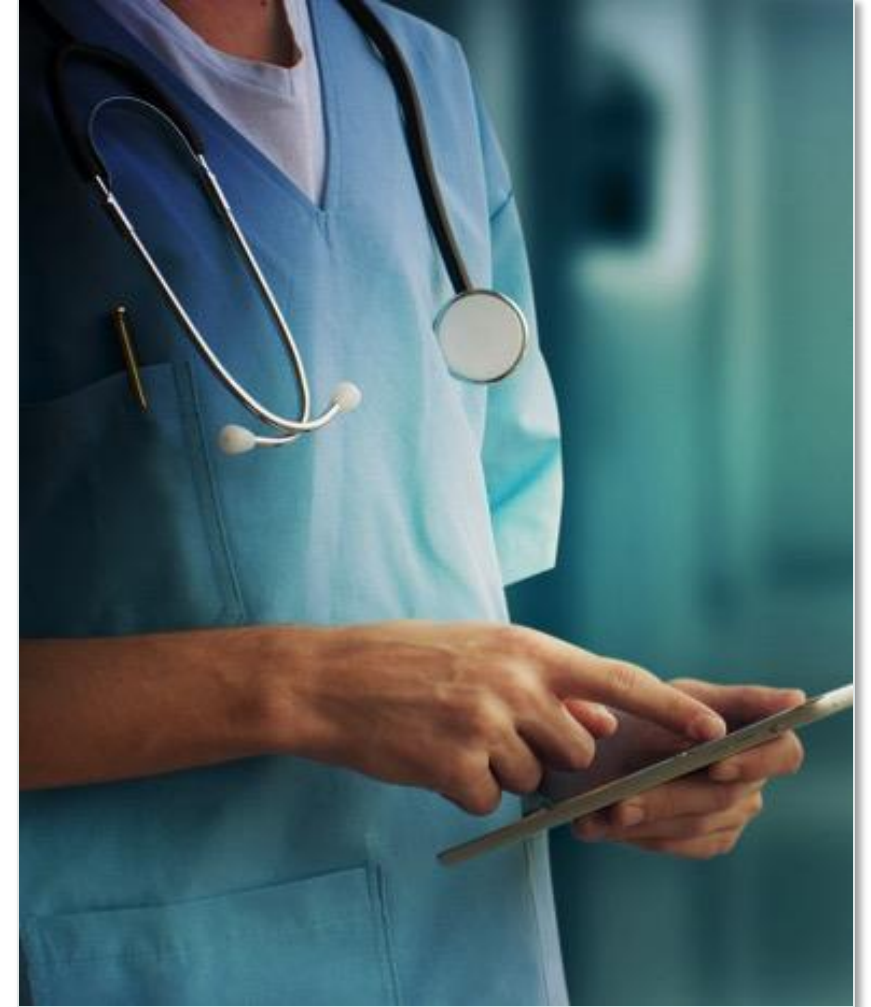
Why is Healthcare more at risk?

- Hospitals are hit with 88% of all ransomware attacks
- Average cost of a HC record is \$408 vs \$141 across other industry verticals
- Stolen health credentials can go for about 10 or 20 times the value of a U.S. credit card number
- Many HC organizations operate on outdated, disparate systems that are vulnerable to attacks
- There is a shortage of cybersecurity talent



Why do they Attack Healthcare?

- Health Record, includes identity and other valuable information
- Data doesn't change
- Medical history is accurate for a lifetime
- Healthcare is easier to hack
- Interoperability requirements
- Great delays between the breach and determining there was one. (100+ Days/2400+ Hours – Average time it takes for most organizations to know they had a data breach).
- Data is used for identity theft, false claims, medical research trends, medical equipment and drug purchases



Cybersecurity a Major Priority Amongst HC Organizations

- Up-front investments to protect Patient Information is paramount.
 - Organizations today are increasingly using multiple layers of security, including one-time passwords, biometric screenings and knowledge-based authentication.
- Hospitals increasingly investing into wearable trackable devices and sensor driven medical devices as well as a growing amount of access points. **This unfortunately requires daily cybersecurity monitoring.**
 - Threats are not just coming from outside the system anymore.
 - During 2018, security of medical devices had worsened as remote access for employees of healthcare systems had increased, (incl. through mobile devices), putting patient and other data at a greater risk.
- Adoption of Internet of Things (IoT) wearable devices such as fitness trackers bring an even more security risk.
 - These devices lack security and are often attached to Wi-Fi access points. This creates pathways to internal networks and sensitive data.
 - Now they become a repository for malware that could result in significant harm to patients, in addition to security incidents within healthcare provider organizations.

Questions for You?

When you talk to customers and prospects:



- What is your nightstand talk?
- How concerned are they about ransomware?
- How are they protecting vulnerable endpoints, such as medical devices and mobile devices?

Playing in the Healthcare Space

Facts and Predictions:

2019:

- 87% of CIOs expect to increase spending on cybersecurity ¹
- 57% of CIOs say they are working to foster a data-driven culture ²
- 70% of CIOs are concerned about the big tech companies like Apple, Amazon & Google disrupting the Healthcare Market ³

In 3 years:

- 60% of CIO's expect health data to be stored in hybrid/private cloud ⁴
- 45% of CIOs expect the use of telehealth to increase ⁵

Facts and Predictions:

In 5 years:

- Talent for emerging technologies will be inadequate to fill 30% of global demand ⁶
- 70% of CIOs will apply data analytics and AI to IT operations ⁷
- Most impactful health IT will be: AI, Consumer technology & Genomics ⁸

^{1, 2, 4, 5, 8} [Healthcare Informatics. \(2018, November 19\). Cybersecurity, Telehealth and Interoperability “Top of Mind” for IT Execs in 2019 \[article\].](#)

³ [Advisory Board. \(2018, November 6\). What 84 Health Care CIOs Told Us About Health IT in 2019 \[website\].](#)

^{6, 7} [International Data Corporation \(IDC\). \(2018, October 31\) IDC Reveals Worldwide CIO Agenda 2019 Predictions \[website\].](#)

Partners to look at with Healthcare Practice

- DELL EMC
- NetApp
- Pure Storage
- VMware
- Nutanix
- Nvidia
- Rubrik
- Veeam
- Palo Alto
- Fortinet
- Splunk
- Intel
- HP Inc
- Zebra
- Barco
- Imprivata
- ExtraHop
- Ergotron
- Humanscale
- Stanley
- Nutanix
- Nyansa
- Ordr
- SealShield

When Developing or Enhancing your HC Practice

Ask yourself does this solution improve:

- Operational Efficiency
- Patient Engagement/Satisfaction
- Physician Engagement
- Clinical Workflow
- Etc.

Key to Success

- ❑ Differentiate Yourself
- ❑ Get outside your Comfort Zone for AI/BD, Cloud, etc.
- ❑ Develop 1 Page Sales Plays/Battlecards for focused Solutions
- ❑ Partner with Key HC Vendors that will make a difference
- ❑ Healthcare Clients love to collaborate – Take Advantage of it!
- ❑ Don't limit your relationships to IT & Purchasing
 - Get to the CIO, CTO, CISO, CMO, CMIO, CNO
- ❑ Have Pillars of Focus
- ❑ Get Educated/Read
- ❑ Attend local/national Healthcare Events

Recommendations for Online Reading

<https://www.beckershospitalreview.com/e-weeklies.html> and sign up for different articles.

- Becker's Hospital Review
- Becker's Hospital CEO Report
- Becker's Hospital CFO Report
- Becker's Health IT & CIO Report
- Becker's Blockchain

<https://www.healthcareitnews.com>

<http://www.healthcareinfosecurity.com>

www.himss.org

The Role of the CIO

Digital transformation is shaking things up for healthcare CIOs. The role of the CIO will be changing from managing IT infrastructure and purchasing decisions to that of a strategic business partner, equally committed to protecting patient data and improving patient experience. - *Make a difference to your customer and show them value.*

Here's to the Future of Healthcare!

Thank you!

George Pashardis
ePlus Technology, inc
VP Healthcare
gtp@eplus.com
212-401-5028

