Hot Topics in Healthcare

Presented By:
David Finn | EVP, Strategic Innovation

CynergisTek was recognized in the 2016 KLAS Security Advisory Services report for having the highest overall client satisfaction, performance and impact on security preparedness in healthcare.

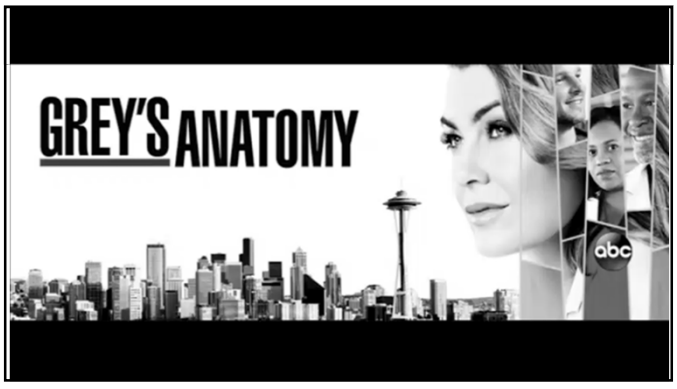
CynergisTek won the 2017 Best in KLAS Award for Cyber Security Advisory Services

CynergisTek was recognized in the 2018 KLAS Cybersecurity Services Report as the company having the greatest breadth of security services and received high praise for their healthcare knowledge and executive involvement.

Today's Presenters

- EVP, Strategic Innovation, CynergisTek
- 30+ years in Health IT
- Involved in leading the planning, management and control of enterprise-wide, mission-critical information technology and business processes for 30+ years
- Holds CISA, CISM and CRISC certifications
- Focused on creating and maintaining trust in and value from information and information systems
- Former Health IT Officer, Symantec
- Recovering Security and Privacy Officer
- Recovering Healthcare CIO

David S. Finn
CynergisTek, Inc.



Why Cybercriminals Like Healthcare

Valuable Information
Lack of investment & Training
Highly Connected Systems

The New Reality of Healthcare

- Ransomware
- Phishing
- Hacked Workstation
- FTP Server Misconfigured
- Website Breach
- Database Misconfigured
- Email Breach
- Malware attack
- Stolen Laptop

Imagine….

Your CEO Getting Ready for an Evening Out

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An After Hours Call… Never Good News

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How Bad Could It Be…

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Pretty Bad…

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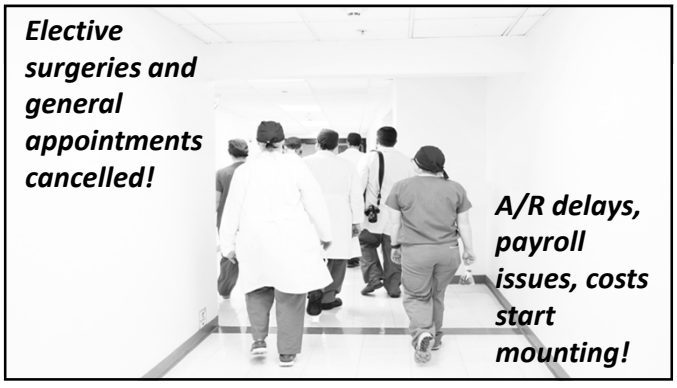
Elective surgeries and general appointments cancelled!



A/R delays, payroll issues, costs start mounting!

The Impact

Impact on Operations

- Two full weeks of downtime – enterprise-wide
- Opened Incident Command Center – 24/7
- Paper processing for nearly everything
- Younger staff were often clueless – "Thank God for older nurses!"
- Needed many "runners" to go everywhere (pick up lab orders, etc.)
- Confusion and inconsistency re: backloading of data/charges
- "Downtime Boxes" were designed for 2-3 days
  - Ran out of forms and prescription pads
  - Used print shop for what they could
  - Old versions of paper order sets

Impact on Operations

- Phones initially impacted (on the same network)
  - Lost ACD/menu functionality for several days
- OR schedule reviewed for "elective" or "postpone-able" procedures
  - No PACS availability – Access to images a challenge
- BCA devices – lost nearly all value after a couple of days
- IT directed to focus on payroll and materials mgmt.
  - You have to pay your staff and order your supplies
- EMR was never actually infected – but limited workstation access made it virtually unusable/inaccessible
  - Focused on a few workstations in order to maintain up to date census

Impact on People

- Staff burnout, mistakes, stress, irritability
- Forced a few "stay home" days for some staff
- Stress/worry that any negative patient outcome would be "our" fault
- Stress/worry about missing something critical increases
  - Access to servers/databases with critical cancer regimen data
  - Access to old clinical data/images
  - Access to allergy data, etc.
- "Remediation Services" not what was expected
  - Required obtaining extra staff from peer organizations and temp agencies

The Recovery

The Recovery

- 14 *days* of paper orders, charges, results, etc.
- 4+ *months* of matching patients with orders, charges, and results in the system
- Additional expense of $250K - $500K (overtime, special services, remediation assistance) not counting new security hardware or software
- No claims processing for 60+ days = no incoming cash flow
- Revenue reduction (lost revenue) of $2 million
- No progress on IT projects for several months

The Cleanup

The Cleanup

- Took a solid four months of enterprise-wide effort, but…
- It is ***still*** happening six months post event
- Confusion and inconsistency of cleanup process
  - Some departments and clinics entered their own backload of data
  - Others had ancillary departments enter their orders/charges
  - Still a few others did nothing, causing frustration and delays
    - *"Lab gets the revenue, they should do the work"*
    - *"Who has the paperwork now?"*
    - *"Our staff doesn't want the extra overtime or weekend work"*
    - *"We didn't cause this, why should we have to fix it?"*
- We still occasionally find a missing charge, order, or result

The Post Mortem

The Post Mortem

- Need to reconsider "downtime" box contents, plan for longer outage
- Need to test all BCA devices and off-line printing capabilities
- Need to add more BCA devices, and downtime computer workstations
- Leadership, department, and physician contact lists were a) out of date, and b) hard to find (when network is down)
- Need to quickly establish mini-registration/census location(s) and distribute information often
- Need better access to standardized forms
- Need better access to paper-based order sets
- Need a formal plan for who will do what (backloading of orders, charges, results) and other scanning

Lessons Learned

Lessons Learned

- The financial recovery following a ransomware event takes a minimum of six months, and even then, the unrecoverable costs are often measurable in the millions. *A Ransomware Post Mortem*, Clyde Hewitt, Health Management Technology, March-April 2018
- 25% of patients have changed their provider following a major data breach Accenture, 2017 Consumer Survey on Cybersecurity and Digital Trust.
- U.S. organizations that paid the ransoms were targeted and attacked again with ransomware 73 percent of the time. Business Wire March 27, 2018
- Forty five percent of U.S. companies hit with a ransomware attack last year paid at least one ransom; but only 26 percent of these companies had their files unlocked. Business Wire March 27, 2018

Today's Threats

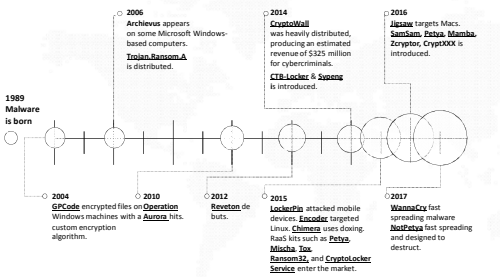
The Cyber Landscape Has Changed

- In 2017, less than 1 in 10 providers had not adopted an EHR system, compared to the inverse in 2003
- Hacking has increased several hundred percent since 2015
- Ransomware attacks soared to 80,000 perhour in 2017, falling off in 2018 only to be replaced by cryptomining, phishing, and more advanced malware attacks
- Breaches today are more about disruption and destruction of data rather than simple theft of data or extortion
- And the new concern is data corruption, the silent attacker

Top Security Risks in Healthcare

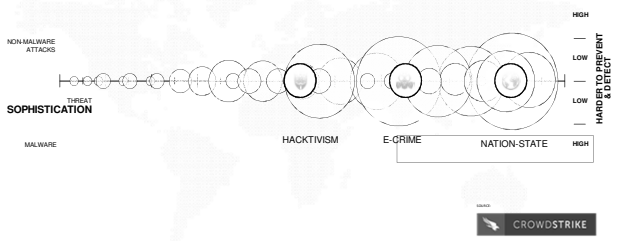
Theft & Loss	Nearly half of all breaches involve some form of theft or loss of a device not properly protected or paper.
Insider Abuse	Breaches in healthcare continue to be carried out by knowledgeable insiders for identity theft, tax fraud, and financial fraud.
Unintentional Action	Breaches caused by mistakes or unintentional actions such as improper mailings, errant emails, or facsimiles are still prevalent.
Cyber Attacks	**Majority of large breaches reported in 2017 involved some form of hacking and represented nearly 99% of the records compromised.**

Attacks are Growing in Frequency



- Every time a new smartphone is turned on, the digital attack surface grows. Every time a new device is connected to the Internet of Things (IoT), the cyber landscape becomes less secure.
  – *McKinsey & Company*
- Industry experts estimates healthcare cyberattacks rose 320% between 2015 and 2016.
- Healthcare has emerged as the most frequently targeted industry, with 164 threats detected per 1,000 host devices.
  – *Vectra Networks Industry Report 2017*
- Accordingly, healthcare cybersecurity spending is expected to reach nearly $65 billion by 2021.
  – *Cybersecurity Ventures 2017*

Attacks are Growing in Sophistication



SOURCE: CROWDSTRIKE

Changing Risk Priorities

From "Business Critical" to "Mission Critical" to "Life Critical"

Confidentiality	Availability	Integrity

• PHI (HIPAA)
• But also PII & PCI
• Account Information
• Billing & Payment Data
• Intellectual Property
  - Clinical Trials
  - Research
  - Design & Formularies
• Legal & HR Documents
• Identities & Credentials
	• Clinical Systems
	  - EHR & Specialty
	  - Ancillary (PACS, Lab, Pharma)
	  - ePrescription / EPCS
	• Medical Devices
	  - Availability of clinical services and results
	• Business Systems
	  - Email
	  - Billing, Scheduling
		• Critical Patient Data
		  - Prescriptions, Medications
		  - Dosages
		  - Allergies
		  - History
		  - Diagnosis
		  - Alarms
		• Critical Technical Data
		  - Calibration
		  - Safety Limits

Patient Experience: "Patient Trust Zone"

Patient Harm: "Patient Safety Zone"

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It Finally Happened . . . Almost

- From Micropole July 6, 2018

"He was doing a very complicated operation on the brain of a thirteen-year-old girl, and in the middle of this operation the clinical center was subjected to a cyber attack, and all the computer systems, all the devices that accompanied this operation, were turned off, . . ."

he and his colleagues managed to *"bring this operation to completion with practically no instrument readings."*

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Managing Cybersecurity is Challenging

- "More people are killed every year by pigs than by sharks, which shows you how good we are at evaluating risk."

Schneier, Bruce. Interview with Doug Kaye. IT Conversations: Bruce Scheier. 2004-04-16.

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Are We Ready?

60% of IT security experts who responded to the Black Hat Attendee Survey believe that a successful attack on U.S. critical infrastructure will happen within two years. Also, only 26% of respondents believe that the country is prepared to handle such an attack.

Dark Reading, July 10, 2017

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A Parting Thought

I See You…

SHODAN

Shodan = Google for Hackers

Thank You!

Questions?

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