Cybersecurity: Recovery After a Ransomware Attack

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Financial Disclosures:

- None

First Things First:

Huge thank you to Jeff Brockette and Michael Sullivan

April 2019

What happened:

- Our practice was hacked with Gandcrab V5.2 ransomware by Russian hackers
  - All servers and several workstations were involved
  - All affected files were encrypted with the extension .WNMYGNJIV
- EHR, Email, and other files affected; all backups failed
- Each affected folder had a .txt file, describing what needed to be done to recover our data

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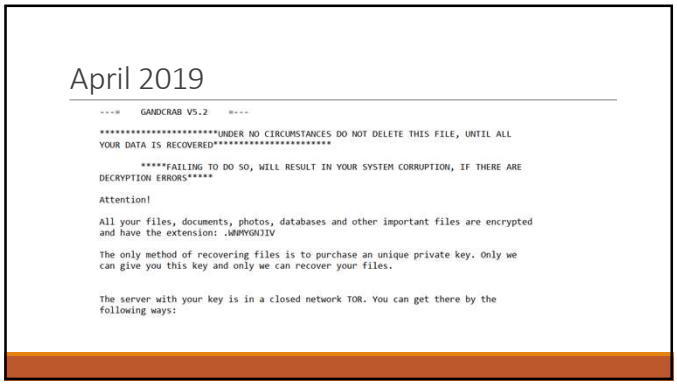

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---=    GANDCRAB V5.2    =---

**********UNDER NO CIRCUMSTANCES DO NOT DELETE THIS FILE, UNTIL ALL
YOUR DATA IS RECOVERED**********

        *****FAILING TO DO SO, WILL RESULT IN YOUR SYSTEM CORRUPTION, IF THERE ARE
DECRYPTION ERRORS*****

Attention!

All your files, documents, photos, databases and other important files are encrypted
and have the extension: .WNMYGNJIV

The only method of recovering files is to purchase an unique private key. Only we
can give you this key and only we can recover your files.


The server with your key is in a closed network TOR. You can get there by the
following ways:
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What we did, Day 1:

- Contacted our health law attorney
- Contacted the FBI
  - Their recommendation was that we not pay the hackers, but
  - They understood if we made the decision to pay the ransom
- Searched for companies who have experience with decryption of files
- Determined that we felt more comfortable paying a reputable company that could decrypt instead of paying the hackers

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What we did, Day 1:

- Continued to see patients through this mess
  - Our retina staff pulled previous injections through the medication inventory system
  - Our anterior segment physicians are referral-based, and most patients were new patients
  - Follow up patients and post-ops:
    - Utilized prior OCTs, Optos images, visual fields, and other diagnostic testing for historical data
    - Contacted the ASCs to get op reports for post-op patients

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What we did, Day 2:

- Informed staff of what has happened and what we were doing to recover data
- Informed staff to tell the patients (for now) that our servers had crashed
- Begin decryption process of data
  - All servers
  - Which affected PCs needed to be decrypted vs. wiped and rebuilt

Two Weeks Later…

Terabytes of Data Finally Encrypted

- Day-to-day operations back to "normal"
  - Entered data from paper charts into the EHR into the system
- Determine if PHI had been compromised
  - Difficult to determine
  - Companies can do a "deep dive" of your data to determine:
    - How information was exfiltrated
    - If PHI had been exposed

Six Weeks Later – What We Learned

- An old account that was no longer used had been compromised
- A brute force attack was launched on this account to gain access
- Malware was uploaded to our RDP server
  - 16 executables were launched in a span of 20 minutes
- The executables allowed hacking of the Administrator account
- Ransomware installed on devices, but
- PHI had not been compromised

Six Weeks Later – Disclosure

- Report information to:
  - HHS
  - State Attorneys General (in our case, Indiana, Illinois, and Kentucky)
  - Media
  - Referring Doctors
  - Patients
    - Send a Letter Detailing Events of the Attack
      - What information was involved
      - Steps Patients could take to protect themselves
      - Contact information for the practice if they have questions

Six Weeks Later – Disclosure

- HHS and AG reports
  - Work with your attorney to provide this information, which should include:
    - HIPAA policies and procedures
    - Password management policies
    - Notice of Privacy Practices
    - Previous Risk Assessments and Penetration Test Reports
      - How your practice has responded to the results of these
    - A description of the incident
    - What security steps have been taken since the attack

Expenses Incurred

- Our IT company acknowledged a portion of the blame for the backup failure
  - Did not charge us for their work
- Payment for data recovery: $167,000
  - This included stronger antivirus protection from the recovery company
  - Also included email protection tools
- "Deep Dive" to confirm no exfiltration of data: $20,000
- Legal fees: $35,000
- All covered and repaid through our cybersecurity insurance policy

New Policy and Procedure Changes

- Backups done every hour
  - Loaded to a local appliance and moved offsite
  - Backup data is tested and encrypted
  - Air-gapped (no connection between the backup and our network)
- Continue to obtain appropriate penetration tests, vulnerability tests, and risk assessments
  - Discuss the results of these in board meetings
  - Document the observations and recommendations in the board meeting minutes
    - Designate these items as fixed, working on, or known and acceptable risks

New Policy and Procedure Changes

- All staff undergo annual HIPAA training, cybersecurity awareness testing
- Use phishing emails to see if staff are paying attention
- Discuss cybersecurity regularly in staff meetings
  - Document this in the staff meeting minutes
- Check all accounts (Windows, EHR, SonicWall, etc.) to ensure all former employees are deactivated
- Ensure password complexity and enforce changing at least every 90 days

New Policy and Procedure Changes

- Use multifactor authentication whenever possible
- Administrator password restricted
  - IT company and CIO have this password
  - Minimum 25 characters (ex., gaFDz5Mynx7mJvEHWHBNSYDBF)
  - Changed regularly
- Make sure that your cybersecurity insurance policy is up to date
- Include cybersecurity in your disaster recovery plan and incident response plan
- Cybersecurity policy coverage is $1MM

Ongoing expenses

- Annual vulnerability testing, penetration testing, etc. for MACRA and MIPS compliance: $18,000
- Cybersecurity insurance premium: $17,000
- Estimated IT support for cybersecurity: $13,000
  - Includes offsite backup management, cybersecurity awareness training, etc.

Four Years Later…

- The HHS / OCR can contact your practice or your attorney

> My name is and I'm an Investigator with the U.S. Department of Health and Human Services (HHS), Office for Civil Rights (OCR). This message is regarding OCR Transaction No. (Talley Medical Surgical Eyecare Associates, PC), which was recently reassigned to me. I'd like to follow up and discuss this matter with you further. Please let me know your availability for a brief call at your earliest convenience. Thank you.

- The OCR wants to know if:
  - You have continued your risk assessments, penetration tests, etc.
  - You have continued to respond to these accordingly
  - You have continued to provide training to staff all appropriate training

Four Years Later…

- Document, document, document
- More information is better
- Demonstrate ongoing efforts to keep your systems and data secure

Finally, a happy ending

- The OCR determined that we were maintaining compliance
  - Recommended ongoing monitoring and updating
- No further action needed
- The OCR may check in periodically

Questions?

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