Curriculum Development Centers Program

Awardee of The Office of the National Coordinator for Health Information Technology

Component 8 Installation and Maintenance of Health IT Systems

Unit 6b
System Security Procedures and Standards

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Technical Safeguards: Intrusion Detection System (IDS)

- Monitors networks or systems for malicious activities or policy violations.
- Logs such activity and notifies administrator.
- Takes preemptive actions to stop activities.
- NOT a firewall (and vice versa).

Technical Safeguards: Audit Logging

- Hardware/software/procedural mechanisms to record & examine access & other activity
- Data to be logged can vary depending on level of access controls to ePHI data.
- In general, servers should use OS system logging tools to track:
  - Who accessed (or tried to access) server.
  - What data/databases were accessed, any changes made.

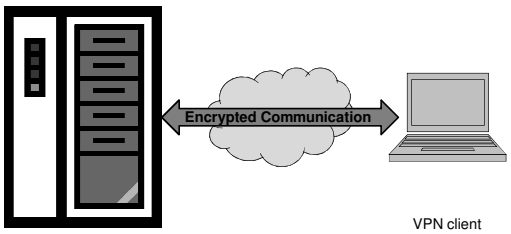
Technical Safeguards: Audit Logging (cont'd)

- EHR should also support logging:
  - User access
  - Patient data accessed
  - Sign-on failures
  - Data changes made
- Periodic proactive audits (sampling)
  - Consider for higher-risk patient populations (e.g., employees) or after publicized events
  - To deter abuse, make users aware.
- Reactive audits triggered by defined event

Technical Safeguards: Offsite Access

- Should be tightly regulated.
- Utilize Virtual Private Network (VPN) and encryption at all times.
- VPN
  - Uses encryption, authentication, authorization, Network Access Quarantine Control to protect data.
  - Point-to-Point Tunneling Protocol (PPTP) or Layer Two Tunneling Protocol/Internet Protocol security (L2TP/IPSec)

What is a Virtual Private Network (VPN)?



Server & Computer Security Tips

- Install firewall, IDS, & monitoring tools to monitor & protect all servers using/storing ePHI.
- Strong policies for use of ePHI.
- Rename local administrator & guest accounts; strong passwords; disable unused accounts.
- NTFS file system (Windows servers)
- Antivirus software, with updates
- Attack surface reduction tool: turn off unneeded server applications & reduce attack surface.
- Configure server correctly, with vendor
- Create security baseline; tools available.
- Install service packs within 48 hours of release.
- Lock down database applications, regularly install updates.

Contingency Plans

- Critical data backed up and stored
- Emergency call list
- Plan to restore systems
- Plan to move into temporary office
- Secure offsite storage
- Situations that may activate contingency plan

Contingency Plans (cont'd)

- Written plans
  - Risk analysis/assessment
  - Database backup
  - Database secure storage
  - Data restore plan
  - Disaster recovery plan
  - Critical incident response plan
- Software inventory
- Hardware inventory
- Logs: transmission points

Data Backup Policy

- Data integrity just as important as confidentiality.
- Backing up critical files, including patient or EHR databases, helps ensure data recovery after catastrophic failure or security breach.
- Determine procedures, hardware, and software required for reliable & efficient backup of production databases.

Secure Data Storage & Restore Policies

- Data most susceptible to corruption or loss in state of rest (90% of the time).
- Databases need particularly thorough analysis for risks.
- Detailed guidelines for securing and safely restoring data stored on network.

Disaster Recovery & Critical Incident Response Plans

- Address emergencies requiring immediate intervention to protect network or restore operational status after catastrophe.
- Based on original risk analysis.
- Outlines elements, procedures, & people needed to restore network or mitigate imminent threat in timely manner.

Hardware & Software Inventories

- Hardware inventory
  - Loss of hardware can mean a loss much greater than just replacement cost.
  - Helps ensure equipment properly locked down and secure.
- Software inventory
  - Provides insight to manage/mitigate risks to network from software vulnerability.
  - Facilitates proper software management practices, patching.

Logs: Transmission Points

- Effective logging and monitoring strategy is critical to network security.
- Logs can be overwhelmingly large. Determine which data need stringent monitoring (e.g., who is accessing); begin by concentrating efforts there.
- Written plan of what is logged & why, with procedures for auditing & record of accountability to ensure compliance.

Summary

- Security measures to be implemented on your network will largely depend on:
  - Federal, state, & local requirements
  - Organizational requirements
  - Network type topology & operating system (OS)

Reference

- University of Wisconsin-Madison HIPAA Security Best Practices Guidelines, #3 Audit Controls, 4D
  - http://hipaa.wisc.edu/docs/auditControls.pdf