

Clinical Implications

OF CYBER ATTACK

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THE MEDICAL INTERNET OF THINGS



Electronic Record

Labs orders
Radiology orders
Results
Record Keeping

Diagnostic Equipment

Pharmacy
Laboratory
Radiology

Medical Devices

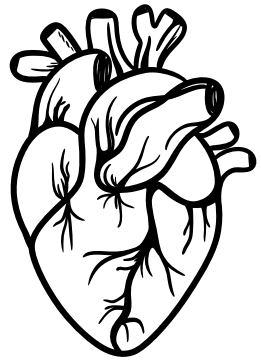
Monitoring
Therapeutic



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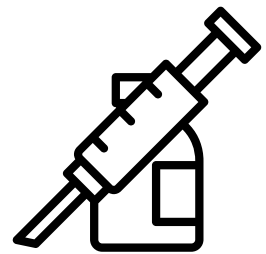
TIME SENSITIVE MANAGEMENT



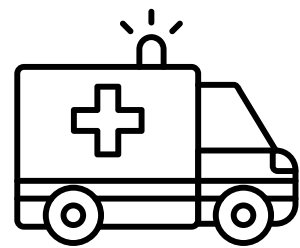
90 minutes
Myocardial Infarction



4 hours
Stroke



3 hours
Sepsis



1 hour
Trauma



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QUANTIFIABLE IMPACT

Ransomware Cyberattack Associated With Cardiac Arrest Incidence and Outcomes at Untargeted, Adjacent Hospitals

OBJECTIVES: Healthcare ransomware cyberattacks have been associated with major regional hospital disruptions, but data reporting patient-oriented outcomes in critical conditions such as cardiac arrest (CA) are limited. This study examined the CA incidence and outcomes of untargeted hospitals adjacent to a ransomware-infected healthcare delivery organization (HDO).

DESIGN, SETTING, AND PATIENTS: This cohort study compared the CA incidence and outcomes of two untargeted academic hospitals adjacent to an HDO under a ransomware cyberattack during the pre-attack (April 3–30, 2021), attack (May 1–28, 2021), and post-attack (May 29, 2021–June 25, 2021) phases.

INTERVENTIONS: None.

MEASUREMENTS AND MAIN RESULTS: Emergency department and hos-

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CASCADING FAILURES

**Cyber compromise
of hospital critical
infrastructure**



Water

- Sterilization equipment (lab, pharmacy, OR)
- Basic sanitation & hygiene
- Food service
- Fire suppression
- HVAC system
- Dialysis



Electricity

- Ventilators, Balloon pumps, etc
- Lighting
- HVAC
- General equipment
- Refridgeration
- Pressure in water systems
- Access Issues
- Dialysis



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AMPLIFIED BY COMMUNITY IMPACT

- Competition for generator fuel or water resupply
- Water-borne illness / dehydration
- Safe Haven
- Outpatient becomes inpatient
- Staff



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Thank you

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