

HimSS[®] 19 Eurasia

Sağlık Bilişimi ve Teknolojileri
Konferansı ve Fuarı



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Organizasyon	
	

The Future of Healthcare Technology

AI, Cybersecurity, Blockchain, Data Protection

30 Ekim - 1 Kasım 2019
Pullman Hotel Yenibosna
İSTANBUL, TÜRKİYE

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 #HIMSSEurasia



Richard Staynings

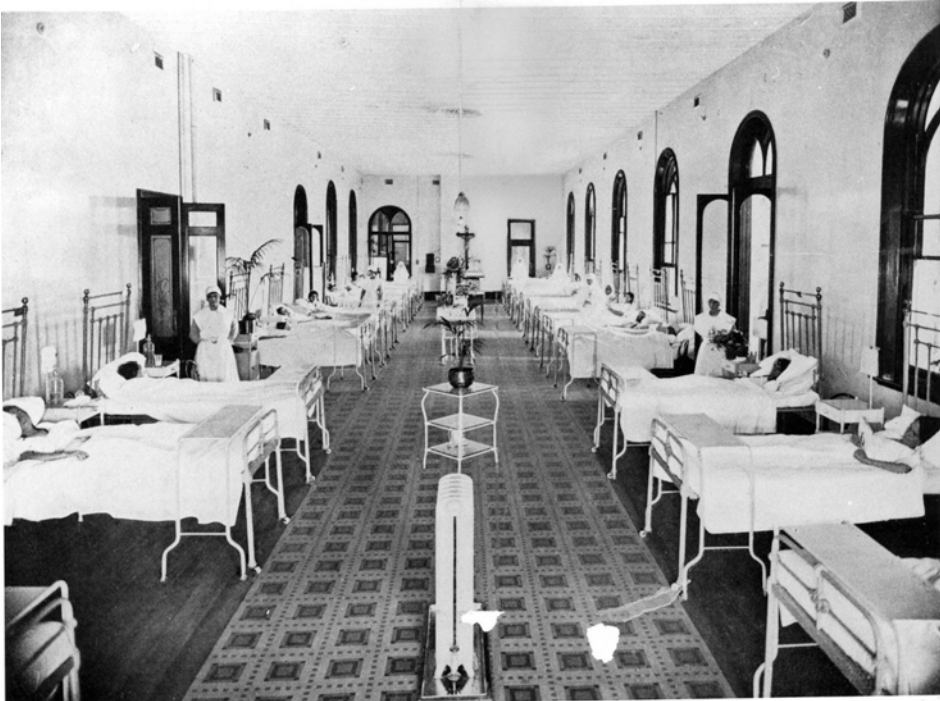
Chief Security Strategist Cylera

@rstaynings

<https://www.linkedin.com/in/richardstaynings/>

<https://Cylera.com>

Healthcare has been transformed over the past century

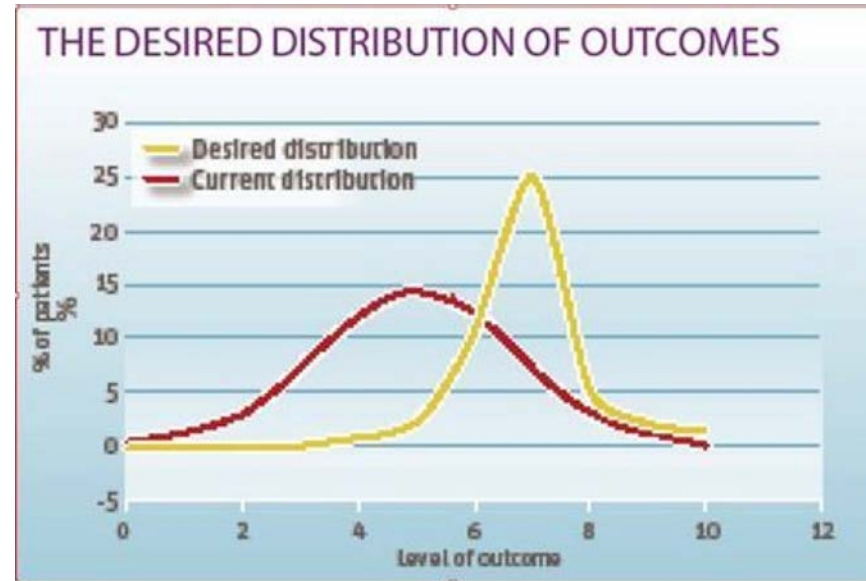


Technology has Fueled Improvements in Patient Outcomes




Polio Patients in Iron Lungs before vaccination against disease

Modern Healthcare has enabled us to improve the human condition, to beat diseases that used to ravage families and communities and to live longer and better than ever before



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The background image shows a scenic view of a coastal town, likely in Turkey, with numerous sailboats docked in a harbor. In the foreground, a large Turkish flag (red with a white crescent and star) is prominently displayed on a tall pole. The town is built on a hillside overlooking the water, and the overall scene is bathed in a soft, slightly hazy light.

**Turkish Healthcare is
very quickly moving
to all Digital Medical
Records**

Digitalization has transformed outcomes



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It has also introduced new risks



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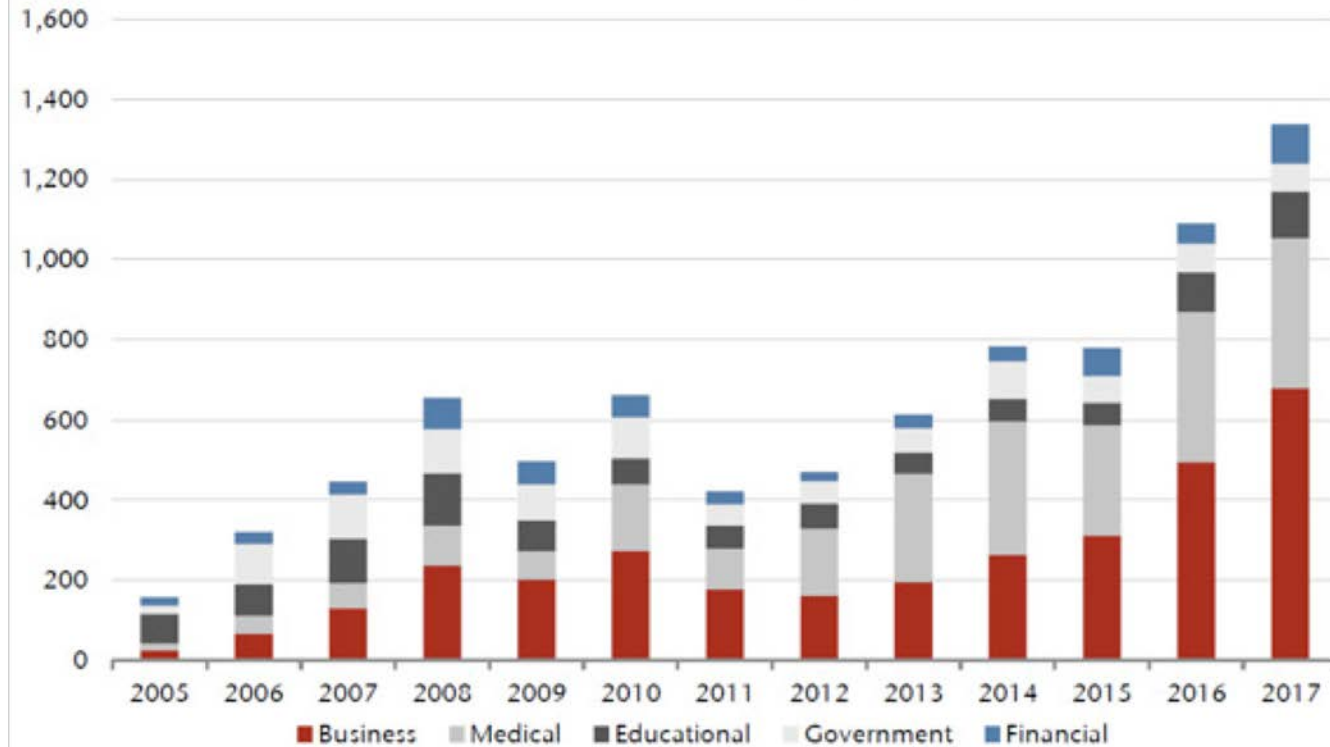
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We Live in Interesting Times!

Chart 9: Increasing number of data breaches (by entity)



Source: Jefferies, Identity Theft Resource Centre

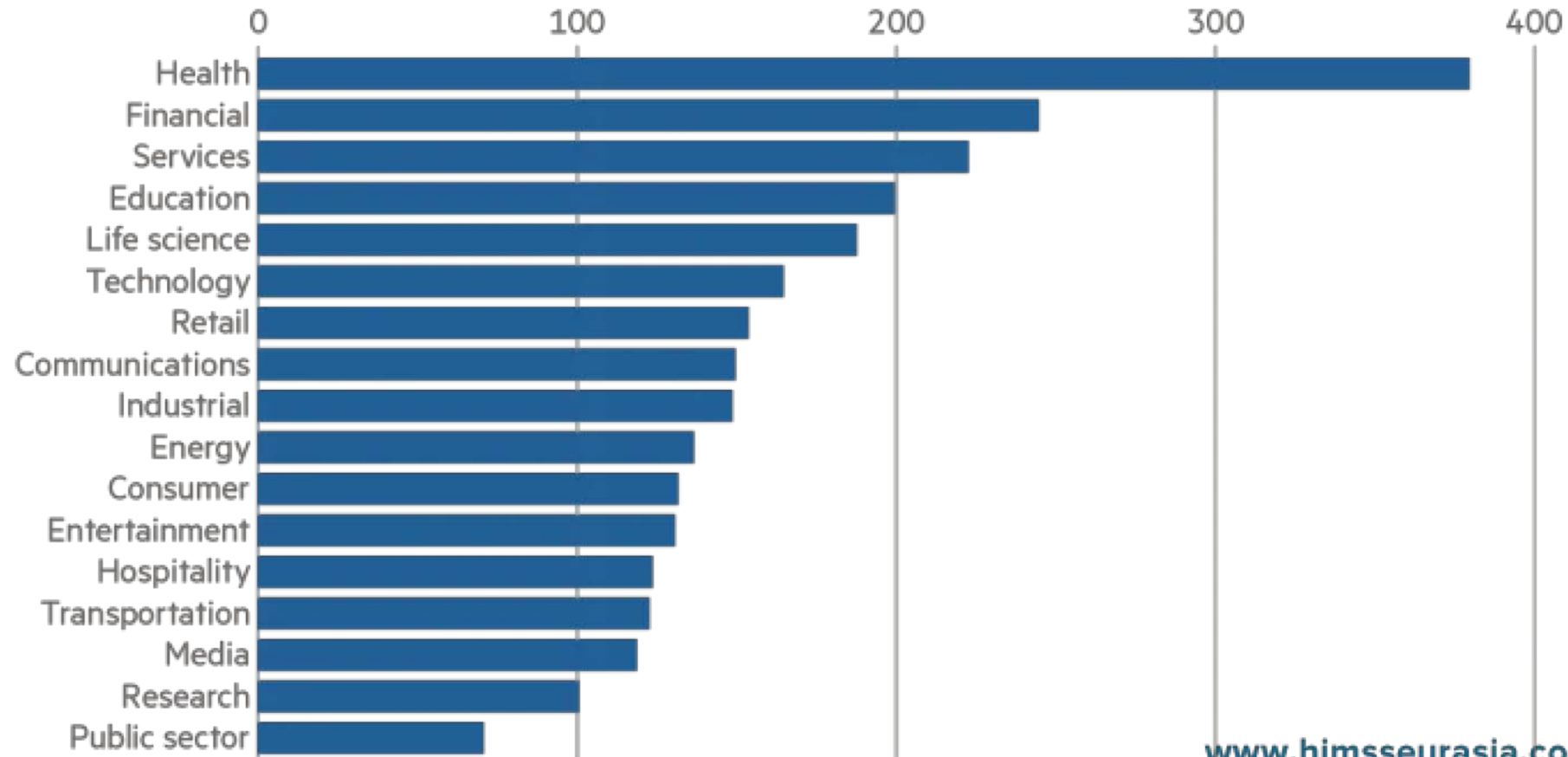
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Data breach cost per capita

By industry classification, 2017 (\$)

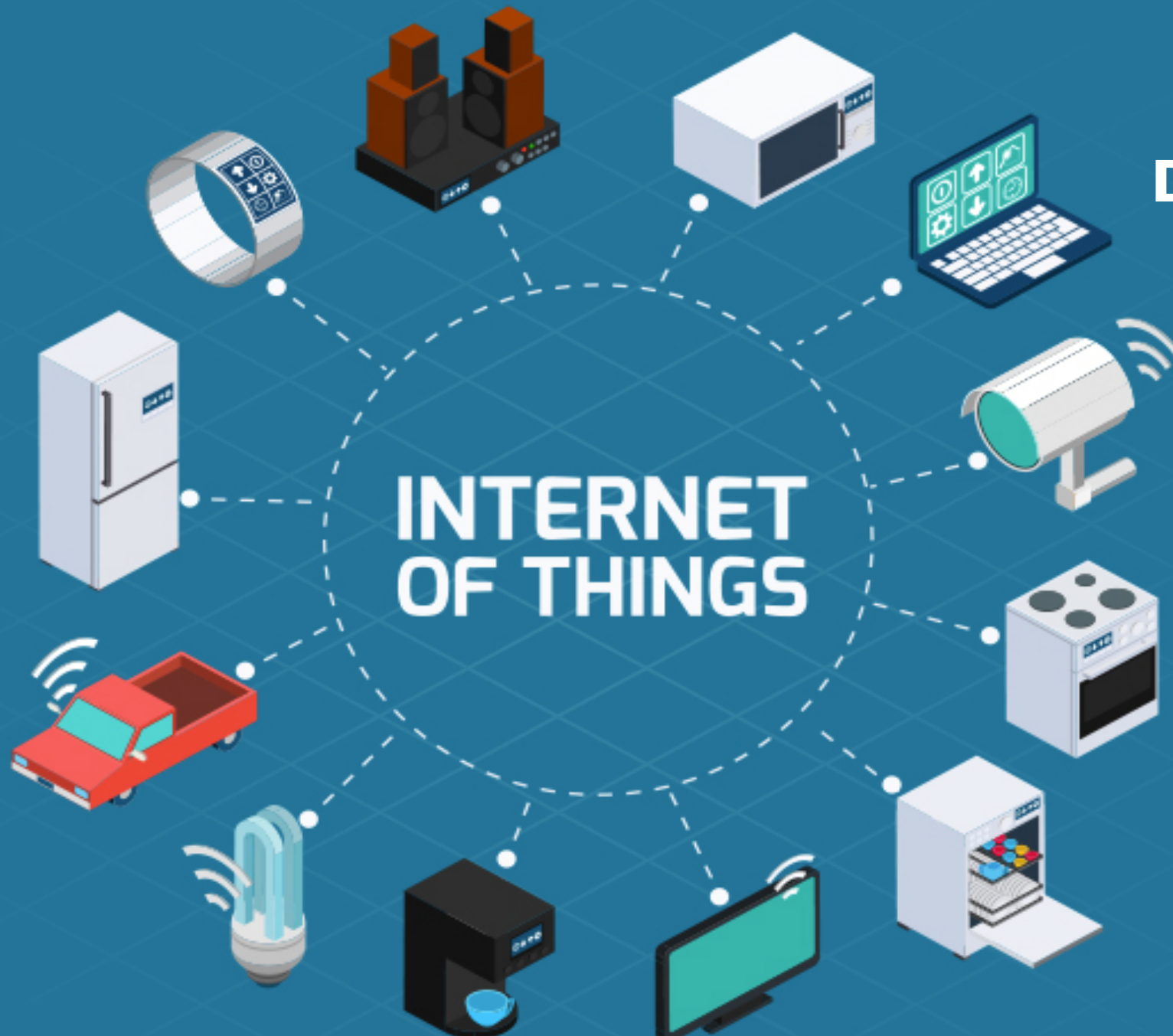
Cost of a Data Breach



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**20 billion
Connected
Devices this
year**





Network Connected Medical Devices

© Healthcare Information Management Systems Society

The IOT Security Risk

- No common standards or security – even in Healthcare
- Little Concern for Security - Not Designed-in
- No Vulnerability Testing or Patches
- Commodity Components and Software – often with backdoors
- Dumb devices unable to support AV or End Point Protection
- Limited CPU and memory unable to sustain malware or DOS attack
- Control Operational Technology – Safety Critical



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Hospital Building Management Systems

© Healthcare Information Management Systems Society

HVAC

Healthcare IOT Security Risk

- 20% growth per annum in number of medical devices
- 5-6 year development and test cycle so out of date when new
- New Devices run Windows Embedded 2009, (Windows XP)
- Half Life – Medical Devices last for up to 20 years
- Old devices support old technologies like insecure 40 bit WEP encryption
- Easiest way to infiltrate a healthcare network is via a medical device wireless network
- An attack on a medical device can cause severe patient harm



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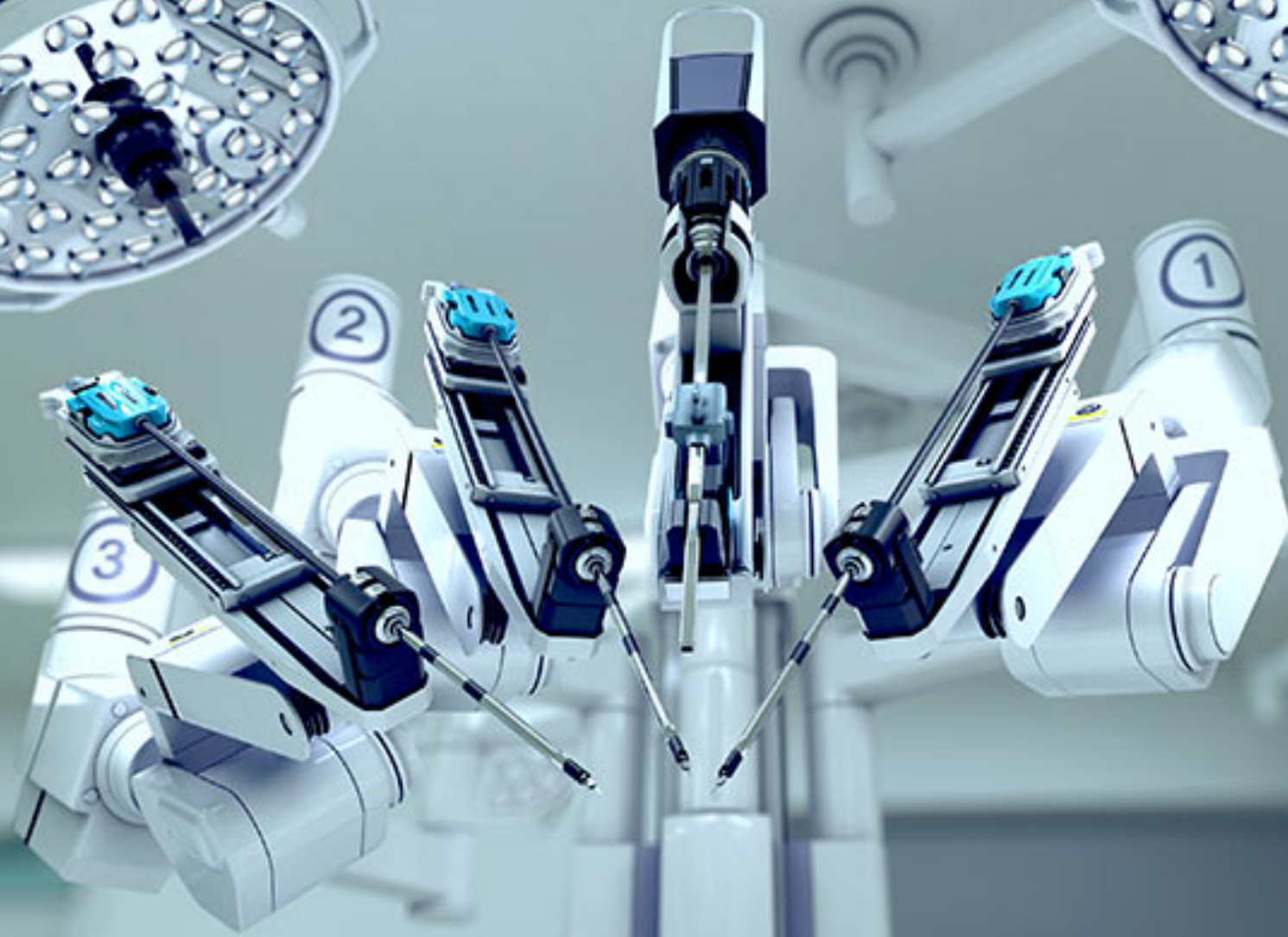


Explosion of Medical Devices

Network Connected Infusion Pumps



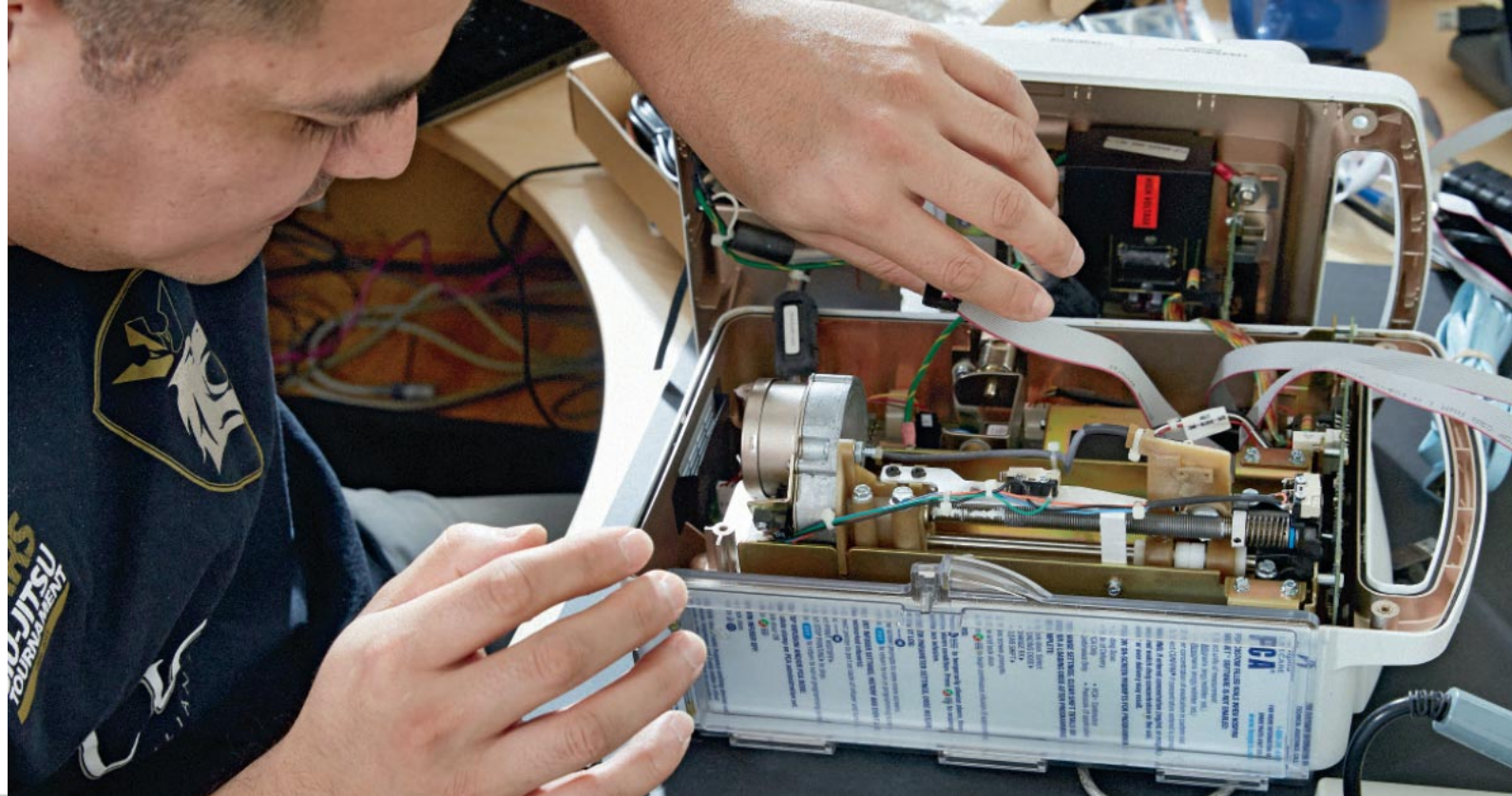
Surgical Robots



Its very easy to Hack a Medical Device

...and you don't need physical access!

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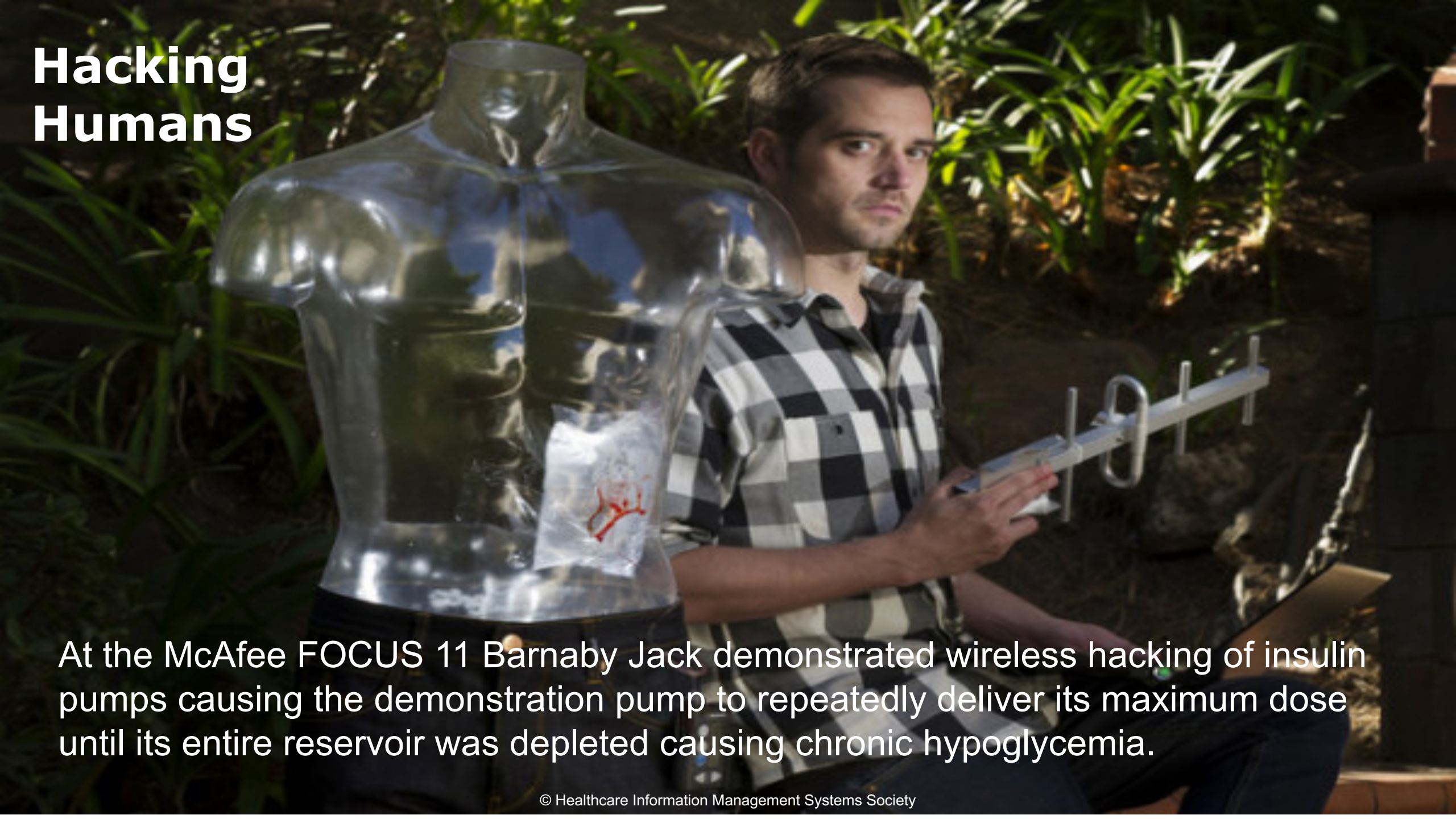


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Hacking Humans

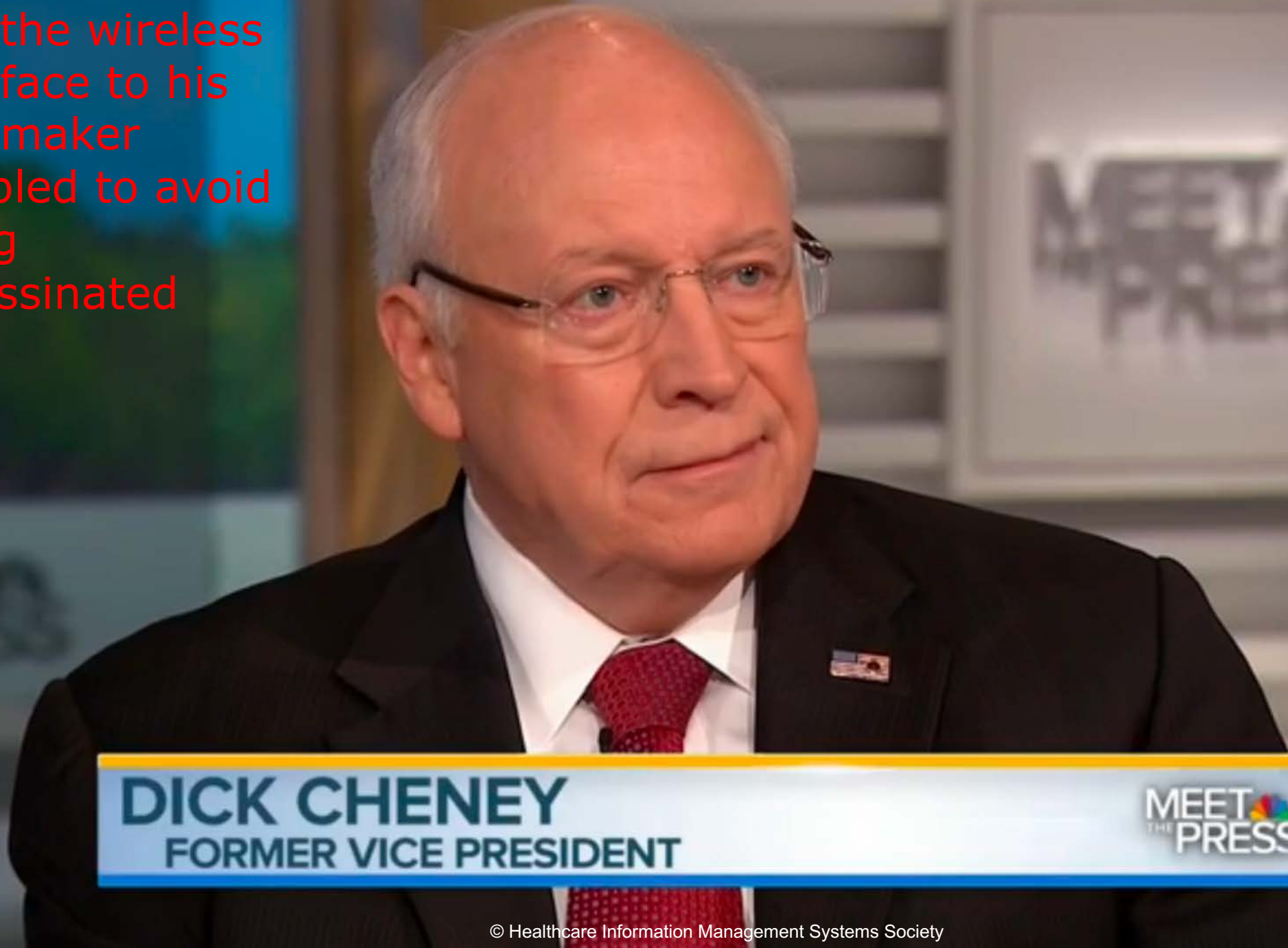
A man with short brown hair, wearing a black and white plaid shirt, is sitting outdoors at night. He is holding a long, thin, silver medical device with a handle and several small vertical pins. To his left is a transparent plastic mannequin torso. Inside the torso, a small white packet with red markings is visible. The background consists of dark green foliage. The scene is lit with warm, low-key lighting, creating a dramatic effect.

At the McAfee FOCUS 11 Barnaby Jack demonstrated wireless hacking of insulin pumps causing the demonstration pump to repeatedly deliver its maximum dose until its entire reservoir was depleted causing chronic hypoglycemia.

Ethical Hacker Barnaby Jack hacked a pacemaker

In 2012 Jack demonstrated the ability to assassinate a victim by hacking their pacemaker at the BreakPoint security conference in Melbourne, Australia

Had the wireless
interface to his
pacemaker
disabled to avoid
being
assassinated



DICK CHENEY
FORMER VICE PRESIDENT

MEET
THE PRESS

Medical Devices are now a Major Concern for



Patient Safety

So What Do We Need to Do To Remediate These Risks?



- **Identify Assets** – Most hospitals don't know what they have!
- **Risk Assess** those HIoT Assets to NIST 800-30 or similar standards
 - Identify CVEs and Zero-Days, and any known patches
 - Beat up vendors for patches – some are better than others. Some are outright negligent.
- **Identify Legitimate Traffic Patterns** – Ports, Protocols, IPs, etc.
 - **Construct White List** of usual traffic patterns so that anomalous activities can be flagged
- **Implement Zero-Trust / MicroSegmentation** or other compensating security controls

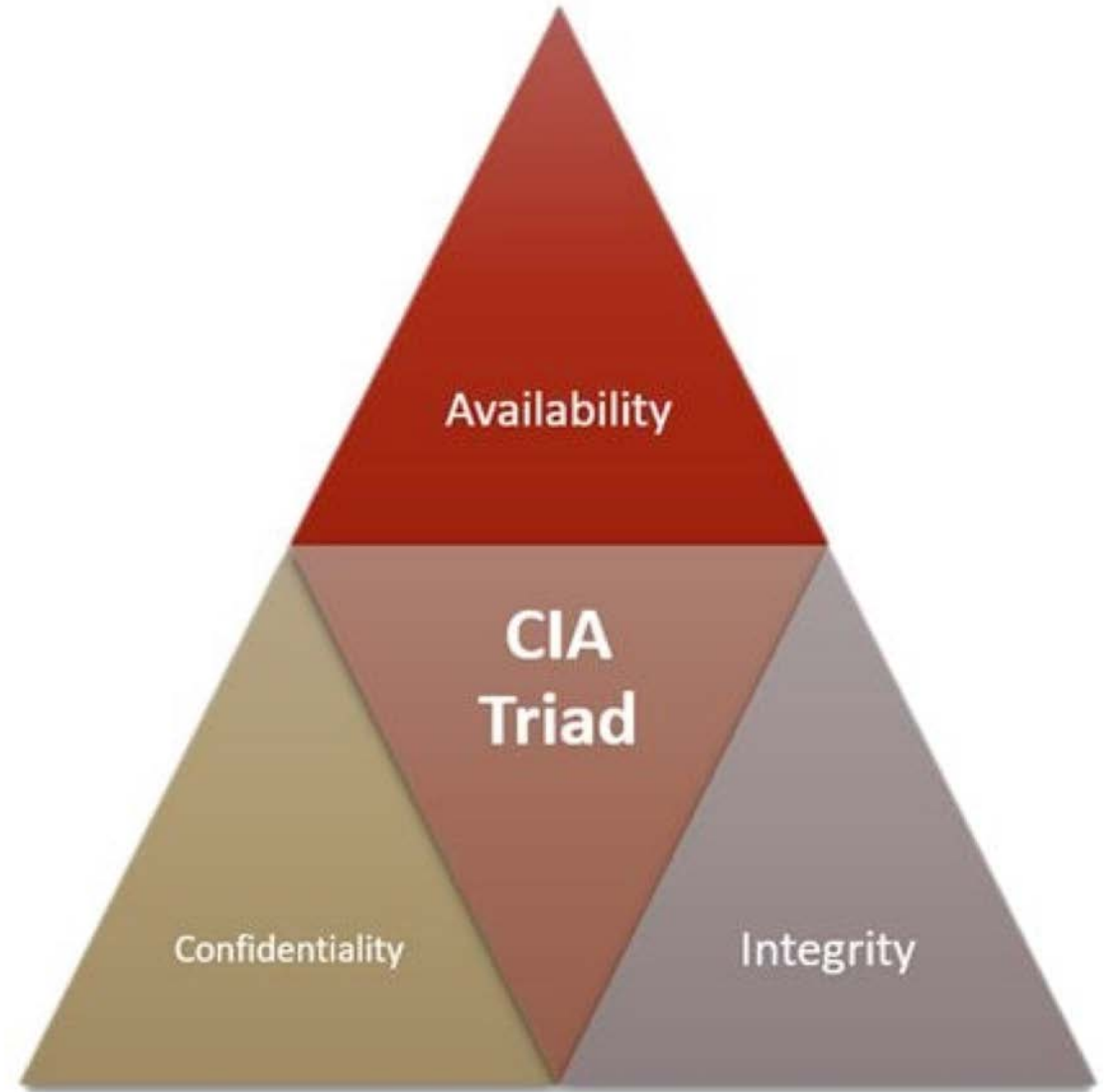
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A blurred photograph of a hospital hallway. In the foreground, a person in blue scrubs is walking towards the camera. In the background, another person in light blue scrubs is pushing a gurney. The hallway has a white wall on the left with a door and a framed picture on the right. A red 'EXIT' sign is visible in the distance. The text 'Patient Safety' is overlaid in the center.

Patient Safety

The CIA Triad



A Risk – Based Approach to Cybersecurity is Needed



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**Lets Keep the
Lights on
&
Keep Patients
Safe**