

Research Note

Critical Infrastructure Protection Healthcare and Public Health

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Abstract – Healthcare sector has been in the news for various reasons mainly for its rising costs and increasing unaffordability for the middle class but with this paper I intend to reflect upon other risks associated with public and private healthcare in United States that somehow do not garner much attention but are equally important for us to know.

Introduction

Critical Infrastructure as the name suggests is highly important to the functioning of a country and society in general. United States identifies 17 such critical infrastructures that are important to the existent and well-being of its citizens. Critical Infrastructure Protection identifies the measures that are in place to protect these Critical Infrastructure Systems. Health Care is one of those 17 important critical infrastructures and a failure in proper functioning of health care can spell disaster for the country. Health care in US has always been a topic of debate owing to the policies put in place by the government. This paper reflects on the risks that are associated with public and private healthcare provided by the country. There is a need to carefully re-examine healthcare risks to provide shareholder and customer value. There are emerging and prevalent risks within healthcare that can potentially mar the system and government cannot afford to take such risks. Risks in healthcare emerge in the form of operational, financial, environmental, clinical and reputational. In order to identify potential risks and build a robust operational risk framework it is extremely important to clearly specify the objectives and vision.

Identification of Risks in Public Healthcare System

Public healthcare in the US is provided in the form of Medicare, Medicaid, and Veterans' programs and provides for elderly, poor, children, veterans, public sector employees and disabled. The structure of public healthcare in the country is such it faces several operational risks for its existence. Government health care plan's lack of competitors may lead to poor quality in terms of service delivery. Limited Resources: Shortage of clinicians and physicians has been perceived as one of the potential risks for the current public health care system in place. This is in effect due to high administrative costs and low reimbursement from the providers. Cost Reductions are often targeted towards Medicare and Medicaid.

This poses severe risk in case of emergency when high volume of patients flock the hospitals and medical centers. Economic uncertainty is putting strains on students pursuing medical profession in general; as the number of hours devoted by each candidate to attain a license and the pay associated with it has gone down significantly and the money is just not worth the amount of effort, according to most students.¹

Limited Services and Coverage of Health Plan: Services such as

cosmetic surgery are not included in public healthcare plan which might serve as a potential risk for patients who require facial reconstruction related surgeries if involved in serious accidents. This is a serious problem with the existing public health plan in place. These limitations put the life of people at risk that might need such procedures, and there should be some guidelines in place pertaining to these procedures to help people attain the best care and treatment possible.²

Information System Infrastructure and Electronic Health

Records Implementation: Public healthcare suffers in terms of implementation of good Information System Infrastructure due to lack of investment funds available. Preparedness of clinical automation system in place is still questionable. It is also imperative to ensure timely implementation of EHR and leverage its use and not go overboard with investments. The risks associated after implementation of EHR needs to be well documented and assessed upon.³

Information Security and Data Privacy Concerns: There have been numerous instances of security breach in public healthcare systems where patient information has been compromised. There

have been several instances where security breach and weakness to preserve patient information has been identified. These are potential risks that are in place due to inability to identify and authenticate the users managing the network and lack of control of network access, privileges and controls to protect the network from external attacks.

Internal and External Fraud: Fraudulent activities related to Medicare/Medicaid fraud impose a great threat to public healthcare. Instances of Medicare fraud have led to an increase in the total Medicare spending from the federal government. Phantom billing, Patient billing and upcoding scheme and bundling are some of the potential risks and fraud that are seen as part of internal fraud in public healthcare system. Implementation of Data analytics and increased scrutiny of billing patterns has helped in putting a check on these frauds.

Private Health Care System and Providers

Health care system and services in US are largely provided by private sector businesses. Private health plans are bought individually or coverage can be extended through an employer-sponsored plan.

Key Risks Associated with Private Healthcare

Access of Patient Data and Information: Unlike public health

care provider, where data is stored in a central repository, there is no such database for private health care providers. As no record exists for each patient this leads to increase in overhead and can cause substantial miscommunication of information. Private health providers need to collaborate and create a repository where patients' record can be stored and found at a later time.⁴

No Unification in Billing and Coding Process: Billing process for private healthcare is a very complex process and the interaction between health care provider and the insurance company can take long to process patient billing. Different providers have a different approach towards billing and this often leaves patients confused and also with a lack of understanding of what the encoding schemes in the bill actually signifies. There needs to be effective regulations from governments for safeguarding the interests of the patients and their right to a systematic billing process that is understandable against all forms.

More Cost Incurred on the Customer: The cost of health care in a private system is very high, and hospital organizations control price regulations based on the services they provide. Potential risks include high prices and premiums that many citizens face after catastrophic

illness that put them on the verge of bankruptcy.⁵

Emerging Risks due to Social Media and Cloud Computing:

Studies have found that hospitals in general are not equipped at handling social media issues. Social media can make or break a brand and healthcare should be careful how they deal with it and the risks associated with it in terms of their brand building. Cloud computing is another area of concern for the healthcare. Not having sophisticated systems in place further propagates the problems. Cloud security is a very relevant issue and healthcare providers should consult risk consultants to ensure proper controls in place for mapping controls to their specific cloud providers, which ensures data integrity and smooth functioning.

Effectiveness of Government Regulations in Health Care Sector in US

Regulations in healthcare are provided by Department of Health and Human Services that fosters much of the agencies that regulate health care within US. There are some basic regulations that healthcare industry is expected to comply and the effectiveness of these regulations is something I am trying to reflect upon in this paper.

Regulation of Healthcare Professionals: Medical licenses are permitted at the state level and these laws were governed by the

American Medical Association. The key point to note in this regulation is that while it does enhance the quality of practitioners by reducing the number of applications but it provides room for limited number of practitioners to raise costs. Other potential flaw with this regulation is if practitioners are denied licenses in one state they have the complete freedom to go and attain a license in different state. This information is controlled centrally through National Practitioner Data Bank but studies suggest it is not well coordinated and there is loss of information providing a loophole in the system.⁶

Regulation of Healthcare Institutions Such as Hospitals and Other Medical Facilities: Regulations are in place for measure of quality of patient care provided in hospitals. But challenges arise in deciding on a basic framework to measure and define this attribute devoid of any ambiguity. The problem is there are no specific metrics and the science of measuring quality is still not mature enough to continue making successful predictions. “Regulation of institutional quality presents an opportunity to consider the challenges in the definition and measurement of this attribute.”⁷ The other significant aspect of quality control is to provide services to the uninsured and not turn them away in times of emergency due to lack of funds. Some

patients knowingly that they won't be denied a treatment visit these emergency cares for minor treatments, which delays the reimbursements for hospital and puts them under financial pressure. Hence it is very important to devise regulation that keeps a proper check on quality, access and cost.

Regulation on Healthcare Finance Administration: American health care is particularly complex in terms of its financial administration. Private and public healthcare is intertwined and controlled at a federal level that adds further to the complexity. Employer based insurance puts people without employment at a severe disadvantage and also puts a financial burden on the firms to offer insurance and have an entire structure build around it, especially tough for startups and not for profits to implement such a structure. A universal health care taken care of by government would serve as a good alternative to streamline financial operations but different organizations and individuals have different views about it.⁸

Regulation of Drugs and Healthcare Products: Drugs and healthcare products need to be evaluated by regulators before they hit the market. FDA ensures proper guidelines but according to manufacturer's puts in place a long, rigorous and expensive method to

complete their assessments. An effective regulation needs to be in place to balance out the costs that speeds up the production and marketing of the drugs without comprising the quality of the drugs.⁹

Regulations in IT: IT has changed the way healthcare is provided and the way patients, clinicians and physicians communicate with each other. Programs such as HIPAA are put in place to effectively monitor that patient information is not being compromised. IT regulatory is still undergoing lots of formulations and the areas of inclusions are: role of data analytics and how comfortable patients are in making the information available public.¹⁰

Dependencies' of Other Sectors on Healthcare and Vice Versa

There are several sectors that depend on healthcare and vice versa, and the disruption in business continuity of either would wreak havoc on the people. Emergency Services Sector is highly dependent on healthcare sector. "Preparedness of hospitals and other medical facilities comes into picture in the wake of natural disasters, disease outbreaks, casualties from terrorist attacks and so on. Preparing hospitals, healthcare systems and their partners to prevent, respond to, and rapidly recover from these threats is critical for protecting and securing our Nation's healthcare system and public health

infrastructure.”¹¹ Operability of healthcare depends notably on the functional capability of other basic infrastructural services like electricity, water supply, information and telecommunication technologies, transport and logistics, and specialized staff. These interdependencies are a key element for the security of health care facilities in crisis situations.¹²

Government should put in place policies that try to secure hospitals and health centers dependency on other critical infrastructure. “In many cases the hospitals simply rely on the safety measures of the public utility company which is a potential flaw and can severely affect the business continuity in wake of disasters. Similar conclusions can be drawn from the dependency on specialized staff. The situation in the transport/logistics sector is very hospital specific because every facility has its individual organizational solutions that depend on the spatial conditions, dimensions of the facility, and other similar factors.”¹³

There are certain internal dependencies that exist within the hospitals such as dependencies between important processes and services in hospitals and basic infrastructure. Diagnostics, medical equipment and their proper cleaning, treatment, pharmacy,

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laboratory results are some of the practices that a health care center depends upon for its day to day functioning and pose a vulnerable situation for health centers. It is important to understand all external and internal interdependencies between sectors and systems and devise business continuity, roles & responsibilities and a risk communications plan for all the sectors so they are equipped to work together when the need arises.

Steps Towards Insuring Resiliency in Healthcare and Public Health Systems

“Resilience is the intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances so that it can sustain required operations, even after a major mishap or in the presence of continuous stress.”¹⁴

Risks exist with every critical infrastructure and healthcare system is no exception. The important point is to analyze all those risks and have a disaster cycle in place that mitigates those risks and have a recovery plan to ensure resiliency of the healthcare system. To ensure backup, recovery and smooth transition from a failure a proper risk management framework needs to be in place that addresses these failures and steps to quickly recover from such catastrophic disasters.

Integration of IT and healthcare has led to increase in risks associated with this sector. Patient records and information stored in cloud pose a risk of possible misadventures such as loss of information and misrepresentation of information that can have severe consequences for providing patient care. Hence it is very important to have a system level approach in place that gives proper regard to safety of information systems.

Many regard healthcare system in the US to be a fragmented system, as there is no unification of data and patient information amongst private healthcare providers. “An estimated 60 million patients in the United States suffer from two or more chronic conditions and are particularly affected by this disconnection among clinical care specialties. Connectivity, integrated care, and coordination are inadequate nationwide at all stages of illness treatment.”¹⁵ These gaps need to be identified and a system needs to be in place that captures all patient information and data from private healthcare providers. Hospitals can leverage the use of cloud computing and store information; have enough backups to ensure consistent information. Policies and procedures and internal controls need to be in place to ensure cloud safety. Information Security policy,

Incident Management plan, Vulnerability scans and penetration testing, real time access to cloud providers management platform and dashboards are some of the controls that can be put in place to ensure proper functioning of cloud computing services.

“Complex equipment and information systems can also contribute to brittleness or resilience.”¹⁶ These systems are often installed in Intensive Care Units that offer acute patient care and recent reports of failures indicate that practitioners were faced with unexpected results from automation of IT and these failures demonstrate a poor understanding of the work settings they are intended to support. “Opaque systems that offer poor feedback and low observability undermine resilience and increase brittleness. There is a need to create new visualizations that provide improved feedback and observation to help people recognize when events challenge current plans in progress.”¹⁷

Recent economic meltdown and financial pressures have put a barrier on Emergency Department Response to respond effectively. “The system has to stretch in response to increasing demands to avoid an accumulation of gaps that would lead to a system failure.”¹⁸ Emergency Departments have to be able to stretch their strategies on

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the fly when faced with emergencies and utilize the capability of their resources to meet the needs of the patients.

A second step to ensure resiliency in healthcare would be to bring the stakeholders of all Critical Infrastructure systems together and foster an effective critical infrastructure protection program that addresses dependencies amongst the systems and provide measures that can be beneficial for the citizens in the wake of an emergency. Social media and social networking are hot topics for businesses these days, and the pace of information sharing has been changed forever. Now with technologies and services ranging from Facebook, Twitter, LinkedIn, blogs, texting, instant messaging, Flickr – the list is ongoing and ever growing. These new modes of communication are now allowing for people to share Immediate and unfiltered content. And this has raised many questions, debates, and problems for companies and organizations that are struggling to keep up with the pace and shifts that drive the dynamic world of electronic communications.

References

- ¹ Assessment of Key Risks for Hospitals and Healthcare Systems – Spring 2010, Retrieved March 10, 2013 from <<http://www.kpmg.com/US/en/IssuesAndInsights/ArticlesPublications/Documents/healthcare-risk-assessment-spring-2010.pdf>>
- ² Assessment, n. pag.
- ³ Assessment, n. pag.
- ⁴ Health Care Internal Audit: Identifying Prevalent Risks within Your Organization, Retrieved March 10, 2013 from <http://mcgladrey.com/pdf/health_care_internal_audit.pdf>
- ⁵ Public vs. Private Health Care, Retrieved March 10, 2013 from <http://www.ehow.com/facts_5571519_public-vs-private-health-care.html-ixzz2NAEqPY5I>
- ⁶ Healthcare Regulation in America, Retrieved March 13, 2013 from <http://www.healthcareregulation.net/Health_Care_Regulation_Teacher's_Guide.pdf>
- ⁷ Healthcare, n. pag.
- ⁸ Healthcare, n. pag.
- ⁹ Healthcare, n. pag.
- ¹⁰ Healthcare, n. pag.
- ¹¹ Healthcare Preparedness Capabilities, Retrieved March 9, 2013 from <<http://www.phe.gov/preparedness/planning/hpp/reports/documents/capabilities.pdf>>
- ¹² Risk Assessment and Critical Infrastructure Protection in Health Care Facilities: Reducing Social Vulnerability by Christopher Riegel, Retrieved March 10, 2013 from <<http://www.ehs.unu.edu/file/get/3796>>
- ¹³ Risk Assessment, n. pag.
- ¹⁴ Minding the Gaps: Creating Resilience in Health Care, Retrieved March 10, 2013 from <http://www.ahrq.gov/downloads/pub/advances2/vol3/Advances-Nemeth_116.pdf>
- ¹⁵ Risk Assessment, n. pag.
- ¹⁶ Minding, n. pag.
- ¹⁷ Minding, n. pag.
- ¹⁸ Minding, n. pag.