

## Cyber-shock and “digital withdrawal”: Organizational Leadership and Crisis Management During a Hospital-wide Computer Shutdown Following a Ransomware Attack

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**Introduction:** In October 2021, Hillel Yaffe, MC, suffered a ransomware attack which shutdown most hospital computer systems, including patient EMR, pharmacy, communications, administration and backup systems. Staff were left in a state of “cyber-shock” without access to essential information for maintaining safety, quality and continuity of care. The aim of this presentation is to share the hospitals' experience and insights of this cyber-attack, outlining preparedness and response strategies.

**Method:** This attack required a multifaceted emergency response strategy, including:

- Immediate response activated according to specific pre-prepared emergency scenario action lists
- Leadership decision making in real time under conditions of uncertainty
- Identifying the extent of systems affected
- Establishing alternative communication across the organization
- Distributing real-time status updates and proactive guidelines, based on pre-existing emergency preparedness protocols
- Finding alternative access to patient health histories
- Adaptation and distribution of alternative hardcopy versions of patient evaluation and documentation normally done by EMR
- Distribution of instruction materials for staff via alternative communication, ensuring quick and correct adoption of alternative protocols
- Special emphasis on patient safety, risk management, quality and continuity of care

Recognition, support and resilience-building for staff facing uncertainty and unprecedented conditions

**Results:** Required preparations include pre-prepared standing orders and procedures, exercises and simulations. Advanced preparation of alternative documentation and care protocols will enable uninterrupted, safe, high-quality patient care. Familiarity with pen-and-paper documentation may minimize shock and disorientation from “digital withdrawal”, especially among younger workers lacking manual documentation experience. Staff members should also be instructed in maintaining “digital hygiene”, such as using strong passwords and awareness about cyber-security threats.

**Conclusion:** Hospitals must prepare for potential cyber-attacks and EMR/digital system shutdowns. Cyber-attack should be treated by organizations as an emergency event, and they should prepare incident response and contingency plans, to assure business continuity and quick disaster recovery.

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## Multilateralism as a Determinant of COVID-19 Outcomes in Small Island Developing States: Mitigating Disaster Impact Through Foreign Affairs Investment.

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**Introduction:** The United Nations (UN) recognizes Small Island Developing States (SIDS) as a heterogeneous group with common geographic and socio-economic challenges. Their vulnerability to disasters was exacerbated during COVID-19 because of emerging nationalism and protectionism towards supply chains and resources. This study aimed to determine if multilateralism engagement improved COVID-19 outcomes and if Foreign Affairs investment improved short term COVID-19 outcomes.

**Method:** Metrics were developed to reflect country parameters, clinical impact of COVID-19, engagement in multilateralism, health systems strength and integration in the International Political Economy. Open-source information was used to quantify proxy measures with the calculated percent spent on foreign affairs being the major proxy of multilateralism and disaster impact as lag time to vaccination, case burden and deaths in the first six months of 2020. Data was collected for each of the 38 SIDS. SPSS was used to assess possible correlations with short- and long-term clinical outcomes of the COVID-19 pandemic.

**Results:** SIDS were noted to have an average lag of 4.1 months to begin vaccination rollout compared with developed nations and prolonged below global average vaccination rates. Expenditure on Foreign Affairs reduced the vaccination lag ( $p=0.03$ ), decreased short-term cases ( $p<0.001$ ) and deaths ( $p<0.001$ ), Human Development Index improved vaccination rates ( $p<0.001$ ) and lowered total cases ( $p=0.03$ ). Foreign Direct Investment (FDI) inflow also decreased vaccination lag (0.02). Dependence on Foreign Aid decreased vaccination rates ( $p=0.01$ ).

**Conclusion:** These relationships suggest that there were multiple factors that determined short- and long-term health outcomes in SIDS. Mitigating the impact of a disaster therefore requires a multiple level investment solution that recognizes the importance of other actors in the global system. The COVID-19 experience suggests that engagement in multilateralism is important in countries that have a high vulnerability to disasters such as SIDS. This is valuable for future disasters in vulnerable states.

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