

## Assessment of Statewide Communication Interoperability Plans (SCIP) Across the United States Using the Cybersecurity & Infrastructure Security Agency (CISA) Interoperability Markers

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**Introduction:** The complexity of disaster management is rising because of rapidly advancing technological changes and the challenges associated with coordinating responses among multi-organizational contexts. One of the common problems with multi-organizational disaster management is the need for an interoperability language. Therefore, by maintaining effective communication, risk can be reduced, and lives can be saved in times of crisis. The United States SCIPs represent one of the solutions used to achieve a culture of better interoperability. In 2019, The National Council of Statewide Interoperability Coordinators (NCSWIC) and CISA collaborated to create a tool that identified 25 Interoperability Markers. This tool is integrated with SCIPs to increase interoperability and serves as a national framework to describe interoperability maturity at the state levels.

**Method:** This is a descriptive study documenting each state's 25 interoperability markers and analyzing common gaps and successes. Two methods were used for collecting data. First, an online search for each state's SCIP. Then, an email was sent to all state's Statewide Interoperability Coordinators (SWIC) to request the most recent update of that state's SCIP. Data were collected from October 1-31, 2022 and exported into an Excel spreadsheet (Microsoft Corp; Redmond, Washington, USA) for descriptive statistics and analysis.

**Results:** The level of interoperability maturity across the United States is 66%. The governance level in the interoperability continuum scored the highest across states with 76.4%. While the other levels of the interoperability continuum like technology, training and exercise, and interstate emergency communication scored 63.5%, 64%, and 60% respectively.

**Conclusion:** This study identifies a high level of interoperability maturity across the United States at the governance level. It is essential to continue to improve interstate interoperability through compatible technological solutions and multi-agency training. Finally, further research on interoperability markers is needed to enhance multi-agency emergency response.

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## The Isolation System for Treatment and Agile Response for High-Risk Infections (ISTARI) Unit, a Carecubes Design: Moving PPE Around the Patient, An Assessment of Provider Safety and Infection Control with Emergency Medicine Residents During Simulation

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**Introduction:** The ISTARI unit is designed to be assembled in buildings or field hospitals to provide negative-pressure rooms in low-resource areas and decrease PPE use in the setting of highly-infectious diseases. Each unit is designed to perform ~20 air exchanges/hour with HEPA filters with multiple access points for providers to perform patient care without entering the unit while decreasing overall PPE usage. The goals of the design include patient safety, ease of use for, decreased infectious spread, and unit affordability.

**Method:** A survey was obtained following a medical simulation within the ISTARI unit with Emergency Medicine resident physicians. The case involved an Ebola patient with Ventricular Tachycardia which progressed to cardiac arrest. Teams were given written and video instructions for the ISTARI unit and Ebola-level PPE. They were limited to one set of high-level PPE for the case. The survey scoring was a 0-5 scale, five being the highest.

**Results:** Medical history-taking provider safety (PS)- 2.87, infection control (IC)-3.09, physical examination PS-3.52, IC-3.78, ultrasound usage PS-3.35, IC-3.43, intubation PS-2.35, IC-2.57, CPR PS-3.43, IC-3.65, cardioversion PS-3.35, IC-3.78, and overall average PS-3.145, IC-3.383.

Limitations were noted compared with traditional care, but 100% of teams met critical actions for patient management, including intubation, cardioversion, and CPR. GloGerm showed no contamination to those providing care outside the unit, but a small amount of contamination after doffing for those who entered the unit.

**Conclusion:** The ISTARI unit is a cost-effective isolation unit maximizing provider safety in management of patients with highly-infectious diseases, particularly in low-resource settings. It allows for easy mobilization of units and decreased medical supplies waste. The preliminary study shows satisfactory data about provider safety and infection control when using ISTARI for a highly-infectious patient, especially in providers unfamiliar with typical high-level PPE. Providers were able to provide all necessary critical actions for highly-infectious, critically-ill patients.

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