

application or video call. The results and opinions were recorded in a mobile application and a specific website. We analyzed the general characteristics and outcomes of the prehospital ACLS using video communication.

**Results:** A total of 11,054 consecutive out-of-hospital cardiopulmonary resuscitation cases were recorded, and 3,352 underwent prehospital ALS using video call. Prehospital ROSC was 23.3%, survival upon hospital arrival was 13.6%, survival admission was 19.5%, survival discharge was 10.6%, and survival with good neurologic outcome was 6.0%. The reasons for no prehospital ALS included no request from a provider (29.1%), cardiac arrest during transport (20.9%), communication failure (11.6%), and family refusal (11.1%).

**Discussion:** As a result of providing prehospital ACLS with direct medical direction through remote video calls to cardiac arrest patients, the prehospital ROSC rate, survival admission, and discharge rate improved. Advantages of this type of medical control by video communication were ease of control of the patient's family, more precise communication with paramedics, and continuous confirmation of the real patient's status and monitoring parameters.

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### Red Cross and Red Crescent Health Information System (RCHIS): Functional Design and Usability Testing Protocol

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**Introduction:** The Red Cross and Red Crescent Health Information System (RCHIS) combines the functionality of an Electronic Medical Record (EMR), Health Information System (HIS), as well as Human Resource and stock management system. Its purpose is to facilitate patient quality of care, early warning for outbreak detection, accountability/reporting, and resource management. Short-term, emergency medical teams and support staff responding to acute clinical needs in a humanitarian context are the intended end users.

**Aim:** To explain the functional design principles and usability testing protocol implemented in initial RCHIS design and development phases to ensure technological fit within the humanitarian medical context.

**Methods:** RCHIS development followed the patient-user journey, with each patient/staff interaction encapsulated by a microservice. The integration of multiple microservices enabled RCHIS to mimic various patient journeys. The functional scope of each microservice was designed by medical end-users and was further used for access management. The value and variable design, including validation rules, were led by health informaticians and existing medical standards. Intuitiveness and ease of use guided User Interface design, with targeted medical end-user feedback collected on a twice-monthly basis in addition to early design workshops, field immersion, and post-development pilot testing.

**Results:** Support and implementation of RCHIS were not inherently guaranteed. As such, the process of co-designing with end users had the primary benefit of ensuring effective scope and technological fit given the humanitarian context, but also the secondary benefit of improving internal acceptability and advocacy.

**Discussion:** The added value of digital health records as a quality assurance mechanism is well documented. However, the increased workload and reduced employment satisfaction affiliated with the rise of EMRs illustrated a need to re-evaluate current design and use within clinical settings. The design and development approach taken for RCHIS is one attempt to improve human-computer interaction in the clinical setting.

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### Stroke Prehospital Informed Decision-Making Using EEG Recordings (SPIDER)

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**Introduction:** The acute care of stroke involves the administration of a clot-dissolving drug (thrombolysis) and/or its removal using endovascular clot retrieval. Earlier intervention results in significantly improved patient outcomes. Clinical assessment scores have limitations, and studies have shown that even the most robust scores have a reported false-negative rate of >20% for large vessel occlusive strokes that may be eligible for clot retrieval, while inappropriate bypass may delay delivery of thrombolysis.<sup>1</sup> Quantitative Electroencephalography (QEEG) has been shown to have a very high sensitivity and specificity in the identification of acute stroke versus matched controls in an in-hospital setting.<sup>(2,3)</sup>

**Aim:** The SPIDER study commenced in Brisbane, Queensland on September 3, 2018, and is investigating the use of an EEG recorder to gather data on acute stroke patients presenting to a metropolitan ambulance service.

**Discussion:** The data collected will guide the development of a simple numerical output reference to guide decision making. The data may aid in identifying large vessel occlusive stroke and patients eligible for endovascular intervention. The QEEG will provide a more accurate and cost-effective tool for the prehospital clinician over other imaging technologies and can guide early destination decisions. This presentation discusses the implementation of a pre-hospital research platform, integration with the clinical dispatch matrix, staff engagement, patient recruitment, and the success of the project so far.

### References

1. Turc G, Maier B, Naggara O, et al. Clinical scales do not reliably identify acute ischaemic stroke patients with large-artery occlusion. *Stroke* 2016;47:1466–1472.