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THE USE OF SOCIAL MEDIA AND INNOVATIVE TECHNOLOGY TO CREATE A GLOBAL AED GEOLOCATION DATABASE - THE iRescU PROJECT

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Glossary:

Social Media – new technologies, often smartphone related, facebook, twitter, etc
Geolocation – Identifying AEDs by their location coordinates – by street address and GPS
Crowdsourcing – utilizing the volunteer public "crowd" to submit data or information
Gamification – creating a contest and game to incentivize participation
2D codes/QR & eTags – complex visual 2D images similar in concept to barcodes which engage smartphones

FINANCIAL DISCLOSURES:

This is a probono, unfunded study under the umbrella of the EMS Safety Foundation

INTRODUCTION:

A critical obstacle to improving the poor survival in out-of-hospital sudden cardiac arrest (SCA) is the difficulty of locating AEDs. A reliable, comprehensive dynamic and easily accessible national AED geolocation database has yet to be created.

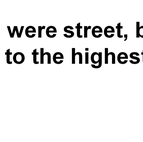
OBJECTIVES:

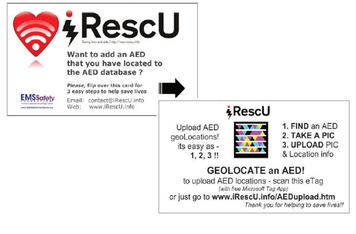
To pilot a sustainable and inexpensive geolocated AED database leveraging gamification using new communication technologies and to subsequently assess the accessibility and functionality of captured AEDs.

METHODS:

A two-way, closed-loop, cloud-based data management system on a sequel server was developed by the iRescU project's interdisciplinary team. The interdisciplinary team included public health, emergency medicine, EMS, social media, human factors, software designers, data management, cardiology, epidemiology and policy expertise. This platform was configured to be populated by crowdsourced data and to upload existing, static AED databases. A pilot study of gamification of AED geolocation crowdsourcing was conducted utilizing this platform. Four geolocation contests were conducted from November 2011 - November 2012. Basic social media strategies for outreach were used, e.g. Twitter, Facebook, SCA aware Listserv(s). Tools included 2D eTags, to direct mobile devices to the AED geolocation upload form. These were printed on novel data entry items (Fig 1.) - T-shirts, baseball caps, stickers, postcards and business cards and were distributed at medical conferences during contests. Use of the 2D tools could be heat mapped.

Fig. 1.
Novel data entry tools





Mandatory fields for AED geolocation information upload were street, building location, city, state and country. Photos were optional. An AED was awarded to the highest AED geolocator in each contest.

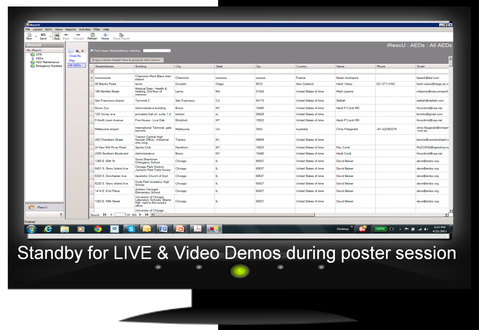


Fig. 2.
Web interface of the 'Cloud Based' data capture of AED geolocation

Fig. 3. - Heat map of eTag use

RESULTS:

1704 crowdsourced AED geolocations were uploaded via: handheld mobile devices (cellphones, smartphones, and tablets) and use of cameras and PCs. The maximum numbers of AED geolocations uploaded by an individual during the 4 contests, were 37, 81, 49 and 103 respectively. The highest AED geolocators in this study were those very familiar with AEDs - parents of a child survivor, researchers in AED use, a classroom of fifth graders with AED geolocation as a project, and first-responders. Data was entered directly to the cloudbased data base Fig. 2. regardless of capture mode. The highest submitters in this study made limited use of eTags to access the upload form. Use of 2D etags was captured at global locations Fig. 3, with the majority being in the USA. Total direct cost of the crowdsourcing gamification infrastructure was ~$450 per contest.

LIMITATIONS:

The target audiences were not identified as fluent in any social media or new technology tools, nor were they necessarily familiar with geolocating and/or GPS/GIS mapping. Heat mapping (Fig. 3) only registered when smartphone use was engaged with accessible GPS signal. Microsoft eTag platform can now generate generic Microsoft Tag Manager trackable QR tags that do not require a specialized Microsoft Tag reader app, Fig 4.

Fig. 4. – New style eTags

CONCLUSION:

New social media and mobile technology can be harnessed to create a dynamic and inexpensive AED database. Individuals who uploaded more AEDs tended to be motivated either by personal knowledge of a SCA survivor or through professional or academic interest in AED use. Given its exponential penetrance and adoption in society, social media may be a valuable tool for outreach into the broader community to increase awareness of SCA and to leverage broader based AED geolocation data.

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