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UMAP: CARTOGRAPHIC TOOL FOR URGENCY MEDICAL-SERVICES' ASSESSMENT OF PREPAREDNESS

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Introduction. Planning, deployment, and management of medical resources face a context of changing demographics, technological developments, and budget constraints. Assessment of preparedness to access any emergency in the territory and casualty evacuation supports the decision-making. Cartographic tools and algorithms, integrated in interactive software tools, help decision-makers better plan the emergency medical resources.

Objective. Assessment of preparedness of Pyrenees regions to attend emergencies and multitudinary events by developing a cartographic web application.

Methodology. Creation of a PostgreSQL database including all resources, use of PostGIS for managing geospatial information and PGRouting extensions for calculation of routes in real-time. A web application (frontend) for user interaction with the system and visualization.

Results. A web application with the following features: 1. Visualization of all medical emergency resources (helicopters, ambulances, emergency centers, hospitals) including characteristics as public/private, subcategory, adult/pediatric/both patients, region, etc. in Ariege, Haute-Garonne, Hautes-Pyrénées, Pyrénées-Atlantiques, Pyrénées-Orientals, Catalonia, Aragon, and Navarre as well as large events requiring the deployment of health resources. 2. Interactive use for the assessment of access times of health services to emergencies located by the user on the map, and assessment of evacuation times to an emergency facility. 3. Determination of places that fulfill prefixed levels of medical resources (type, number, and access time) to host a large event. 4. Addition of new medical resources for assessment of preparedness improvement.

Conclusions: The simultaneous consideration of all health emergency resources in all territories quantifies and points out the unequal access to emergency medical resources. The UMAP tool demonstrates the benefits of cross-border cooperation of territorial public health systems. Planning large events with medical resource requirements needs considering the emergency medical capacity of the surrounding territory. The UMAP application can evolve into a simulation interactive tool for learning the management of emergency medical resources in cases of large accidents and catastrophic events