Innovative Practices in the Emergency Medical Services in Crete

A. Kouroubali, D. Vourvahakis, M. Tsiknakis

Dr. Angelina Kouroubali
Research Scientist
FORTH
Journey in Organizational Issues of Medical Informatics

- **Masters**
  - 1997-1999 Columbia University, NY, USA
    - Resistance to change
    - Technical excellence

- **Ph.D.**
  - 1999-2003 University of Cambridge, UK
    - Dynamics of change
    - HYGEIAnet, Crete

- **Affiliated Research Scientist**
  - 2004-Present, eHealth Lab, ICS-FORTH, Crete, Greece
    - Innovative practices in Emergency Care
Population of ~600,000
16 primary health care centres, 7 hospitals
Large number of isolated communities in remote locations

Population more than doubles during the summer period Accidents more than triple during the summer period
42% of accidents involve tourists
The Healthcare System of Crete includes all levels of the hierarchy
HYGEIAnet implementation

- Public Sector
  - No central body to force change against employees
  - Pilot and model initiative based on collaborations
  - Use relied on good will and interest of individuals

- Instead of exact plans HYGEIAnet implementation followed:
  - Interconnected changes
  - Loose control
  - Encouragement of innovation
  - Direction setting
EKAB Crete

EKAB (Hellenic National Center for Emergency Care) is the sole public provider of Emergency Pre-Hospital Care in Greece.
EKAB Crete - Resources

- 5 Mobile Intensive care units
- 8 M.D.
- 120 Paramedics
- 38 Ambulances
- 13 Operators/Dispatchers

- About 25000 emergency cases per year
  - 40% trauma
  - 20% cardiology
- 200 air medical evacuations per year
EKAB Crete - Innovative Practices

- The ambulatory service in Crete
  - Information systems
    - Triage
    - Coordination
    - Management of resources

- Continuous education & training programs
EKAB Crete - The Information Network

resource management

static resource information

resource status updates

emergency record management system (ERMS)

multimedia medical data

Telemonitoring acquisition & display of multimedia medical data

multimedia medical data

amulance tracking & route guidance

resource status links to archive

logging information

multimedia medical data

Teleconsultation Telediagnosis Tele-education

Teleeducation

Dr. Angelina Kouroubali, kouroub@ics.forth.gr
eHealth Laboratory, Institute of Computer Science, FORTH
EKAB Crete - Coordination Centre Network

Chania

Rethymno

EKAB Crete Coordination Centre Heraklion

Agios Nikolaos

Hospitals

Ambulances

Primary Care Centers

Dr. Angelina Kouroubali, kouroub@ics.forth.gr
eHealth Laboratory, Institute of Computer Science, FORTH
Emergency Call & Resource Management

The operator at the call centre receives an emergency call and decides, based on the first available information about the emergency episode (location, gravity, etc.) and the current location of the available ambulances, which ambulance to assign for the management of this episode.

Thus, a new emergency episode is initialized.
Triage Protocol

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http://www.ics.forth.gr/eHealth/

Dr. Angelina Kouroubali, kouroub@ics.forth.gr
eHealth Laboratory, Institute of Computer Science, FORTH
Ambulance Tracking System (GIS)
Managing an Emergency Call

Coordination Center

Dispatcher

Doctor

GPS - GIS

Medical Station

Emergency Call

Mobile Unit
Teleconsultation Based on Vital Signs

The ambulance is alerted and the ambulance subsystem is started up. Once the ambulance arrives at the episode site and the patient is taken on board, the vital sign monitor is connected to the patient. The patient’s vital signs are transmitted to the emergency coordination centre. The doctor at the expert station gives appropriate instructions to the ambulance personnel.
Episode card for the doctor at the coordination centre
Education in Emergency Medicine - eLearning

- Continuous training
- Educate large part of population
- Instant evaluation of trainees
- Use of up-to-date and validated content (following the relevant standards, ERC recommendations and guidelines)
- Affordable solution for education
- Use of modern information & communication technology
Change Management

- Alternative view of change: Treating health care systems as complex adaptive systems
  - Change is an inherent capacity of organizations, a process of self-organization
  - Self-organization: a self guided process of change springing from within
Change ... How?

- **Given:**
  - Public sector
  - “Can’t force anyone to do anything”

- **Ingredients of success**
  - **System:** Greatly improve daily practice, reliable
  - **Leadership:** friendly, colleague mentality, vision
  - **Team work:** sense of operating in a greater family
  - **Mandatory Education:** High risk job, continuous education helps competence
  - **PHILOTIMO**
    - good will and interest
    - Greek characteristic of altruism to perform well, honor
Conclusions

- **eHealth benefits Prehospital Emergency Telemedicine**
  - Telemanagement
  - Telemonitoring
  - Teleconsultation
  - Telediagnosis
    - Health Emergency Coordination Center
    - Mobile ICUs
    - (Hospital ED - PCC)
  - Teleeducation – eLearning

With Leadership & Teamwork
Goals are Achieved