

Emergency Medical Care

Patient-centric Medical data to support personalized emergency medical care delivery

Agenda

- Emergency medical data
- Common source of emergency medical data
- Case study on data analysis
 - Emergency patient-centered vs. Emergency patient-centric data
 - Patient data as key factor in emergency care?
- Discussion

Definition

- **Emergency medical data**

are most important medical data that the medical doctor must know to provide the emergency medical care, for ex:

Diagnoses, for ex: diabetes, heart diseases

Medication taken regularly

Allergies and intolerances

Medical guidance (ex: on implants or a pregnancy)

Contact details for attending medical doctors and relatives

- **Personalized medicine (emergency medicine)**

Type of medical care in which treatment is customized for an individual patient

Source of emergency medical data in general

- **Common sources**

- **EMR/PHR version:** Theoretically emergency medical data should be fetched from the patient electronic medical records (EMR)[medical doctors level] or patient health records (PHR)[patient level]
- **Patient portal:** Access to patient medical record via portals provided by care providers or health insurance companies
- **Portable digital device:** Most important medical data are stored on the patient mobile device such mobile phone
- **Print version:** Commonly paper base forms ([ex1](#), [ex2](#)) are used to collect most important information on the patient health conditions in order to make adequate decision on the medical treatment to be given.

- **Challenges/Issues/Limitations**

- EMR/EHR: mostly study level, poorly in use
- Patient portal: based on patient, issues most health systems are poorly connected
- Portal digital device: patient can lose it
- Print version : can face inaccuracy, time consuming,

Source of emergency data (suite)

- Vital data monitoring and collection during an emergency transportation
 - Manual data collection
- How should the source look like to fit personalize emergency care?
 - Connect the ambulance to the emergency hospital
 - Connect the electronic health and medical records systems to the ambulance
 - Involve patient health records (if exists) [Access issues could be faced, only the patient can authorize the access]
 - A federated medical data [source](#)

Case study: Data collection & Objectives

- Vital data collection
 - Case 1: traditionally
 - Case 2: using an IoT system connecting the ambulance, EMR system, and the ingestion system
- Medical data collection
 - Use existing patient medical data (spread over the health care system), partially patient-centered
 - Use EHR/EMR system fully patient centric
- Objective 1: Assess the data quality from traditional and proposed system
- Objective 2: Assess the quality of the decision made for treatment
- Objective 3: Assess the link between the data source and the quality of the emergency medical care delivery outcomes

Case study: Emergency medical data

- Sources: Patient-centered data vs Patient-centric data
- Definition
- Issues and challenges

Case study: Data analysis

- Tool: MS Excel
- Null hypothesis test
- ANOVA (analysis of variance)
 - Check to what extent factors are associated with an outcome variable
 - Test the (null) hypothesis
 - Methods : **One-way ANOVA, Two-Way ANOVA**
 - Interpretation variables P-values (statical significance /cutoff =0.005), average
- Correlation coefficients
 - Measure of relationship between two variables
 - Range: -1 to 1
- Correlation vs. Causation

Discussion