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A. Rodríguez-Molinero, A. Catalá, M. Díaz, J. Rodríguez, E. Fernández de la Puente, A.Tabuenca, JJ. De la Cruz, L. Narvaiza, A. Yuste. CAALYX: evidence-based selection of health sensors for elderly telemonitoring. Gerontechnology 2008; 7(2):198. The objective of the CAALYX project (Complete Ambient Assisted Living Experiment), funded by the Commission of the European Union, is to develop a telemonitoring system capable of detecting health alterations and falls in the elderly – at home and outside the home– and to alert the assistance services when necessary[1]. Unfortunately, health disorders in the elderly often occur in latent or atypical ways; therefore, health telemonitoring in the elderly is both a medical and technological challenge[2]. The choice of suitable physiological parameters to be monitored is thus the key to system optimization and to minimization of false negative and false positive reports. **Methods** This multi-step method is aimed at facilitating selection of the most helpful group of sensors for the diagnosis of the most relevant health disorders in the elderly. (i) Identification of frequent health disorders: using the Spanish national surveillance system for hospital data (CMBD - 2005) and the databases held by the emergency services of the Hospital Clínic de Barcelona and the Hospital de Mataró (Barcelona). (ii) Selection of relevant health disorders: since frequent health disorders have varying degrees of importance, a discussion group composed of independent physician experts was designed to establish priorities for health disorders to be monitored. (iii) Identification of physiological parameters: four geriatricians reviewed 1,200 bibliographical sources in order to identify the most sensitive and specific physical manifestations for the diagnosis of the previously selected health disorders. (iv) Sensor selection: the list of the most suitable physiological parameters for the diagnosis of health disorders was reviewed by a mixed group of experts (medical-technological) in order to choose parameters that can be measured using currently technology. **Results and discussion** Table 1 lists the most frequent and relevant health disorders in the elderly. Table 2 lists some physiological parameters related to these health disorders. Health monitoring in the elderly may be optimized by including sensors capable of measuring the physiological parameters listed in table 2. The ultimate group of sensors for the CAALYX project will be decided in March, 2008; these sensors will be optimized for the elderly health disorders.

References

1. Boulos MN, Rocha A, Martins A, Vicente ME, Bolz A, Feld R, Tchoudovski I, Braecklein M, Nelson J, Laighin GO, Sdogati C, Cesaroni F, Antomarini M, Jobes A, Kinirons M. International Journal of Health Geography 2007;2:6-9
2. Sloan JP. Protocols in Primary Care Geriatrics. New York: Springer; 1991; p 160

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Table 1. 20 frequent and relevant diseases of elderly

Hip fracture	Heart failure	Atrial fibrillation
Depression	Respiratory infection	Acute coronary syndrome
Gastroenteritis	Acute psychotic states	Anxiety
Urinary tract infection	Glycemic disorders	Pancreatitis
Urinary retention	Bowel obstruction	Kidney failure
Respiratory insufficiency	Anaemia	Gastrointestinal bleeding
Febrile syndrome	Stroke	

Table 2. Relevant physiological parameters / disease manifestations

Heart rhythm	Body weight	Glycemia
Heart electrical activity	Gait parameters and falls	Alertness / Consciousness
Blood pressure	Sleep parameters	Alcohol / toxic levels
Temperature	Bowel pattern	Speech characteristics
Respiratory rate	Urinary frequency	Hydration and perfusion
Blood oxygen saturation	Urine sediment	Faecal blood
Couch / productiveness	ADL functionality	