

## Frailty and gerontechnology research

To cope with the rising number of older people with higher care needs new (geron)technology approaches are essential not only in the domains of health care but also in the support of independent living and mobility<sup>1</sup>. Various strategies have been developed for improving care for patients with chronic health conditions (such as heart failure and, respiratory or vascular disease). Remote medical care may procure accurate and reliable data influencing patients' behaviours and attitudes, and potentially improving their medical condition. Several experiences have been published in this journal that focus on older individuals with dementia and residents in nursing homes. In these cases, the main objectives are to improve security and minimize deficiencies and chronic disability. The overall aim is to support the well-being of the person, and not specifically to boost cognition or function.

The geriatric concept of 'frailty' appeared as a paradigmatic physiologic multisystemic condition, leading to severe negative outcomes such as falls, institutionalisation, hospitalisation or death<sup>2</sup>. Indeed frailty is a common condition with a concrete, defined and measurable phenotype, quite distinct from disability and other chronic illnesses<sup>3</sup>.

Little is known about technological research and interventions in older patients identified as frail. The recent development of clinical assessment tools is a good step in the task of identifying useful preventive interventions. The frail patient, in the stage between robustness and dependency, should become a major target for research in gerontechnology. Research should be focusing on health and the functional, environmental and social aspects of this 'unique' concept of vulnerability, where loss of independence leads to a cascade of health and social problems.

We had the opportunity to take part in a research project about telemedicine interventions (health devices, ambient and domotic services and a navigator system), targeting frail older people who lived independently in the community: The Home Sweet Home project<sup>4</sup>. Monitoring and registration of data allowed us to initiate early preventive interventions when a problem was detected or was expected. Focus was on quality of life and the extension of independent living (not being admitted to a nursing home). The screening items for several functional domains were chosen in a way that they could make up a com-

posite resulting in the Edmonton Frail Scale (EFS)<sup>5</sup>, a validated scoring for frailty. A unique characteristic of this clinical scale is its inclusion of the domain of social support, suggesting an endorsement of the dynamic model of frailty. We expect that the analysis of data extracted from the pilots in the project will provide information on the most significant areas affecting the quality of life and health and social outcomes of community-dwelling frail older persons.

To conclude, we would like to highlight the need of gerontechnology to collect new evidence on the 'frail' condition, in order to delay the onset of disability and prevent health and social related negative outcomes.

## References

1. Bronswijk JEMH van, Bouma H, Fozard JL, Kearns WD, Davison GC, Tuan P-C. Defining gerontechnology for R&D purposes. *Gerontechnology* 2009;8(1):3-10; doi:10.4017/gt.2009.08.01.002.00
2. Morley JE, Vellas B, Abellan van Kan G, Anker SD, Bauer JM, Bernabei R, Cesari M, Chumlea WC, Doehner W, Evans J, Fried LP, Guralnik JM, Katz PR, Malmstrom TK, McCarter RJ, Gutierrez Robledo LM, Rockwood K, von Haehling S, Vandewoude MF, Walston J. Frailty consensus: a call to action. *Journal of the American Medical Directors Association* 2013;14(6):392-397; doi:10.1016/j.jamda.2013.03.022
3. Fried LP, Ferrucci L, Darer J, Williamson JD, Anderson G. Untangling the concepts of disability, frailty, and comorbidity: implications for improved targeting and care. *The Journals of Gerontology, Series A: Biological Sciences and Medical Sciences* 2004;59(3):M255-M263; doi:10.1093/gerona/59.3.M255
4. Home Sweet Home project. Health monitoring and social integration environment to support the extension of independent life at home; www.homesweethome-project.be; retrieved June 13, 2014
5. Rolfson DB, Majumdar SR, Tsuyuki RT, Tahir A, Rockwood K. Validity and reliability of the Edmonton Frail Scale. *Age & Ageing* 2006;35(5):526-529; doi:10.1093/ageing/afl041

*Miquel Àngel Mas MD, Sebastià Santaeugènia MD, María José Ciudad MSC, Ignasi Saez MD, Badalona Serveis Assistencials, Badalona, Catalonia, Spain*  
*Maurits Vandewoude MD, Ziekenhuis Netwerk Antwerpen. University of Antwerp, Belgium*  
E: mmas7@bsa.cat; Twitter: @DrMqAgMas  
doi:10.4017/gt.2013.12.2.006.00