Remote healthcare for an aging population

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An aging population and an increased incidence of debilitating illnesses such as Parkinson's and Alzheimer's disease means there is pressure on technology to offer assistance with healthcare - monitoring and treatment. Research published in the *International Journal of Ad Hoc and Ubiquitous Computing* points to remote monitoring as offering a way to improve patient care and even accelerate medical research.

Andrew Thomas formerly of Birmingham City University, UK and colleagues there and at the University of Wolverhampton, UK, the Technical University of Catalonia, Barcelona, Spain, Ritsumeikan University, in Kusatsu and Fukuoka Institute of Technology, Japan, suggest there is a need to develop pervasive technologies that monitor patients at home, where medically viable so as to reduce the pressure on general practitioners and other healthcare workers and their limited resources. "Those 'smart care spaces' require use of sensors and intelligent computer systems to support the needs of the cared-for, carers and medical personnel," the team reports.

The judicious use of technology and the development of a smart care spaces will hopefully lead to great improvements in the quality-of-life through comfort and adequate medical-monitoring of patients with a range of serious, chronic and degenerative conditions where current practice does not cope well or where pressure on carers can be alleviated. New technologies might also hint at new approaches to treatments for any number of diseases here correlations between healthcare practices informed by the technology points to putative improvements in medication regimen, exercise, as well as environmental changes for

improving the patient's life with the disease.

The team has reviewed systems using sensors and health monitors and suggests that even simple sensors, such as radio tags, "shadow" cameras, and electricity usage monitors, that monitor night-time activities or detect when a patient has had a fall, might be highly cost effective. A fall may lead to injury that requires hospitalization whereas evidence of insomnia might lead to other symptoms during the day where an intervention might improve the situation. There are many technologies, including pulse monitors and heart monitors, gyroscopics to detect falls, that could be connected to a smart phone that would send alerts to carers of an imminent problem with a patient's well being too.

A holistic approach to the design of a smart care space and the implementation of the available technology could provide the greatest benefits, the researchers suggest, rather than ad hoc use of simple monitors or other devices in isolation. "It is apparent that much of the technology required to create smart care spaces already exists, but further research is required to integrate them into a functional whole," the team concludes.

More information: Thomas, A.M., Moore, P., Evans, C., Shah, H., Sharma, M., Mount, S., Xhafa, F., Pham, H.V., Barolli, L., Patel, A., Wilcox, A.J., Chapman, C. and Chima, P. (2014) "Smart care spaces: pervasive sensing technologies for at-home care," *Int. J. Ad Hoc and Ubiquitous Computing*, Vol. 16, No. 4, pp.268–282.

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