

*E. VAN DEN HEUVEL, F. JOWITT, A. LONG, B. FERNANDES, P. GAYDECKI.* **A Novel assistive technology for women who use continence pads: Smart underwear.** *Gerontechnology* 2012;11(2):248; doi:10.4017/gt.2012.11.02.310.00

**Purpose** Fear of pad leakage is a major concern for women who use continence pads<sup>1</sup>. The purpose of this project was to develop and test a product (*Figure 1*) that would help the wearer to avoid pad leakage spreading to outer clothing and seats. The Smart underwear alerts the wearer to any leakage from the continence pad, allowing them to change before the urine spreads. **Method** A user-centred design was used to develop an acceptable prototype underwear and signalling system. Each participant had 5 pairs, sufficient for the two-week test period. We recruited adult women who were using one or more continence pads per day for urinary incontinence and had experienced leakage from the pad at least once in the previous month. The International Consultation on Incontinence modular Questionnaire Urinary Incontinence Form (ICIQ-UI)<sup>2</sup> and International Consultation on Incontinence modular Questionnaire- lower urinary tract symptoms (ICIQ-LUTS)<sup>3</sup> were used at baseline and on completion of the two-week trial, and the Psychosocial Impact of Assistive Devices Scale (PIADS)<sup>4</sup> was used at the end of the test period. Participants were also asked to record their experience of the device's performance in a diary and to complete a product evaluation at the end of the trial. **Results & Discussion** A total of 28 women tested the Smart underwear. Out of 342 leakage events recorded during the evaluation, the Smart underwear was effective at alerting the wearer 92% of the time and in 50% of those events the wearers were not aware that the pad had leaked until the device alerted them. Although some women experienced problems with false alerts, data from the focus group design work indicated that women would prefer the device to be over-sensitive rather than it not being sensitive enough. False alerts were more common in summer months and became problematic for two women with menopausal sweating, because the system cannot discriminate between wetness cause by excessive sweating and urine. Even though the system is still at prototype stage, two thirds of the participants said they felt more confident when using the device. The Smart underwear has been developed at the request of users to meet an important need for people who use continence pads; it has been shown to be effective in detecting pad leakage and, most importantly, in enabling users to be more confident. We anticipate that this increase in confidence will help users to stay more involved in both work and leisure activities, reducing the likelihood of social isolation and depression that are often associated with incontinence.

### References

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*Figure 1: Smart underwear*