

Incontinence: the Engineering Challenge VI

Dr Alan Cottenden
University College London

Developing improved incontinence products is not a popular choice among those seeking to make their mark in academia, industry or the clinical world: the first Nobel prize for a non-blocking catheter, a leak-free drainage bag tap or a skin-friendly incontinence pad has yet to be conferred! Incontinence technology has a serious image problem and is in need of new ideas, new energy and new blood. So it was that the sixth biennial *Incontinence: the Engineering Challenge* seminar run by the Institution's Medical Engineering Division on 14-15 November 2007 was designed to inform, encourage and provoke fresh thinking. As usual, a rich multidisciplinary mix of delegates gathered from industry (45%), academia (24%) and the clinical world (18%), along with people with incontinence (7%) and those from government and not-for-profit organisations (6%). A third of the 97 attendees were from overseas.

Roger Feneley (Bristol Biomed Centre) opened proceedings with a characteristically stirring lecture which set the scene for a lively two days. On the first morning, a panel of men and women with intractable incontinence were asked to tell their stories, explain how they currently managed their problem and describe their "dream product". The openness and humour with which they shared their experiences and fielded questions was, according to the feedback, one of the highlights of the seminar. On the second morning it was the turn of a group of experienced caregivers from a variety of backgrounds whose brief was to highlight problems which they considered to be in particular need of technical solutions.

Each day these consumer and caregiver sessions were followed by lectures from experts outside the field who were invited to make their knowledge available to the incontinence world: perhaps they had answers to questions of which they were as yet unaware! Drawing on his work with NASA and ESA, Ian Sutherland (Brunel University) explained how spaceship toilets work – quite a design challenge in the absence of gravity to encourage the waste to move in an appropriate direction! Back on Earth, Brian McCarthy (TechniTex Faraday Ltd) provided a helpful review of existing and emerging textiles that may find applications in incontinence management, while Pankaj Vadgama (Queen Mary, University of London) gave a fascinating account of what coatings and biosensors may have to offer. A fine pair of state-of-the-art lectures completed the morning programs. Jenny Southgate and her team (University of York) described their bladder tissue engineering work while Nick Donaldson (UCL) gave an account of his team's development of nerve stimulators for incontinence in spinal cord injury. Nick's lecture was interesting not only for its technical content but also for the discussion it provoked on the challenges of bringing to market technology which has the potential to deliver enormous benefit to a limited number of people.

Afternoon presentations on recent and ongoing work were gathered into four themed sessions. The session on absorbent products covered the range from Volker Braig's (BASF AG) useful technical tutorial on superabsorbent polymers to Mandy Fader's (University of Southampton) account of recent clinical trials of pads for lightly incontinent women. Spanning the two were interesting papers by Markus Vogt and Marie Elliot (BASF AG and LHT, respectively) and Maximilian Swerev (Paul Hartmann AG, on behalf of a project team from several companies belonging to EDANA (European Disposables and Nonwovens Association)) who described their work to correlate data from laboratory and

consumer tests on pads – vital for product and international standards development. Alan Cottenden (UCL) completed the session by putting the case for developing improved washable absorbent products for lightly incontinent women.

Although incontinence and pressure ulcers are known to be mutually compounding problems, contact between their associated “professional tribes” is limited and so it was particularly pleasing to have Dan Bader (Queen Mary, University of London) - a leading pressure ulcer expert - deliver the opening lecture in the session on incontinence and skin health in which he explored the impact of skin wetness on pressure ulcer formation and healing. Subsequent papers from Perry Xiao (London South Bank University), Sinead Clarke-O'Neill (UCL) and Daniel Osario's (University of Sussex) described a variety of novel tools for characterising skin health of which Daniel Osario's new method for recording skin colour seems to hold particular promise. Stephen Reil (Cognis GmbH) closed the session, helpfully describing how pad materials can now be designed to deliver skin care benefits.

Papers in the session on long-term urinary catheters ranged from Adele Long's and Andrea Moore's (Bristol Biomed Centre) presentations highlighting the problems to be solved, through Nicola Morris' (Bristol Biomed Centre) comprehensive account of progress on understanding and combating catheter encrustation, to several papers describing new technology. It was particularly fascinating to hear Trevor Wills (Albert UK Ltd), Stuart Orme (Bristol Biomed Centre) and Nada Manojlovic (Pocketpants Ltd) each describe how they were motivated to innovate by the need to address incontinence management problems either they or a close relative faced. Completing the session, Tony Cronshaw (PA Consulting Group) and Donald Griffith (Baylor College of Medicine, Houston) – a designer / urologist team – described their development of a novel suprapubic urinary catheter, particularly the tissue-bonding employed in the implanted element of the device.

The title of the final session (Eclectic but fascinating) proved to be an accurate description of its content! Tim Short (Liverpool University) described a student project (provoked by a need highlighted at the 2005 seminar) to design a discreet yet functional bottom wiper for those unable to tackle the task in the conventional way, while Remi Guibert (Fred Bergman Healthcare Pty) described a fascinating system for remote sensing of incontinence pad wetness in healthcare facilities to inform help care staff when pads may need changing. Peter Brett (Aston University) completed the program by describing his recent work to develop robot sensors for controlled penetration of flexible tissue interfaces, and exploring the potential applications in the incontinence area.

It is encouraging that these biennial seminars continue to attract a stimulating mix of delegates prepared to rise to the challenge of communicating with colleagues whose native professional cultures and languages are entirely different from their own, and more encouraging still to hear many regulars comment that this was the best seminar yet. The hope of the organising committee continues to be that - by informing, encouraging and inspiring - these seminars will yield life-changing benefits to people with incontinence. Planning is already underway for the seventh, which is scheduled for 2-3 December 2009.

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Alan Cottenden
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