

MDVSNPLUS

Medical Devices and Vulnerable Skin Network PLUS





Innovation in Medical Devices for Children Workshop

Tuesday 26th September 2017

11am – 4pm with lunch and refreshments

Registration and badges from 10am in The Coach House with tea, coffee and pastries

The Coach House, Chilworth Manor Hotel, University of Southampton Science Park, SO16 7PT







MORNING SESSION: THE COACH HOUSE, CHILWORTH MANOR Chaired by Professor Dan Bader, MDVSNPLUS PI

10.00	Registration and badges with tea, coffee and pastries
11.00	Welcome to our Innovation in Medical Devices for Children Workshop - Professor Dan Bader, Professor of Bioengineering and Tissue Health, University of Southampton and PI on MDVSN ^{PLUS}
11.10	Technology Innovation Transforming Child Health (TITCH) - Nathaniel Mills, NHS Innovation Manager - Paediatric Theme, NIHR Devices for Dignity HTC
11.20	Starworks Innovation Project: Innovations in Prosthetics for Young People - Nathaniel Mills, NHS Innovation Manager - Paediatric Theme, NIHR Devices for Dignity HTC
11.30	No Pressure - Dr Heather Elphick, Consultant in Paediatric Respiratory and Sleep Medicine, Sheffield Children's Hospital
11.50	Design of respiratory medical devices to enable effective drug delivery and minimise traumatic damage to vulnerable neonatal tissues - Professor Howard Clark, Professor of Child Health, University of Southampton
12.10	Skin breakdown in premature neonates - Dr Pete Worsley, Lecturer in Rehabilitative Bioengineering, University of Southampton and Co-I PI on MDVSN ^{PLUS}
12.30	NIHR Invention for Innovation - A Translational Funding Scheme for Medical Devices and Diagnostics - Dr Lee Allen, Senior Programme Manager, NIHR Central Commissioning Facility

13.00 – 14.00 LUNCH AND NETWORKING – THE COACH HOUSE

AFTERNOON SESSION: THE COACH HOUSE, CHILWORTH MANOR Chaired by Dr Peter Worsley, MDVSN^{PLUS} Co-I

14.00 NIHR CYP MedTech (The Children and Young People MedTech Co-operative)

- Dr Heather Elphick, Consultant in Paediatric Respiratory and Sleep Medicine, Sheffield Children's Hospital

14.15 Chronological Evaluation of the Functional Changes in Neonatal Skin

- Dr Anushma Sharma, Paediatrician and Neonatal Research Fellow, University of Southampton

14.30 Developing Potential Research Proposals

- Dr Pete Worsley, Lecturer in Rehabilitative Bioengineering, University of Southampton and Co-I PI on $\mathsf{MDVSN}^\mathsf{PLUS}$

15.30 Summary and Next Steps - Dr Peter Worsley, MDVSNPLUS Co-I

SPEAKER BIOGRAPHIES

Professor Dan Bader, Professor of Bioengineering and Tissue Health, University of Southampton

Professor Dan Bader is a physicist by training (BSc, MSc) with a PhD in Bioengineering at the University of Southampton. His postdoc position at Oxford University focused on engineering aspects of pressure ulcer (PU) prevention. He later moved to Queen Mary, University of London (QMUL) as a lecturer in Biomaterials leading Soft Tissue Research in the EPSRC Funded IRC in Biomedical Materials (1991-2002).

In 1999, he became first Professor of Medical Engineering, establishing a world-renowned research group at QMUL. In 2011, he joined the Faculty of Health Sciences (FoHS) at University of Southampton as Professor of Bioengineering and Tissue Health, to establish a multidisciplinary team focusing on Skin Health. Since 2000, he has been a Part-Time Professor in Soft Tissue Remodelling in Biomedical Engineering at Eindhoven University collaborating with Oomens on skin damage and PU research. In 2006, he was elected to the World Council of Biomechanics.

In 2011, he became Editor of the Journal of Tissue Viability and was presented the Senior Investigators Award by the European Pressure Ulcer Advisory Panel (EPUAP), an organisation he serves as a Trustee. His research areas include (i) Bioengineering solutions in PU prevention; (ii) Imaging of soft tissues; (iii) Designing medical devices and systems for clinical use; (iv) Cell/tissue biomechanics. Bader has published over 200 scientific papers, has a current H factor of 45, and edited three books.

Nathaniel Mills, NHS Innovation manager for the NIHR Devices for Dignity Heath Care Technology Cooperative.

Nathaniel manages the paediatric theme within D4D, this includes D4D Junior which cross cuts D4D's existing themes and also the TITCH (Technology and Innovation Transforming Child Health) collaborative which is a network of experts from across the paediatric health sector. The network also includes academic, industry and charity representation.

Nathaniel is a trained nurse and prior to his role with D4D was the lead nurse for the South Yorkshire Clinical Research Network (Now CRN: Yorkshire and Humber).

Professor Heather Elphick, Consultant in Paediatric Respiratory and Sleep Medicine, Sheffield Children's Hospital.

Heather was appointed as consultant in Paediatric Respiratory Medicine at Sheffield Children's Hospital in 2008. She has a particular clinical interest in physiological sleep disorders and non-invasive ventilation. She has a strong track record in research and was awarded a Visiting Professorship with Sheffield Hallam University in 2014 in recognition of her collaborative work in research and innovation and supervision of post-graduate students.

She has been two awarded NIHR i4i grants as principal investigator for development of innovative technologies in children with chronic disease and has collaborated on other nationally funded multicentre projects including the PLEASANT asthma trial.

She leads a passionate and productive research team. Her current projects include development of custom made masks for children using NIV, funded by NIHR, the "Sheffield Sleeping Well" project, funded by the Health Foundation and the "Asthma and Me", funded by SBRI.

Professor Howard Clark, Professor of Child Health, Head of Academic Department of Child Health University of Southampton

Honorary Consultant in Paediatrics (Neonatal Medicine), University Hospital Southampton NHS Foundation Trust

Professor Clark read medicine at Cambridge and completed clinical training at Addenbrooke's hospital in Cambridge. He also gained a degree in Philosophy. After general paediatric training in Bristol and London, he took up a Fellowship in Neonatal-Perinatal Medicine at the University of California, San Francisco (UCSF).

In addition to training in neonatology he carried out basic research on lung surfactant biochemistry and metabolism for which he was awarded the MD by Cambridge University. On returning to Britain he carried out basic research on lung surfactant proteins A and D at the University of Oxford for which he was awarded the DPhil. A Fellowship for Medical Research to continue these studies in Oxford followed.

Thereafter Prof Clark was awarded a Senior Research Fellowship in Medicine in 2004 and he left Oxford to take up his current position as Head of the Department of Child Health at Southampton in 2007.

Dr Peter Worsley, Lecturer, University of Southampton

Dr Peter Worsley qualified as a physiotherapist (BSc, 2007) and completed a PhD in Bioengineering (2011) both at University of Southampton. In his early research he acquired skills and experience in *invivo* monitoring (healthy volunteers and patient cohorts) and *in-silico* research techniques, funded by industry (DePuy).

In 2012, he joined the Skin Health Research group, where he develops test methods and protocols for *in vivo* testing in the state-of-the-art lab facilities and supervises research students (PhD, MSc and overseas internships). He is now combining his research experience in the clinical and bioengineering setting to initiate and implement research which has clear translation to the clinical practice. His research has attracted collaborations with academics from University of Southampton, the UK, and key international leaders. His skills include physiological and biomechanical monitoring, imaging of musculoskeletal tissues and computational techniques to predict device-body interactions.

Peter's research interests vary across the spectrum of skin health to include patient sub-populations from neonates to lower limb amputees. His research has been funded by UKRCs, NIHR, local University of Southampton ECR equipment grants, NHS Trusts (PhD studentships) and industry totalling £429,000 in grant income.

Dr Lee Allen, Senior Programme Manager, NIHR Central Commissioning Facility (CCF)

Lee is currently a Senior Programme Manager for the NIHR Invention for Innovation programme. He has an academic background in pharmacology (BSc), molecular biology (PhD) and commercial technology management (MSc).

Prior to working for the NIHR, he spend a decade in the biopharmaceutical industry developing new manufacturing technologies and processes for novel large molecule therapeutics. He is also part of the NIHR Intellectual Property Unit that helps researchers to ensure that IP produced by their research is translated in to patient benefit by whatever is the most appropriate mechanism.

Dr Anushma Sharma, Paediatrician, University Hospital Southampton NHS Foundation Trust and Neonatal Research Fellow, University of Southampton

Anushma completed her MRCPCH in 2007 and worked as a Paediatrician trainee in North West Deanery in Manchester. In 2014, she started RCPCH higher specialist training in neonatal at Wessex Deanery in Southampton.

She is currently working on a programme of research on Chronological Evaluation of Functional Changes in Neonatal Skin. She has a keen interest in evaluating vulnerability of neonatal skin and how research can improve the long term outcome in this population.