

EMS 999 Forum Conference 2021: CaHRU fields a strong team and wins highest quality research award.



This year's EMS 999 Forum Conference 'Research in prehospital care: Past, pandemic, present & future' took place online on Tuesday 23 March 2021. There were four presentations by CaHRU members. Despina Laparidou, research assistant at CaHRU,



presented her study 'Perceptions and experiences of residents and relatives of emergencies in care homes: systematic review and meta-synthesis', Dr Vanessa Botan, research associate in statistics at CaHRU gave an oral presentation of the NIHR Applied Research Collaboration East Midlands funded study on 'The effects of a leaflet-based intervention, 'Hypos can strike twice', on recurrent hypoglycaemic attendances by ambulance services (Ambu-HS2)' and Dr Murray Smith presented a study of prehospital methoxyflurane for acute pain in trauma in adults.

Professor Graham Law of CaHRU was part of a stellar line up with Professor Gina Agarwal (Professor of Family Medicine, McMaster University, Canada), Dr Michael Redlener (Associate Professor of Emergency Medicine at Icahn School of Medicine, Mount Sinai, New York, US) and Professor Chris Ryther (Professor of Paramedicine at American River College, Sacramento, US) presenting a panel discussing 'International perspectives on EMS and COVID-19' (pictured above).



Dr Vanessa Botan (left), gave an oral presentation of a study on 'The effects of a leaflet-based intervention, 'Hypos can strike twice', on recurrent hypoglycaemic attendances by ambulance services (Ambu-HS2)'. The Ambu-HS2 study team, led by Professor Niro Siriwardena, included Professor Graham Law, Dr Murray Smith, Dr Colin Ridyard and Despina Laparidou at CaHRU, members of the Healthier Ageing PPI group (Mrs Amanda Brewster, Pauline Mountain and

Keith Spurr), colleagues at the University of Leicester (Mrs June James and Prof Kamlesh Khunti) and East Midlands Ambulance Service NHS Trust (Sally Dunmore and Rob Spaight). Congratulations to Vanessa for her presentation and team members following the award for the highest quality research prize at the conference!

The Ambu-HS2 study aimed to investigate the effect of an intervention in which ambulance clinicians provided advice, supported by the 'Hypos can strike twice' booklet, following a hypoglycaemic event to prevent future attendances. The study used a non-randomised stepped wedge-controlled design, where the intervention was introduced at different times (steps) in different areas (clusters) in EMAS. The study included 4825 patients experiencing hypoglycaemic events attended by EMAS. The study showed a significant decrease in repeat ambulance attendances for hypoglycaemia relative to the pre-intervention trend.

The panel 'International perspectives on EMS and COVID-19' was chaired by Professor Niro Siriwardena in his role as a member of the 999EMS Forum and the conference steering committee. The session began with Prof Agarwal who leads the Community Paramedicine Research Team at McMaster, speaking about the effect of the pandemic and lockdown on ambulance calls in Ontario, Canada and the innovations in community paramedicine taking place there. Professor Law followed this by discussing mental health, alcohol and substance use during COVID-19, comparing ambulance attendances in the UK and Canada. Dr Redlener described the experience of the EMS response to cardiac arrest in New York City and the effect of a change in termination of resuscitation policy. Finally, Professor Ryther, a practising 999 Forum logoparamedic and paramedic educator discussed the impact of the pandemic on teaching and learning during

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the pandemic. The session finished with questions from the audience to all the presenters.

Despina Lapidou (right), research assistant at CaHRU, presented her study, 'Perceptions and experiences of residents and relatives of emergencies in care homes: systematic review and meta-synthesis'. The study team, led by Professor Niro Siriwardena, included Dr Ffion Curtis of the Lincoln International Institute of Rural Health, Marishona Ortega, university librarian, and from CaHRU and the University of Colombo, Drs Iresha Jayawickrama, Dr Dedunu Weligamage and Sarathchandra Kumarawansa.



The study aimed to explore perceptions and experiences of care home residents and their family members who experienced medical emergencies in a care home setting. The team searched five electronic databases, MEDLINE, CINAHL, PubMed, Cochrane Library and PsycINFO, supplemented with internet searches and citation tracking. Ten studies from 4 countries (Australia, Canada, UK, and US), all of acceptable quality, were included in the review. Six analytical themes were developed using thematic analysis: the infrastructure and process requirements in care homes to prevent and address emergencies; the complexity of decisions to transfer to hospital; the challenges of transfer and hospitalisation for older patients; the need for good communication for desirable outcomes; legal, regulatory and ethical concerns; and the importance of trusting relationships enabled residents to feel safe.

The study concluded that the emergency care experience for care home residents can be enhanced by ensuring resources, staff capacity and processes for high quality care, and trusting relationships between staff and patients and between staff, are underpinned by good communication and attention to ethical practice.

Dr Murray Smith, senior research fellow in econometrics and health economics, also gave an oral presentation at the 999 EMS Research Forum Conference 2021. Murray presented CaHRU's study on 'Clinical effectiveness and costs of prehospital inhaled methoxyflurane for acute pain in trauma in adults'. The study team included Dr Smith who led the analysis, with Dr Elise Rowan of CaHRU, Rob Spaight of East Midlands Ambulance Service NHS Trust (EMAS) and Prof Niro Siriwardena, Director of CaHRU.

Methoxyflurane (Penthrox®; Galen Ltd), which has been used in practice as an inhalational analgesic based on hospital studies, was more recently issued a European licence for emergency relief of moderate to severe pain in conscious adults with trauma pain. The presentation described the implementation and evaluation of methoxyflurane in the prehospital setting using statistical/econometric modelling to show the effect of methoxyflurane compared with usual analgesics such as Entonox, intravenous paracetamol or intravenous morphine taking into account patient age, sex, clinical condition, and initial pain score.



The study involved training 96 EMAS paramedics and Emergency Medical Technicians (EMTs) who administered methoxyflurane over one year from 2018 to 2019 for adults with trauma, in place of or in addition to usual analgesics. Methoxyflurane reduced pain from severe (pain score 7-10) to moderate (pain score 4-6) levels within 10 minutes, which was more than three times more quickly than Entonox or intravenous paracetamol and more than twice as quickly as intravenous morphine. Both paramedics and EMTs were able to use methoxyflurane and this was a benefit for patients because EMTs are not able to give intravenous paracetamol or morphine. Clinician reported adverse effects minor and infrequent and benefits were achieved at a modestly greater cost. Study limitations related to observational data and methods. This study, the largest prehospital study of methoxyflurane, was conducted independently from the funder, Galen Ltd.

Improvement science and research methods seminar March 2021: Dr Murray Smith on Analysis of repeated measures and longitudinal data in health research



The March 2021 Improvement Science and Research Methods seminar from CaHRU was presented by Dr Murray Smith, senior research fellow in econometrics and health economics at CaHRU, on 'Analysis of repeated measures and longitudinal data in health research'. The seminar described what is meant by panel data, that is longitudinal or repeated measures data involving repeated observations on the same cross-section over time, how these are analysed and examples.

The examples of the method shown were those that Murray has used in recent studies. For example in the MAGIC and MAGIC2 studies, panel data were analysed to measure the passage of an inert marker ingestible medical device through the gut for assessment of functional constipation in children and to explore potential adverse effects of the device. Another use was in the economic evaluation of Sport England's Active Steps

remote health coaching delivered by the British Lung Foundation which involved an independent, parallel standard care trial with data collected at baseline, 3, 6 and 12 months which created a set of panel data.

The final example was the recently completed study of methoxyflurane for acute pain in trauma in which Murray compared pain scores over time for adults given methoxyflurane or other analgesics.

The next improvement science and research methods seminar will take place on Wednesday 16th June at 11.00 when Dr Maria Kordowicz will speak about "the origins and practice of ethnography in health." If you would like to attend, please e-mail sbowler@lincoln.ac.uk or nsiriwardena@lincoln.ac.uk for a link to join.

Greg Whitley awarded NIHR/Health Education England integrated clinical academic post-doctoral bridging fellowship

On the 23rd March 2021 I was lucky to celebrate two achievements simultaneously; passing my PhD viva and being awarded a National Institute for Health Research (NIHR) / Health Education England (HEE) Integrated Clinical Academic (ICA) Post-Doctoral Bridging Fellowship.

I started my PhD studying "Pre-hospital pain management in children: A mixed methods study", at the University of Lincoln in January 2018. This was funded by a NIHR Applied Research Collaboration East Midlands doctoral fellowship. Surviving the challenges of the COVID-19 pandemic and balancing a clinical academic career (working as a frontline paramedic one week per month for the three years) made passing the viva all the more rewarding. My doctoral supervisors; Professor Niroshan Siriwardena, Professor Graham Law and Associate Professor Pippa Hemingway from the University of Nottingham, were all excellent and guided me through the tough times. My PhD viva examiners; Professor Alicia O'Cathain (University of Sheffield), Adjunct Associate Professor Bill Lord (Monash University, Australia) and Associate Professor Ros Kane (University of Lincoln) all made me feel very much at ease. I passed the PhD viva subject to minor corrections.



Whilst awaiting my PhD viva, I applied for a NIHR/HEE ICA post-doctoral bridging fellowship. I was informed on the 11 March 2021 that I had been successful in my application, awarded through the University of Nottingham, conditional on passing my PhD viva with no or minor corrections. This admittedly added a little extra pressure on the PhD viva of course! The NIHR/HEE ICA post-doctoral bridging fellowship was awarded with East Midlands Ambulance Service NHS Trust as the host organisation, the University of Lincoln as the Higher Education Institution and Professor Niroshan Siriwardena and Associate Professor Sarah Redsell (University of Nottingham) as mentors. The bridging fellowship will backfill my time, one day per week, allowing me to develop a competitive NIHR ICA Clinical Lectureship application. I plan to continue my research into pre-hospital pain management in children by building on my previous research, addressing current gaps in the evidence and developing interventions to improve the quality of care for children attended by ambulances.

Improvement science and research methods seminar April 2021: Dr Colin Ridyard on Health Economic Analysis Plans



The April 2021 Improvement Science and Research Methods seminar from CaHRU was presented by Dr Colin Ridyard, research fellow in econometrics and health economics at CaHRU, on 'Health Economic Analysis Plans in the context of trial documentation'. Colin has a background in pharmaceutical manufacturing, marketing, the NHS and health economic research. He developed his expertise in health economic analysis and research methods cross various fields including randomised clinical trials, database design, data mapping, methodological development, and infection control. His ongoing academic interests include healthcare resource use, medical statistics, intervention-based research, and seamless big data analysis.

With an ever-increasing interest in transparent approaches to research it is no surprise the spotlight would soon fall on improving the transparency of economic evaluations. One approach to transparency is to mirror the statistical analysis plan (SAP) and pre-specify in tandem a health economics analysis plan (HEAP). Colin began by describing the different sources of resource use measures (RUMs) including those derived from research databases, collected by researchers in case report or other routine data, and reported by patients and carers.

The content of HEAPs was determined using a Delphi survey of health economists and a final expert panel, which concluded that 58 items should be included in the essential list. This was followed by a literature review to identify published HEAPs or protocols with detailed descriptions of the economic analysis to be followed in a project. All papers were assessed by two independent researchers. The content of their findings was then checked against items identified in previous studies as essential for HEAPs. The review established HEAPs are not widely-published documents but could allow for a more standardised approach.

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Funding

Whitley G. Post-doctoral bridging fellowship, Health Education England £13, 546.

Solomon J, Latif A, Knapp P, Gussy M, Baines D, Law GR. The Lifeguard Study: Responding to people in danger. A feasibility study to co-develop a community pharmacy response service for domestic violence and suicidal ideation, NIHR RfPB, £370,459.

Siriwardena AN, Spaight R, Palastanga N, Wilkins L, Law GR, Botan V, Laparidou D, Rowan E, Curtis F, Whitley G, Smith MD, Miller E, Roberts L. Researching Emergency Ambulance calls to Care Homes: a mixed methods study (REACH). NIHR Applied Research Collaboration East Midlands, £133,607.

Publications

Botan V, Law G, Laparidou D, Rowan E, Smith M, Ridyard C, Brewster A, Spaight R, Spurr K, Mountain P, Dunmore S, James J, Roberts L, Khunti K, Siriwardena AN (2021). The effects of a leaflet-based intervention, 'Hypos can strike twice', on recurrent hypoglycaemic attendances by ambulance services: a non-randomised stepped wedge study. *Diabetic Medicine* (in press).

Garjani A, Hunter R, Law DR, Middleton RM, Tuite-Dalton KA, Dobson R, Ford DV, Hughes S, Pearson OR, Rog D, Tallantyre EC, Nicholas R, Morriss R, Evangelou N, das Nair R (2021). Mental health of people with multiple sclerosis during the COVID-19 outbreak: A prospective cohort and cross-sectional case-control study of the UK MS register. *Multiple Sclerosis Journal* (in press).

Snooks H, Watkins A, Bell F, Brady M, Carson-Stevens A, Duncan E, Evans B, England L, Foster T, Gallanders J, Gunson I, Harris-Mayes R, Kingston M, Lyons R, Miller E, Newton A, Porter A, Quinn T, Rosser A, Spaight R, Williams V. Call volume, triage outcomes and protocols during the first wave of the COVID-19 pandemic in the UK: results of a national survey. *Journal of the American College of Emergency Physicians Open* (in press).

- Cooper A, Carson-Stevens A, Edwards M, Davies F, Donaldson L, Anderson P, Cooke M, Dale J, Evans B, Harrington B, Hepburn J, Hibbert P, Hughes T, Porter A, Siriwardena AN, Snooks H, Edwards A (2021). Identifying safe care processes when GPs work in or alongside emergency departments: realist evaluation. *British Journal of General Practice* (in press).
- Akanuwe JNA, Black S, Owen S, Siriwardena AN (2021). Barriers and facilitators to implementing a cancer risk assessment tool (QCancer) in primary care: a qualitative study. *Primary Health Care Research and Development* (in press).
- Curtis F, Lapidou D, Bridle C, Law GR, Durrant S, Rodriguez A, Pierzycki R, Siriwardena AN (2021). Effects of Cognitive Behavioural Therapy on insomnia in adults with tinnitus: systematic review and meta-analysis of randomised controlled trials. *Sleep Medicine Reviews* 56: 101405.
- Langlois A, Armstrong S, Siriwardena AN (2021). Do national and international ethics documents accord with the consent substitute model for emergency research? *Academic Emergency Medicine* 28; 569-577.
- Whitley GA, Hemingway P, Law GR, Siriwardena AN (2021). Ambulance clinician perspectives of disparity in pre-hospital child pain management: A mixed methods study. *Health Science Reports* 4:e261
- Edwards M, Cooper A, Hughes T, Davies F, Sherlock R, Anderson P, Evans B, Carson-Stevens A, Cooke M, Dale J, Hibbert P, Harrington B, Hepburn J, Porter A, Rainer T, Siriwardena AN, Snooks H, Edwards (2021). A classification of primary care streaming pathways in UK emergency departments: findings from a multi-methods study comprising cross-sectional survey; site visits with observations, semi-structured and informal interviews. *International Emergency Nursing* 56.