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CDCE² is a collaboration between the University of Warwick (UoW), Public Health England (PHE) and Health Education England West Midlands (HEE). Our aims are to undertake research to develop the evidence base for communicable disease control and to support others in undertaking and using research in public health practice, including through research training. This, our first termly newsletter, is part of advertising our work with a view to increasing collaborations with colleagues across PHE and the University of Warwick. It introduces our team and describes one project done to support PHE, 'Synthesising Evidence on Sepsis'.

Principal
Investigator:

Professor Noel
McCarthy



Professor Noel McCarthy

My research focuses on developing and applying quantitative and novel epidemiological methods to practical public health problems. This includes using bacterial genomic information in epidemiology. My teaching is mainly been on infectious disease epidemiology and specialty public health training.

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The Team 1

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Senior Research Fellow, Dr Alexander Tsertsvadze

Since March 2015 I have been a Senior Research Fellow with the CDCE² Team. I am a clinical epidemiologist, methodologist, and expert in evidence-based synthesis (eg. systematic reviews, meta-analysis, and other synthesis reports) with more than 12 years of experience acquired in the academic world. My main focus is the use of epidemiological methods in evidence synthesis.

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Clinical Research Lecturer, Dr Hendramorthy Maheswaran

I am a Clinical Lecturer in Public Health. I recently completed my PhD examining the cost-effectiveness of HIV self-testing in Blantyre, Malawi. My main focus is examining the use of health economics research methods to answer public health questions, and communicable diseases research. Specifically, I am interested in decision-analytical modelling; psychometrics and Econometrics.

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Information Specialist, Dr Pamela Royle

My role in CDCE² is as a part-time (0.2wte) Information Specialist, doing literature searches. My background is in health technology assessment, mainly in support of NICE, doing literature searches and systematic reviews.

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CDCE² Co-ordinator, Mrs Eileen Taylor

Since October 2015, I have been the Co-ordinator for the CDCE² Team. I have worked at the University of Warwick since 2004 in various administrative roles.

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Sepsis

Sepsis is a life-threatening condition and a major public health and economic burden in the industrialised world. Difficulties in accurate diagnosis of sepsis have been shown to lead to diagnostic delays and there is substantial advocacy for interventions to speed up presentation, diagnosis and initiation of specific treatments. Guidance from the National Institute for Health and Care Excellence on the recognition, diagnosis and management of severe sepsis is currently in consultation with expected publication in July 2016. This does not consider public facing interventions to improve public recognition of sepsis and presentation to healthcare. The 2015/6 remit letter from the Department of Health to Public Health England identified the need to “review the evidence and make recommendations on the scope for a public-facing campaign to raise awareness of sepsis”.

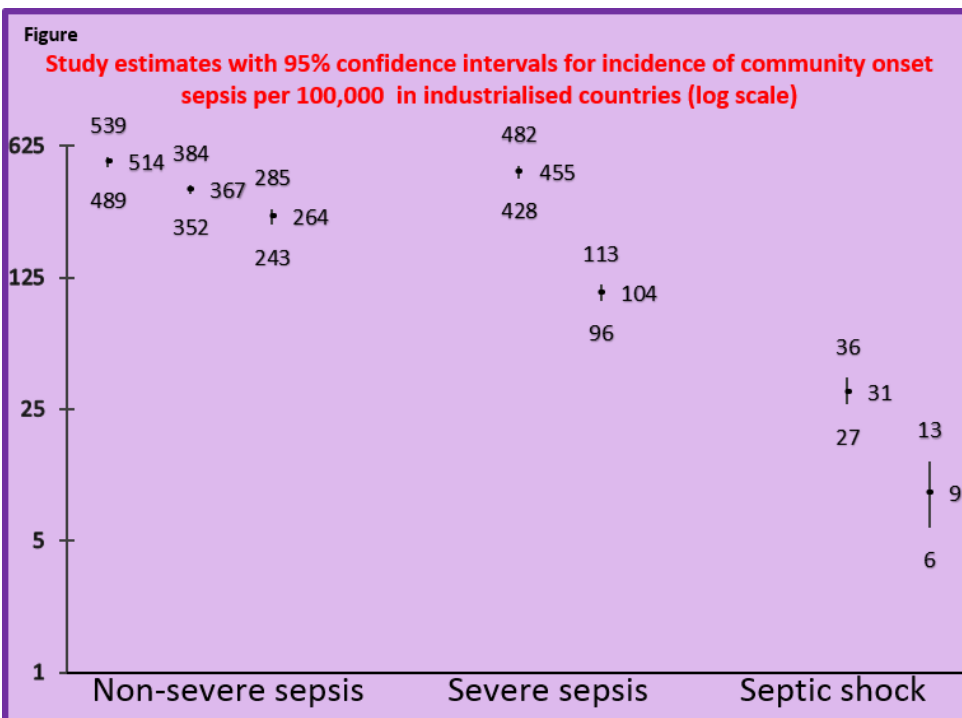
Working with Isabel Oliver as the PHE lead on this task we agreed on questions for evidence synthesis research to meet this DH request. This guided work including systematic reviews of the evidence base to identify (i) the community onset component of the sepsis burden in high income countries since this is the part of the burden that might be amendable to public facing campaigns, and risk factors for community onset sepsis and (ii) the evidence base for the impact of public facing information interventions. In addition information on existing public facing interventions, whether evidence based or not, were identified from www searches and collated.

The systematic review on sepsis burden in the community identified a large variation in estimates of the incidence of community onset sepsis from non-severe sepsis to septic shock groups (Figure and [1-2]). Variation may largely be due to varying definitions and case-ascertainment methods, highlighting these factors in any population based surveillance that PHE might undertake in this area. No evidence for the effectiveness of public facing information campaigns to improve awareness of, and presentation with, sepsis was identified. Synthesis of evidence for community onset sepsis risk factors for was used to identify high risk population groups (Figure and [1, 2]) for any

more targeted interventions. The **CDCE²** team participated in PHE meetings and production of papers to policy makers to support the integration of this work into advice to policy makers.

1: Tsertsvadze A, Royle P, McCarthy N. Community-onset sepsis and its public health burden: protocol of a systematic review. *Syst Rev.* 2015 Sep 23;4:119. doi: 10.1186/s13643-015-0103-6.

2: Tsertsvadze A, Royle P, Seedat F, Cooper J, Crisby R, McCarthy N. Community-onset sepsis and its public health burden: a systematic review. *Syst Rev.* 2016 May 18; 5:81. doi: 10.1186/s13643-016-0243-3.



Selected risk groups and conditions for severe sepsis (odd ratios with 95% confidence intervals)

Nursing home residents	2.6 (1.2 - 5.6)
Immunosuppression	4.5 (3.7 - 5.3)
Respiratory disease	3.3 (2.8 - 3.8)
Diabetes	2.0 (1.7 - 2.4)