

## **Understanding acute functional decline and its relationship to UTI in older people living in care homes** **Supervisors: Chris Butler, Gail Hayward**

Reversing the rising trend of Gram-negative blood stream infections is a national priority, (1) and to this end a key policy focus is now on more accurate and early detection of UTI in older adults. UTI is common in older people living in care homes (2) but the diagnosis in this population is particularly challenging.(3-6) Missing a UTI risks possible blood stream infection, unplanned admissions and death (7-9) but inappropriate use of antibiotics in the absence of infection adds to the burden of antimicrobial resistance, already high in this group.(10) A number of novel UTI diagnostics are being developed which aim to resolve this problem, and our team is collaborating with companies on evaluations of these technologies in community settings.

Care home staff and the healthcare teams that support them often associate acute functional decline in residents with the presence of a UTI,(11, 12) despite UTI being only one of many possible causes.(13) In our previous qualitative work, GPs have described their use of broad-spectrum antibiotics as a strategy for managing older people with an acute deterioration without a clear infective source.(14) Whilst we know anecdotally that older people in care home frequently experience acute functional decline, there is not a universally recognised phenotype, nor knowledge of its natural history, underlying causes (including actual association with UTI) and any associated outcomes.

We will address this challenging problem by:

- 1) Performing a systematic review to determine best approach to collecting urine samples from older adults
- 2) Exploring the possibility of phenotyping those with non-specific symptoms who will be most likely to benefit from antibiotics by developing and conducting a pilot prospective cohort study of care home residents. Participants would enter the cohort when they experience an episode of acute functional decline that prompts the care home staff to seek further support from the GP. Associations between baseline clinical factors, point of care blood and urine test results, the nature of functional decline and microbiological evidence of UTI will be tested.

Performing a nested diagnostic accuracy evaluation of a promising novel UTI diagnostic technology (developed in partnership with the NIHR Community Healthcare MIC).

## **Other University of Oxford Wellcome DRF studies**

The department of primary care at Oxford has an unrivalled investment and range of research infrastructure to support EMC researchers from an accredited CTU, to hosting 3 of the 4 major UK PC databases (each having particular benefits), to a strong multi-disciplinary environment of world class academics from clinical primary care, public health, epidemiology, statistics, health economics, social sciences, all available in-house. We also have excellent support teams for students, access to renowned masters-level modular training programmes, and superb physical space and access to the greatest provision of library and museum resources in Europe in the world's top university and historic city. Other projects are possible in CVD, diabetes, cancer, infection, behaviour change, disease diagnosis, risk prediction, digital health, and social sciences.