

Application number/Title: 21727 - Hormonal and reproductive factors and subsequent risk of haematological malignancies

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Funding body: Internally funded by the Centre for Public Health, Queen's University Belfast

Keywords provided by the Applicant PI to describe the research project:

Haematological, sex, hormones, lymphoma, leukaemia, myeloma

Application Lay Summary:

1a: Haematological malignancies (HM) are male dominant; the reasons for which remain unknown. Immunomodulatory exposures have been reported to increase HM risk with female sex hormones potentially protecting against HM development. To date, studies investigating HM risk using reproductive factors and exogenous hormone use have generated inconsistent findings. No study has investigated endogenous sex hormone levels and HM risk.

Specifically, we aim to investigate the following:

- (1) Are reproductive and menstrual factors associated with HMs?
- (2) Do circulating levels of endogenous sex-hormones influence risk of HMs in males and females?
- (3) Are there differences in aforementioned variables and HM subtypes?

1b: Haematological malignancies (HM) account for >6% of cancers and impact on quality of life with many subtypes conferring poor prognosis or disease progression to more aggressive disease states. Identification of risk profiles for HM subtypes will assist in the identification of causation and potential for prevention, screening and targeted therapeutics.

1c: The researchers will use data collected as part of the UK Biobank study to identify patients with blood cancers. They will compare data on gender and

reproductive factors between blood cancer patients and participants who have not been diagnosed with a blood cancer. We will also compare sex hormone levels to see if there are differences between blood cancer patients and controls and to see if these levels vary by blood cancer type.

1d: The full cohort will be included in the primary analysis of sex differences in the incidence of HMs (and by HM subtypes). Similarly, the full cohort will be utilised in analysis of hormone serum concentrations in males and females and subsequent risk of HMs. The full cohort will also be utilised in the analysis of both male and female reproductive factors and risk of HMs.