PhD project focusing on pathways for genetic testing for ovarian cancer patients in Australia

Research Strategy

Background

BRCA1/2 gene variant status has an important influence on ovarian cancer risk, treatment, and survival. Estimates from pooled studies indicate that the average risk of developing ovarian cancer in *BRCA1* pathogenic variant carriers by age 80 is 44%, and 17% for *BRCA2* [1]. A seminal Australian study found that of 1,001 women with ovarian cancer recruited between 2002 and 2006, 14.1% tested positive for a *BRCA* pathogenic variant and the germline pathogenic variant frequency could be as high as 17.1% in women with high-grade serous ovarian cancer [2]. This report also highlighted that those women with *BRCA*-associated disease were younger (*BRCA1* only) and more likely to be diagnosed with late stage disease. Importantly, 44% of these women had no reported family history of breast or ovarian cancer. Furthermore, only 6.8% of participants had been referred for genetic counselling or testing outside of the study; this typically occurred late in the patient's cancer trajectory. The findings of this study highlighted the importance of genetic testing in the Australian context for women with ovarian cancer who may not have a strong family history and aligns with results from other international studies [3].

The importance of *BRCA* status extends beyond assessment of risk for developing ovarian or breast cancer. *BRCA* mutation status also assists to identify patients most likely to benefit from treatment with poly-ADP ribose polymerase (PARP) inhibitors [4]. Previous studies have also demonstrated that carriers of *BRCA1* or *BRCA2* pathogenic variants have better 5-year survival than non-carriers, even when matched for disease stage, grade, histology and age of diagnosis [5]. Therefore, gaining knowledge of a patient's *BRCA* variant status has important implications for treatment options, clinical and patient decision-making, and clinical course and survival predictions. *BRCA* gene variant status also has important implications for family members, in terms of understanding and management of their own risk of ovarian, breast, prostate or other cancers [6].

Whilst the best practice and funded management pathways for women with ovarian cancer are known, it is not known how women (and their families) are transitioned through each step, what barriers and enablers exist (in relation to, for example, clinician roles and responsibilities, forms, approvals, IT systems, etc.), and how variation between clinical settings may impact this. It is important to further our understanding of the systems and processes in place for genetic testing for ovarian cancer patients. Furthermore, in light of the recent COVID-19 outbreak, it is important to identify whether these circumstances have impacted this process (positively or negatively). Together, these insights will provide much needed evidence to tailor health system interventions to improve the extent to which patients follow, and complete, the appropriate pathway.

Study Aims

The PhD project aims to understand referral processes for genetic testing and counselling for women with ovarian cancer and their families, to identify variation that may exist between

clinical settings and to assess impacts of the COVID-19 pandemic on referral processes. The focus will be on genetic testing for *BRCA1* or *BRCA2* pathogenic variants as well as other markers associated with Homologous Recombination Deficiency. The ultimate goal is to further understanding of the systems and processes that are in place for genetic testing for ovarian cancer patients in Australia so that recommendations can be made to correct variability and inequity in care and ultimately improve outcomes for ovarian cancer patients.

Methods

Variation in eligibility criteria and referral processes for genetic counselling and testing will be assessed through service level case studies for example through interviews with gynaecological oncologists or other gynaecology specialists involved in the diagnosis of ovarian cancer. To enable a thorough and comprehensive assessment of BRCA1/2 genetic testing for ovarian cancer patients, the project will involve collection of de-identified individual level patient data. This may include potential utilisation of the evolving Ovarian Cancer Clinical Registry, as there is a quality indicator around genetic testing. This information will be used alongside the process maps which will be developed across services in local health districts in different states to help identify key areas of variation. Following the identification of key areas of variation or inequity, the project will involve the development of data collection tools to assess barriers to best practice testing and referral processes, followed by co-design of strategies to support improvement at scale. Importantly, there will be scope for the PhD Candidate to develop the methods to conduct this study in order to achieve the study aims.

Supervisory Team

The project will be based in the Daffodil Centre, a Joint Venture between Cancer Council NSW and the University of Sydney. The advisory team for the project will include investigators from the Daffodil Centre Ovarian Cancer research stream (Dr. Melissa Merritt, Professor Anna DeFazio) and Associate Professor Natalie Taylor who is an expert in implementation science (UNSW Sydney).

References

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