**Title of Research/Project:**
Longitudinal characterisation of cardiac function in recently-diagnosed breast cancer patients.

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**Background and Purpose:**
We wish to investigate the influence of systemic adjuvant therapy (SAT) on cardiac function/rhythm, body composition, physical activity and cardiorespiratory fitness in recently diagnosed breast cancer patients. Evidence suggests that SAT can lead to the development of cardiotoxicity (Pizzino et al., 2014), rhythm abnormalities (Diemberger et al., 2015) and autonomic dysfunction (Ades et al., 2014). It has also been demonstrated that breast cancer patients experience weight gain and unfavourable changes in body composition (i.e. sarcopenic obesity) (Sheean et al., 2012), a reduction in physical activity levels (Sabiston et al., 2014) and impairment of cardiorespiratory fitness (Klassen et al., 2014). There is little information in the literature regarding the extent and time-course of changes in these characteristics. Moreover, the differential influences of specific treatment regimes and different chemotherapy drugs on these characteristics remain unclear. Furthermore, there has been no objective study of the influences of activity/fitness/body composition on cardiotoxicity in breast cancer patients. A better understanding of these issues is the primary aim of our study.

This study will also determine whether an alternative and inexpensive method for monitoring heart function (Impedance Cardiography, ICG) is a sufficiently accurate and reliable alternative to MUGA, which can be performed only infrequently owing to safety and cost considerations.

**Methods:**

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**Table:**

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Cardiac function assessment will be performed with ICG, Holter (ambulatory beat-to-beat) ECG and MRI. Fitness, physical activity and body composition will be assessed quantitatively using cardiopulmonary exercise testing on a bicycle with breath-by-breath gas analysis, accelerometry and DEXA scans respectively. These assessments will be performed both during, and following completion of, treatment. Data analysis will be conducted with the use of several conventional and novel techniques, including non-linear heart rate variability (HRV) methods, beat-to-beat QT variability and oxygen uptake kinetics.

**Results:**

Data collection with patients will begin next month (June).

**Conclusions:**

Eventually we hope that the data from the study will be of use in modifying current treatment regimens to minimize chemotherapy-induced changes in cardio-respiratory function.

**References:**


