

Mind Over Matter: Confronting Challenges in Post-Mortem Brain Biobanking for Glioblastoma

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Brain cancer is the sixth leading type of cancer in Australia and appears to be increasing. The Mark Hughes Foundation (MHF) Brain Bank is facilitated by Hunter Cancer Biobank (HCB) and located at Hunter Medical Research Institute, Australia. The first post-mortem Brain Cancer biobank in the country, we are located within a well-established and resourced health network, however, the boundaries of service provided by the biobank extend well into the surrounding regional and rural areas. This presents a number of challenges both logistically and in terms of resources. By nature, brain biobanking is challenging, with conflicting international guidelines for best practice and many unanswered questions relating to scientific, psychosocial and operational practices. This is further complicated by the cancer specific nature of the program, as the few guidelines that do exist have been developed for mental health biobanking and do not account for the unique requirements of cancer brain banking – namely prologued agonal state, rising systemic pH and increased rates of necrosis in brain tissue.

Our best practice model has been developed to account for these concerns, while also addressing the challenges of operating within regional communities or resource poor settings. Establishing a partnership with NSW Health Pathology has been key to our success, along with the invaluable input from the local Brain Care Coordinators. At present we have a maximum post mortem delay of 12 hours between death and freezing of tissue, yet have facilitated the majority of recent donations within a 4 hour period. This is reduced from the 72 hour period accepted from many brain banks in the UK specialising in mental health brain banking.

Having successfully facilitated a recent donation from a participant located in a remote area, we have also developed solutions to the challenge of operating a program that requires 24hr communication and services, within a community that does not have 24-hour health facilities. Obstacles overcome include long distance patient transport, lack of palliative care staff, death in the home and the absence of local general practitioners with limited rural outreach services.

With the support of the MHF and the dedication of HCB staff we have established a brain bank that provides an invaluable service to the community and ensures that local researchers have access to the tissues samples needed to facilitate much needed translational research in brain cancer.