

Genomic and precision medicine



CASE STUDY

Personalised treatment improves outcomes for children with cancer

The Zero Childhood Cancer Program (ZERO) is a world-leading personalised medicine program led by the Children's Cancer Institute and Kids Cancer Centre at Sydney Children's Hospital, Randwick. ZERO established a framework for recommending precision and personalised therapy for all Australian children diagnosed with high-risk malignancies (less than 30 percent chance of survival) or who relapse on standard therapy or have rare or undiagnosable tumours.

To date, ZERO has enrolled close to 800 children with high-risk cancers on its national clinical trial. For almost all children, the genomic basis of the disease has been identified, and personalised treatment recommendations have been made for over 70% of these children. Of the first 250 children enrolled on ZERO who received their recommended personalised treatment, 70 percent had a complete remission, a partial remission, or their tumour was stabilised. Over the next three years, ZERO will expand more than six-fold to be available to all children in Australia diagnosed with cancer, connecting them to a global network of information/data sharing and knowledge transfer.

ZERO is generating comprehensive, internationally unique datasets and tumour tissue resources that may hold the key to improving long-term health outcomes for children with cancer. The program has developed cutting-edge advanced capabilities in child cancer preclinical modelling, liquid biopsy, computational biology, and drug discovery and development. Industry partnership is welcomed at many stages to effectively and efficiently find new drug targets, develop new therapeutics and repurpose existing medications, test efficacy of new agents in paediatric cancer models and improve disease detection and monitoring.