



## Improving outcomes in childhood leukaemia

Leukaemia is the most diagnosed cancer in children and second only to brain cancer in the number of deaths caused. NHMRC-funded researchers collaboratively developed a highly accurate and sensitive technique to predict relapse in children with the most common type of leukaemia, acute lymphoblastic leukaemia (ALL). The technique, known as minimal residual disease (MRD) testing, provides doctors with the opportunity to adjust treatment, preventing some relapses and improving survival. Oncologists worldwide now rely on MRD tests to help guide their treatment decisions.

### Origin

Leukaemia is a cancer of the white blood cells, which develops in the bone marrow. ALL is the most common form of leukaemia in children. In Australia, around 410 people are diagnosed with ALL each year. Of these, more than half are children and adolescents aged under 20.

Although almost all children with ALL initially respond well to chemotherapy and enter remission, one in six children later relapse when treatment fails to eliminate all cancerous cells.

### Investment

NHMRC supported researchers at the Children's Cancer Institute (CCI) include Murray Norris, Michelle Haber, Glenn Marshall and Rosemary Sutton.

These researchers have received a succession of NHMRC grants to support research focused on childhood cancers.

Their research was also supported by Cancer Council NSW (CCNSW), Anthony Rothe Memorial Trust and the Leukaemia Foundation.

### Research

MRD is the name given to the small number of surviving cancer cells after treatment which can cause relapse.

CCI researchers developed a highly sensitive and accurate MRD test, capable of detecting a single cancer cell among close to a million healthy cells.

Using this test, clinicians are able to assess a patient's risk of relapse and tailor treatments to best eliminate remaining cancer cells.

### Translation

Patient-specific MRD testing has been applied to measure disease in ALL patients enrolled in clinical trials organised by trial groups both in Australia and Internationally.

These trials have established the utility and importance of MRD testing for ALL patients of different ages and at different stages of treatment.

The MRD based approach of early intervention prior to relapse significantly improves outcomes in children with high-risk ALL, effectively doubling the survival rate from 35% up to 70%.

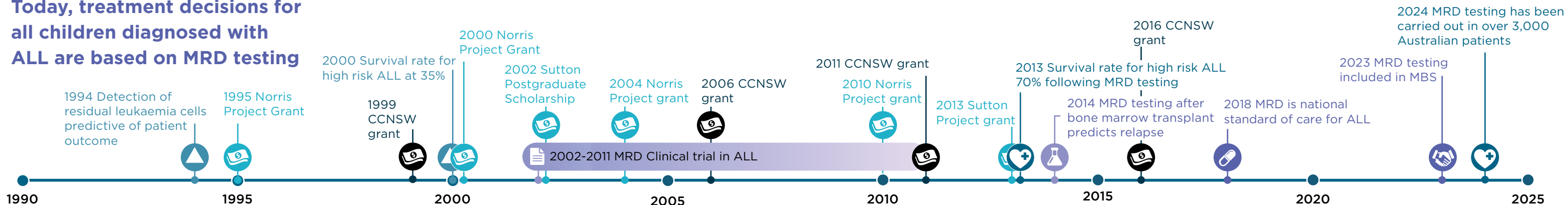
### Impact

The use of MRD testing to guide treatment decisions for children with ALL has been the 'standard of care' in Australia for over a decade.

MRD testing has been carried out at CCI on over 3,000 patients and CCI provides this service for hospitals throughout Australia. MRD testing is now listed on the Medicare Benefits Schedule.

MRD testing leads to shorter hospital stays and has important flow-on benefits for the patient, their family and the national health system.

### Today, treatment decisions for all children diagnosed with ALL are based on MRD testing



### Researchers

Prof Murray Norris AM  
Prof Michelle Haber AM  
Prof Glenn Marshall AM

A/Prof Rosemary Sutton  
Dr Toby Trahair  
Dr Michelle Henderson

visit [nhmrc.gov.au](https://nhmrc.gov.au)  
to read the full story

