The College’s Foundation for Surgery NZ Research Fellowship has helped fund a research program that could result in a prognostic model to assist clinicians design personal treatment plans for patients with colorectal cancer.

The Fellowship was endowed upon New Zealand general surgical trainee Dr Deborah Wright in 2000 to fund the first year of her PhD research now being conducted at the University of Auckland.

Dr Wright said that while Australia and New Zealand have among the highest rates of colorectal cancer in the developed world, with treatment typically combining both surgical resection and chemotherapy, almost half of those given chemotherapy derive no benefit.

She said that while clinicians had great expertise in selecting patients who would do well with the combined treatment and those with metastasised tumours who would not, there was a large cohort of patients with Stage Two and Three colorectal cancers whose response to such treatment was less well known.

“Clinicians already decide whether systemic chemotherapy is indicated based on disease stage – an aggregate of tumour, lymph node and metastasis status – and the individual patient’s co-morbidities and functional status and we are mindful of adding to that knowledge built up over decades,” she said.

“We are working instead to develop a multi-modality model which will combine the clinical and pathological data traditionally used to make treatment decisions with molecular tumour data – that is information about the expression pattern of large numbers of genes within the tumour – to achieve more accurate prognosis and prediction of treatment benefit for individual patients.”

“Clinicians could then input details of a patient’s gender, age and tumour stage along with molecular features and histological features and the computer could then spit out information about the likely responses to various treatment options.”

Dr Wright, whose work is now being funded by the Health Research Council of New Zealand, said such a computerised treatment guide was still some years off with large patient data sets required.

Also as part of her research, Dr Wright conducted a national online survey of cancer clinicians to determine the uptake and influence of computerised prognostic models and existing molecular tests on the care of patients in New Zealand.

She said that while there are molecular modelling tests available in New Zealand and Australia for malignancies such as breast cancer, the research team was keen to learn how many clinicians used them to guide their decisions.

“The survey we conducted asked for feedback from a range of clinicians including surgeons, pathologists and haematologists and we found that such tools influence the care of many patients with cancer in New Zealand,” she said.

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“We are now at a stage in our understanding of colorectal cancer where we need to be more precise in our knowledge of which patients and which types of tumours will do well with chemotherapy and those who do not need it either because the tumours are too treated successfully with surgical resection alone or cannot be treated at all,” she said.

“Chemotherapy is expensive to provide in terms of the health system budget and expensive for patients in terms of side-effects and time away from work, so if we can determine more precise treatment plans for those patients the benefits, particularly in terms of such a relatively common disease, could be significant.”

Dr Wright said that while a number of research units around the world were now working on computerised models to guide patient care, the work being done in Auckland was unique in that it did not intend to replace current knowledge but add to it.

She said new genomic information based on the expression of messengerRNA and microRNA and the affects of various chemotherapeutic agents would be used to develop complex mathematical models to guide surgeons, pathologists and oncologists in designing personalised treatment plans.

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