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The Prophylactic Antibiotic Regimens in Tumour Surgery (PARITY) Trial: Unprecedented international collaboration in orthopaedic oncology

Sarcomas (cancers of the bone and connective tissue) are rare cancers and, therefore, sarcoma patients are treated at specialized cancer centres. However, because of the rarity of the disease, a relatively small number of patients are treated at a given centre each year, which is not conducive to conducting prospective, high-quality clinical studies. In order to produce high-level evidence that will lead to advancements in the sarcoma field, multi-centre and international collaborations are required.

Bone sarcomas of the limbs were historically managed with amputation. Today, the current standard is limb-salvage surgery where bone cancer surgeons remove the tumour and reconstruct the limb with a large metal bone replacement called ‘tumour prosthesis’. However, these surgeries have a high risk of devastating surgical site infections. The most effective antibiotic regimen to prevent infections after these surgeries is unknown and surgeons do not agree on how much antibiotics to prescribe.

In the Prophylactic Antibiotic Regimens in Tumour Surgery (PARITY) trial, patients are randomized (randomly assigned) to either 1 or 5 days of antibiotics after surgery. The aim of this study is to identify the antibiotic regimen that will significantly reduce infection rates in bone cancer patients and, thus, reduce the risk of amputation and associated poor quality of life. The first PARITY patient was enrolled in Canada in January 2013 and the early success of the study attracted international interest. Further sites have since opened in the United States, Argentina, Australia, Austria, Brazil, Egypt, India, the Netherlands, Singapore, South Africa and Spain. At present, 55 sites across 12 countries and 6 continents are participating in the study; therefore, the PARITY trial has the largest number of collaborating countries than any other previous orthopaedic surgeon-initiated trial.

The PARITY trial is the first multi-centre randomized controlled trial in bone cancer surgery and will determine how best to prevent infections in sarcoma patients. Over 500 of the 600 patients required for the study have been enrolled and study recruitment is expected to be complete this year. More importantly, in the process of conducting the PARITY trial, the first collaborative research network of international surgeons in bone cancer surgery has been established, which will pave the way for future studies in the field that will aim to improve the clinical care of bone and soft-tissue cancer patients.