

## **Robotically Assisted Knee Surgery**

Robotically assisted surgery has been developed to improve a patient's experience and function after a knee replacement.

Modern designs of knee replacements have a very good track record of removing pain after surgery. The length of time that they last before requiring revision (re-do) is also increasing. Despite these advances about 40% of patients never "forget" that they have a knee replacement in their leg as it does not feel normal.

### **Why is this?**

Despite all the advances in knee replacement design, the way that they are put in has not changed in many years. Every person's knee is put in the same way. They are lined up using metal rods within the bones above and below the knee. Therefore, the knee replacement is not put in specifically for each patient. Once inserted if the knee replacement does not have equal tension from side to side the ligaments are partially released to make it balance.

### **How does robotically assisted surgery work?**

Before surgery a CT scan of your leg is taken. This allows a 3D model of your knee to be made on the computer. Using the computer any defects in your bone can be replaced. The knee replacement can then be sized and planned for insertion in the specific alignment of your leg. This is the plan before surgery. At the time of surgery, the knee is mapped onto the computer. The computer then knows where your knee is in space. Importantly at this point the tension in the muscles and ligaments around the knee can also be fed into the computer. Mr Lavender, at the time of surgery, can then slightly alter the plan from before surgery. This ensures that the knee replacement is properly aligned and balanced for you before he starts any cutting the bone.

The robotic arm, with Mr Lavender in charge, then cuts the bone much more accurately than he could do before with the traditional method. The angles of the cuts are specifically designed for your knee.

The knee replacement is then checked with a trial knee replacement and the computer to ensure that it is tensioned / balanced for your knee. Only then does Mr Lavender fix the real knee replacement in place.

### **Aim**

By aligning and balancing the knee before cutting the bones, the knee replacement is specific for you so that it feels more "normal".