

INSTITUTE OF PHYSICS (London & South Eastern Branch)  
REMS Section  
Visit to DMRC Headley Court Prosthetics Department  
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Originally the house built in 1899 for Lord Cunliffe (chairman of the Bank of England) and subsequently used for various military purposes, Headley Court, near Epsom is currently a rehabilitation hospital for members of all three Services.

A long walk from the vast car-parks led our group of 13 members up a drive to the Main Guard Room where our ID was checked, we were photographed and given temporary visitors' passes. Our guide for the morning, Lead Clinical Prosthetist Mark Thorburn welcomed us and gave us an overview of the facilities.

His own department consists of 21 staff who treat 40% of the Complex Trauma (i.e. seriously injured) in-patients. At any one time there are 45 Complex Trauma patients on site in any given week.

As well as his own department there are physiotherapy, occupational therapy, mental-cognitive health, neurology and language therapy departments together with administrative and support staff

The original house is now the Officers' Mess and many more buildings have been added, including 2 gyms and a large ward. We were shown into a large modern complex with a swimming pool (funded by the Help the Heroes charity). Mark explained that previously patients used the public swimming pool in Leatherhead, but the on-site pool was built following complaints from members of the public that they were upset at seeing amputees in the public pool. We were all shocked to hear this!

This building also has a Cardio-vascular Suite with rowing and exercise machines as well as a Gait Laboratory for clinical and academic research. Infra-red cameras around the room linked to markers on the patient's body help build a computerised image of how he/she is walking once an artificial limb has been fitted, whilst force-plates in the floor show exactly where the patient's power is generated (muscles of the hips, torso and back) This is important because amputees use 50 %-60% more energy in walking than people with their own limbs. Thanks to the intensive training and exercise received by patients at Headley Court this has been reduced to only 17% more energy use - they are able to walk far more efficiently. This research is being carried out in conjunction with Salford University.

Mark then gave us more details about the kind of amputations treated in his department. Most are caused by IED's which leave "untidy" wounds and often affect the other leg as well as the rest of the body. Patients may need leg braces and devices i.e. "orthotics" (which assist parts of the body still there) as well as "prosthetics" (which replace parts lost). Mark compared his patients with those who have amputations carried out by the NHS. These are often elderly and need amputations as a result of diabetes or vascular disease. His patients are young and (until injured) were at peak fitness so the aim of Headley Court is to provide the best possible result for each individual and to return them (as far as feasible) to the level of activity they enjoyed before injury.

Unlike the NHS, treatment here is not limited by finance - so long as staff can justify expenditure.

The average period of treatment lasts for 35 months, consisting of 11 admissions of 4 - 6 weeks, with time at home in between. Whilst at the hospital, when not being treated in the different departments, patients spend the rest of their time in the gym. It is this intensive exercise regime that gives such good results. Somebody said to Mark "It's all right for you, with two legs" - at which point he rolled up one trouser leg and revealed that he, too, is an amputee, as a result of a motor-cycle accident long before he trained as a prosthetist!

In his own department we were shown several artificial limbs, some with micro-processors or hydraulic cylinders to control stance and leg swing, and costing tens of thousands of pounds. They are set up by computer to take account of each patient's variables. We saw how sockets with silicone liners were made to fit each healed leg stump. Fitting the prosthetic leg to the socket is done by pins; in Australia this can be done by screwing the new limb directly into the remaining bone, but this carries a risk of infection.

Upper limb replacements are also made here, with pressure-pads inside to move the "fingers" - some for special purposes, e.g. archery. There are arms with electronic elbows and wrists which pick up signals from remaining muscles in the upper arm.

After a welcome tea-break we met Gillian Conway who told us something of the future of prosthetics - targeted muscle regeneration, re-connecting nerves, implantation of electrodes to improve sensation, limb regeneration and even hand transplants. She emphasised that these may not provide better results than prostheses.

Many questions from the REMS group followed, some (unfortunately for me as a non-physicist) quite technical.

Following the UK's withdrawal from Iraq & Afghanistan, there is less demand for treatment here and we were told that the emphasis is more on research. In 2014 Philip Hammond announced that the service would be transferred to Stanford Hall by 2018. The buildings will be handed to the Headley Court Trust. Mark said that Stanford Hall will still be only MOD. Perhaps its facilities and expertise could be opened to NHS patients?

After a fascinating and thought-provoking morning we made our way to Epsom Racecourse where we enjoyed a convivial lunch at the Rubbing House pub.

Thanks go to George Freeman for arranging the visit and to Mark Thorburn and his staff including Gillian Conway and Helen Jarvis (Gait Lab.) for making it so memorable.

Jennifer Hudson