

## **MEDICAL AND EDUCATIONAL AID TO KENYA (MEAK)**

### **KENYA ORTHOPAEDIC PROJECT: A NUMBER ONE EXPERIENCE**

On January 29<sup>th</sup> the first MEAK Kenya Orthopaedic Project was launched in Nanyuki General Hospital.



#### **NANYUKI**

Nanyuki General Hospital serves a population of 100,000 people. The majority of people in Nanyuki and surrounding area come from either the Massai or Kikuyu tribe. Their work relies mostly on farming, local retail or labour for the surrounding farms, with the average person earning roughly one pound a day.

The health care system like most areas in Kenya is very limited. There are two hospitals in the area: Nanyuki General Hospital with 150 beds and 6 doctors and Nanyuki Cottage Hospital, a privately funded hospital with 40 beds and one doctor. Although these doctors work tirelessly for the benefit of patients in Nanyuki, the sheer volume of patients and lack of resources leaves many patients untreated.

Without the luxury of a national health service, healthcare for most of the population of Nanyuki becomes nothing more than a wishful dream. With manual work being the mainstay of family income, a disability can mean a death sentence to these people and their families. The MEAK orthopaedic mission aimed to change this dream into reality.

## ORTHOPAEDICS IN NANYUKI:



Nanyuki General Hospital supports one general surgical consultant and one gynaecological consultant. All orthopaedics falls under the remit of the general surgeon. With only one dedicated operating day per week to fit all general and orthopaedic cases in a population size similar to a small UK city, it can be understood why only those with life or limb threatening injuries are treated as a priority. All other orthopaedic conditions must either wait or pay for private treatment. The main orthopaedic pathologies found in Nanyuki fall into three categories:

**Trauma:** There are a huge number of road traffic accidents in Kenya with Nanyuki being no exception. The introduction of motorbikes has seen a rise in the number of trauma cases coming through the general hospital, and even during the week the MEAK team were there, new trauma cases were coming in daily.

With little money to pay for health care and a shortage of doctors, beds and operating time, few of these cases will receive the operation they require and will be left with permanent disability.

**Infection:** Bone infection (osteomyelitis) is a huge problem in the developing world. Due to delayed presentation of most cases and limited antibiotic supply, the infection becomes chronic and therefore even more difficult to treat. Chronic bone infections lead to continuing local and systemic pathologies such as deformity or fracture of the bone involved, systemic infection and infective sinus formation to that limb with chronic discharge from the infected area.

**Osteoarthritis:** A life of labour is predetermined for the population of Nanyuki. Without the daily comforts we rely on such as running water, firewood, food, electricity etc these people must daily walk miles carrying heavy burdens purely to survive. Most occupations involve manual labour without correct equipment or health measures imposed. Both these factors lead to a huge amount of osteoarthritis, predominantly affecting the hips and knees. Without the painkillers and crutches that are so accessible in the UK, the mobility and function of patients with osteoarthritis in Nanyuki quickly deteriorates rendering the patient in pain and immobile.

The aim of our orthopaedic mission to Nanyuki was to offload the sheer volume of orthopaedic cases and to provide those impoverished patients with a treatment they would not otherwise receive.

The operations we performed consisted of trauma and elective cases. Trauma cases in the UK would normally wait a maximum of seven to ten days to be treated. The trauma cases we performed in Nanyuki were an average of three months old, making the operations longer and more technically difficult. Our elective cases were mostly osteomyelitis cases, and straightening procedures for children with severe deformities impairing their mobility. Our aim in the future is to perform total hip and knee replacements for those crippled with osteoarthritis. Prostheses and operative equipment for joint replacements come at vast expense in Kenya and the UK, but we believe that with further fundraising this will become possible in future Kenya Orthopaedic Projects.



## The Team

Mr Robert Lofthouse	Consultant Orthopaedic Surgeon
Mr Dominic Spicer	Consultant Orthopaedic Surgeon
Ms Lucy Obolensky	Orthopaedic Surgical Trainee
Dr Kerri Houghton	Consultant Anaesthetist
Dr Gary Minto	Consultant Anaesthetist
Ms Jo Redfern	Theatre Sister
Ms Sarah Bailey	Surgical Nurse Practitioner
Mr Paul Salter	ODP
Ms Denise Allcorn	Theatre Sister
Ms Wendy Harvey	Recovery nurse
Ms Helen Reynolds	Theatre Staff nurse
Ms Lucy Houghton	Theatre Administration

The team were fantastic in their fundraising efforts prior to the project. Each member of the team raised their own funds for the mission meaning that every penny donated by the major sponsors of the project went towards operative equipment and the patients we treated.

## THE OPERATIONS



On arrival in Nanyuki we travelled straight to the hospital for a long, tough first day in clinic.

Over seventy patients were reviewed and patients triaged into operative and non-operative cases and the urgency of their case assessed. This was an incredible first day where the team worked exceptionally hard to see all the patients who had been long awaiting their chance to see an orthopaedic surgeon. The enormous amount of cases we saw, all desperately in need of an operation further highlighted to the team the continual pressure that the surgeons in Nanyuki are under, with an abundance of patients and not enough time or equipment to provide for all. Although many of the patients we reviewed did not receive an operation, they were all overjoyed at their chance to see a specialist surgeon free of charge. Like most patients in the UK, the patients we reviewed in Nanyuki were desperate just to receive a diagnosis, and an understanding and prognosis of their condition. This we were able to

provide for the patients we saw in clinic, even if they did not go on to be operated on.

<b>List</b>	<b>Age</b>	<b>Sex</b>	<b>Diagnosis</b>	<b>Operation</b>
1	80	M	Fracture Right Neck of Femur	Right Austin Moore
2	2	M	Left Genu Valgum	Temporary epiphysiodesis
3	89	F	Fracture Right Neck of Femur	Right Austin Moore
4	15	F	Osteomyelitis Left femur	Sequestectomy
5	45	M	Fracture Right Radius and Ulna	Open reduction Internal Fixation with plating
6	25	M	Right thumb fracture dislocation	Arthrodesis Right thumb
7	29	M	Extensor tendon laceration - EDC, EPL, EDRL, ECRB	Tendon repair
8	16	M	Right knee dislocation with Salter Harris three fracture tibia	Right knee relocation with open reduction internal fixation right tibia
9	23	M	Fracture left tibia and fibula - mid shaft	Open reduction Internal Fixation with plating
10	60	M	Osteomyelitis left distal tibia	Sequestectomy
11	26	M	Chronic osteomyelitis with associated fracture midshaft femur	Sequestectomy and femoral plating
12	47	M	Fracture right radius and ulna	ORIF Right Ulna
13	30	M	Comminuted right femoral fracture	Open reduction Internal Fixation with K Nailing
14	26	M	Fracture Left tibia and fibula - mid shaft	Open reduction Internal Fixation with plating
15	13	M	Osteomyelitis Left Distal Femur	Sequestrectomy Left femur
16	90	F	Fracture Right Neck of Femur	Right Hip Hemiarthroplasty
17	30	M	Fracture left ankle - Weber C	Open reduction internal fixation with plating and syndesmosis screw
18	30	M	Fracture left ankle - Weber C	Relocation of syndesmosis screw

## TEACHING



Teaching played a major role in the first MEAK Kenya Orthopaedic Project, and was felt by the team to be an important and essential part of the mission. All members of the team learnt a huge amount for their Kenyan counterparts and were able to return this with some of the western education we have been lucky enough to receive. This accentuated the relationships and sense of teamwork that quickly evolved within the group.

The Torbay nursing staff quickly formed excellent working relationships with the Nanyuki theatre staff and were able to demonstrate the high standards of sterile practice used in orthopaedic operating in the UK. They were able to teach the nurses how to maintain these standards in Nanyuki even without the hi-tech equipment we take for granted.

The anaesthetists from Nanyuki hugely valued the continuing teaching of practical skills and theory provided for them by the team's anaesthetists. Firm friendships were made during the week and with the encouragement and support of the teams anaesthetists, the anaesthetists in Nanyuki gained confidence in spinal and regional anaesthesia.

The experience of third world operating to our orthopaedic surgeons was invaluable. They were given the opportunity to treat cases we simply no longer see in the UK, improvise with the equipment available to them, teach UK trainees in challenging environments, impart western orthopaedic practice to Kenyan surgeons as well as learning techniques that are fundamental to orthopaedic surgery in Nanyuki for conditions that we do not have in the UK.

A monthly regional meeting was called whilst we were in Nanyuki where all doctors in the surrounding region meet for an evening of educational talks. We were asked to provide the topic for the evening that was relevant to all specialties attending, and Dr Kerri Houghton was kind enough to give an excellent lecture on pain management. It demonstrated that effective pain management is affordable and possible for all patients in Kenya. The talk emphasised that the drugs we use in the UK are no different or more expensive than those affordable in Kenya but that dosage and regularity is key to adequate pain management.

Dr Gary Minto provided a fantastic ATLS lecture and demonstration at the weekly hospital meeting. This again emphasised that despite the lack of first world equipment, by following protocols and performing simple measures good quality ATLS can be provided in Nanyuki.

The teaching was very well received amongst all medical staff in Nanyuki, and this is certainly an area that has huge possibilities for expansion in our future missions to Nanyuki.

## **COSTS**

Orthopaedic operating is expensive. The equipment used and prosthesis needed makes orthopaedics one of the most expensive surgical specialties. For this reason running third world orthopaedic missions becomes difficult not only for the funds involved to acquire the equipment but the weight of both operative instruments and implants to transport to the third world. The expense of orthopaedic operations in the developing world and lack of first world support, paradoxically makes orthopaedics missions to the third world the most highly sought after and essential to these patients.

Nanyuki General Hospital has very little orthopaedic operating equipment, with only one general orthopaedic set. Nanyuki Cottage hospital was better equipped and we would like to thank Stryker USA for their generous donation of a TPR set and Saw enabling the team to perform quicker, higher quality operations throughout the week. However patients presenting to the General or Cottage hospitals would normally still need to provide their own prosthesis prior to their operation being performed. On the salary most patients receive, the sheer cost of the implant would make their operation unobtainable. All equipment and prosthesis needed during the mission was therefore brought with us to Nanyuki.

Over six thousand pounds of orthopaedic operating equipment and prosthesis, two thousand pounds of anaesthetic equipment, and seven hundred pounds of pharmaceuticals was brought on the mission. All the above was donated to the hospital, a small proportion was used during the mission, and the rest left for their continued use.

Nanyuki hospital relies on a small amount of government funding to sustain the running costs of the hospital. Patients must therefore contribute to their hospital stay and surgery, with orthopaedics being one of the most costly. The patients we treated would have been unable to meet this requirement. We performed free surgery on these patients, paid for their hospital stay and left the hospital one thousand seven hundred pounds to ensure their continuing postoperative care and medication would be paid for.

## **THE FUTURE**

The first MEAK Kenya Orthopaedic Project was a huge success to all those involved, operatively, educationally and culturally. A very prosperous meeting with the hospital administrator, Dr Buthe, and the surgeon Dr Ndanya ended the mission to Nanyuki. Despite regular letters and emails from other hospitals around Kenya asking for Orthopaedic missions to be run there, we feel we

have set the foundations for an ongoing dynamic relationship with Nanyuki hospital. We will therefore endeavour to perform yearly missions to Nanyuki for the foreseeable future. Dr Buthe has kindly agreed that on their part Nanyuki will pay for all patients above the first ten that we operate on during the next mission. In this manner funding for all patients treated on the mission can still be achieved through fundraising from both parties, bringing our working relationship and combined goal for the patients even closer together.

Orthopaedic Projects to other hospitals in Kenya are certainly achievable, especially given the success of our first mission to Nanyuki. Mombassa hospital is in desperate need of orthopaedic intervention and, funding permitting, we will aim to run a project to Mombassa Coast General Hospital in November 2009, followed by a return trip to Nanyuki in February 2010.

## **THANKS**

I would like to thank the entire team enormously who made the first MEAK Kenya Orthopaedic Project the success it was. They used their annual holiday and raised their own funds to make this mission possible.

Without the generosity of our sponsors, the mission would not have been possible. We hope that with their continuing support we will be able to change the lives of many more patients in the Nanyuki and Mombasa district.

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