

The Role of Podiatry in the Treatment of Leprosy

Catherine Waller, a final year Podiatry student at the University of Brighton, was awarded the Cosyfeet Study Award 2008. The £1000 grant helped to fund her voluntary research trip to Nepal, looking into the role of Podiatry in the treatment of Leprosy. Her report is published [here](#).

In August 2008, after completing the second year of a Bsc (Hons) Podiatry degree at the University of Brighton, I and fellow student Rosalie Rea, travelled to Nepal for a month to volunteer at the Lalgadh Leprosy Hospital in the South Terai area. This amazing experience enabled us to observe and take part in foot surgeries on almost a daily basis. It gave us knowledge, skills and confidence that we can bring to our patient care in the UK, and left us with enormous respect for the leprosy sufferers who we were so privileged to meet.



Our interest had begun when a group of podiatry students from the university visited the hospital two years previously. Following the presentation of their trip I instantly wanted to experience it for myself.

A lot of planning went into our visit, with a great deal of help from the Nepal Leprosy Trust. Although I had some idea of what to expect, I was keen to get there and experience it firsthand.



When we arrived in Kathmandu we were picked up from the airport and taken to a guest house over night. Our excitement to be there was almost overwhelming. The streets were very busy and the traffic didn't seem to have much discipline. The extreme heat also took some getting used to. The next day we took an internal flight to Janakpur, followed by an extremely bumpy ride the rest of the way in a Land Rover.

When we arrived at the hospital it was breathtaking, with lots of trees and flowers everywhere, in total contrast to the dried up rivers and dusty roads we had seen on the journey through the nearby villages. As we arrived on a Friday afternoon, the staff had finished for the day and the hospital would reopen on Sunday. This provided a welcome opportunity to catch-up on sleep, and a chance to look around while it was quiet.

The Lalgadh Hospital was set up and is owned by the Nepal Leprosy Trust. It not only treats those affected by leprosy, but also helps to educate through self care programmes. These programmes inform patients about how to care for their anaesthetic hands and feet, and how to deal with disabilities caused by the disease. The hospital also teaches literacy and safe cooking. Still other projects there are designed to support patients as they integrate back into the community, for when they are cured from leprosy but have to live with physical deformity. These patients may receive a monthly allowance to help them if they are unable to return to work, and the trust has even built houses for former patients.



Leprosy has a great deal of stigma attached to it, and many people have a very outdated view of the disease. My experience in Nepal has given me the chance to pass on the facts, and to try to prevent the unhelpful misconceptions that prevail surrounding the subject.

Around 200,000 people worldwide are being treated for leprosy, but the true figure of leprosy sufferers may be much greater. Many cases go undiagnosed, or sufferers opt to disguise their disease rather than have it treated, so anxious are they to avoid stigma from their community and their family. Such stigma can have brutal consequences, both emotionally and socially.

Many myths surround leprosy, for example that it cannot be cured, and that limbs can simply fall off, but with education, the Nepal Leprosy Trust is trying to stamp out these myths once and for all. Leprosy is curable, and although limbs and digits can be lost, this is through amputation, which can become necessary when nerve damage leads to ulceration, and in turn to infection, both of the soft tissues and in the form of Osteomyelitis.

Leprosy, also known as Hansen's disease, was discovered by Dr G. A. Hansen in 1874, and acquired its name from the bacteria which causes it: *Mycobacterium Leprae*. Under the microscope the bacteria is seen as a slightly curved, rod shaped organism, and if untreated can be found in the nasal passages, mouth and open skin lesions. Hansen had many difficulties identifying the characteristics of the organism as it proved extremely difficult to cultivate synthetically, until it was eventually found in an infected armadillo and was successfully injected into a mouse foot pad (Dept of Health 1987).

Leprosy begins with infection from the bacilli. It is still unclear how exactly leprosy is transmitted from person to person, but it is thought to be linked to close contact with sufferers over many years, and to be caught through coughing and sneezing within close quarters, for example in cramped living conditions. (Skin to skin contact has been ruled out unless open abrasions are present in both parties.) As I saw in Nepalese villages, most of the houses are very close together and are very small, with no real personal space or separate rooms, and in some cases they open onto the street. The conditions certainly exist there for the spread of the disease.



The first signs of leprosy are often anaesthetic patches found on the skin, and the degeneration of certain peripheral nerves, starting primarily with the Ulna nerve.

Table 1 shows the major nerves in the body and how they can be affected by leprosy.

Table 1.

Nerves	Damage caused by Leprosy
Neck nerves	None
Radial	Anaesthesia, causing wrist drop
Ulna	Anaesthesia, causing clawing of the 4 th and 5 th fingers
Medians	Anaesthesia, causing clawing of the 2 nd and 3 rd fingers
Common Peroneal	Anaesthesia, causing foot drop

Posterior Tibial	Anaesthesia of plantar surface, causing clawed toes
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Leprosy has an incubation period of 2-9 years due to the lengthy time it takes for the bacilli to multiply, and the susceptibility of the person affected. People with a strong immune system, who have inhaled or digested M. Leprae, would react to just a few bacilli and would usually kill them off, but a person with low immunity would not react, and the bacilli would carry on multiplying until eventually the infection would manifest itself in the clinical signs of leprosy. A person's level of immunity also determines the degree of severity of the leprosy, and which multi drug therapy (MDT) programme would be used (see table 2).

Drug therapies have been developing since the early 1950s. The drug Dapsone used to be used on its own, but now prolonged treatment is given using MDT. This cures leprosy completely in most cases.

There are, however, reactions that occur after leprosy has been cured, due to dead M. Leprae bacilli remaining in the system. This can cause an autoimmune response in the form of a type 1 or type 2 reactions. Both are hypersensitivity reactions to the antigens released by the killed off M. Leprae bacilli remaining in the body after MDT treatment. They can manifest as pustules, nodules or ulcer type lesions.

Because there are many differences in the types of leprosy, and differences in the drug regimes they require, the diagnosis process within the hospital is rigorous. Classifications derived by researchers Madrid and Ridley-Jopling to aid the diagnosis and treatment of leprosy, are both used. The World Health Organisation (WHO) favours the Madrid scale in their training of health care professionals, as it is easier to follow (Hastings 1985). Both classifications are shown in Table 2.

Table 2.

Madrid	Ridley-Jopling	MDT
1. Indeterminate 2. Tuberculoid	1. Indeterminate 2. Tuberculoid	1. Paucibacillary (Bacterial index (BI) is 1 plus or less at any site)
3. Borderline 4. Lepromatous	3. Border Tuberculoid 4. Borderline	2. Multibacillary (BI is more than 2 at anyone site)

	Borderline 5. Borderline Lepromatous 6. Lepromatous	
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Sunday is the busiest day at the hospital, with many bus loads of outpatients arriving and queuing in the drive way to be seen. They are seen first of all in the main reception area of the hospital, are registered and given a file.

If the patients have suspected leprosy they move into the Outpatient department for diagnosis, which consists of checking for anaesthetic patches and swelling of the major nerves in the arms (Ulna and Radius nerve). A clinical diagnosis will be given at this stage of either Paucibacillary (PB) consisting of 5 or less skin lesions, or Multibacillary (MB) consisting of 6 or more skin lesions.

Once the clinical diagnosis has been made, patients move through to the laboratory for skin slit tests to distinguish the Bacterial Index (BI) and the type of leprosy present. The Bacterial Index shown in table 2 relates to the amount of *M. Leprae* found at any one skin site under the microscope. The skin slit test shows acid fast bacilli and is carried out before treatment, after treatment and once a year for 3-5 years after being cured. Once the BI is established, treatment can be decided upon. If the laboratory test results show the patient has leprosy they will be told by the onsite counsellor, who talks them through the processes of the disease and drugs they will take.

MDT has been in place since the mid eighties and has proved to be a great success over the original treatment of Dapsone alone. The regime and duration of MDT is shown in Table 3.

All of the procedures described above are free to leprosy sufferers, including the drug therapy they require. This also includes any visits to the inpatient department for treatment and observation.

Table 3.

Regime Assignment	Classification	Drug dose and length
1. Paucibacilli	Indeterminate Tuberculoid	1. Rifampicin 600mg monthly for 6 months

		2. Dapsone 100mg daily for 6 months
2. Multibacilli	Borderline Lepromatous	1. Rifampicin 600mg monthly for 12 months 2. Lamprone 300mg monthly for 12 months 3. Lamprone 50mg daily for 24 months 4. Dapsone 100mg daily for 12 months

The drug treatment is collected by patients on a monthly basis from their local health post. The hospital usually only maintains contact with more complex or serious cases.

If a patient is suffering from an ulcer, a reaction or an injury, however, they can come to the hospital and be checked over, and in many cases be admitted to a ward for care and observation. The seven wards at the hospital are constantly full of patients suffering from injuries and disabilities, many of whom have ulcers ranging from simple to complicated.

During my visit, the footwear department was of great interest to me. I spent a lot of time learning about how they make and modify shoes and sandals to accommodate disfigured feet, and to protect anaesthetic feet from any injury. This department was always busy with people waiting for shoes or having prescriptions made up, but I noticed the atmosphere was always relaxed and quite therapeutic to spend time in.

A lot of the tools and machinery used are the same as podiatrists would use in UK orthotic departments, although it seemed a lot more hands on when it came to actually making sandals and leather modifications. A standard sandal would be made from scratch, or a standard trainer (made in Kathmandu for use in Leprosy foot care) adapted by the addition of insoles.

In the second year of my degree I learnt about posterior tibial tendon dysfunction and how it causes foot drop. I found this to be very prevalent in leprosy. The footwear department at the hospital has designed and made a foot drop spring to be worn with a sandal. This assists dorsiflexion very effectively.

During my time in the footwear department I carried out a footwear project in which I gathered information from 38 patient files, and made a table of information on their impairment, their treatment, and which services they received from the hospital. The

information itself I found fascinating, and this was also a useful learning experience in how to gather, record and present research data. See table 4.

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I observed and assisted throughout all of the procedures that took place at the hospital. It was an invaluable and deeply moving learning experience, especially the septic surgery, which was carried out almost every day.

I was able to both observe and take part in operating and stitching up wounds after the removal of infected bone and ulcers which could not heal properly. My confidence has increased dramatically from a clinical point of view. I can carry many of the skills learnt from ulcer care into my third year, and forward into my future career as a podiatrist, particularly in the care of diabetic ulcers.

During my placement I also took part in community visits to villages near the hospital. One of the ladies that we visited was aged 68 and was practically blind. She had facial palsy, a severely disfigured hand and one prosthetic limb, yet she had a very upbeat, positive and feisty attitude to life. A little girl from the village would collect rice and vegetables for her and she would use these to cook for herself. She lived in a little hut with two rooms which was built by the NLT. She received a government pension as well as an allowance from the hospital to ensure she is able to integrate back into the community.

My knowledge about Leprosy and the people who suffer from it has broadened considerably through my experience, and I am very aware of the importance of educating people in all parts of the world, and in all walks of life, about the disease. It is ignorance and misconception that is hindering the process of ridding the disease from the world completely.

My trip was, all-in-all, an amazing experience. I have benefited in so many ways from visiting the hospital and being privileged to spend time with the brave people who are its patients.

The hospital not only diagnoses and cares for leprosy patients, but also general patients with injuries from road traffic accidents and other illnesses. These patients are charged a small fee for their treatment, and this money helps the hospital to keep running. The only other hospital income is from donations and sponsors from around the world.

In discussion with Dr Graham Clugston, who works at the hospital and was formerly a senior figure in the World Health Organisation, there are many things the hospital needs but cannot afford. I asked him for more information as I would like to raise money and awareness for the Nepal Leprosy Trust. He gave me a wish list of the things they need and the costs involved.

After reading this, if anyone would like to donate or find out more information, please visit the trust's website at www.nlt.org.uk. I will also be doing a sky dive for the Nepal Leprosy Trust next summer and will be collecting sponsorship for this. If anyone would like to sponsor me please contact me at caw2@brighton.ac.uk

(Tables 1, 2 and 3 are taken from the World Health Organisation and Multi Drug Therapy training manuals.)