Introduction & Acknowledgements: Leprosy is an ancient disease but today it is completely curable. If diagnosed and treated early, the disease can be cured without leaving any sign on the body of the affected person.

In most countries the diagnosis and treatment of leprosy is part of community health and primary health care activities. This course aims to provide the essential information for health workers about suspecting, diagnosing and treating leprosy. The course includes some tests to reinforce understanding of basic concepts.

This course is based mainly on ILEP Learning Guide 1. Some other materials and photographs from different countries and existing training materials have also been used. In particular we would like to acknowledge the following organizations and their learning materials: Leprosy in Africans, W. K. Jacyk, DAHW & Talmilep; A New Atlas of Leprosy, A. Colin McDougall & Yo Yuasa, SMHF.
Leprosy is a chronic infectious disease caused by leprosy bacillus. It can affect people of any age and sex, including infants.

Though it is an infectious disease, most people will not catch the infection even if they come in contact with it. Not all leprosy patients are infective.

Leprosy can be completely cured without leaving any sign on the body, if diagnosed and treated early.

The first sign of leprosy is usually a skin patch that is usually lighter than the surrounding skin on any part of the body.

In the picture you can see the arm of a person with one big irregular shaped skin patch and many smaller patches, that are lighter than the surrounding skin. Such patches can be due to leprosy.

Skin patches can be caused by many conditions. Therefore you need to confirm if the skin patch is caused by leprosy or not.

To confirm this the first step is to sit with the patient and ask questions about the skin patch. Some of the questions that you can ask are:

- How long do you have the skin patch? How did it start? Has it changed? Leprosy patches usually appear slowly.
- Do the patches itch? Is there pain?
Leprosy patches can be of very different shapes. They can be flat or raised up or like nodules. They are usually lighter than surrounding skin but sometimes they can be darker or redder than surrounding skin.

After asking the questions about the skin patch, you can ask some other questions such as:

- Are there any unusual sensations in hands or feet such as tingling or numbness?
- Have the hands or feet become weaker? Are there problems in holding things or moving with hands or feet?

Next step is **clinical examination**: Tell the person that you need to examine his or her whole body. Do the examination in a place where other persons cannot look in. Examination of women patients should be done by women health workers or in the presence of some relative.

Examine the body from head to toe, to see if there are any other patches. Note the number and sites of the skin patches.
Once you have noted the number and position of skin patches on the body, you need to do the test for sensation in the patch.

**Sensation testing** means checking if the person can feel if something touches the skin patch. Skin patches caused by leprosy have loss of touch sensation.

Before starting the skin testing, explain it to the patient.

Skin testing for sensation needs to be done **properly** by asking the patient to be seated.

Never say that a person has leprosy just because you have seen a patch on their skin that looks like leprosy without first doing a skin test and proper examination.

**Skin sensation testing:**

1. Ask the patient to close eyes so that he or she can not see, where you touch the skin.
2. Lightly touch the skin patch with cotton wool or the tip of a ball pen.
3. Ask the person to point to the place with a finger to show where you have touched.
4. Test the sensation in the patch and in normal looking skin.
If the persons can not feel anything when you touch the patches, they have leprosy.

**Skin testing:**

In this picture, a patient is pointing with her finger to show where she felt the touch sensation.

Do not use sharp objects such as pins or needles for skin testing.

Do not put too much pressure for skin testing with a ball pen. Light touch is required for skin testing.

If the persons can not feel anything when you touch the patches, they have leprosy.
Skin testing:

In this picture, a cotton wool is being used for skin testing. If the sensation in the patch is missing, then the person will be unable to point to the exact point where the skin was tested with cotton wool or tip of a ball pen.

Some times, skin testing may not provide a clear answer, if the person has leprosy. The next step is to test the nerves.
Prosy patches do not itch and usually are not painful.

Testing if the nerves are enlarged

Enlarged nerves can be a sign of leprosy. Two nerves that are commonly enlarged, can be tested quite easily. These are ulnar nerve near the elbow and the peroneal nerve below the knee, as shown in the picture.

Next you will learn how to feel these two nerves.

**Testing Ulnar nerve for enlargement**

Ulnar nerve is at the back of elbow. Feel it in both sides. It can be enlarged in one or both sides in leprosy. You can practice on your own elbow to learn how a normal nerve feels.

Procedure: Hold the person's hand as for shaking hands. With other hand feel around the back of person's elbow, from the outside of the arm to the inside.

Ulnar nerve lies between two points of bone, on the inner side of elbow. Touch it with the tip of your fingers. Do not press too hard.

If the nerve in one hand feels obviously larger than the other side, this means that it enlarged.
Testing Peroneal nerve for enlargement: Ask the person to sit in a chair and then kneel down in front of the person.

With your right hand, feel for the nerve on the outside of left leg, just below the knee. Palpate till you feel the rounded head of fibula bone, the nerve is just below it, curving around it.

Use your left hand to feel the nerve on right side in the same way.

If the nerve feels obviously thicker compared to other side, it is enlarged.

Testing nerves for enlargement

If the nerves are enlarged, the person may have leprosy. You can look for other signs to confirm the diagnosis.

Some times nerves may also be tender, that means that they are painful when you touch them. If nerves are tender the patient requires special treatment urgently. Read about treatment of reactions, to learn about the special treatment for tender nerves in leprosy. If possible refer the patient to leprosy services urgently.

Next step is to examine the hands and feet for nerve damage.
Four points on the hand that should be tested for loss of feeling with the tip of ball pen

Eximining hands for nerve damage

Nerve damage can lead to loss of feelings in hands and feet. Loss of feeling is rare in other diseases, so it can help you to confirm the diagnosis of leprosy.

Explain what you are going to the person. Ask them to place their hand on table in front of you with palm upwards and close their eyes.

The testing for loss of feeling in the hands is done in the same way as for skin sensation test for a patch of leprosy, but for this use the tip of ball pen and not the cotton wool.

The testing should be done at the four points shown in the picture.

Examining hands for nerve damage

As the skin of hands is thicker, you need to press gently with tip of ball pen to make a small depression and ask the person to point to the place you have touched.

Test loss of feeling on both hands.

Loss of feeling at any of the four points or all of them means that the person has loss of feelings in hands and can confirm the diagnosis of leprosy.

Next we look at examining the feet for loss of sensation.
Examining feet for nerve damage

As the skin of feet is thicker, you need to press gently with tip of ball pen to make a small depression and ask the person to point to the place you have touched.

Like for the hands, test loss of feeling in four specific points as shown in the picture.

Examining feet for nerve damage

Loss of feelings in the feet should also be tested with a ball pen and not with cotton wool.

Support person’s foot with one hand and test with the ball pen in the other hand. Hold the pen straight, press it gently to make a small depression but not too hard.

Ask the person to point to the place you have just touched.

If the person has lost feeling in their hand or foot, this may mean that they have leprosy.
For doing skin smear you need a laboratory and trained laboratory technician

**Skin smear for confirming leprosy**

If you have access to a laboratory, it can be possible to do a skin smear test to look for leprosy bacteria. If a laboratory can do sputum smears for TB, they should be able to do the skin smear for leprosy.

Skin smear can help to confirm the diagnosis of leprosy in cases where you are not sure about leprosy on clinical examination.

Among the online courses, you can learn more about doing skin smears for leprosy.

If you do not have access to a laboratory, leprosy can be diagnosed in most cases on clinical examination as explained earlier.

**Summary - What to do if a person presents with a skin patch?**

1. Ask questions to learn more about the patch and other problems
2. Test feeling in the skin patch
3. Feel if nerves are enlarged.
4. Test for loss of feeling in hands and feet
5. If possible, ask for a skin smear examination.
Leprosy is confirmed if a person shows any one or more of the following three signs:

1. Pale or reddish patches on the skin, with definite loss of sensation.

2. Involvement of the nerves, shown by nerve enlargement and loss of feeling in hands or feet.

3. The presence of leprosy bacilli in skin smear examination.

Once the diagnosis of leprosy is confirmed, you have to decide about the treatment.

Treatment of leprosy: For treatment purpose, leprosy is classified in two main groups:

- More serious kind of leprosy requiring treatment for 12 months called **Multibacillary leprosy (or MB leprosy)** with more than five skin patches on the body
- Less serious kind of leprosy requiring treatment for six months called **Paucibacillary leprosy (or PB leprosy)** with five or less skin patches on the body
Skin smear positive - always treat as MB

Skin smear negative - count the number of lesions for deciding if MB or PB

Treatment of leprosy - if skin smear is done, classify the patient on the basis of results of skin smear.

If a skin smear has been done and it is positive for leprosy bacilli, the person should be treated as MB leprosy for 12 months, even if number of patches is less than five.

If the skin smear is negative for leprosy bacilli, and the number of patches is less than five, the person should be treated as PB leprosy for six months.

Therefore, if skin smear is positive, the person is always considered MB. If it is negative, then count the number of lesions and if less than five, treat as PB and if more than five, treat as MB.
More than 5 lesions - treat as MB

Blister pack for MB leprosy treatment - top part for monthly dose, bottom part for monthly daily dose. MB patients must take 12 of such blisters within maximum 18 months

Treatment of MB leprosy in Adults
(persons above 15 years)

A MB patient has to take 12 months treatment. The treatment consists of some drugs to be taken once a month and other drugs to be taken daily.

The 3 drugs to be taken once a month are Rifampicine 600 mg, Clofazimine 300 mg and Dapsone 100 mg. If possible these 3 drugs should be given under the supervision of a health worker.

The 2 drugs to be taken daily are Dapsone 100 mg and Clofazimine 50 mg.

The drugs are provided through WHO in convenient blister packs, as shown in the picture. The medicines shown in the top of blister are for monthly dose and the remaining are for daily dose.

If a person does not take drugs regularly make sure that the whole treatment is completed in maximum of 18 months. If this is not possible, whole treatment may need to be repeated.
A PB patient has to take 6 months treatment. The treatment consists of some drugs to be taken once a month and other drugs to be taken daily.

The 2 drugs to be taken once a month are Rifampicin 600 mg and Dapsone 100 mg. If possible these 2 drugs should be given under the supervision of a health worker.

The 1 drug to be taken daily is Dapsone 100 mg.

The drugs are provided through WHO in convenient blister packs, as shown in the picture. The medicines shown in the top of blister are for monthly dose and the remaining are for daily dose.

If a person does not take drugs regularly make sure that the whole treatment is completed in maximum of 9 months. If this is not possible, whole treatment may need to be repeated.
Treatment of MB leprosy in children (persons below 15 years)

The duration of treatment in children is same as in adults. This means that children with MB leprosy should take 12 months treatment.

The doses are different according to age:

**Below 10 years**: Once a month 3 drugs - Rifampicine 300 mg, Dapsone 25 mg and Clofazimine 100 mg. Daily dose Dapsone 25 mg and twice a week, Clofazimine 50 mg.

**10 - 14 years**: Once a month 3 drugs - Rifampicine 450 mg, Dapsone 50 mg and Clofazimine 150 mg. Daily dose Dapsone 50 mg and on every alternate day, Clofazimine 50 mg.
Children with five or less lesions - PB leprosy to be treated for 6 months (dose depends on age)

**Treatment of PB leprosy in children (persons below 15 years)**

The duration of treatment in children is same as in adults. This means that children with PB leprosy should take 6 months treatment.

The doses are different according to age:

**Below 10 years**: Once a month 2 drugs - Rifampicine 300 mg, Dapsone 25 mg. Daily dose Dapsone 25 mg.

**10 - 14 years**: Once a month 2 drugs - Rifampicine 450 mg, Dapsone 50 mg. Daily dose Dapsone 50 mg.
Congratulations for completing the online course on Essentials of leprosy - diagnosis and treatment, based on ILEP learning guide 1.

You can download the full ILEP learning guide from the ILEP website.

We shall appreciate receiving your comments, suggestions and criticisms about the course. This will help us to improve the course. Please send an email to sunil.deepak@aifo.it