A Research Strategy to Develop New Tools to Prevent Leprosy, Improve Patient Care and Reduce the Consequences of Leprosy

Five Year Leprosy Research Strategy

Approved by ILEP Board October 2011

Coordinator: Prof. WCS Smith
Summary: A Research Strategy to Develop New Tools to Prevent Leprosy, Improve Patient Care and Reduce the consequences of Leprosy

The Importance
The Global Leprosy Programme has had a dramatic impact on the prevalence of registered cases of leprosy over the last 20 years through the implementation of short course multi-drug therapy (MDT) treatment. However, further advances in the field of leprosy are hindered by the lack of new tools to address the challenge of apparent persistence in transmission and incidence, and the long-term consequences of the disease.

The Strategy
This strategy was developed by the Technical Commission of ILEP to provide a framework to prioritise research, to identify the steps needed to develop and implement new tools, and to identify funding gaps. The strategy focuses on applied research, either technology transfer or research to evaluate effectiveness of interventions where there is already proof of principle. More basic research and proof of principle are important but are outside the scope of this five year strategy.

The Principles
The strategy is composed of eight themes, but research in these themes should be fully integrated mainly through the use of common field sites. The integration of research with other Neglected Tropical Diseases and diseases of poverty, and multidisciplinary approaches are strongly advocated. Millennium Development Goal (MDG) 6 targets the reduction in the burden of disease but tackling poverty (MDG1), education (MDG2), gender equality (MDG3), child health (MDG4), maternal health (MDG5) and partnerships (MDG8) are all important for leprosy.

The Logistics
This strategy is based on the achievement of deliverables within five years at an estimated cost of £24 million. A number of the projects are already in progress, some are developed and requiring funding, while other areas are gaps representing urgent priorities. The key components are presented in the table:

<table>
<thead>
<tr>
<th>Research Themes</th>
<th>Technology Transfer</th>
<th>Evaluate Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prevention</td>
<td>Roll out chemoprophylaxis</td>
<td>Chemoprophylaxis + BCG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assess new TB vaccines</td>
</tr>
<tr>
<td>2. Early Detection</td>
<td>Prevent delayed detection</td>
<td>Test neuro, immune and molecular diagnostics</td>
</tr>
<tr>
<td>3. Chemotherapy</td>
<td>Improve adherence</td>
<td>U-MDT and new regimens</td>
</tr>
<tr>
<td>4. NFI and Reactions</td>
<td>Use of monofilaments</td>
<td>Early detection, optimal steroids, ENL treatment</td>
</tr>
<tr>
<td>5. Prevention of Disability</td>
<td>National programmes, integration with ‘Legs to stand on’</td>
<td>Novel treatments for plantar ulcers</td>
</tr>
<tr>
<td>6. Community Based Rehab.</td>
<td>Increase CBR participation</td>
<td>Test CBR guidelines</td>
</tr>
<tr>
<td>7. Stigma Reduction and Advocacy</td>
<td>Implementation of proven interventions</td>
<td>Test interventions to reduce stigma</td>
</tr>
<tr>
<td></td>
<td>Translate UN Guidelines</td>
<td>Test Patients Charter</td>
</tr>
<tr>
<td>8. Health/Social Care Integration</td>
<td>Integration with Primary Care, CBR and NTDs – in low endemic settings</td>
<td></td>
</tr>
</tbody>
</table>

RED – funding required  GREEN – funded and in progress
A Research Strategy to Develop New Tools to Prevent Leprosy, Improve Patient Care and Reduce the Consequences of Leprosy

The Importance

The Global Leprosy Programme has had a dramatic impact on the prevalence of registered cases of leprosy over the last 20 years through the implementation of short course MDT treatment. However, further advances in the field of leprosy are hindered by the lack of new tools to address the problems of continuing new case detection and the long-term consequences of the disease. The challenge is to develop a five year research programme to tackle the big issues in leprosy that will have an impact on transmission and lead to reduction in new cases of leprosy, earlier diagnosis of leprosy before disabilities develop, better adherence with chemotherapy, chemotherapy that is more acceptable, has less side effects and reduces the risk of drug resistance, better diagnosis and treatment of reactions to minimise disability, increased coverage of prevention of disability to minimise impairments, better access to rehabilitation and interventions to reduce stigma and discrimination against those affected by leprosy.

The development of new strategies to address the challenge of leprosy and to respond to emerging threats to the Global Leprosy Programme is hindered by the lack of research (3). The current global strategy is based on technologies that are more than 25 years old. There is an urgent need for research to develop innovations that could lead to the eradication of leprosy.

The Strategy

Our co-ordinated approaches to leprosy research in the last decade have worked well and been fruitful – for example INFIR\(^1\), IDEAL\(^2\), and drug-resistance surveillance. However, these collaborations have been largely limited by funding constraints, and have focused on one topic. The aim of this Research Strategy is to pull together the whole programme of research based on multi-disciplinary working so that we can share methods, research sites and avoid duplication. It needs to be based on strong North-South partnerships and provide new evidence of effective interventions that can be implemented across all regions and contexts. It is also important that leprosy research becomes more integrated with research in other Neglected Tropical Diseases. This is important as a requirement of many funding streams, but there are other advantages in terms of knowledge exchange, access to technology, and synergies in the conduct of field research. Millennium Development Goal (MDG) 6 targets the reduction in the burden of disease but tackling poverty (MDG1), education (MDG2), gender equality (MDG3), child health (MDG4), maternal health (MDG5) and partnerships (MDG8) and all important for leprosy.

The Principles

The strategy is composed of eight themes, but research in these themes should be fully integrated through the use of common field sites, shared methods and co-ordinated by a Steering Group. The integration of research with other Neglected Tropical Diseases and diseases of poverty, and multi-disciplinary approaches is

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\(^1\) The ILEP Nerve Function Impairment in Reaction
\(^2\) Initiative for Diagnostic and Epidemiological Assays for Leprosy
The leprosy research themes are as follows:

1. Prevention of leprosy
2. Early detection
3. Chemotherapy
4. Nerve function impairment and reactions
5. Prevention of disability
6. Community-Based Rehabilitation
7. Stigma reduction and advocacy
8. Health and social care integration

The Logistics

This strategy is based on the achievement of deliverables within five years. A number of the projects are already in progress, some are developed and requiring funding, while other areas are gaps representing urgent priorities. The deliverables have been defined as **technology transfer** where the evidence of effectiveness exists, but roll out to scale is required including work on feasibility, acceptability and cost-effectiveness; and deliverables where **evaluation of the effectiveness** of interventions is needed. Research which is further upstream including early drug development, vaccine development and more basic research where patient benefit is unlikely to be achieved within five years are clearly important, but are outside the scope of this research strategy.

The case for each part of the strategy is presented in a standard way in the appendix by describing the problem, its importance, the objective of the work programme, the activities, relationship to other NTDs or MDGs, timescale, the deliverable, potential key investigators, the status of the research including work ongoing and estimated costs.

The Process

The initial work on the Strategy has been based on reviewing current recommendations (1, 2) for research in leprosy and the most recent review of research evidence (3). This current version of the Strategy has been edited following a period of consultation, taking account of comments and criticisms from individuals and ILEP Member associations. The Strategy was presented and discussed at the ITC and ILEP Multilateral/Cooperation Meetings in London in October, 2011 and subsequently approved by the ILEP Board on 14th October, 2011.

References


## Appendix: Research Theme Cases

### 1. Prevention

<table>
<thead>
<tr>
<th>Roll out of chemoprophylaxis</th>
<th>Technology transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Single dose rifampicin reduces new cases in close contacts by more than 50% but it is not routinely implemented</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>30% of new cases are in close contacts so implementation could reduce new cases</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Develop methods to achieve 80% coverage of chemoprophylaxis in close contacts</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Field studies of acceptability, logistics, cost-effectiveness of chemoprophylaxis</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Chemoprophylaxis is a strategy used in a number of other NTDs</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Enhanced contact surveillance and methods to reduce new cases in contacts through roll out chemoprophylaxis</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, ILEP – Richardus, Smith, Saunderson</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Not funded</td>
</tr>
<tr>
<td><strong>Estimated costs</strong></td>
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<table>
<thead>
<tr>
<th>Test chemoprophylaxis + BCG</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Chemoprophylaxis only effective in first 2 years</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Chemoprophylaxis + BCG could provide greater and longer protection for close contacts</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Evaluate the effectiveness of chemoprophylaxis +BCG</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Clinical trial</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Both methods used in other NTDs</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Evidence to enhance and sustain reduction in new cases in contacts</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>Richardus</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Funded (Maltalep) – in progress</td>
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<td><strong>Estimated costs</strong></td>
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<table>
<thead>
<tr>
<th>Test new TB vaccines</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>New TB vaccines to replace BCG are under trial</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Need to ensure the TB vaccine are effective against leprosy too</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Evaluate the effectiveness of TB vaccines against leprosy</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Add on to existing studies</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Relevant to TB</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>New vaccines effective against leprosy</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>IDRI/ALM</td>
</tr>
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<td><strong>Status</strong></td>
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## 2. Early detection

<table>
<thead>
<tr>
<th>Prevent delay in diagnosis</th>
<th>Technology transfer</th>
</tr>
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<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>A proportion of patients have visible disability at the time of diagnosis</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>The presence of irreversible disability at the time of diagnosis has long term consequences</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Use existing methods to identify barriers to delayed diagnosis and implement solutions in different settings</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Interviews with patients with disability at diagnosis to identify patient and health system problems and develop solutions</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Delayed diagnosis is a common issues for all NTDs</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Rapid methods to reduce disability in new cases by identifying and solving problems of delayed diagnosis</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, ILEP, Smith, Nicholls</td>
</tr>
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<td><strong>Status</strong></td>
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<tr>
<td><strong>Estimated costs</strong></td>
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<table>
<thead>
<tr>
<th>Test neurological, immunological and molecular diagnostics</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Early diagnosis is currently based on clinical examination – there are no reliable diagnostic tests for early leprosy</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Early diagnosis and treatment will prevent the occurrence of disability due to leprosy – potential link to chemoprophylaxis</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Develop acceptable, feasible and valid diagnostic tests</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Field studies to evaluate novel neurological, immunological and molecular methods of early diagnosis and measures of exposure</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Early diagnostic methods could be applied for other NTDs – relation to tuberculosis and Buruli ulcer</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>New, rapid, diagnostic test and test of exposure to M.leprae for early detection and targeting prophylaxis</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>IDEAL and INFIR groups</td>
</tr>
<tr>
<td></td>
<td>Potential collaboration with TDR and FIND, Geneva</td>
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### 3. Improved Chemotherapy

<table>
<thead>
<tr>
<th>Improve adherence with MDT</th>
<th>Technology transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>The information on compliance with MDT is based on distribution of MDT rather than completion of treatment – reports suggest that adherence is much lower</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>A high level of adherence to MDT is required to achieve a low relapse rate and prevent emergence of drug resistance</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Assess adherence and apply evidence from other treatment programmes to improve treatment completion rates</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Patient interviews, random inspection and urine testing to assess adherence followed by interventions to improve adherence</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Common problem in NTD treatments</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Reduced risk of relapse and drug resistance by improved adherence with MDT</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, ILEP</td>
</tr>
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<td><strong>Status</strong></td>
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<table>
<thead>
<tr>
<th>U-MDT Trial</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>The current MDT regimen requires classification of patients and 4 different regimens to be distributed</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Classification is error prone and 4 regimens leads to both non-availability and drug wastage</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Test the effectiveness of a single regimen for all patients</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Trial</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Specific to leprosy</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Simplified, single regimen for all patients</td>
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<tr>
<td><strong>Key investigators</strong></td>
<td>TDR, WHO</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>On going in India and China</td>
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<td>TDR funded</td>
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<table>
<thead>
<tr>
<th>New MDT Regimens</th>
<th>Evaluate effectiveness</th>
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<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Adverse effects of current MDT, dapsone resistance is common, threat of rifampicin resistance</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Need proven, alternative regimens</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Develop new combinations of existing drugs (TB)</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>RCT of new combinations of existing drugs</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Common issues with tuberculosis</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 – 10 years</td>
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<tr>
<td><strong>Deliverable</strong></td>
<td>Effective alternative to MDT to combat resistance</td>
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<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, TDR</td>
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<tr>
<td><strong>Status</strong></td>
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<td><strong>Estimated costs</strong></td>
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### 4. Prevention and treatment of reactions and NFI

<table>
<thead>
<tr>
<th><strong>Use of monofilaments</strong></th>
<th><strong>Technology transfer</strong></th>
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<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>New nerve function impairment is detected too late to effectively treat</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Irreversible nerve function impairment leads to life-long, progressive disability</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Test effectiveness of providing all patients and field staff with monofilaments with education</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Series of pilot studies and roll out to scale</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Shared technology with foot care in diabetes</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Reduce disability by improved early diagnosis of nerve impairment</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>ILEP</td>
</tr>
<tr>
<td><strong>Status</strong></td>
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<table>
<thead>
<tr>
<th><strong>Early detection of NFI/reactions</strong></th>
<th><strong>Evaluate effectiveness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Nerve function impairment is detected late and optimal steroid treatment is uncertain</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Irreversible nerve function impairment leads to life-long, progressive disability</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Test new early nerve impairment detection, different steroid regimens and 2nd line treatments</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Clinical trials</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Specific to leprosy</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Improved early nerve impairment detection and optimal treatment</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
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<table>
<thead>
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<th><strong>Improved treatment for ENL Reactions</strong></th>
<th><strong>Evaluate effectiveness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>ENL reaction is a common complication in MB patients with high bacteriological indices</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>ENL is a widespread, chronic complication affecting quality of life</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Develop improved treatment</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Clinical trials</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Specific to leprosy</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Reduce morbidity by better ENL treatment</td>
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<tr>
<td><strong>Key investigators</strong></td>
<td>Lockwood, Sundar Rao</td>
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### 5. Prevention of disability

<table>
<thead>
<tr>
<th>Integration of national programmes (Legs to stand on)</th>
<th>Technology transfer</th>
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<tbody>
<tr>
<td>Problem</td>
<td>Prevention of disability activities are effective but coverage is very limited</td>
</tr>
<tr>
<td>Importance</td>
<td>Chronic, progressive disabilities are a problem for more than 3 million people after MDT completion</td>
</tr>
<tr>
<td>Objective</td>
<td>Increase coverage of POD activities integrated with other lower limb care in global programme</td>
</tr>
<tr>
<td>Activities</td>
<td>Implementation and integration of POD activities in ‘Legs to Stand On’ network</td>
</tr>
<tr>
<td>Relationship to NTDs/MDGs</td>
<td>Integration with lymphatic filariasis, Buruli ulcer and other conditions such as diabetes</td>
</tr>
<tr>
<td>Timescale</td>
<td>5 years</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Better access to effective, integrated lower limb care for people affected by leprosy</td>
</tr>
<tr>
<td>Key investigators</td>
<td>ILEP, Cross, Post, NTD Collaborators</td>
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<tr>
<td>Status</td>
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<table>
<thead>
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<th>Test novel treatment for plantar ulcers</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>Plantar ulcers are a common and chronic problem for many patients after completing MDT</td>
</tr>
<tr>
<td>Importance</td>
<td>Plantar ulcers cause morbidity for people affected, use a high proportion of clinical service and surgery, and require specialised footwear</td>
</tr>
<tr>
<td>Objective</td>
<td>Test new treatments for plantar ulcers</td>
</tr>
<tr>
<td>Activities</td>
<td>Clinical trials</td>
</tr>
<tr>
<td>Relationship to NTDs/MDGs</td>
<td>Relate to other lower limb care</td>
</tr>
<tr>
<td>Timescale</td>
<td>5 years</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Improved quality of life and reduced morbidity through better management of plantar ulcers</td>
</tr>
<tr>
<td>Key investigators</td>
<td>ILEP</td>
</tr>
<tr>
<td>Status</td>
<td>Not funded</td>
</tr>
<tr>
<td>Estimated costs</td>
<td>£500,000</td>
</tr>
</tbody>
</table>
### 6. Community-based rehabilitation

<table>
<thead>
<tr>
<th>Increase participation in CBR</th>
<th>Technology transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>A proportion of people affected by leprosy need rehabilitation but have limited access</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Rehabilitation for some people affected by leprosy is necessary to improve quality of life and participation in society</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Increase access and participation in CBR</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Activities to promote participation of people affected by leprosy in CBR programmes</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Common issues with other disabling conditions</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Improved quality of life by Increased participation of people affected by leprosy in CBR</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, ILEP, IDEA, IDDC</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Not funded</td>
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<tr>
<td><strong>Estimated costs</strong></td>
<td>£500,000</td>
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<table>
<thead>
<tr>
<th>Test CBR guidelines</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Comprehensive guidelines for CBR have been published in 2011</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Access to effective CBR is important for a proportion of people affected by leprosy to improve their physical and social functions</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Test effectiveness of CBR guidelines in field</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Implementation of guidelines in pilot studies</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Relates to all disabling conditions</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Evidence of effectiveness of CBR guidelines</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>WHO, UN, ILEP, IDDC</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Not funded</td>
</tr>
<tr>
<td><strong>Estimated costs</strong></td>
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</table>
7. Stigma reduction and advocacy

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Technology transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>Stigma associated with leprosy affects the physical and social function of those affected</td>
</tr>
<tr>
<td>Importance</td>
<td>Stigma is a major constraint for all those affected by leprosy and their families</td>
</tr>
<tr>
<td>Objective</td>
<td>Application of community activities to change attitudes to leprosy</td>
</tr>
<tr>
<td>Activities</td>
<td>Implementation of interventions proven to be effective in reducing stigma</td>
</tr>
<tr>
<td>Relationship to NTDs/MDGs</td>
<td>Stigma is relevant to many NTDs and HIV/AIDS</td>
</tr>
<tr>
<td>Timescale</td>
<td>5 years</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Improve social participation through reduced stigma associated with leprosy</td>
</tr>
<tr>
<td>Key investigators</td>
<td>ILEP, IDEA</td>
</tr>
<tr>
<td>Status</td>
<td>Not funded</td>
</tr>
<tr>
<td>Estimated costs</td>
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</table>

<table>
<thead>
<tr>
<th>Test interventions to reduce stigma</th>
<th>Evaluate effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>Stigma associated with leprosy affects the physical and social function of those affected</td>
</tr>
<tr>
<td>Importance</td>
<td>Stigma is a major constraint for all those affected by leprosy and their families</td>
</tr>
<tr>
<td>Objective</td>
<td>Develop and test interventions to reduce stigma in different country settings</td>
</tr>
<tr>
<td>Activities</td>
<td>Intervention trials</td>
</tr>
<tr>
<td>Relationship to NTDs/MDGs</td>
<td>Stigma is relevant to many NTDs and HIV/AIDS</td>
</tr>
<tr>
<td>Timescale</td>
<td>5 years</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Tools proven to reduce stigma to increase quality of life in different country settings</td>
</tr>
<tr>
<td>Key investigators</td>
<td>ILEP, IDEA, van Brakel</td>
</tr>
<tr>
<td>Status</td>
<td>Partially funded</td>
</tr>
<tr>
<td>Estimated costs</td>
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<table>
<thead>
<tr>
<th>Translate and disseminate UN Guidelines</th>
<th>Technology transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>There are laws and regulations in many countries that discriminate against leprosy</td>
</tr>
<tr>
<td>Importance</td>
<td>This is a human rights issue for leprosy</td>
</tr>
<tr>
<td>Objective</td>
<td>Advocate for change based on new UN guidelines on leprosy discrimination</td>
</tr>
<tr>
<td>Activities</td>
<td>Translate, disseminate and advocacy</td>
</tr>
<tr>
<td>Relationship to NTDs/MDGs</td>
<td>Discrimination applies to all NTDs and HIV</td>
</tr>
<tr>
<td>Timescale</td>
<td>3 years</td>
</tr>
<tr>
<td>Deliverable</td>
<td>Change in legislation and regulation on discrimination to improve social participation</td>
</tr>
<tr>
<td>Key investigators</td>
<td>ILEP, IDEA, UN</td>
</tr>
<tr>
<td>Status</td>
<td>Not funded</td>
</tr>
<tr>
<td>Estimated costs</td>
<td>£500,000</td>
</tr>
</tbody>
</table>
### Test Charter approach

<table>
<thead>
<tr>
<th><strong>Problem</strong></th>
<th>People affected by leprosy are discriminated against and are not aware of their human rights</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Importance</strong></td>
<td>Loss of rights of people affected by leprosy affects individuals and society</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Develop and promote a charter for people affected by leprosy</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Develop charter based on those available for other conditions and test this with people and society in a number of countries</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Patient charters are relevant to all NTDs</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Empowerment of those affected by leprosy through a Charter of rights for people affected by leprosy</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>ILEP, IDEA, UN</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Not funded</td>
</tr>
<tr>
<td><strong>Estimated costs</strong></td>
<td>£500,000</td>
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</tbody>
</table>

### 8. Health/Social Care Integration

<table>
<thead>
<tr>
<th><strong>Integration of health and social care</strong></th>
<th><strong>Technology transfer</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td>Leprosy programme on their own are unsustainable at low levels of endemicity</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>Leprosy must be integrated with other health and social care programmes to be cost-effective and sustainable</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Implement leprosy services integrated with primary health care, dermatology, CBR and NTD programmes</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>Develop links with primary care, dermatology, CBR and NTD programmes to ensure that leprosy services are fully included</td>
</tr>
<tr>
<td><strong>Relationship to NTDs/MDGs</strong></td>
<td>Closely linked with all NTDs</td>
</tr>
<tr>
<td><strong>Timescale</strong></td>
<td>5 years</td>
</tr>
<tr>
<td><strong>Deliverable</strong></td>
<td>Delivery of leprosy care in low endemic settings with primary health care, dermatology, CBR and NTD programmes</td>
</tr>
<tr>
<td><strong>Key investigators</strong></td>
<td>Government NPM, ILEP, NTD, dermatologists, and CBR programmes and other NGOs</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td>Not funded</td>
</tr>
<tr>
<td><strong>Estimated costs</strong></td>
<td>£500,000</td>
</tr>
</tbody>
</table>