Integrated morbidity management for lymphatic filariasis and podoconiosis, Ethiopia

Article (Accepted Version)


This version is available from Sussex Research Online: http://sro.sussex.ac.uk/id/eprint/69211/

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher's version. Please see the URL above for details on accessing the published version.

Copyright and reuse:
Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

http://sro.sussex.ac.uk
Abstract

**Problem** Lymphatic filariasis and podoconiosis are the major causes of tropical lymphoedema in Ethiopia. The diseases require the similar provision of care, but in 2012 the Ethiopian health system did not integrate the morbidity management.

**Approach** To establish health-care services for integrated lymphoedema morbidity management, the health ministry and partners used existing governmental structures. Integrated disease mapping was done in 659 out of the 817 districts, to identify endemic districts. To inform resource allocation, trained health extension workers did integrated disease burden assessments in 56 districts with a high clinical burden. To ensure standard provision of care, the health ministry developed an integrated lymphatic filariasis and podoconiosis morbidity management guideline, containing a treatment algorithm and a defined package of care. Experienced professionals on lymphoedema management trained government-employed health workers on integrated morbidity management. To monitor the integration, an indicator on the number of lymphoedema-treated patients was included in the national health management information system.

**Local setting** In 2014, only 24% (87) of the 363 health facilities surveyed provided lymphatic filariasis services, while 12% (44) provided podoconiosis services.
Relevant changes To date, 542 health workers from 53 health centres in 24 districts have been trained on integrated morbidity management. Between July 2013 and June 2016, the national health management information system has recorded 46 487 treated patients from 189 districts.

Lessons learnt In Ethiopia, an integrated approach for lymphatic filariasis and podoconiosis morbidity management was feasible. The processes used could be applicable in other settings where these diseases are co-endemic.

Introduction
Lymphatic filariasis and podoconiosis are major causes of lymphoedema in tropical areas.\(^1\) Lymphatic filariasis is a mosquito-borne parasitic infection, while podoconiosis is an inflammatory disease caused by prolonged contact with irritant soil minerals. However, both diseases require the similar provision of health care.

People with lymphoedema caused by lymphatic filariasis need access to care throughout their lives\(^2\) and the World Health Organization (WHO) has suggested a minimum package of care for managing morbidity and preventing disability. The package includes: providing antifilarial medicine, either through mass drug administration or individual treatment; hydrocele surgery; preventing and treating episodes of adenolymphangitis; and managing the lymphoedema.\(^3\)

Podoconiosis causes lymphoedema of the lower limb and acute pain.\(^4\) Early stages of the disease are reversible, but more advanced stages need lifelong treatment. The main prevention methods are use of footwear, regular foot hygiene and floor coverings, whereas already affected people receive management of their lymphoedema-related morbidity. The management includes daily foot hygiene using soap, water and antiseptics, emollients to restore skin function, elevation of the legs, exercise, use of socks and shoes, and if needed bandaging and removal of nodules.\(^4\)

Following the Global Programme to Eliminate Lymphatic Filariasis – which aims to eliminate lymphatic filariasis as a public health problem by 2020\(^5,6\) – the Second edition of national neglected tropical diseases master plan of Ethiopia for 2016–2020 targets lymphatic filariasis and podoconiosis for elimination by 2020 and 2030, respectively.\(^7\) The health ministry has taken an integrated approach for care provision, because of the unfeasibility to differentiate the two diseases at primary health-care facilities and the similarity in health-care services provided.
Here we describe the implementation of the integrated approach in to the Ethiopian health system.

Local setting
In Ethiopia, lymphatic filariasis is endemic in 70 districts, with over 5.6 million people at risk of acquiring the disease;\(^7\) whereas podoconiosis is endemic in 345 districts, with 34.9 million people at risk.\(^7,^8\) Twenty-nine of these districts are co-endemic.

In 2014, 24\% (87) of the 363 health facilities surveyed provided lymphatic filariasis services, while 12\% (44) provided podoconiosis services.\(^9\) In the endemic districts, 42 nongovernmental partners-supported centres provide treatment for lymphatic filariasis and podoconiosis. These treatment centres consist of experienced staff members and act as training centres for health workers on lymphoedema morbidity management.

Approach

**Mapping and burden assessment**
In 2013, the mapping teams for the two diseases joined together to co-map the disease distribution in 659 out of Ethiopia’s 817 districts. Details on the integrated mapping are described elsewhere.\(^10\)

To estimate the allocation of resource needed for morbidity management and disability prevention, implementing partners did a burden assessment to know the exact number of people with lymphoedema and/or hydrocele in the endemic districts. In 2015, a pilot of an integrated burden assessment in 20 co-endemic districts was done to inform the development of a national burden assessment protocol at district-level in 2016. The protocol describes the standardized design and implementation procedure.

Before the assessment started, health professionals from the partners-supported treatment centres provided a one-day classroom training for health extension workers at central place in each district. The training entailed how to identify people with lymphoedema and hydrocele – by using pictures on different stages of lymphoedema and hydrocele, signs and symptoms – how to treat and prevent lymphoedema, and how to use the patients questionnaire for the burden assessment. The participants received travel reimbursement.
The health extensions workers informed the health development army about the assessment, who passed the information to the community by visiting each household. Subsequently, the health extension workers visited each household to identify people with lymphoedema or hydroceles. They provided information on morbidity management, self-care and where to seek care to the identified people. If nobody was home at the time of visit, they left a message to the neighbours that they will come by the end of the day or the next morning. They followed up twice and if nobody could be reached, they reported the household as absent. To assess if lymphoedema was correctly identified, health extension workers were instructed in some selected districts to refer identified people for verification by health officers or nurses at central locations, usually health centres, on a specified day.

Between 2015 and 2016 the burden assessment identified 44,039 lymphoedema and 1574 hydrocele cases in 56 districts, of which 25 districts were co-endemic.

**Joint technical working group**

The health ministry organizes technical working groups to provide evidence-based technical and implementation inputs to health programmes. The groups, which meet monthly, include health ministry staff, members of research institutes, implementing partners, international organizations and donors. To aid the implementation of the integrated approach and enable a transparent discussion, the ministry combined the lymphatic filariasis and podoconiosis technical working groups. The ministry also assigned a focal person for the two diseases, whose role is to plan, coordinate and oversee the implementation of the interventions. In addition, this person is responsible for organizing and to lead the technical working group meetings.

**Guideline development**

To develop an integrated morbidity management and disability prevention guideline, which would facilitate the streamlining of the integrated morbidity management into the general health system, the health ministry hosted workshops with the joint technical working group in 2015.\(^1\)\(^1\) To identify the minimum health service package, the group, with support from experts in the field, reviewed national and global experiences on morbidity management.\(^3\) The new guideline contains a simple algorithm on clinical assessment, treatment and referral needs, and a defined package.\(^1\)\(^1\) The package includes patient counselling and teaching the self-care routine, foot hygiene, skin care with ointment or emollients, leg elevation and exercise, footwear, wound care
and management of adenolymphangitis and, if needed, bandaging for people with podoconiosis. Based on the severity of disease, health workers encourage newly diagnosed patients, to either report to the clinic or be visited by a health worker in their homes once a month for the first three months. During follow-up visits, health workers monitor the lymphoedema progress, look for entry lesions, remind patients and their families of the defined package and the importance of prevention and early care, and provide patients with more treatment supplies. After three months, patients are followed up annually to address any issues related to morbidity management and to ensure compliance with the self-care routine.

**Implementation**

In the districts or nearby towns in adjacent districts, experienced professionals on lymphoedema management provide a three-day guideline course for government employed health workers. The first two days contain lectures on neglected tropical diseases in general, details on the two diseases and morbidity management. On day three, the participants receive practical training on morbidity management and do role plays. So far, 542 workers from 53 health centres in 24 districts have been trained. Based on supportive supervision reports performed by partners and health ministry staff, health workers are providing services according to the national guideline.

The health ministry, supported by partners, also developed and rolled out a teaching video for health workers on integrated morbidity management.

The implementation also requires some additional resources, such as pamphlets on self-care routine, treatment supplies and custom made shoes. Hence, the morbidity management services and training on self-care are being scaled up in a phased approach at health centres in the endemic districts.

**Monitoring and evaluation**

Since July 2013, the national health management information system contains an indicator for the number of lymphoedema-treated patients, segregated by cause (if available), which enables monitoring and evaluation of the integrated approach. The indicator definition of lymphoedema is a chronic progressive swelling of one or more parts of the body due to accumulation of lymphatic fluid and the fluid is gradually replaced by fibrous tissue. Treated patients are those who have received training on self-care routines and returned for the three-month follow-up. Health workers record demographic information, including name, contact address, sex, age, age
of onset of condition, clinical stage, presence of wounds/entry lesions for new patients. An information system focal person collects reports on the number of lymphoedema cases treated from the registers in each health centre and manually enters the information into the health management information system. The information is then sent to the district health office where the reports are compiled and sent to the regional health bureaus. Treated patients are reported only once and between July 2013 and June 2016 the information system has recorded 46,487 treated patients from 189 districts.

Lessons learnt
The implementation of the integrated morbidity management for lymphatic filariasis and podoconiosis has worked well. However, some organizations and budgets focused only on one of the diseases, which limited the full implementation at regional, zonal and district levels.

Several factors contributed to the successful implementation. First, the health ministry’s leadership helped converting the vertical programmes to an integrated programme. Second, the presence of experienced health professionals in lymphoedema management supported the implementation by training health workers, though these experts were not available in all endemic districts. Third, the existing treatment centres served as practical demonstration sites. Finally, committed partners technically and financially supported the implementation of the integrated approach (Box 1).

The integrated approach during the mapping and the burden assessments reduced cost in comparison to disease-specific approach. According to the planning budgets covering 659 districts, the estimated cost of lymphatic filariasis mapping was US$ 1,212,209 United States dollars (US$), while the budget for podoconiosis mapping was estimated at US$ 1,211,664, compare to the actual cost of the dual mapping of US$ 1,291,400. Team training, one diagnostic test for both diseases, supplies and travel contributed to most of the savings.\(^\text{10}\) By integrating the two diseases in the burden assessment, the need for a diagnostic disease-specific test was unnecessary, which reduced staff time and cost. Furthermore, having a single indicator has eased advocacy for the inclusion of the indicator into the information system, leading to regular and sustainable data collection. Finally, the development of a guideline brought partners and experts together to discuss experiences and resolve implementation differences, such as the use of bandaging and surgical removal of nodules for podoconiosis cases.\(^\text{11}\) The experts agreed that most aspects of the
lymphoedema management can be integrated, while maintaining disease specific parts. This process helped to capitalize on national experience while learning from global experiences.3

The lessons learnt in Ethiopia could be used by other co-endemic countries, such as Brazil, India and United Republic of Tanzania, wishing to implement an integrated morbidity management approach. In the future, the approach could include other neglected tropical diseases causing similar morbidities, such as leprosy and Buruli ulcer.12

Acknowledgements

We thank all the implementing partners. Namely WHO Ethiopia, National Podoconiosis Action Network (NaPAN), Research Triangle Institute (RTI) International, Centre for Neglected Tropical Diseases at the Liverpool School of Tropical Medicine (CNTD/LSTM) and Ethiopian Public Health Institute. The main lymphatic filariasis programme implementing partners in Ethiopia include The Carter Center, RTI, and CNTD/LSTM. Podoconiosis implementing partners include: Action against Podoconiosis Association, Ethiopian Catholic Secretariat Social and Development Commission, International Orthodox Christian Charities, and Mossy Foot International, coordinated by NaPAN.

Funding:

The implementation was supported by the Ethiopian Federal Ministry of Health, WHO Ethiopia, the Wellcome Trust, CNTD/LSTM funded by the Department for International Development, The End Fund, NAPAN, the ENVISION and MMDP Projects, funded by the US Agency for International Development and led by RTI International and the Task Force for Global Health. KD is funded by a Wellcome Trust Intermediate Fellowship in Public Health and Tropical Medicine [grant number 201900].

Competing interests:

None declared.

References


Box 1. Summary of main lessons learnt

- An effective health ministry leadership helped the implementation efforts through the development of the national guideline for the integrated morbidity management and disability prevention.

- The presence of treatment centres and experienced health workers on lymphoedema morbidity management within the country was important for training of health workers.

- The involvement of committed partners from planning stage to implementation contributed to the successful integration.