Gap Analysis of Leishmaniasis
Detection, Prevention & Response: Lessons Learned for Vector-Borne Diseases

CORDS
Connecting Organizations for Regional Disease Surveillance

Image courtesy of CDC’s Public Health Image Library http://phil.cdc.gov/phil/details.asp
Welcome

Professor Nigel Lightfoot CBE, Executive Director
Connecting Organizations for Regional Disease Surveillance (CORDS)
Lyon, France / London, United Kingdom
Webinar Outline

- Welcome & CORDS Synopsis
- **Overview** of Methodology & Approach of Gap Analysis
- **Country Reports**
  - Pakistan
  - Albania
  - Jordan
- **Summary** of Common Issues
- **DNDi** and Medication Access
- **Q&A** Discussion Session & Closing Remarks
The CORDS Network

Six Major Regional Networks

www.cordsnetwork.org
Overview of Leishmaniasis
Gap Analysis Project

Dr. James Crilly, Technical Advisor
Leishmaniasis Gap Analysis Project Coordinator
Southeast European Centre for Surveillance and Control of Infectious Diseases (SECID) South Eastern Europe Health Network (SEEHN)
Overview of Leishmaniasis

Cutaneous leishmaniasis (CL)
http://phil.cdc.gov/phil/details.asp

Visceral leishmaniasis (VL)
http://www.who.int/campaigns/world-health-day/2014/photos/leishmaniasis/en/
Overview of Leishmaniasis

Leishmaniasis is an entirely treatable parasitic disease spread by sandflies.

**Cutaneous leishmaniasis** can lead to distressing and disfiguring skin ulcers and scarring.

**Visceral leishmaniasis** affects the liver and spleen and if untreated is fatal.

Psychological and social stigma can lead to exclusion from society due to the mistaken belief that the disease is contagious.

- Mothers stopped from teaching their children
- Children stopped from going to school
- Disfigured women considered unsuitable for marriage
- Disease used as pretext for a husband to leave his wife

The disease is unlikely to spread to developed western countries which have healthy populations with good sanitation and healthcare.

The disease cannot be transmitted directly from an infected person or animal to another person.

Infection requires presence of female sandfly to transmit the disease.

40,000 deaths occur every year, making visceral leishmaniasis the 2nd biggest parasitic killer after malaria.

CORDS
Connecting Organizations for Regional Disease Surveillance

coregroup
Advancing community health worldwide.

310,000,000 at risk of infection globally
1,600,000 new cases every year.
Leishmaniasis in the News

Cutaneous Leishmaniasis and Conflict in Syria

THE DOUBLE BURDEN: HIV/visceral leishmaniasis co-infection in East Africa

MSF briefing note, December 2011
http://www.msfaccess.org/content/visceral-leishmaniasishiv-co-infection-east-africa
Overview of Leishmaniasis Gap Analysis Project

WHO leishmaniasis control strategy aims to:

- Eliminate mortality due to VL;
- Significantly reduce morbidity due to VL and CL;
- Contribute to improving health status of populations at risk;
- Minimize socioeconomic losses provoked by the disease.
Priority Interventions of WHO Leishmaniasis Control Strategy

1. **Strengthen** public health services;
2. **Improve** capacities for early detection, diagnosis; treatment
3. **Reinforce** disease surveillance;
4. **Improve** capacities for outbreak response/prevention;
5. **Strengthen** vector and reservoir control;
6. **Strengthen** research capabilities;
7. **Increase community awareness** and participation;
8. **Build** and scale up partnership action;
9. **Enhance** inter-sectoral collaboration;
10. **Strengthen** cross-border coordination and cooperation.

Source: WHO Strategic framework for leishmaniasis control in the WHO European Region 2014-2020
The gap analysis considered each of these objectives in *three stages*:

1. An objective description of status of leishmaniasis and the current surveillance, treatment and control activities in each country.

2. A critical evaluation of the effectiveness of these activities, identifying opportunities for improvement.

3. These observations in turn provided the basis for the recommendations to be included in the action plan proposing practical and sustainable measures for capacity building at the individual, institutional and societal level. It is envisaged that the action plan will be the basis for developing an improved strategy for the control of leishmaniasis in each country.
Project Activities & Outputs

- **Data management** component implemented by national experts in each country.
  - Clinical case data collated and analysed to enable endemic zones to be mapped and incidence rates calculated;
  - Vector distribution and prevalence rates in reservoirs were similarly reported.

- 1-2 week **study tour** and in-country **workshops** in Albania, Jordan, Pakistan.

- Detailed reports were produced for each of the three countries as well as a combined summary report.

- **Ongoing dissemination and collaboration** activities.
  - Creation of Leishmanixa virtual group platform;
  - **Meta-analysis** released to media in Feb. 2016;
  - International Society on Infectious Disease (ISID) **conference abstract** accepted.
Pakistan’s Leishmaniasis Gap Analysis Overview:

Salient Features, Findings & Way Forward

April – November 2015

Dr. S.M. Mursalin, Executive Director
Pakistan One Health Alliance.
Pak One Health Alliance (POHA)

- POHA is a newly formed group of like-minded professionals drawn from diverse disciplines (e.g. public health, veterinary sciences, agriculture, entomology, environmental health, wildlife, information technology, health biotechnology).

- Aims to curtail illness/disease spread either through human, wildlife, vector, food or human-ecosystem interface using One Health approach.

- Representation from concerned government departments, international partners is ensured.

- Coordination with regional/global partners (e.g. CORDS, SECID, OHASA).
Cutaneous Leishmaniasis Cases Reported Via DHIS-Pakistan (2014)
Active Cutaneous Leishmaniasis Case in Pakistan

Image courtesy of POHA
Key Findings
Strengths in Pakistan

- Adequate health infrastructure with countrywide community health workers network.
- District Health Information System (DHIS) is routinely reporting CL cases (but not currently VL and not in all districts).
- Effective vector control programs for Dengue and Malaria are implemented.
- Standard case definitions & manuals are available (but treatment protocols need to be updated).
- Disease Early Warning System (DEWS) for early detection and response to epidemic-prone diseases established in 2005 (currently non-operational).
Key Findings
Weaknesses/Opportunities in Pakistan

- Absence of National Leishmania Control Strategy, difficult for the federal government to initiate and implement initiatives due to autonomy of provinces.
- Considerable gap in management and disease control in refugee/IDP camps.
- Weak diagnostic capacity, lab facilities and trained dermatologists.
- Frequent shortages, high cost and doubtful quality of drugs esp. in rural areas.
- Delays in seeking medical care, lack of follow-up, and high rate of relapse increase the risk of disfiguring scars.
- No post of medical epidemiologist at district level. Effective risk reduction measures such as use of insect repellents and nets in either windows or on beds is very low.
Challenges to Address
Leishmaniasis Gap Analysis in Pakistan

- Political and financial commitment for disease prevention & control by national and provincial authorities.
- **Promotion of inter-sectoral collaboration (One Health approach)** at district, provincial, national and international level.
- Better use of existing health infrastructure and community workforce, re-establishment of DEWS.
- Develop innovative mobile technology applications for surveillance, control, and awareness of leishmaniasis and other neglected diseases.

Health staff conducting interviews in Balochistan, Pakistan, 2015. Image courtesy of POHA.
Priorities & Next Steps
Leishmaniasis Gap Analysis in Pakistan

- Improve access to diagnostic and treatment facilities among urban-rural and deprived communities.
- **Ensure supply of affordable, quality assured drugs** by encouraging local manufacturing, registration and legal import.
- Update of current guidelines and protocols as per new standards.
- Re-instate DEWS and build emergency communication systems.
- Conduct collaborative research studies/pilot projects in high risk areas.

Interviews with patients in remote areas of Pakistan, 2015. Image courtesy of POHA.
Study Team Meeting
(Islamabad, Pakistan – September 3, 2015)
Pak One Health Alliance

- Website
  - http://pakonehealth.org

- Facebook
  - www.facebook.com/PakOneHealth

- Twitter
  - @PakOneHealth
Dr. Silvia Bino, Associate Professor of Infectious Diseases
Head, Control of Infectious Diseases Department
Institute of Public Health Rruga Aleksander Moisu Nr. 80
Tirana, Albania
Southeast European Centre for Surveillance and Control of Infectious Diseases (SECID)
South Eastern Europe Health Network (SEEHN)
Key Findings
Leishmaniasis Gap Analysis in Albania

- Visceral Leishmaniasis (VL) due to *L. infantum* is the main form of the disease in Albania with 50-150 cases annually;
- 80% of cases are in children under 10 years of age with half between 1 and 4 yo;
- The disease is zoonotic with street and/or pet dogs acting as the main reservoir;
- The main vector is *Phlebotomus neglectus* with *P. tobbi* playing a secondary role;
- Access of medication (Ambisome) for paediatric cases in public hospitals is intermittent and there is currently no treatment available for adults (>14 yrs);
- Case detection and clinical management protocols are outdated with low capacity for early detection at regional or district level;
- Availability of kits and reagents for diagnosis is sporadic with no access to PCR or Rapid Diagnostic Tests (RDTs)
Albania has no established Leishmaniasis control program as the disease is not perceived as a PH priority;

Interagency cooperation (MoH, MoA, municipalities) for the control of zoonotic diseases is limited;

There is under-reporting of cases to national authority at IPH and to district authority levels;

There are no population control measures in place for street dogs and no active surveillance for canine leishmaniasis;

There is no vector control programme for sand flies;

Public awareness of leishmaniasis is low, particularly in impoverished communities where the disease is prevalent.
Proportional distribution of all leishmanial cases
Challenges to Address
Leishmaniasis Gap Analysis in Albania

- Deficiencies in diagnosis and management of leishmaniasis cases;
- Lack of access to anti-leismania drugs due to treatment for general population and lack of insured or public health treatment and care program for refugees;
- Increasing awareness for establishing a One Health control program with an accountable authority;
- Challenges of integrated investigation of Leishmania infection among Syrian/Afghani refugees and migrants in Jordan, Albania and Pakistan (others, reservoirs and vector species);
- Lack of community and trained health care workers engagement;
- Risk of increasing cutaneous leishmaniasis;
- Lack of a system to exchange health data or other (vectors and reservoirs) among countries receiving refugees and others exporting them.
Priorities Identified
Leishmaniasis Gap Analysis in Albania

- Ensure appropriate treatment is available for all age groups;
- Increase knowledge of primary health care workers and provide RDTs to improve case detection;
- Designate one national laboratory for detection of Leishmania in humans, animals and vectors using molecular diagnostic techniques;
- Establish national **One Health** forum to create a critical mass of multi-disciplinary experts;
- Increase awareness of policy makers and others for Leishmaniasis as a public health priority;
- Devise and implement surveillance protocol for zoonoses and vector borne diseases where human, animal and vector surveillance is integrated.
A Platform for experts to develop and test evidence based strategies for the treatment and control of Leishmaniasis.

Meeting between SECID and CORDS

VBORNET Newsletter 8, special issue ‘SAND FLIES’, July 2010

CONTENTS
1. Phlebotominae sand flies (Diptera: Psychodidae): Main vectors in Europe and their distribution with special emphasis for Turkey
2. The leishmaniasis in southern Europe
3. Public health importance and control of sand flies in continental Europe

Leishmaniax Virtual Group Monthly Phone-call Notes
LEISHMANIASIS, CUTANEOUS - LIBYA: (TRIPOLI)

Submitted by lluka_qafoku on Fri, 04/15/2016 - 13:45

A ProMED-mail post

ProMED-mail is a program of the International Society for Infectious Diseases

Date: Mon, 11 Apr 2016
Source: The Libya Observer [edited]

A total of 145 cases of leishmaniasis have been recorded in Bani Walid, the city's health authorities have reported. Bani Walid Health Center said there is a surge in leishmaniasis due to waste accumulation.

The infected cases are increasing significantly and there is difficulty in providing therapy due to lack of medicines. the manager
Southeastern European Centre for Surveillance and Control of Infectious Diseases (SECID)  
South East European Health Network (SEEHN)

- **Website**
  - [http://www.secids.org](http://www.secids.org)

- **Facebook**
  - [www.facebook.com/secids](http://www.facebook.com/secids)

- **Twitter**
  - @secids

- **Leishmaniax.net**
  - A platform for experts to develop and test evidence-based strategies for the treatment and control of Leishmaniasis.
Dr. Khalil Kanani, Head of Parasitic and Zoonotic Diseases Division
Ministry of Health
Amman, Jordan
Middle East Consortium on Infectious Diseases Surveillance (MECIDS)
CL due to *L. major* and *L. tropica* is endemic in Jordan

Annual average IR of CL = 3.02 / 100,000

VL is rare in Jordan (less than 20 cases reported over last 50 yrs)

Epidemiologic data points toward zoonotic origin of *L. major* and *L. tropica*
In 2015, there were over 630,000 Syrian refugees in Jordan, of which only 17% were living in refugee camps.

Different leishmania parasite species known to be endemic in Syria.

Reporting between 2010 - 2015 indicates:
- 393 CL cases (382 cases reported, 2012-2015)
- 3 pediatric VL cases (laboratory confirmed, 2015)

Syrian Refugees in Jordan, 2015
- In refugee camps, 17%
- Not in refugee camps, 83%
Syrian refugees surpass four million

- Turkey: 1,805,255
- Lebanon: 1,172,753
- Iraq: 249,726
- Jordan: 629,128
- Egypt: 132,375
- North Africa: 24,055

Source: UNHCR, Government of Turkey / 7 July 2015
Reported CL Cases
In Jordan by Nationality

- 2010: Jordanian 150, Syrian 5, Other nationalities 0
- 2011: Jordanian 130, Syrian 6, Other nationalities 0
- 2012: Jordanian 77, Syrian 12, Other nationalities 14
- 2013: Jordanian 41, Syrian 103, Other nationalities 2
- 2014: Jordanian 96, Syrian 80, Other nationalities 4
- 2015: Jordanian 65, Syrian 187, Other nationalities 5
Key Findings
Leishmaniasis Gap Analysis in Jordan

- Under reporting of leishmaniasis cases.
- Weak capabilities of diagnosis treatment in high endemic and marginalized areas.
- Low awareness of:
  - Prevention;
  - Importance of early diagnosis;
  - Proper treatment of cases.
Risk of ACL (anthroponotic cutaneous leishmaniasis) becoming established and spreading in urban areas of Jordan.

Strengthen health services capacities on surveillance, diagnosis and treatment of leishmaniasis.

Sustain availability of specific anti-leishmanial drugs.
Priorities Identified
Leishmaniasis Gap Analysis in Jordan

- Establishment of a national leishmania unit with adequate resources for vector and animal reservoir host control.

- Strengthen inter-sectoral coordination for the control of animal host and leishmania vector.

- Change regulations to enable registration and importation of anti-leishmanial drugs.
Leishmaniasis is a low priority for health authorities with limited budgets and resources allocated for its control, particularly in marginalized areas.
Recommendations
Leishmaniasis Gap Analysis in Jordan

Ensure availability and accessibility for diagnosis and management of leishmaniasis cases at peripheral level and refugee camps.

Raise awareness of health personnel and community on:
- Prevention;
- Early diagnosis;
- Management of CL cases.

Integration of leishmaniasis control activities with other vector-borne disease control programmes.
Middle East Consortium on Infectious Diseases Surveillance (MECIDS)

- Website
  - http://www.mecidsnetwork.org

- Facebook
  - www.facebook.com/sf cg.org

- Twitter
  - @SFCG_

- Search for Common Ground
  - www.sf cg.org
  - We partner with people around the world to ignite shared solutions to destructive conflicts.
Insights from Leishmaniasis Gap Analysis Project

Dr. James Crilly, Technical Advisor
Leishmaniasis Gap Analysis Project Coordinator
Southeast European Centre for Surveillance and Control of Infectious Diseases (SECID)
South Eastern Europe Health Network (SEEHN)
While the findings of the gap analysis for each country have been presented, there are several conclusions that can be drawn which have a wider relevance.

- All three countries currently lack the funding, manpower and resources needed to address current and emerging vector borne disease threats.
- Leishmaniasis is a major disease threat for refugees and host communities.
- Effective and affordable anti-leishmania treatment is frequently unavailable in the impoverished urban and rural communities where leishmaniasis is most prevalent.
Preparedness against emerging vector borne disease threats such as Dengue and Zika requires a functional vector borne disease capacity.

The best indicator of a functional vector borne disease capacity is a demonstrable ability to control the vector borne diseases which are endemic in the country.

A major output of the gap analysis was to document the limitations in all three countries, for the surveillance and control of the sandfly vectors of leishmania.

Deficiencies were identified in all critical capacities:

- Legislative
- Institutional
- Administrative
- Financial
- Technical
- Research
- Awareness

For each country, we have proposed that a national vector-borne disease unit should be established with adequate funding, staff and resources to conduct coordinated evidence-based integrated vector control interventions against diseases such as malaria, dengue and leishmaniasis.
Due to limited disease surveillance capacity, the spread of ACL in Pakistan over the last 20-30 years was largely unreported.

There is every likelihood of similar occurrence in countries hosting Syrian refugees such as Jordan, Lebanon and Turkey.

Risk of contagion and the ensuing social consequences for young women may be a factor in migration.

Where is the support for the public health services and NGOs working to treat and control leishmaniasis?

Why are anti-leishmania drugs unavailable or unaffordable?
Dr. Byron Arana, Head of Cutaneous Leishmaniasis
Drugs for Neglected Diseases initiative (DNDi)
Geneva, Switzerland
Difficulties to Control Leishmaniasis

- No effective vaccine is available.
- Traditional vector control methods do not appear to be effective and are often not available to or practical for at-risk populations.
- Control is unlikely to be achieved by a single intervention. A combination of case management strategies, integrated vector control and animal reservoir control if relevant, is required and should be tailored to each context.
- Few efforts on drug screening/discovery.
- Treatment has long depended on antiquated drugs that would be considered far too toxic for introduction under modern registration systems.
- Response rates to different treatment options varies from region to region, country to country and also varies depending on the specie of *Leishmania* causing the disease.
- CL is a diseases with a spectrum of clinical manifestations, hence different treatment approaches (topical, systemic, combinations) are recommended depending on number of lesions, localization, lesion size, specie of *Leishmania* causing the disease, etc.
- Even though progress has been made for the treatment of VL (Liposomal Anfotericin B, Combinations), for CL it seems that what is currently available will probably represent almost the entire therapeutic arsenal for the coming years.

The priority for control is developing and implementing improved diagnostic methods and better treatments that are more amenable to field use.
DNDi Comments

**Treatment Examples**

- **AMBISOME® (Liposomal Amphotericin B)**
  - One-supplier (Gilead)
  - Long lead times in the past
  - Sourced via WHO agreement (countries must request via WHO Regional office)

- **IMPAVIDO® Miltefosine**
  - One-supplier (Knight Therapeutics)
  - Unclear commitment of company to continue to produce drug
  - Minimum order size requirements to attain Access Pricing

- **Paramomycin**
  - One producer of finished product (Gland) and API
  - Quality issues led to supply gaps in the past

- **SSG Sodium stibogluconate**
  - One generic producer (Albert David)
  - API producer is not compliant with GMP
  - Availability varies

**Global-level Access challenge**

- AMBISOME®
  - Work with stakeholders to validate a generic supplier
  - WHO in process of negotiating w/ Gilead for extension of agreement

- IMPAVIDO® Miltefosine
  - Establish procurement solution with stakeholders (ie. Rotating Stockpile...)
  - Find alternative producers

- Paramomycin
  - Better forecast information and share with suppliers
  - Work with stakeholders (MSF, WHO, IDA solutions...) to create a longer-term supply agreement for PM and SSG

**Potential solutions**

*Treatment may differ depending on National Treatment Guideline or alignment with neighboring country guidelines*
Based on the experience at DNDi, it is important to have:

- **Affordability**
  - Conduct price mapping, prices paid at different levels within the health system.
  - WHO Regional Offices facilitate the Liposomal Ampho B (AMBISOME®) donation.

- **Availability**
  - Determine registration status of key drugs in each county.
  - Cold-chain requirements for AMBISOME®; second line option of Miltefosine & PM?
  - Inclusion of drugs on national tender.

- **Adoption**
  - Create national guidelines with treatment recommendations.
  - Define Clear objectives, goals, milestones and indicators for National Control Programmes.
  - Capacity building activities to train healthcare workers on diagnosis and treatment protocols.
  - Strengthen data collection and reporting.
DNDi’s CL Objective

To achieve short, safe, non-invasive, efficacious, affordable and field-friendly treatments for CL or at least for lesions caused by *L. tropica* and *L. braziliensis*.
Q&A Discussion Session

Leishmaniasis is an entirely treatable parasitic disease spread by sandflies.

- **Cutaneous leishmaniasis** can lead to distressing and disfiguring skin ulcers and scarring.
- **Visceral leishmaniasis** affects the liver and spleen and, if untreated, is fatal.

310,000,000 at risk of infection globally, 1,600,000 new cases every year, 40,000 DEATHS occur every year, making Visceral leishmaniasis the 2nd biggest parasitic killer after malaria.

Leishmaniasis cannot be transmitted directly from an infected person or animal to another person. Infection requires presence of female sandfly to transmit the disease.

The disease is unlikely to spread to developed western countries which have healthy populations with good sanitation and healthcare.

Psychological and social stigma can lead to exclusion from society due to the mistaken belief that the disease is contagious.

- Mothers stopped from teaching their children
- Children stopped from going to school
- Disfigured women considered unsuitable for marriage
- Disease used as pretext for a husband to leave his wife

The Leishmaniasis Gap Analysis (www.cordsnetwork.org) found leishmaniasis is an emerging, yet largely neglected disease... mainly affecting impoverished communities living in poor conditions with low immune systems and without access to proper healthcare.

CORDS Connecting Organizations for Regional Disease Surveillance

coregroup Advancing community health worldwide.
Closing Remarks

Professor Nigel Lightfoot CBE, Executive Director
Connecting Organizations for Regional Disease Surveillance (CORDS)
Lyon, France / London, United Kingdom

CORDS, Zika & beyond the next global threat:

- Benefits of coordinated vector control.
- Innovations in strategy and approach.
- CORDS’ contribution to Zika activities.
- Full Leishmaniasis Gap Analysis Report and Action Plan available on CORDS website here.
Thank you to our networks, partners and supporters
Thank you for participating and stay in touch!

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