

Operational Research on Vector Control in Emergencies



REDUCING DEATHS AND SUFFERING FROM TROPICAL DISEASES



MENTOR - Our Mission

Established in 2002, MENTOR works to relieve human suffering from tropical diseases in complex emergency settings through an integrated approach.

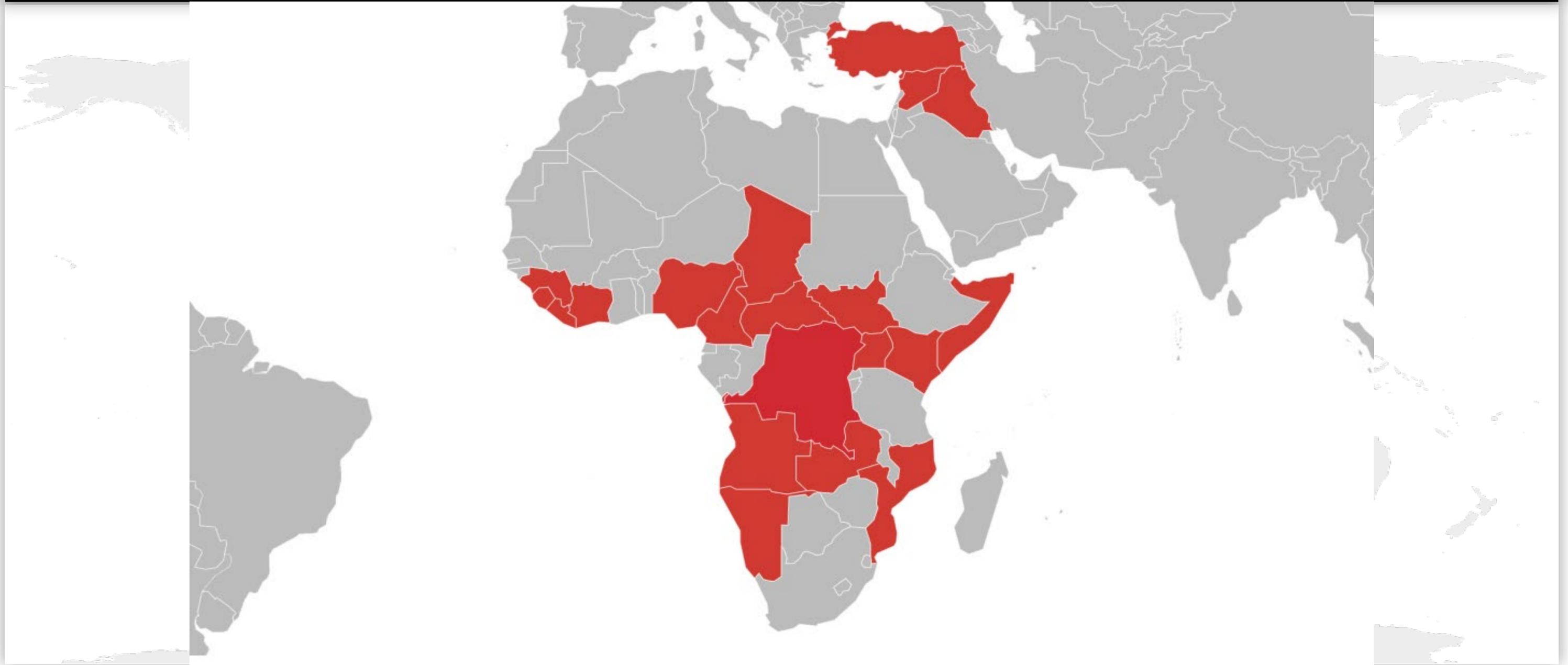
- Integrated vector management programmes
- Health service support
- Capacity building
- Operational research



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Reaching the world's most vulnerable populations



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Vector Control in Conflict Settings

IRS

- Large workforce
- Training required
- International aid
- Technical equipment + insecticide



LLINs

- Pyrethroid resistance
- Lower uptake and usage
- Behaviour change
- Achieving appropriate coverage



Challenges

- Traumatized populations
- Highly fluid and mobile
 - Poor shelters
 - Low-resource
 - Isolated areas



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Challenges of operational research in complex settings

Moving Population

- Loss to follow up
- Product lost
- Address / origin of infection sometimes unknown

Insecurity

- Interrupted activities
- Accessibility to households
- Multiple governing bodies



Low-Resource Setting

- Logistical challenges
- Non perfect laboratory conditions
- Lower educational level

Data Resources

- Health facilities lack diagnostics
- Poor health data



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Vector Control Tools for Conflict Affected People



- Robust and durable for harsh living conditions
- Adaptable to settings
- Easily packaged for delivery and displaced populations
- Sustainable
- Easily scaled up
- Little to no behaviour change required



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Operational Research for Novel Vector Control Tools - Past

- Demuria LLINs for Nomadic Kenyan Communities, Garissa
- Insecticide Treated Plastic Sheeting for Liberian Refugees
- Vector Control Response Kits in Wajir, Kenya
- Permanent Wall Linings for Villages in Liberia
- PBO LLINs in Displacement Camps, South Sudan

<https://www.thementorinitiative.org/mentor-publications/>



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Operational Research for Novel Disease Control Tools - Current

- Disinfection Kits, CAR & Nigeria
- Similar 2MR for Dengue control in Aden, Yemen
- Mesh long-lasting spatial repellent, Yemen & Nigeria
- **Envelope for leishmaniasis prevention, Syria**



Envelope Pilot Study, Al Hol camp, North-East Syria (October 2020)



Envelope Pilot Study, City of Qah, North-West Syria (October 2020)



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Syria: Cutaneous Leishmaniasis (CL)

- Neglected Tropical Disease
- Transmitted by phlebotomine sandfly
- Causes skin lesions which can lead to life-long disfigurement and life threatening secondary infections.



Idlib, Syria - The Independent Press (July 2020)



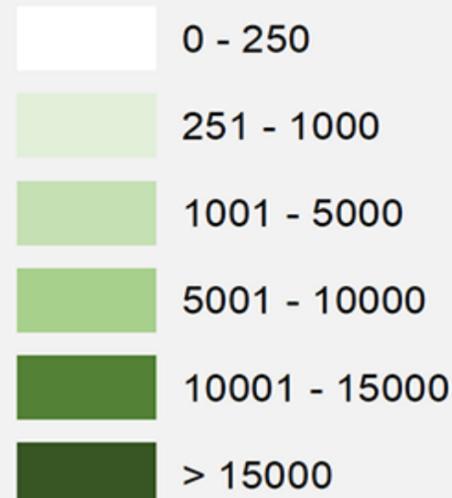
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Syria : Disease Burden of CL

- Prolonged conflict
- Mass population displacement
- Poor living conditions exacerbating vulnerability to infection
- Destroyed infrastructure as breeding ground for sand flies
- Steady rise in infections

CL cases

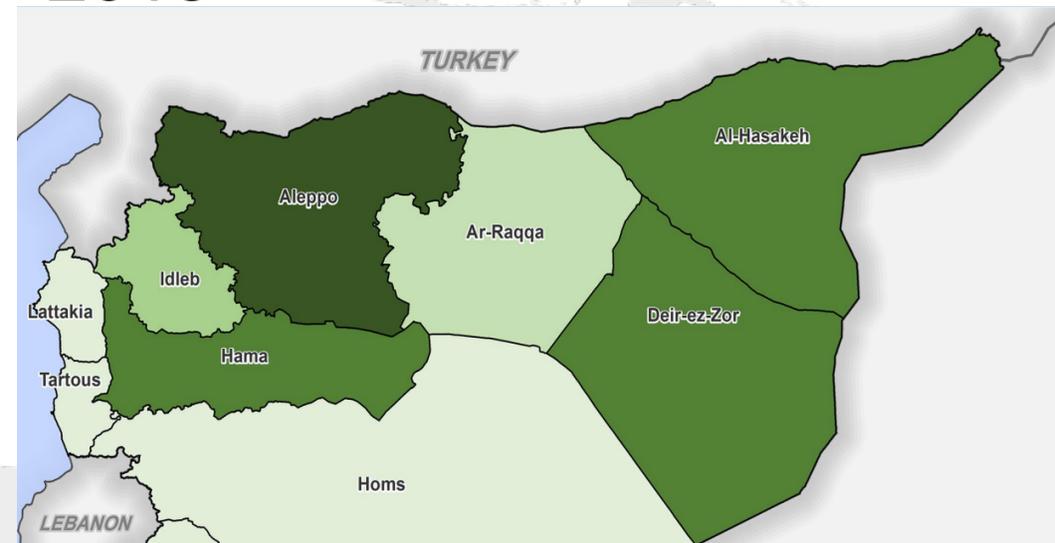


Incidence up to 40 times higher than pre-war levels!

2010



2018



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MENTOR Response in Syria

MENTOR have been working across Northern Syria since 2013:

- Disease prevention through vector control
- Case management
- Improving health system capacity



Envelope Study Team and IRS Team, City of Atareb, North-West Syria (March 2021)



Entomological Monitoring Team, Mahmoudli camp, Ar-Raqqa, North-East Syria (March 2021)



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Novel Tool: Envelope

- Designed and manufactured by **SC Johnson**
- Impregnated with spatial repellent **transfluthrin**
- Cheap and easy to use directly by families
- Logistically feasible in emergency settings
- No need for international assistance or intervention
- Potentially first cost-effective and sustainable alternative to Indoor Residual Spraying
- Proven efficacy at protecting people from mosquitoes in Sub Saharan Africa

Research Question: Can it be used to prevent CL?



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Envelope: GCC Funded Research

This research aims to evaluate the impact that Envelope can have on both **entomological** and **epidemiological** outcomes for a conflict-affected community.

1. What is the measurable epidemiological and entomological impact of Envelope against CL?
2. Is it feasible to implement Envelope interventions for populations living in camps and static houses?
3. How successful is the uptake and acceptance of Envelope?
4. Are Envelopes a sustainable intervention when using small businesses as points of distribution?



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Envelope: Study Design

This study will use a **mixed-method community control trial** with **three arms** (2 controls and 1 research) in two settings (urban & camp), :

- 1. Research:**
Population receiving monthly distribution of Envelope + MENTOR health services.
- 2. Positive Control**
Population receiving IRS with long-lasting insecticide + MENTOR health services.
- 3. Negative Control:**
Population receiving MENTOR health services only.

Each research arm in both settings reaches approximately 10,000 people. **(Total study population 60,000)**



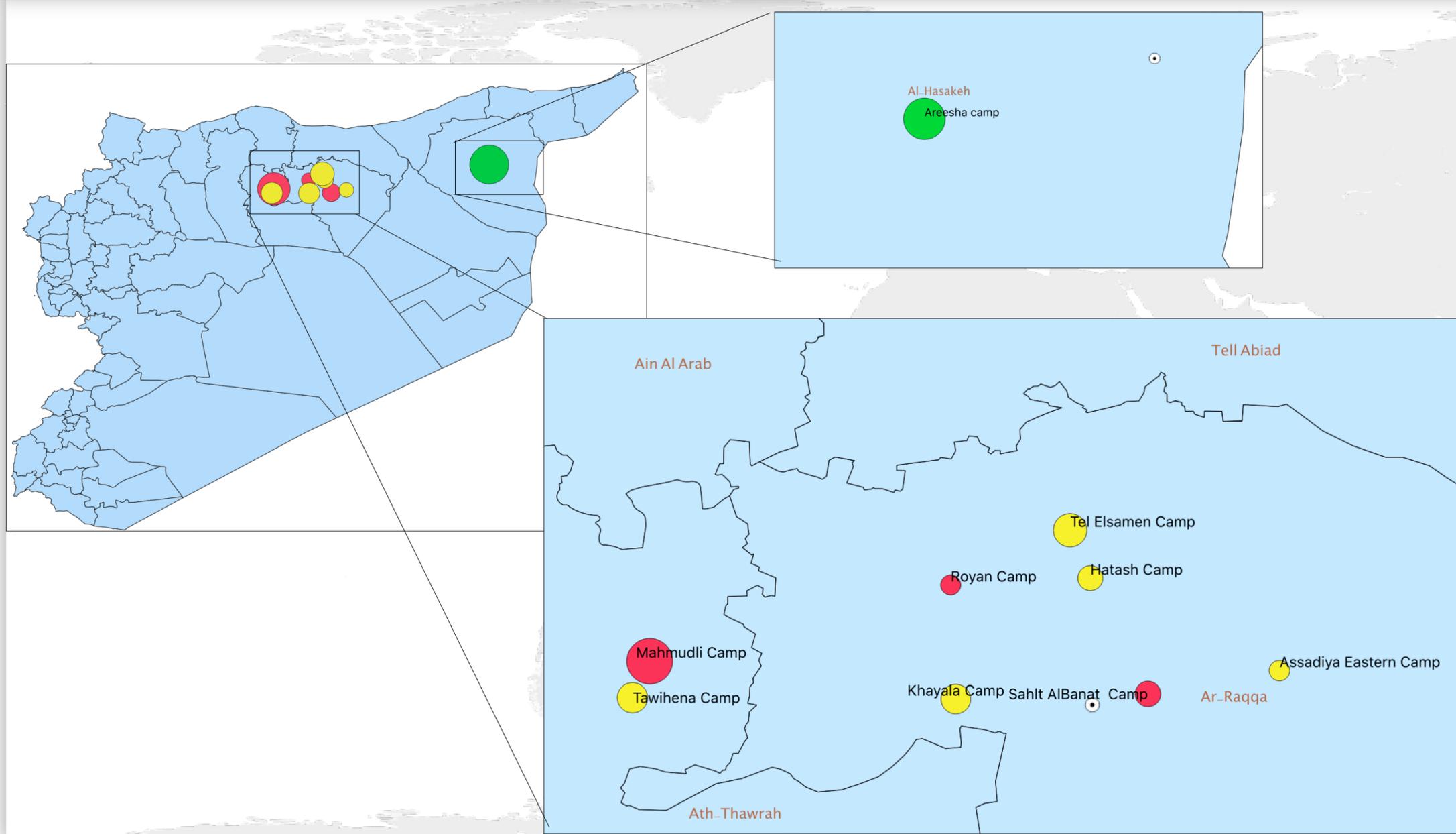
Envelope Pilot Study, Al Hol camp, North-East Syria (October 2020)



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Envelope: Camp Setting - North East Syria



Displacement camps randomly selected for research, based on:

- Population size
- CL caseloads (2020)
- Security
- Logistics

Red = Research

Yellow = Negative control

Green = Positive control.

- Size is proportional to population.
- Data from Kurdish and camp authorities.



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Envelope: Camp Setting - North East Syria

Displacement camps in Ar-Raqqa governorate (research & negative control arms):

- Approximately 20,640 residents
- Shelters consist of standard UNHCR tents made of plastic sheeting
- Residents internally displaced from neighbouring governorates such as Hama, Homs and Deir-ez-Zor.
- MENTOR health service by mobile clinics circulating between camps and by supporting static health facilities

Areesha camp based in Al-Hasakeh governorate (positive control arm):

- Approximately 13,000 residents
- Shelters consist of standard UNHCR tents made of plastic sheeting
- Residents internally displaced from neighbouring governorate of Deir-ez-Zor.
- MENTOR health service by supporting of static health facility



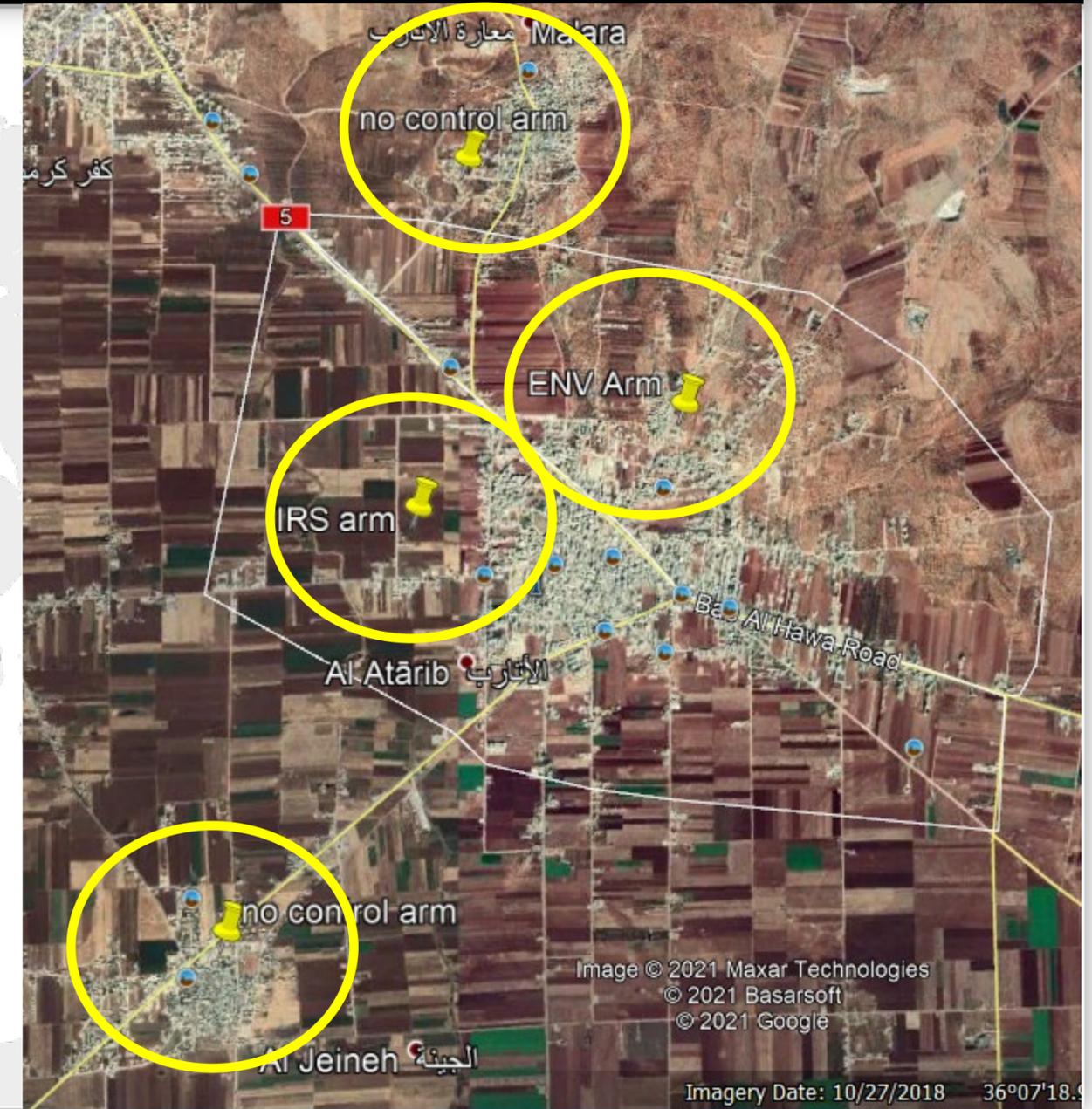
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Envelope: Urban Setting – North West Syria

Atareb:

- A city in the Western Aleppo countryside, North West Syria
- Approximately 46,972 inhabitants.
- Security and access to households can be ensured through close collaboration with local authorities and due to its proximity to MENTOR permanent base in Qah.
- The city has been divided into 3 sections of minimum 10`000 inhabitants each, which represent the 3 study arms



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Envelope: M&E

Entomological - Trained Entomology team:

- Identifying best method for sand fly collection
- Efficacy of reducing indoor density of sandflies through bi-monthly sand fly collection
- External laboratory analysis of sand flies

Epidemiological - MENTOR health service

- Analysis of CL incidence on monthly basis

Acceptance - Trained Qualitative Survey team:

- Assessment of uptake and usability through monthly surveys
- Feasibility of scale up through local supply chains



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Envelope: Progress to date

- **Research arms:** First round of Envelope distributed in both Urban and Camp settings. We are now preparing for the second round of distribution.
- **Positive control arms:** IRS completed in both Urban and Camp settings.
- **Negative control arms:** Active case detection & referral for ensuring access to medical diagnosis and treatment ongoing
- Entomologic baseline assessment finalized in all 3 study arms



First Envelope distribution, City of Atareb, North-West Syria (March 2021)



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Envelope: Action points

- Epidemiological monitoring through community engagement and active case detection ongoing.
- Entomological monitoring carried out twice a month in each target location.
- Evaluating local supply chain opportunities for sustainability.
Local Market? Bakers? Pharmacies?



Envelope Pilot Study, Sahlt Al Banat camp, Raqqa, North-East Syria (March 2021)



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MENTOR's roadmap for Operational Research

- Quick set up of programmes in complex operational settings
- Team of entomologists and epidemiologists
- Full operational and logistics permanently on site
- Strong partnerships with manufacturing companies and private sector
- Close links with operational research academic partners
- Unique platforms for operational research (populations, settings)



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