

**Prevalence and Annual Incidence of Nodding Syndrome and
Other forms of Epilepsy in Onchocerciasis Endemic areas of
Northern Uganda**

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Background

- Outbreak of epilepsy-like illness in northern Uganda between 2002 & 2012: illness referred to as Nodding Syndrome (NS).
 - Affected districts include: Pader, Kitgum and Lamwo
- No ivermectin distribution in the 3 districts before 2007.
- Sub-optimal distribution of ivermectin in affected districts since 2007
- Census of all cases of NS and epilepsy in 2012
- Mass administration of ivermectin and river larviciding in affected districts since 2013

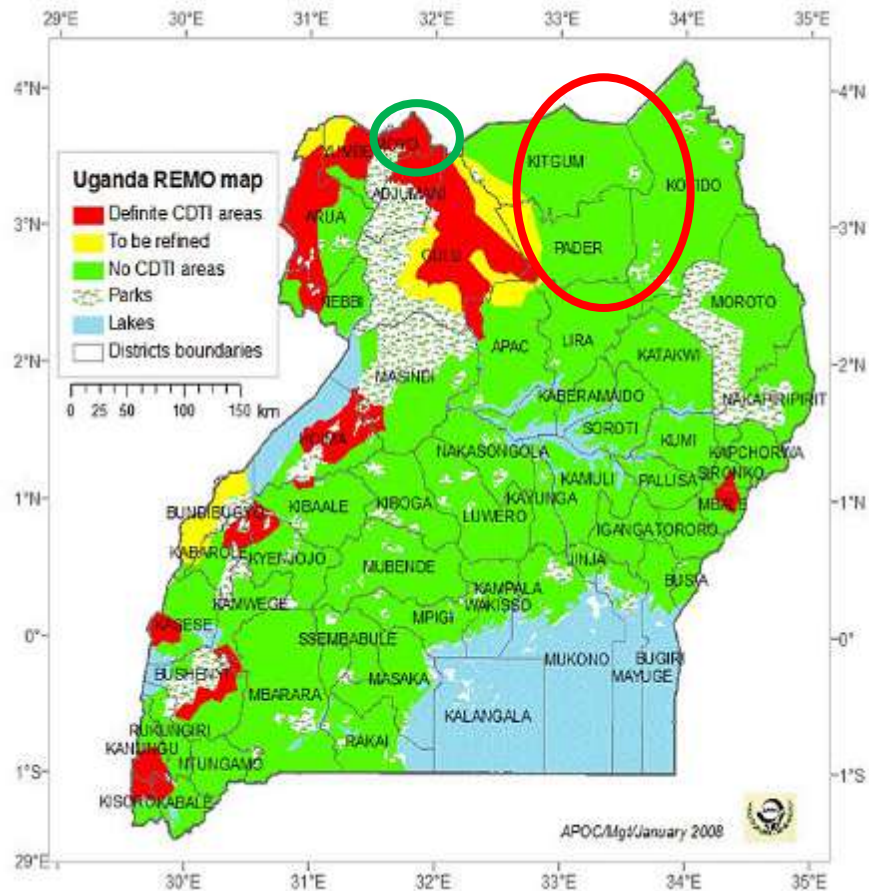
Objectives

- Establish prevalence of NS and Other forms of Epilepsy (OFE)
- Establish annual incidence of NS and OFE and relate it with the ongoing onchocerciasis control interventions i.e. ivermectin distribution and river larviciding.

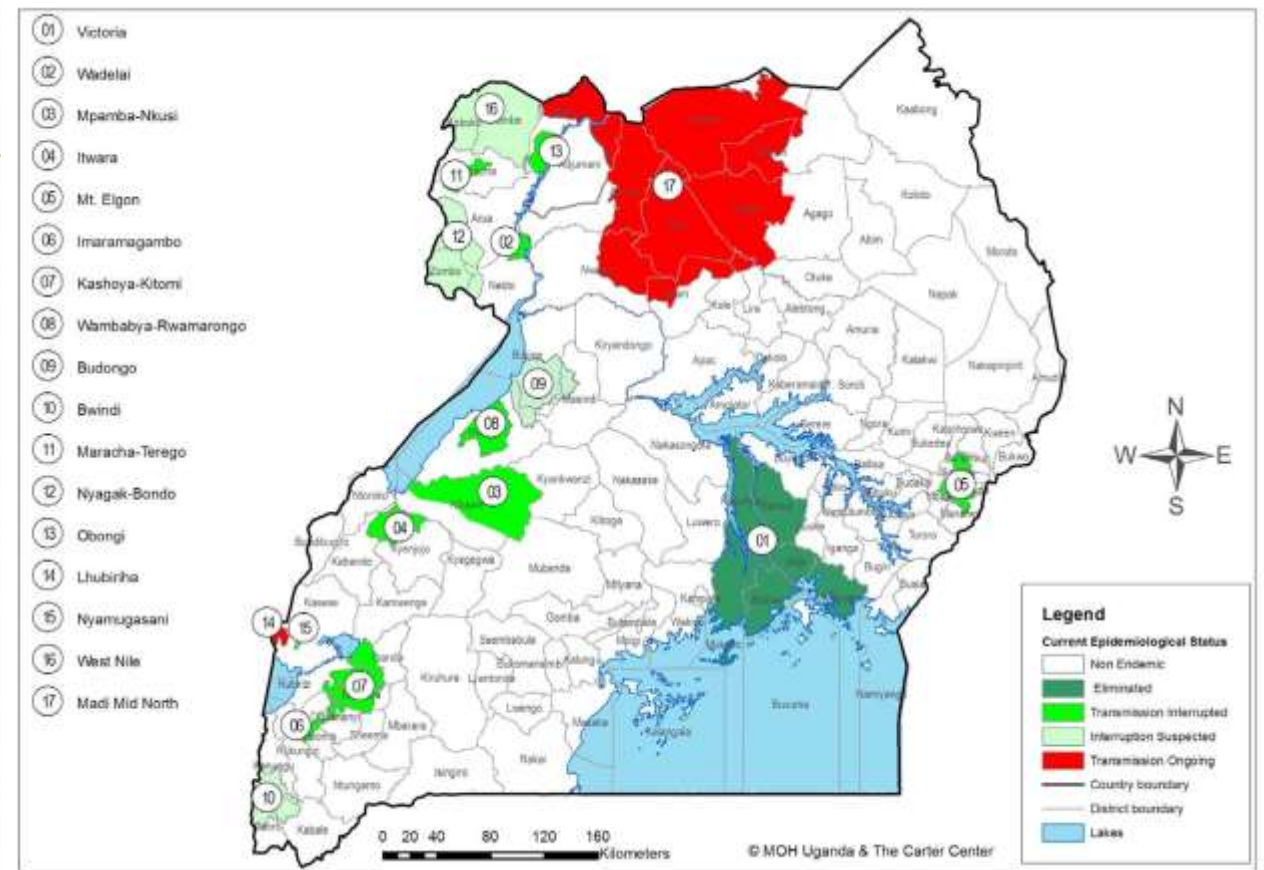
Methods

- Population based cross sectional survey in villages with an estimated highest prevalence of NS and/or OFE.
 - Moyo, like Pader, Kitgum and Lamwo is an area of high onchocerciasis endemicity.
- Villages selected were:
 - Tumangu and Kampala – Anyuka in Kitgum and Paikat-Akidi in Pader.
 - Pakarukwe and Pajakiri-North in Moyo.

Uganda REMO (Rapid Epidemiological Monitoring of Onchocerciasis) Maps, 2008 & 2014



*Weekly epidemiological bulletin, MOH, Uganda, 2008



REMO Map, Carter Centre and MOH, Uganda, 2014

Kitgum Pader landscape



Methods

- Two stage approach to identify cases of NS and OFE
 - Door-to-door screening of the entire village population by trained village health team members to identify suspects.
 - Clinical and neurological examination of suspects by a trained medical team to confirm the diagnosis of NS and OFE.
- Data collected for 3 weeks from August to September 2017.
- 2,138 individuals from 381 households interviewed.

Methods

- Prevalence calculated by dividing the total number of confirmed cases with total area population.
- Annual incidence obtained by counting the total number of confirmed cases per year of onset of illness.
- Proportion of cases per age group from 2012 census data compared with 2017 survey data.

Medical team practicing using tablets to collect data collection



Nurse screening for epilepsy at a household



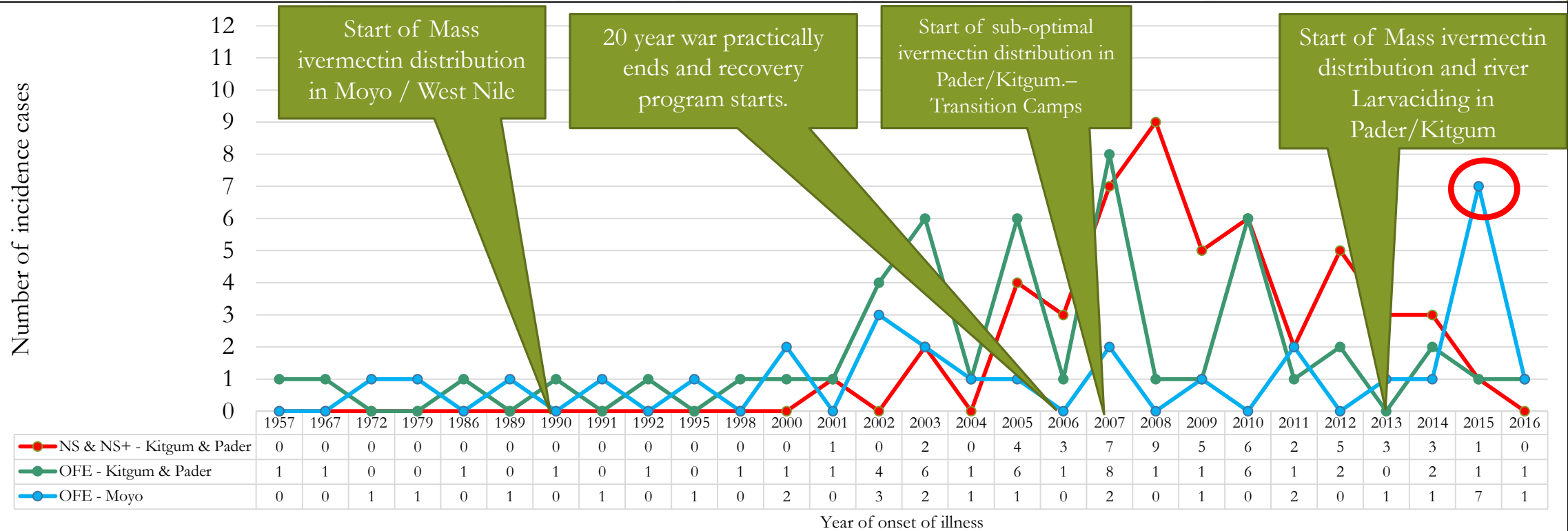
Results

Prevalence of NS and OFE

District	Total Population	Prevalence of All cases of Epilepsy & NS combined	Prevalence of NS & NS with other forms of seizures	Prevalence of Other forms of epilepsy
Kitgum	871	79 (9.1%)	36 (4.1%)	43 (4.9%)
Pader	307	29 (9.4%)	15 (4.9%)	14 (4.6%)
Moyo	960	38 (4.0%)	0 (0.0%)	38 (4.0%)
Total	2,138	146 (6.8%)	51 (2.4%)	95 (4.4%)

Results

Number of persons by year they developed their first seizures.



Results

Shift in age categorization: Comparison of 2012 census and 2017 survey data

District	Kitgum and Pader (NS & NS+)		Kitgum and Pader (OFE)	
	2012 Census N (%)	2017 Survey n (%)	2012 Census N (%)	2017 Survey n (%)
5-18 Yrs	2,199 (88.6%)	39 (76.5%)	2,982 (63.4%)	21 (36.8%)
19-30 Yrs	61 (2.5%)	12 (23.5%)	591 (12.6%)	30 (52.6%)
31+ Yrs	47 (1.9%)	0 (0.0%)	731 (15.6%)	5 (8.8%)
Total	2,307	51	4,700	56

Conclusions and Recommendations

- NS & OFE incidence has generally been decreasing following ivermectin MDA
- From 2012 – 2017 (5 Years) the high proportions of NS/OFE shifts to older age groups, likely explained by reduced incidence in 5 – 18 year and increased survival perhaps due to increased access to anti-epileptic treatment.
- NS and OFE incidence have exhibited similar trend, pointing to possible sharing of similar etiology and risk factors.
- High number of OFE in Moyo in 2015 needs to be investigated.

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