

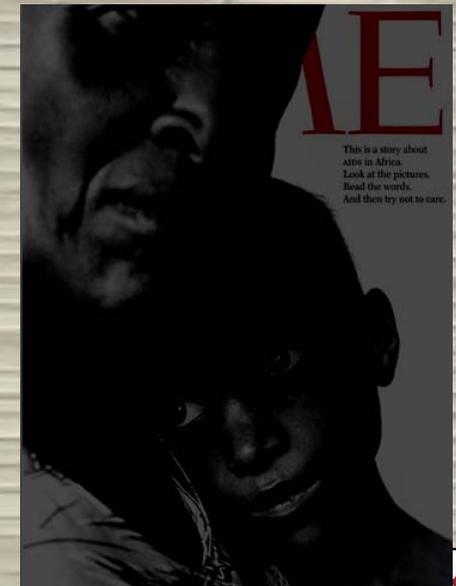
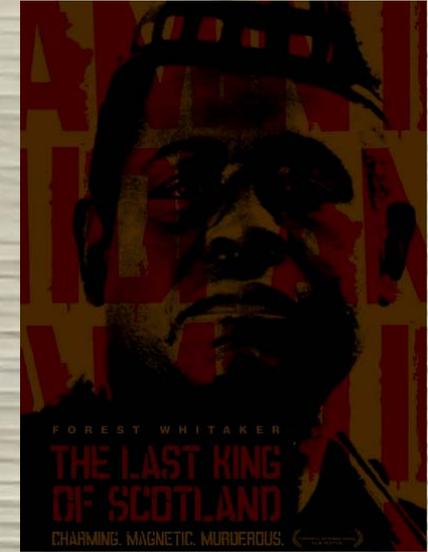
Global Health
An Overview and Case Study from
The U.S. National Library of Medicine

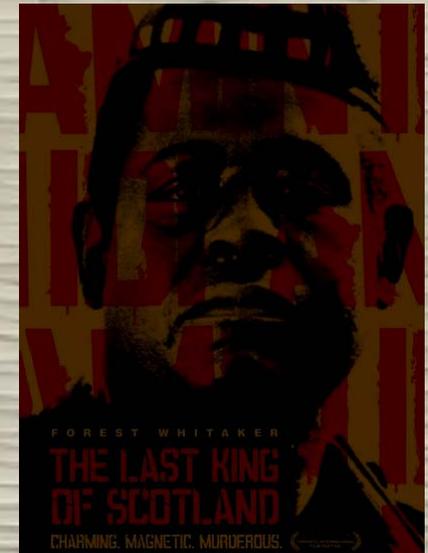
November 4, 2010

For Presentations in Medicine Program
The Collaboratory for High Performance
Computing and Communications

Julia Royall
Chief, International Programs
U.S. National Library of Medicine

Africa: What Image Comes to Mind?

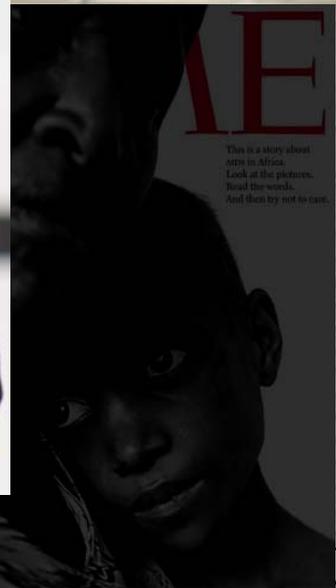
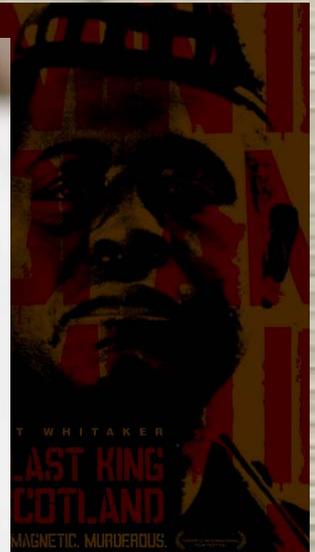


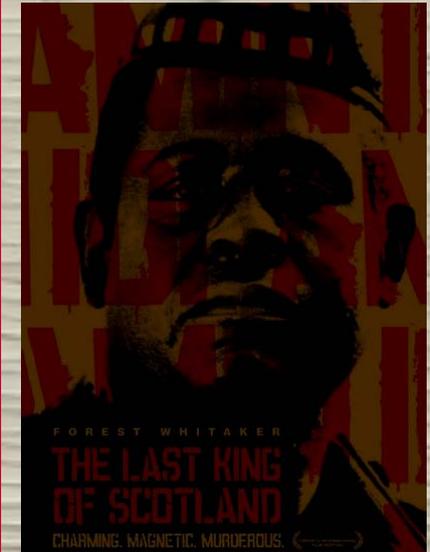


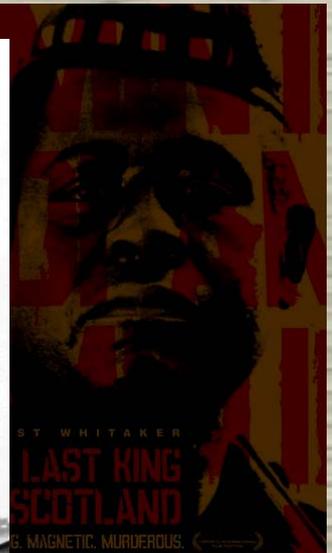
MAKE POVERTY HISTORY



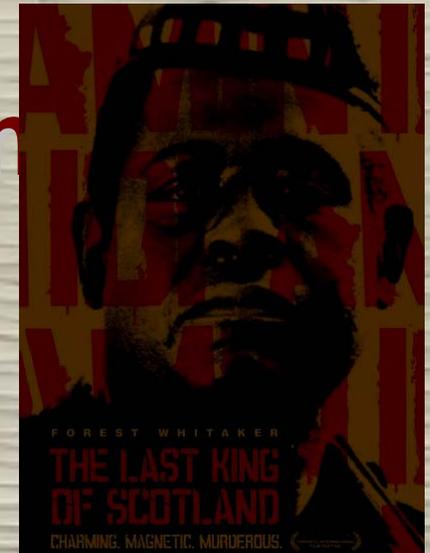


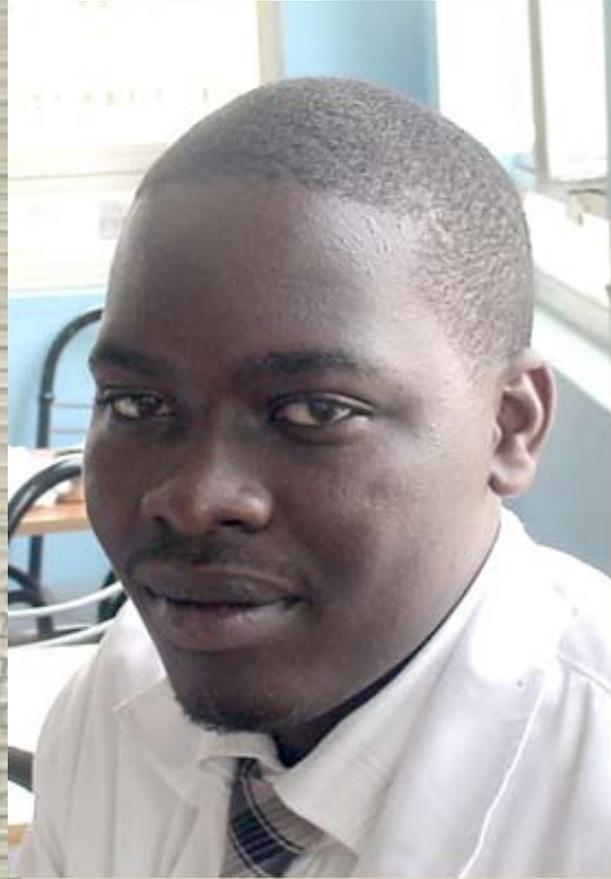






MAKE POVERTY HISTORY





MAKE POVERTY HISTORY



-9- 11/9/2010



NLM Associates from Africa



African Medical Journal Publishing Project Editors



-11- 11/9/2010

NLM Outreach in Africa

African Malaria Researchers
(Multilateral Initiative on Malaria Communications Network)

African Medical Students
(Medline Plus Tutorial on Malaria)



African Medical Journals
(African Medical Journal Partnership Project)

African Medical Librarians
(NLM Associates Program & Network of African Medical Librarians & Deans)

Paradigms for Development:

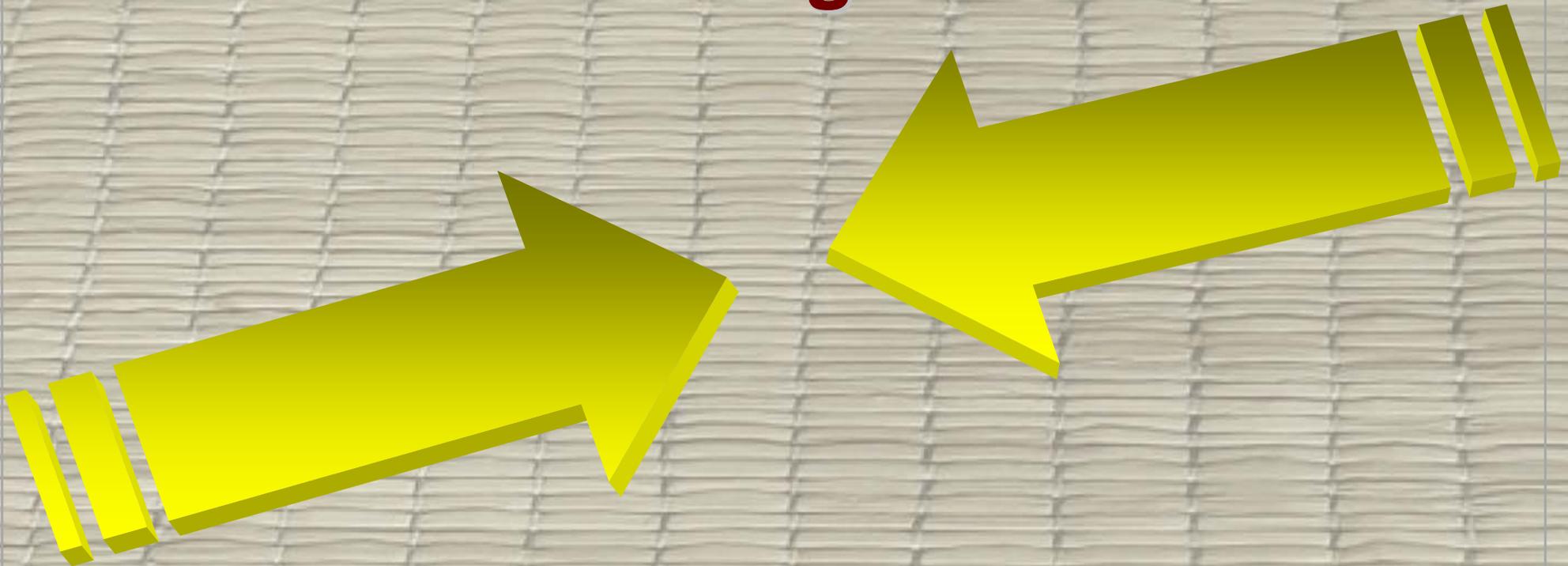
Colonial



Paradigms for Development



Paradigms for Development: Collegial



Creating a two-way street: How, when and why...

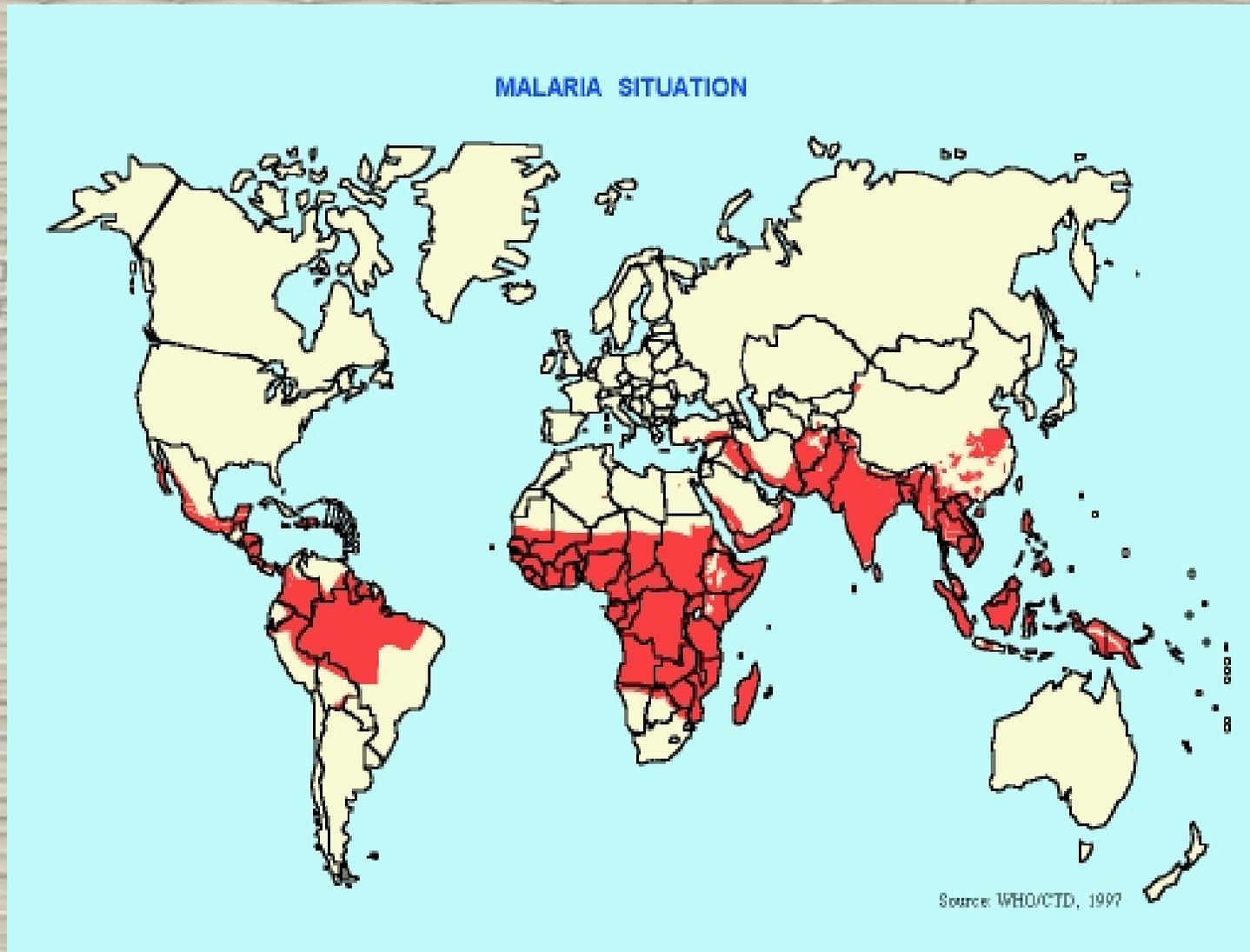


Communication Links Between Partners in Healthcare & Research

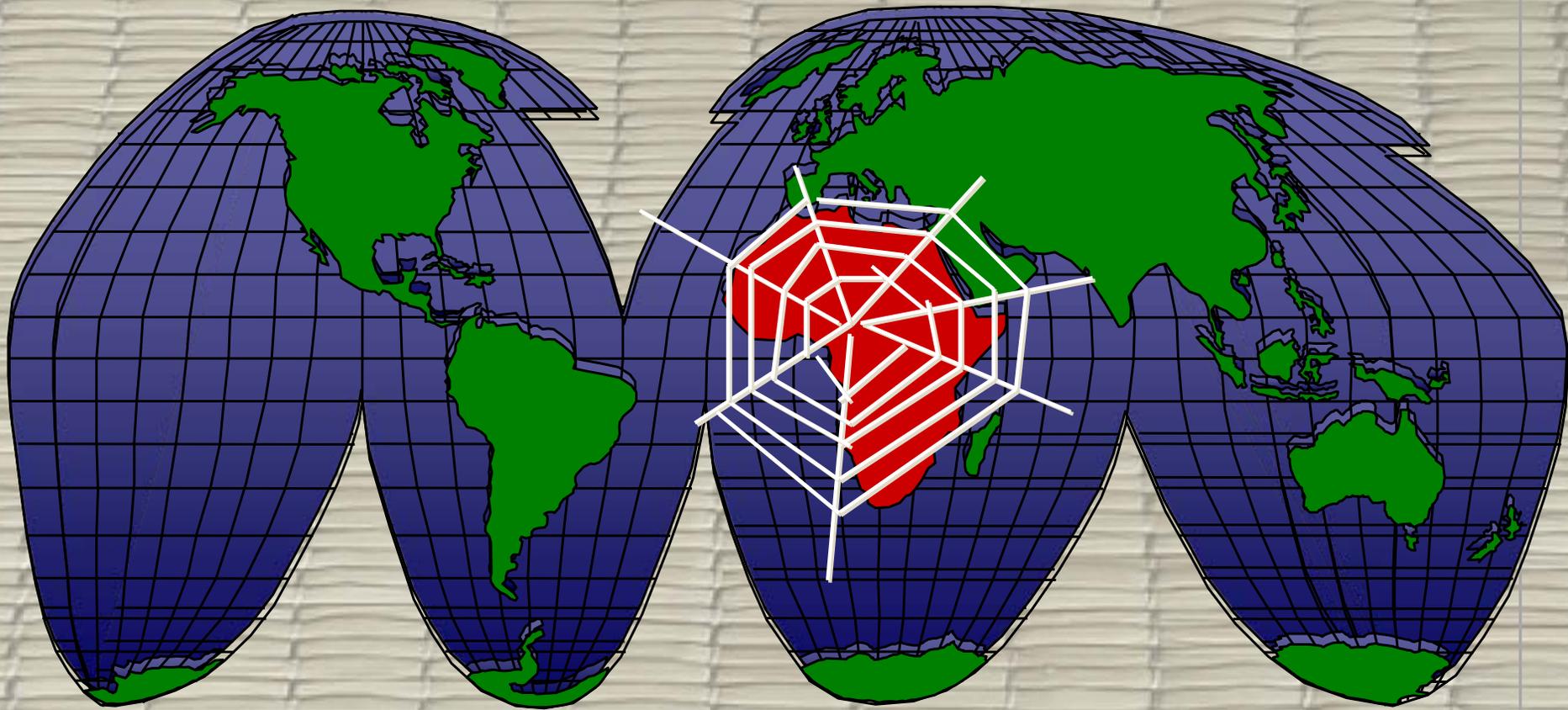


Schematic by Andrew Kitua

The Malaria Situation



Africa Reaches Out to the World



Origins of MIMCom



Goals of MIMCom

First phase:

- **Setting up the network based on the needs as defined by researchers**

Second phase:

- **Supporting research agendas**
- **Africanizing MIMCom leadership**



- Started with one connection in one place

African Malaria Researchers Multilateral Initiative on Malaria Communications Network 27 sites in 14 countries





MIM Communications Network—MIMCom

Gateway to the world of malaria research

MIMCom site is used here to identify those African health institutes whose access to e-mail and the Internet has been enabled or enhanced with initial assistance from MIMCom.

- Phase I MIMCom Site
- ▼ Phase II MIMCom Site
- Countries with subscribers to MIMCom's weekly Malaria Update

Ouagadougou,
BURKINA FASO

Bamako,
MALI

Navrongo,
GHANA

Noguchi,
GHANA
Ibadan,
NIGERIA

Yaounde,
CAMEROON

Lambarene,
GABON

Brazzaville,
CONGO

Lusaka,
ZAMBIA

Manhica, MOZAMBIQUE

Entebbe, UGANDA

Kampala, UGANDA

Kisian, KENYA

Mbita, KENYA

Kericho, KENYA

Nairobi, KENYA

Kilifi, KENYA

Amani, TANZANIA

Dar es Salaam, TANZANIA

Ifakara, TANZANIA

Blantyre, MALAWI





The Wellcome Trust

Noguchi Memorial Institute for Medical Research

a constituent of the College of Health Sciences



Sida



The University of Malawi
College of Medicine



UNITED STATES

National Library of Medicine



National Institute
for Medical Research

Tanzania



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Medical Research Unit

Albert Schweitzer Hosp
Lambaréné, Gabon

UVRI/IAVI



MAKERERE UNIVERSITY

WRAR
Walter Reed

THE UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT

USAID

Mulago Hospital Complex



Department of Health and Human Services
Centers for Disease Control and Prevention



International Centre of Insect Physiology and Ecology

NAVRONGO HEALTH
RESEARCH CENTRE



KENYA MEDICAL RESEARCH INSTITUTE
(KEMRI)



Dr. Andrew Githeko

Senior Scientist & Climatologist, Kenya



“Now we have a system that uses scientific facts to predict the epidemic. Before we were just guessing and we had no idea what was going to happen.”

Dots on a Map

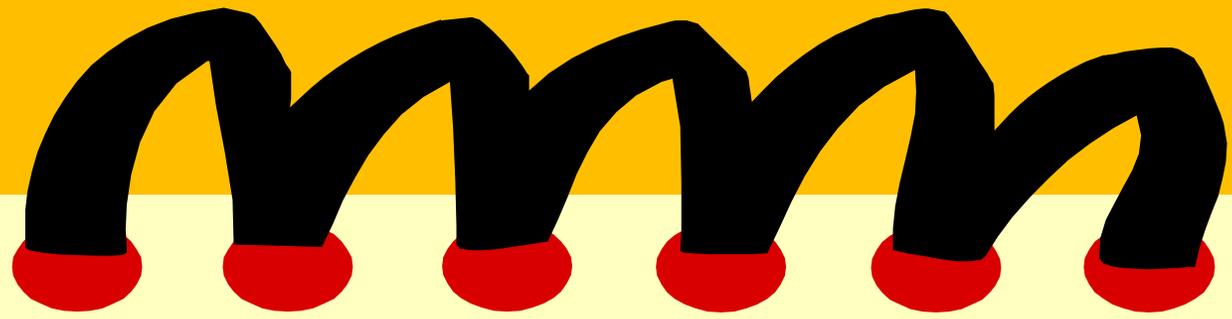


MIMCom VSAT
& Wireless S

Medical Informatics

Successful Outcomes

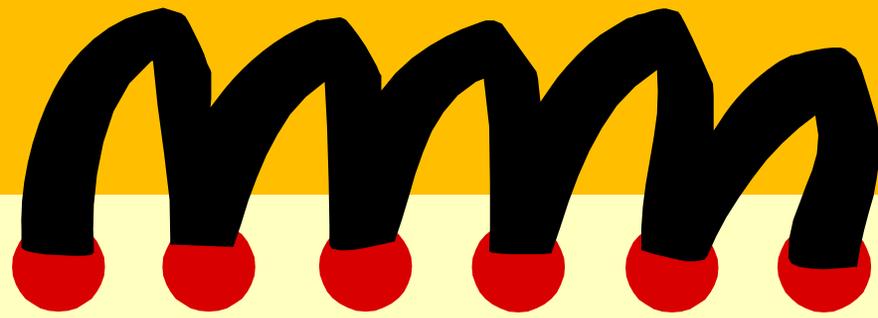




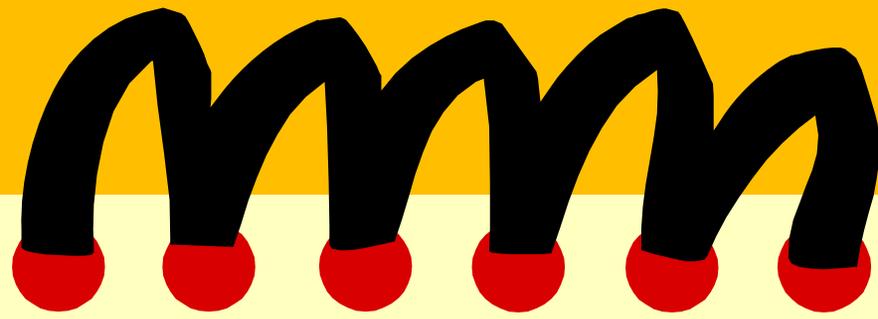
To: Washington

**From: Mifumi village, Eastern
Uganda**

Re: Malaria and Bednets



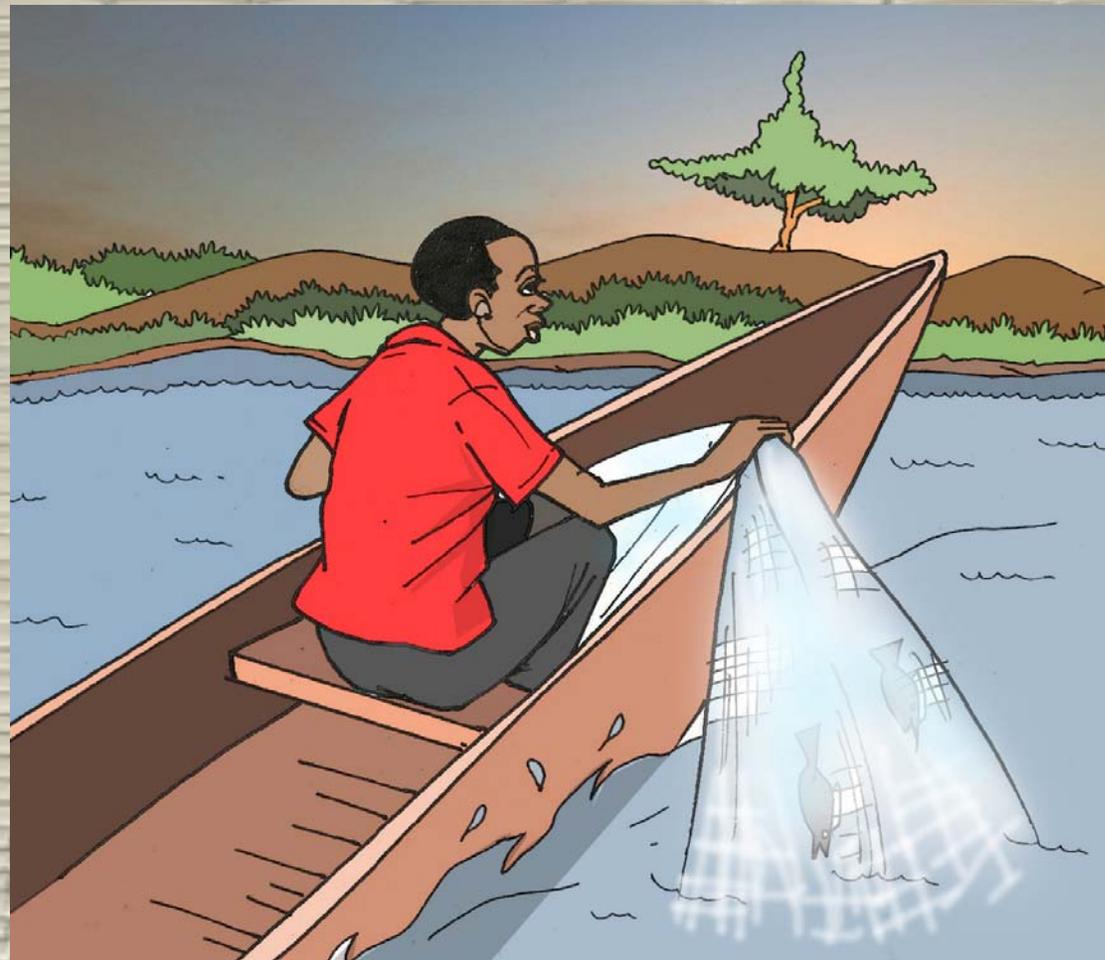
**We are happy
you want to help
Africa. We are
trying to use nets
to prevent
malaria, but it's
not so easy...**



**Nets by
themselves
don't always
work. Here's
why....**

Why bed nets do not always work as designed: People use them for other things

■ Fishing net



Why bed nets do not always work as designed: People use them for other things

■ Bridal veil



Why bed nets do not always work as designed: People use them for other things

■ Table cloth



Why bed nets do not always work as designed: People use them for other things

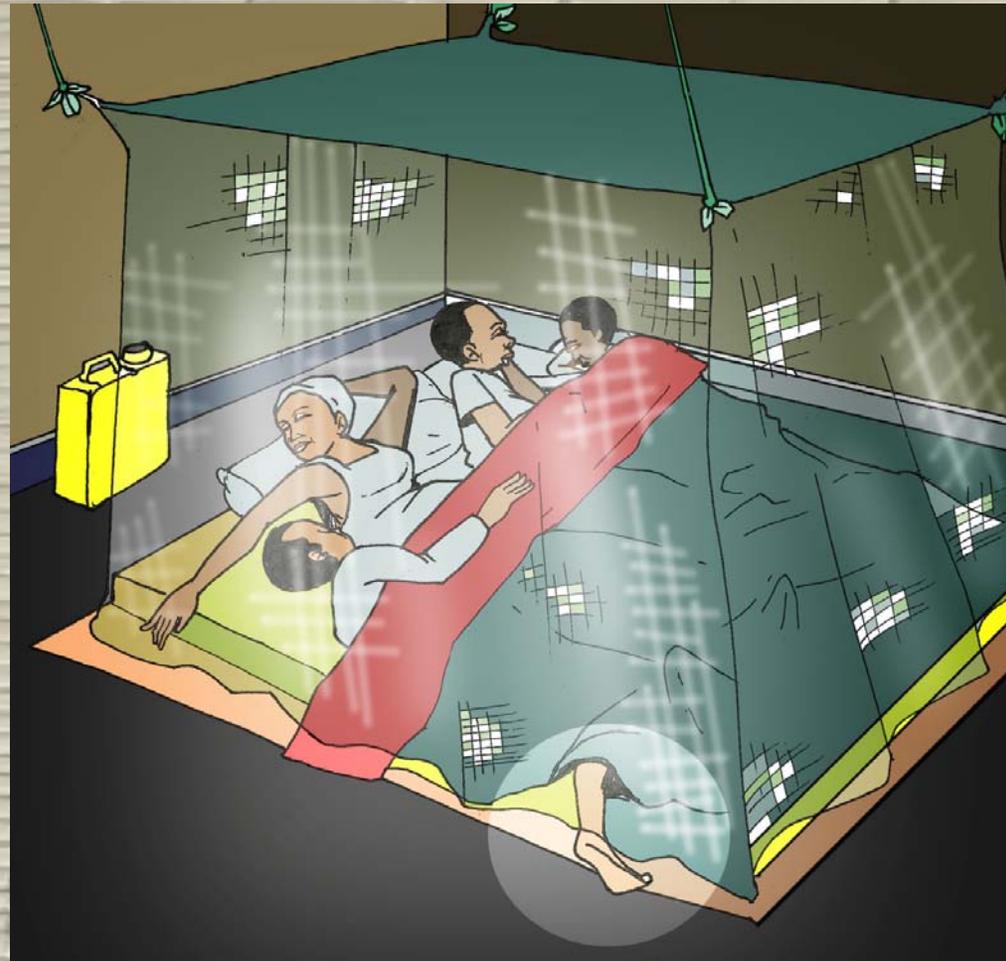
■ Sell for money



Why bed nets do not always work as designed:

One net for the whole family

■ Overcrowding



Why bed nets do not always work as designed:

Lack of electricity



Why bed nets do not always work as designed: Rest of the family is unprivileged



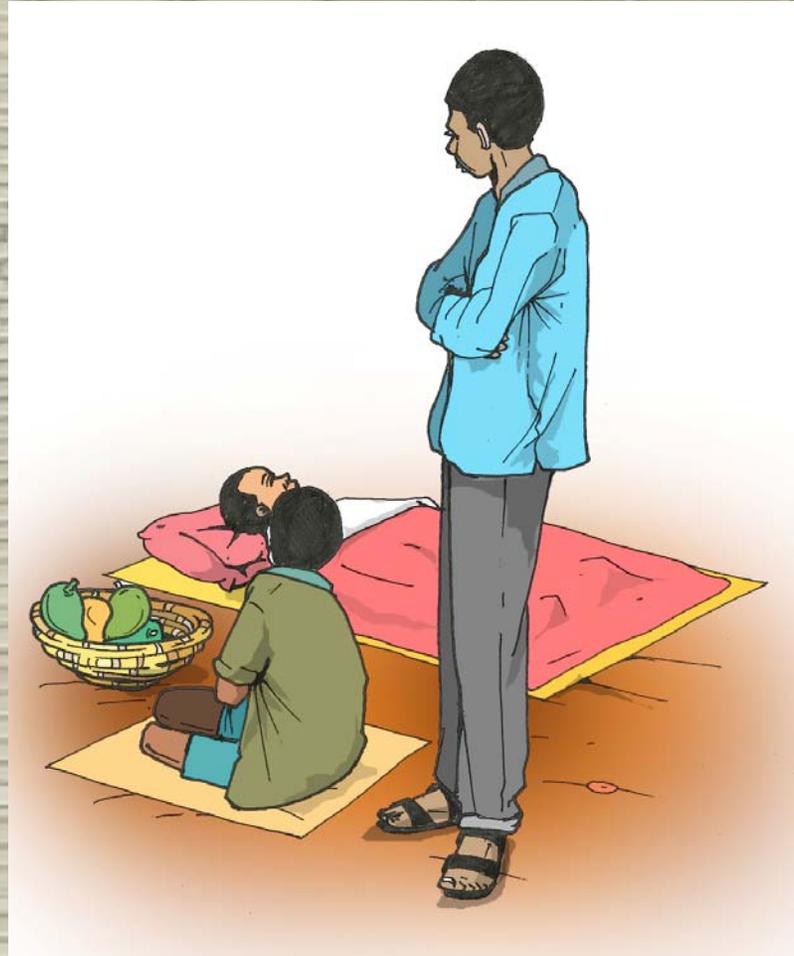
Why bed nets do not always work as designed: Outdoor cooking and socializing

Late cooking

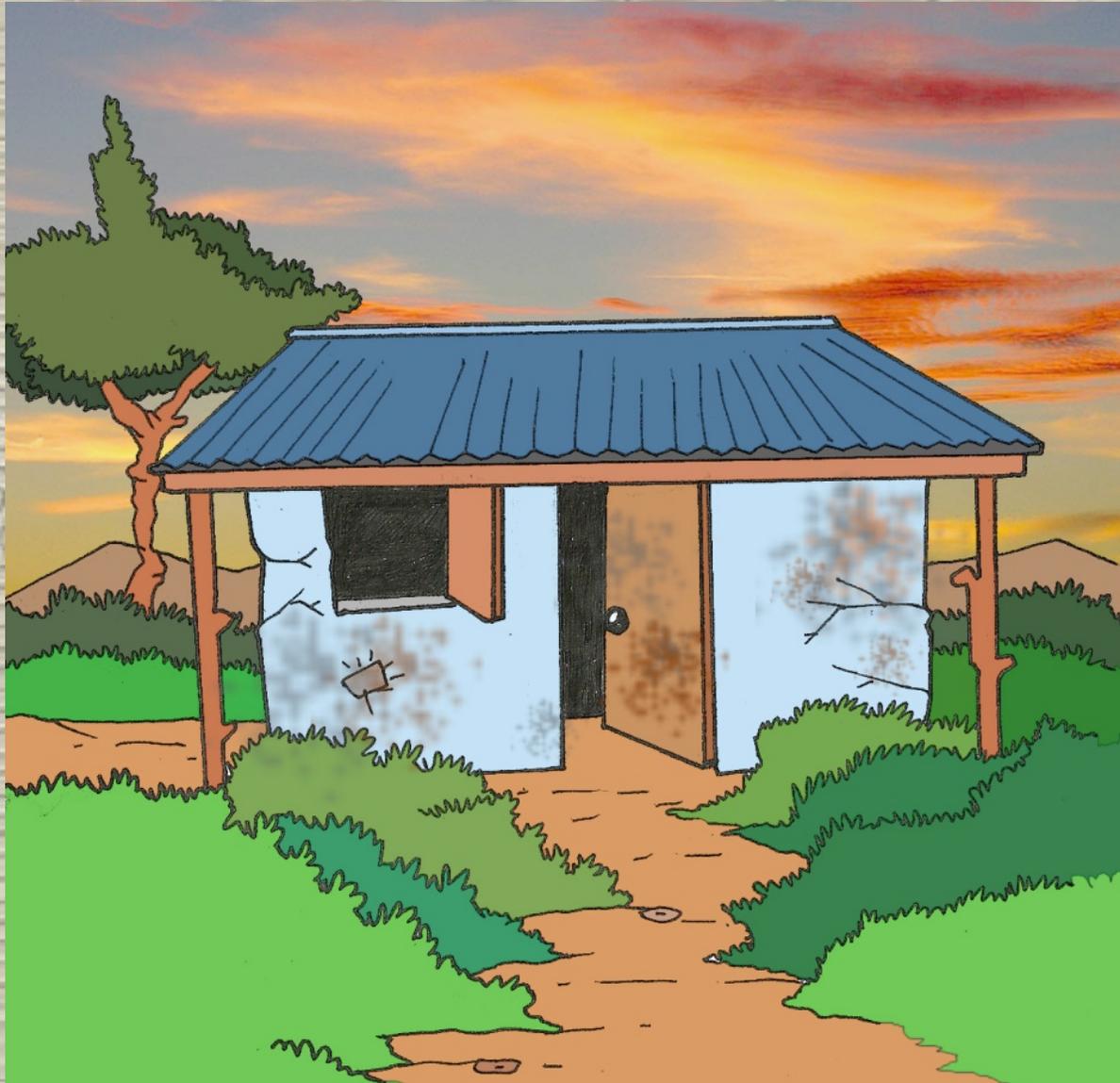


Why bed nets do not always work as designed: Thoughts about other causes

■ Mangoes

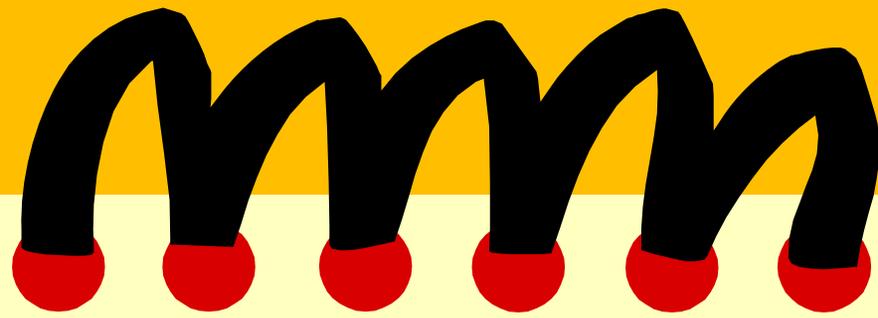


Why bed nets do not always work as designed: Poor Infrastructure and Bushes



Why bed nets do not always work as designed: No interest in getting help





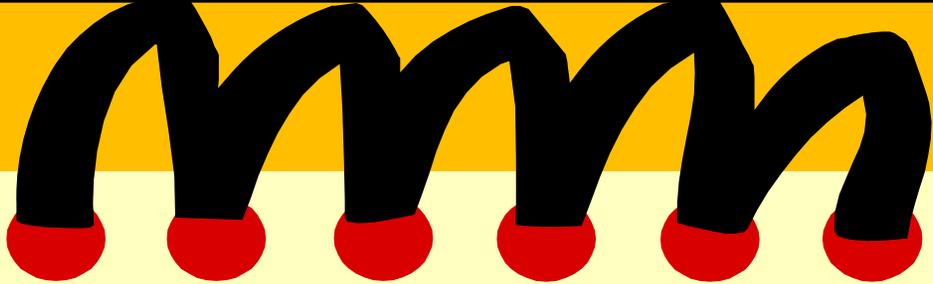
**When used,
here's how they
often look....**











We brought in medical students to help out in our health center and develop an education program.



Baseline survey on knowledge of malaria

INFORMATION SOURCES

Where do you get information about malaria? (can tick more than one)

Friends Healthworker Health center Doctor Nurse sister
 Traditional healer Drug shop Radio Television Newspaper Posters

Do you trust the information you get? Yes No

Why not? Because it helps her to survive.

Have you ever changed your behavior based on information? If yes, give example.

Yes
- She follows what has been taught.
- Sleeps under a net.

■ MedlinePlus
African
Tutorials

Medline Plus Tutorial on Malaria: Cultural Beliefs

- Image creation by local artists in Uganda
- Cultural considerations



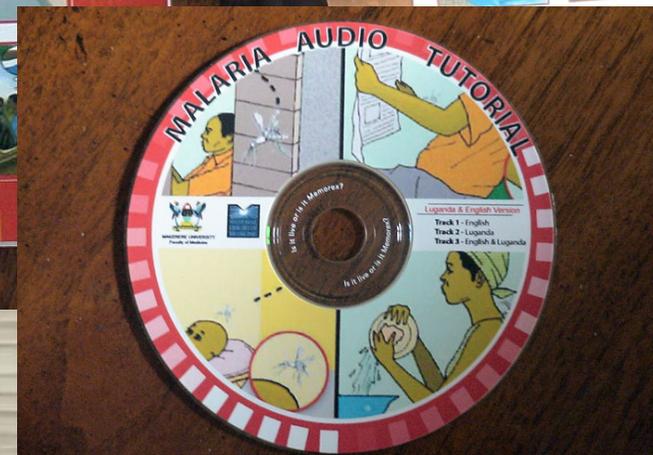
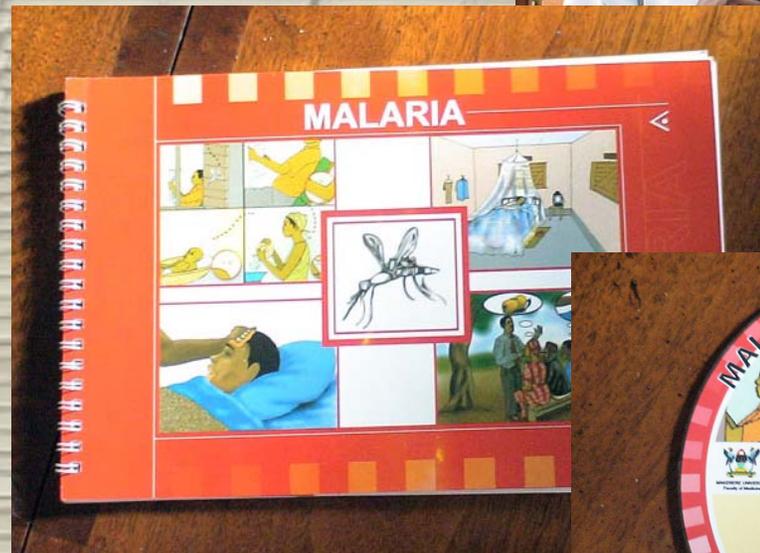
Implementation of information intervention

MedlinePlus African Tutorials



Medline Plus Tutorial on Malaria: Formats

- Electronic
 - Online
 - CD
 - Audio
- Hard copy
 - Posters
 - Booklets



Field Testing



As part of their curriculum, medical students take tutorials to the field for comments.

Medical student Ronnie Kiweewa

Medline Plus Tutorial on Malaria: in English

What do we know about malaria?

- Carried by mosquitoes
- Causes fever, chills
- Can be dangerous, even deadly

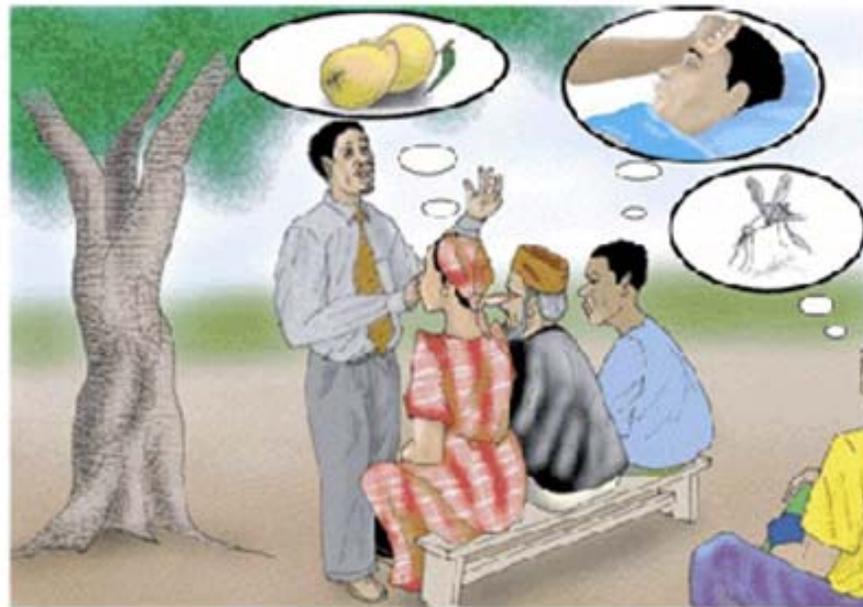


Slide: 5 of 28

Medline Plus Tutorial on Malaria: in Luganda

Kiki kyetumanyi ku musujja gw'ensiri?

- Gusaasanyizibwa ensiri
- Guleeta okwokya n'ekitengo
- Gwabulabe era nga guyinza okuvaako okuffa

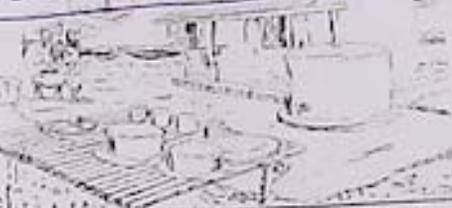


English

Medline Plus Tutorial on Malaria: Languages

■ Translation into local languages

- 🔊 English
- 🔊 Luo
- 🔊 Rukiga
- 🔊 Luganda

| | | | |
|----|--|---|--|
| 25 | <p>If you are given medicine for malaria, it is very important you take all of it. Do not share it with anyone.</p> <p><i>gwe,</i></p> | <p>Bw'oba oweleddwa eddagala ly'omusujja gw'ensiri, kikulu nti olimila lyona. Tobaako na gwoligabana naye.</p> <p><i>olikozesa</i> olimila <i>olikozesa</i></p> |  <p><i>tundu kya</i></p> |
| | <p>Prevention of malaria is important to you, your family, and the community. Prevention measures include keeping a clean homestead, using mosquito nets, and wearing long sleeve shirts at night.</p> | <p>Okuziyiza omusujja gw'ensiri kiyamba ob'amumakaago. Mu kuziyiza mulimu okukuma amaka nga mayonjo, okukozesa obutimba bw'ensiri obulimu eddagala n'okwambala engoye ezibika omubiri ng.onoobera ebweru ekiro.</p> | <p><i>nabamukitunda kya</i></p>  <p><i>omusujja</i> <i>abo</i></p> |
| | <p>Sharing information within the community on prevention and treatment of malaria can help keep people healthy.</p> | <p>Okugabana Okubulira ebikwatagana ku kuziyiza n'okujanjaba omusujja gw'ensiri kiyamba okukuuma obulamu bwaffe nga</p> | <p><i>bannj abamukitunda</i></p>  |

Implementation of Information Intervention

MedlinePlus African Tutorials

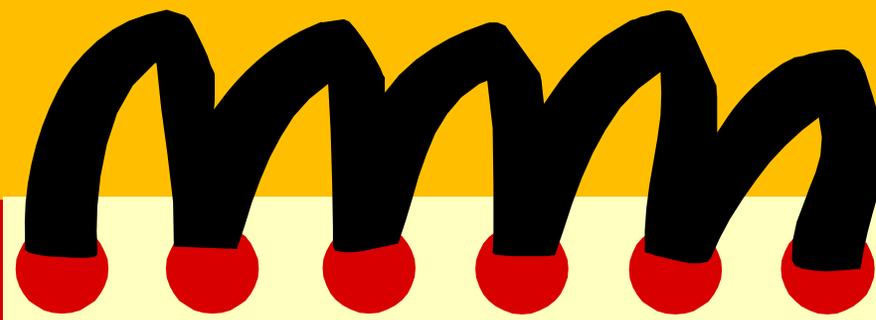


Bernard at Mifumi Health Center

Implementation of Information Intervention

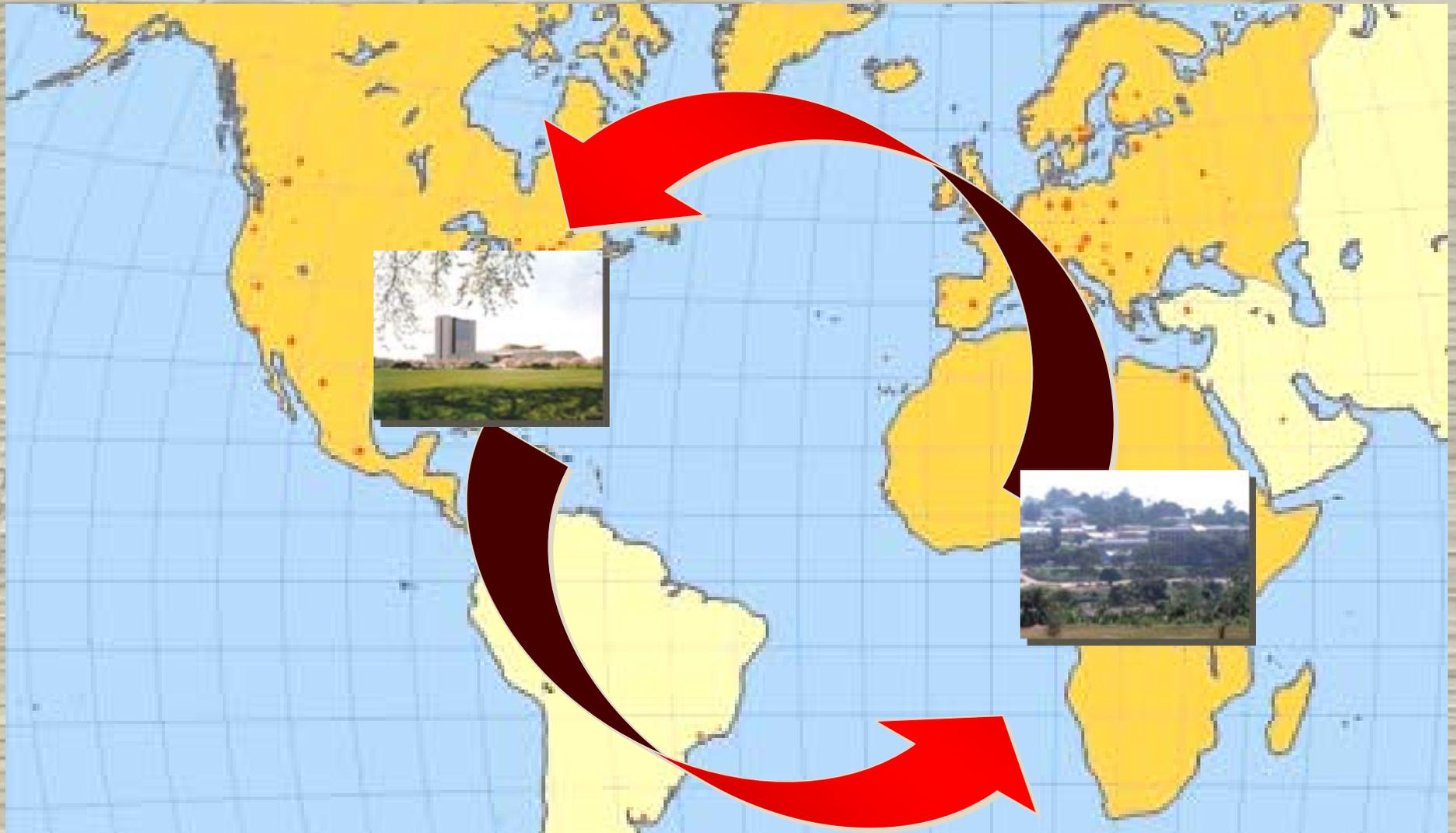
MedlinePlus African Tutorials





We launched a study of bed net use. Medical students collected data using the digital pen.

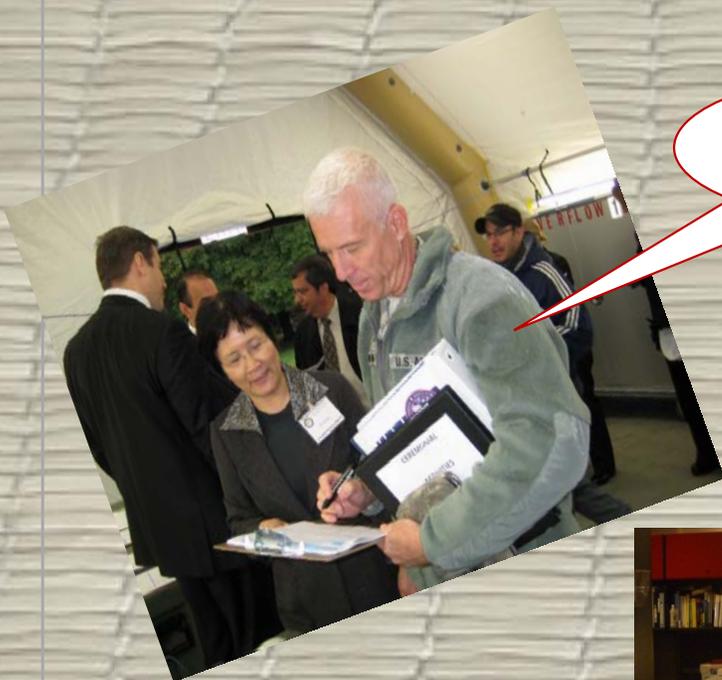
The Collaboration



The Players: Mifumi Village



The Players - OCCS Development Team



**Wei Ma in
CMAX 2009**



**Chandra
Kola**



**David
Zhang**



**Matthew
Rothstein in
CMAX 2009**



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The Players - COBES Students



The Players - HealthNest Team



Survey of Bed Net Use

NATIONAL LIBRARY OF MEDICINE (NLM) HEALTHNEST
 MAKERERE UNIVERSITY COLLEGE OF HEALTH SCIENCES MIFUMI

MOSQUITO NET UTILIZATION OBSERVATION/EVALUATION FORM

Household # Zone :
 Village : Sub County :
 Date : Time : Observer (initial) :

Instructions
 Tick appropriately (Y=Yes, N=No, Unobserved)

Section 1. Brief Household Details

| | Yes | No | UnObserved |
|--|--------------------------|--------------------------|--------------------------|
| Located/Surrounded by a bushy environment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has at least two bedrooms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| House has more than five household members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Presence of swamps and ponds | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Presence of water traps (broken pots and plastics) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there children below 5 years | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are there expectant mothers in the household | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Additional Comments:

Section 2. Availability of Mosquito Net(s)

| | Yes | No | UnObserved |
|---|--------------------------|--------------------------|--------------------------|
| Mosquito net(s) available | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Available and in active use | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Household uses only one mosquito net | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Each member of the household has a mosquito net | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Additional Comments:

Section 3. Status of the Mosquito Net(s)

| | Yes | No | UnObserved |
|--|--------------------------|--------------------------|--------------------------|
| Fully intact | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has repairable damage | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Damaged beyond repair (grossly torn, ≥ 3 holes, etc) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has damages that appear to have been repaired | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

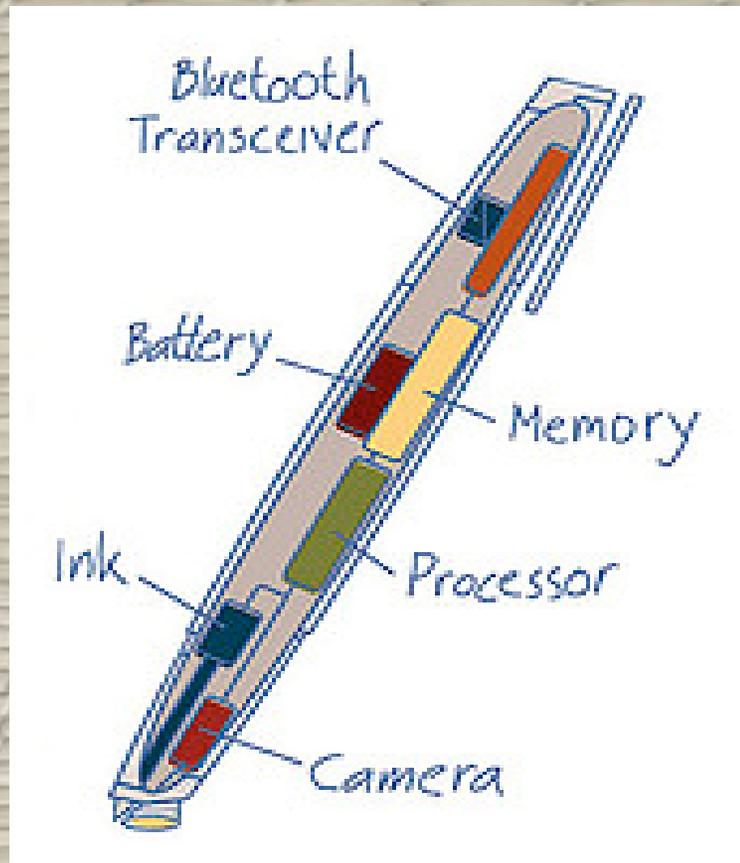
Additional Comments:

Section 4. Utilization of the Mosquito Net(s)

| | Yes | No | UnObserved |
|---|--------------------------|--------------------------|--------------------------|
| All household members use mosquito nets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Used by only children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Used by only adults | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Shared by both adults and children | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tied and or hung appropriately <small>to provide intended protection from mosquitoes</small> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tucked appropriately under the mattress | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Appears clean and presentable | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Appears dirty and generally not presentable | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Damaged nets are in use | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Spread the bed nets by dusk | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Net used for other purposes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Additional Comments:

Digital Pen and Paper



- Technology bridges the gap between paper and electronic systems.
- It is a pen -writes normally, captures data automatically through the camera, data can then be transmitted to a computer to review and modify via either USB or Bluetooth before transferring to a background system.
- Camera takes 50+ pictures per second
- Store up to 50 Letter size pages of handwritten data
- Battery life limited to:
 - Around 5 hours of continuous use
 - More than 24 hours if capped
 - Weeks if capped and stored



Data Collection

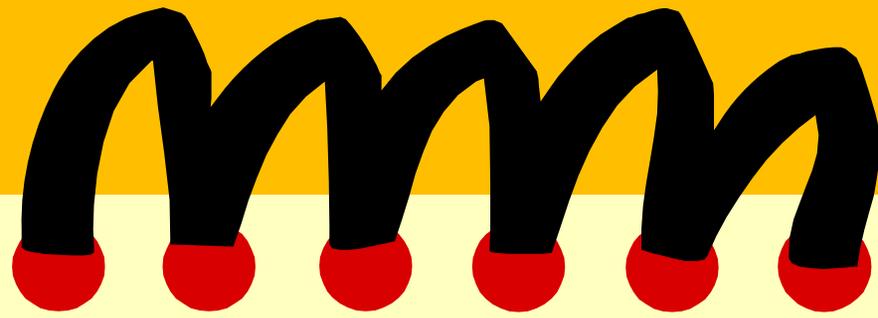


Data Collection



Data Collection





**This is our
village.**

Mifumi Village



Mifumi Village



Mifumi Village



Mifumi Village



Mifumi Village



Mifumi Village



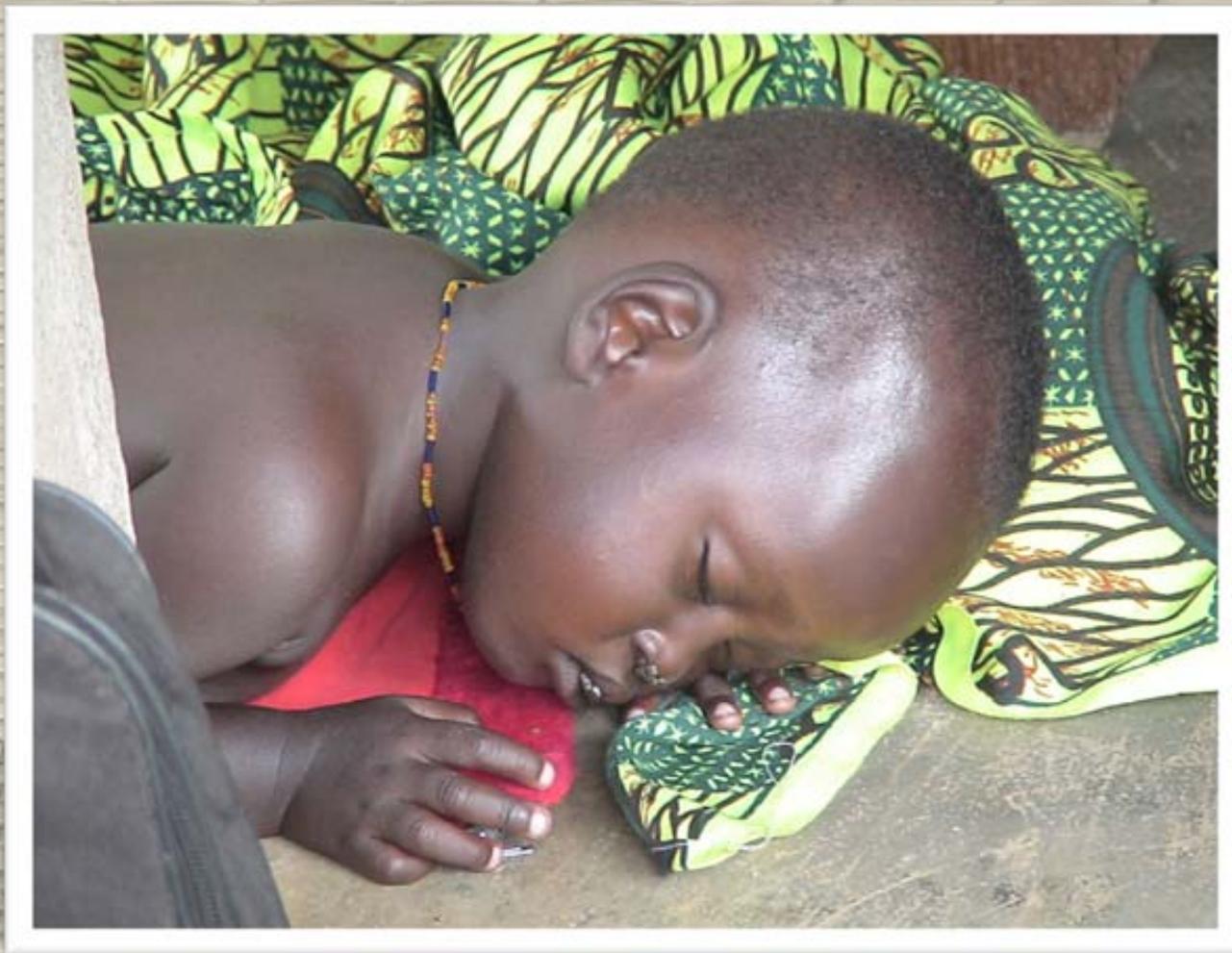
Mifumi Village



Mifumi Village



Mifumi Village



Mifumi Village

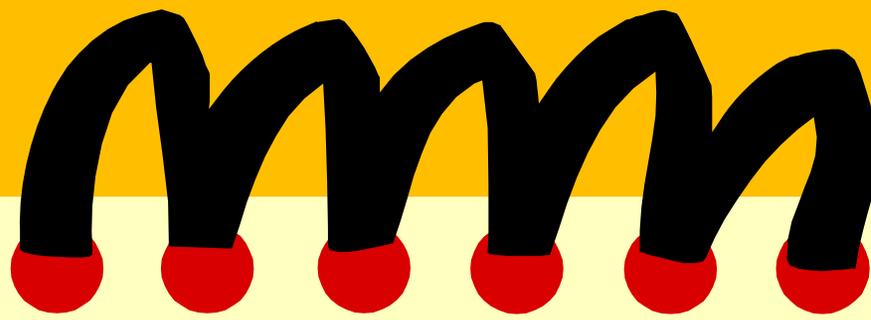


Mifumi Village



Mifumi Village





In July, we held a community meeting to give the results to the community and engage them in what we are doing. They came – more than 150 of the villagers – and stayed for TWO HOURS.

Community Meeting



Community Meeting



Community Comments



**We sometimes
chase mosquitoes
away using by
smoking the house.**

Community Comments



We use some plants with repellent odor to send mosquitoes out of the house.

Community Meeting



Community Comments



**Cockroaches
present a big
problem to the
mosquito nets,
biting and thus
destroying them.**

Community Meeting



Community Comments



**How can we go
about preventing
mosquito bites in the
evening sessions
while seated outside
before going to bed?**

Community Meeting



Community Meeting



Community Comments



We truly appreciate this feedback from you, and would like to request that we meet on a monthly basis, so you can continue sensitizing us on such diseases the affect us in our community.

Community Meeting



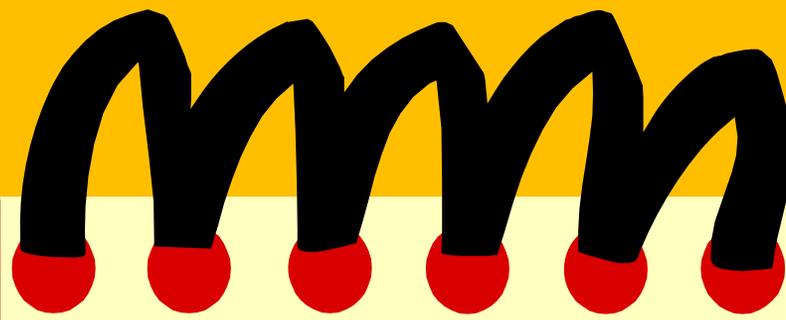
Community Comments



The treatment of malaria is very expensive, going to as high as \$30 when it really gets to advanced stages. However, we are grateful to Mifumi Health Center for providing us with drugs.

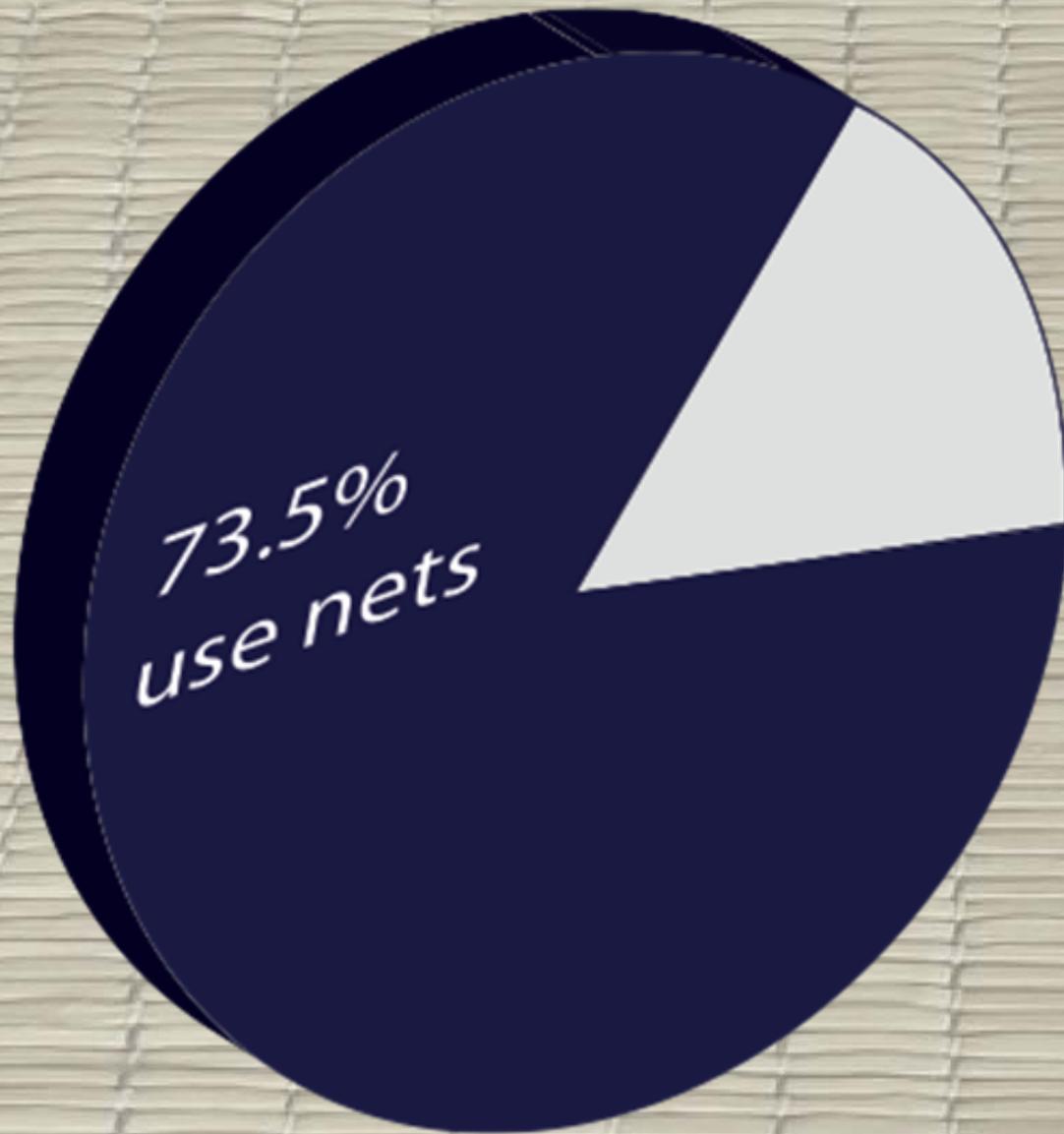
Community Meeting



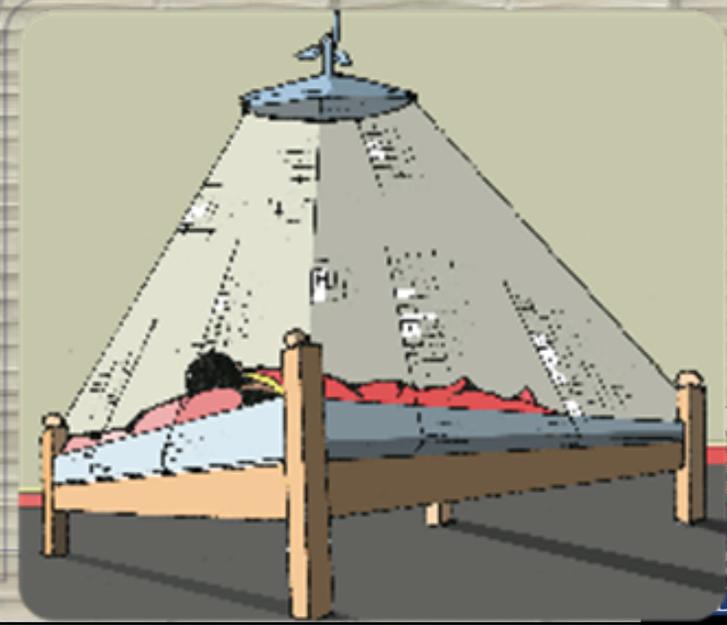


**Here's what
the study
found:**

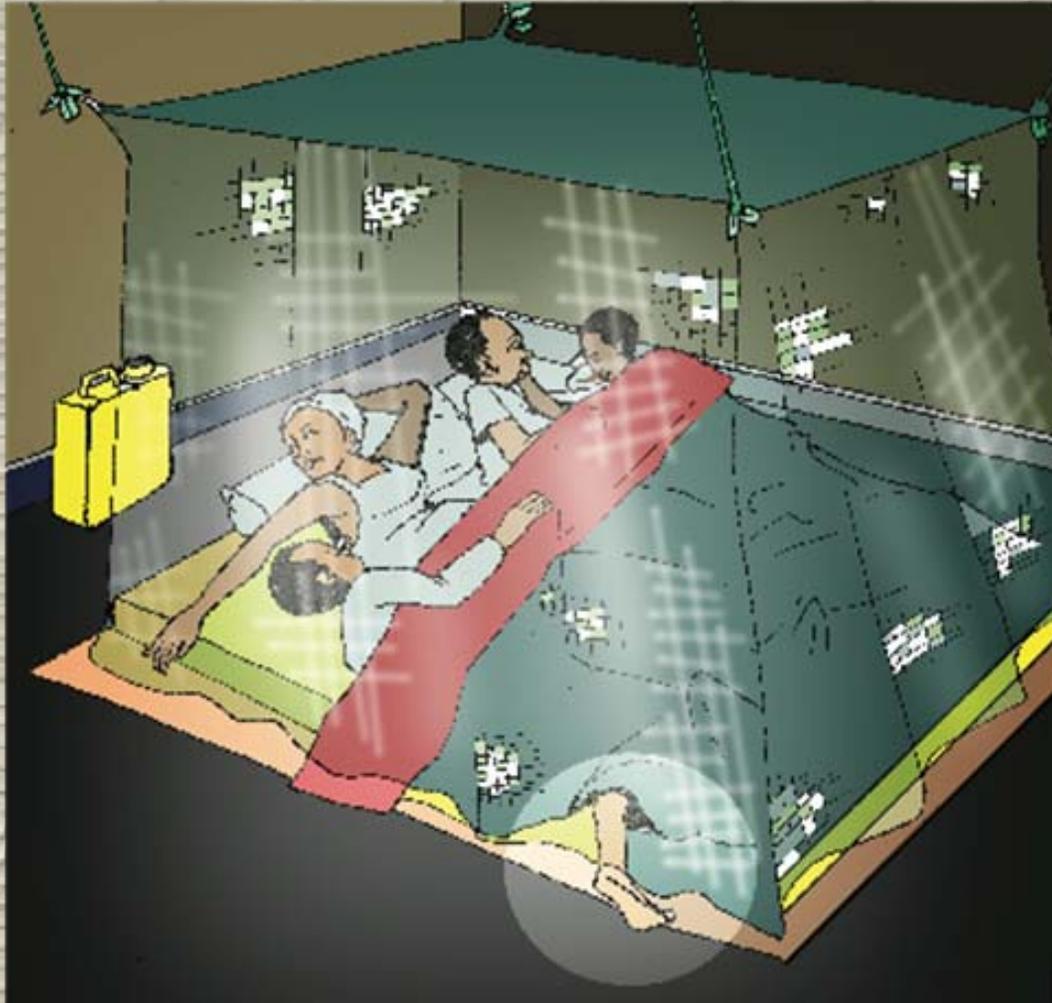
Findings: Education Efforts



From the study, it was observed that the majority of households (73.5%, i.e. 125 of 170) use mosquito nets as a result of education efforts by the village health center (see earlier NLM "information intervention" projects from 2008-present.)



Findings: Sharing in Most Households



In nearly all the households, the nets in use were being shared, with priority being given to adults in some households.

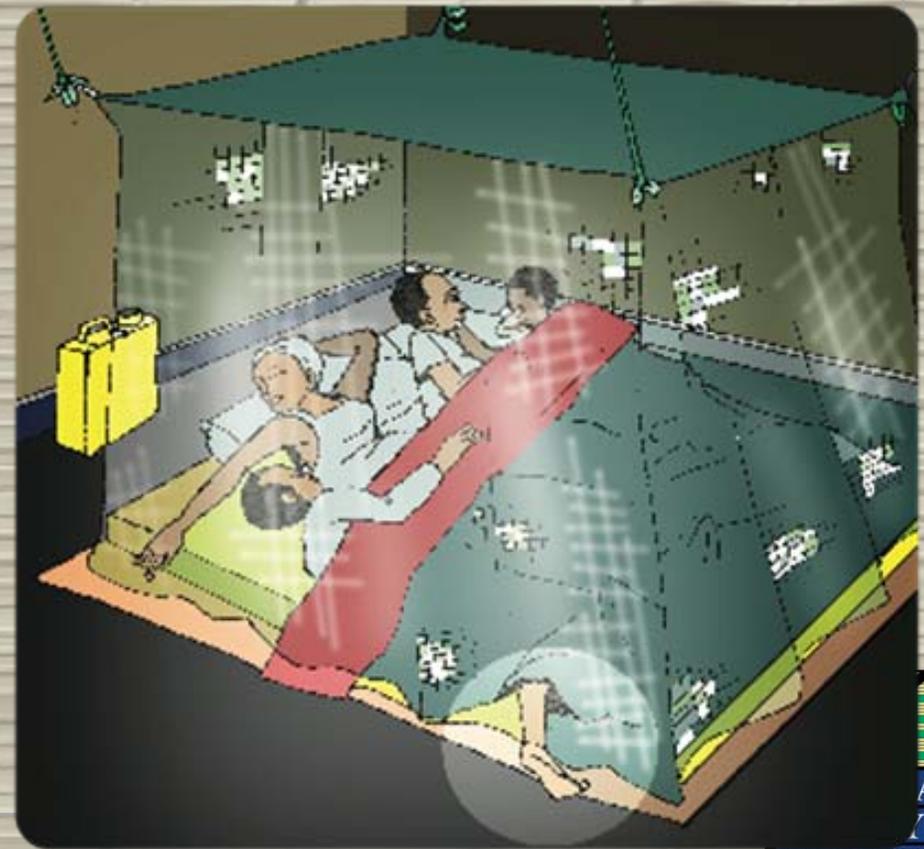
Adults were given priority in some households



Findings: Appropriately Hung Nets



In a majority of the households (77.6, i.e. 132 of 170), the nets were hung appropriately as a result of adequate instructions prior to the distribution.



Findings: Mishandling

Limited Space



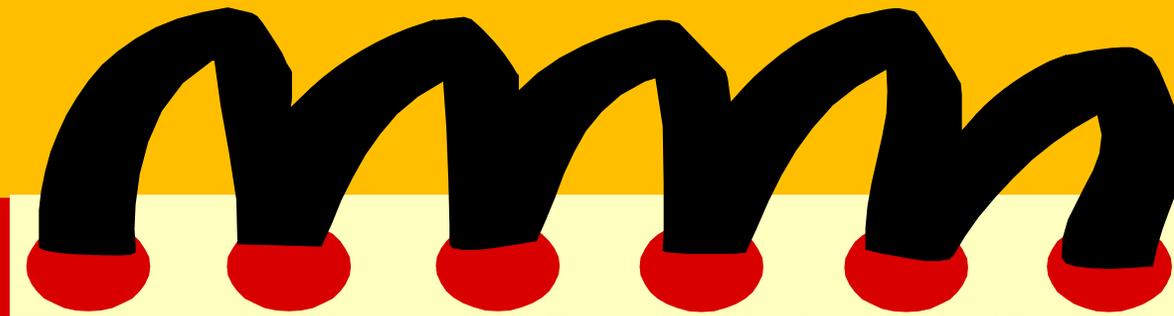
In incidences where the nets were not tied and hung appropriately (35), the contributing factors could be limited space and lack of knowledge.

Lack of knowledge



Malaria Morbidity and Mortality in Mifumi Village

| Year | Morbidity | Mortality |
|------|-----------|-----------|
| 2008 | 4402 | 303 |
| 2009 | 3618 | 118 |
| 2010 | 2951 | 10 |



The study taught us about the:

- **Importance of research in endemic areas**
- **Importance of new technical tools in service of research**
- **Importance of students doing research in community**
- **Importance of voice of engaged community**

Regina Shakakata

Medical librarian

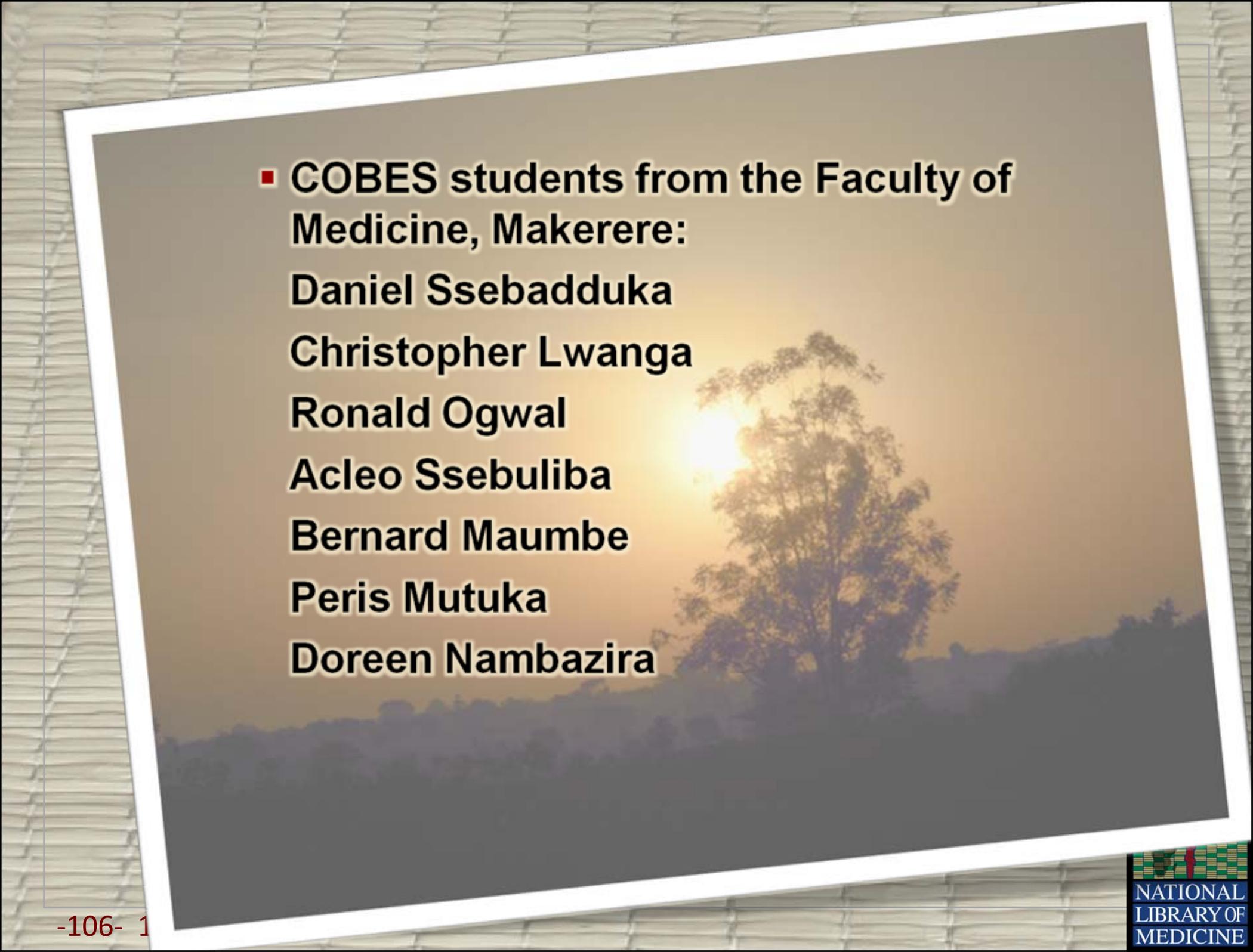


“We are talking of empowering our communities, empowering individuals in Africa with appropriate information so that they can take decisions about their own health. About their well-being.”

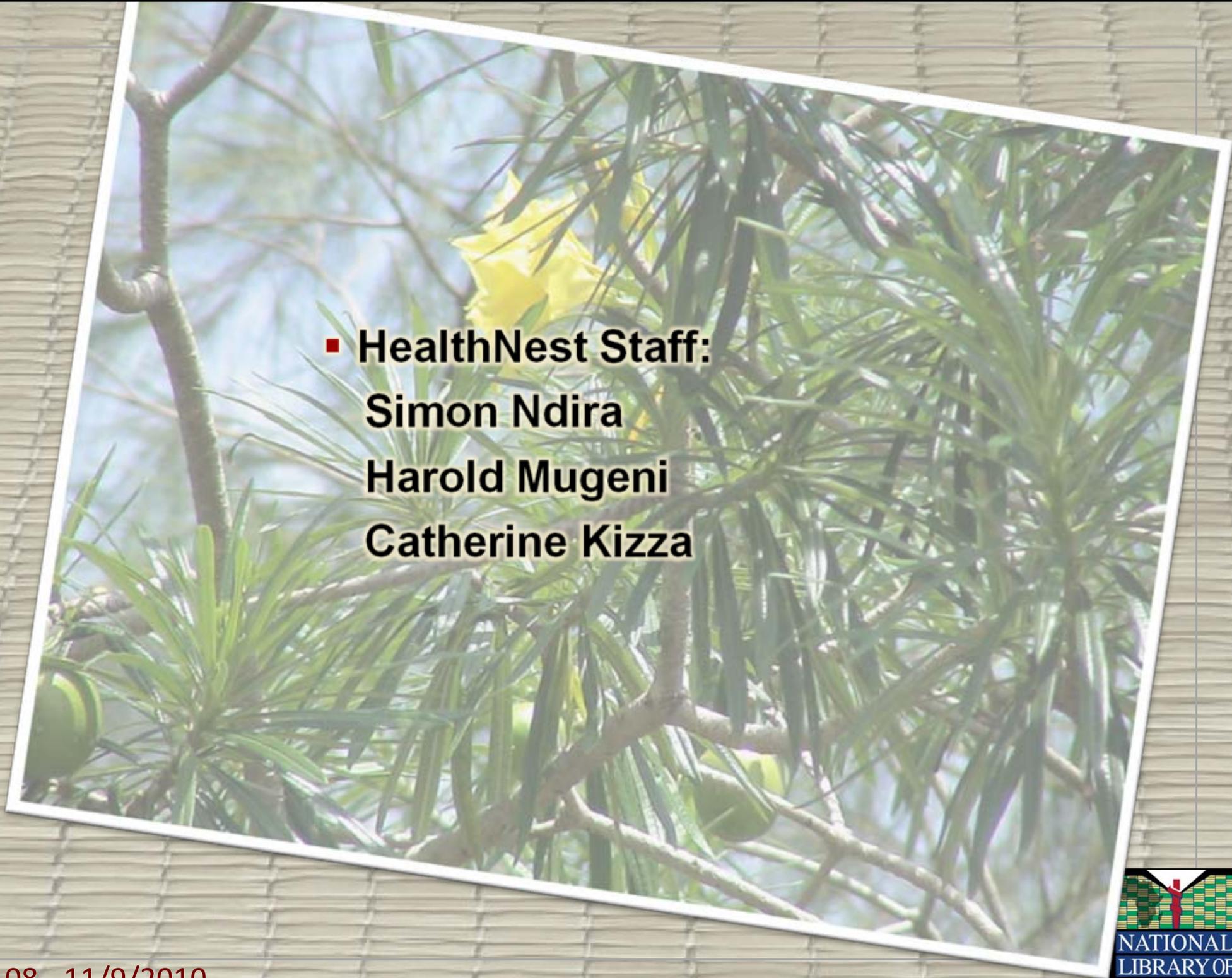
With thanks to:

- **Prof. Dr. Nelson Sewankambo, Principal, College of Health Sciences, Makerere University**
- **Dr. David Okumu, District Health Officer, Tororo District**
- **Dr. Andrew Mwanika, Head of the COBES Program, Faculty of Medicine, Makerere University**
- **Sr. Gorretti Athieno, Principal Nursing Sister, In-Charge, MIFUMI Health Center**



- 
- **COBES students from the Faculty of Medicine, Makerere:**
Daniel Ssebadduka
Christopher Lwanga
Ronald Ogwal
Acleo Ssebuliba
Bernard Maumbe
Peris Mutuka
Doreen Nambazira

- 
- **NLM OCCS Team:**
Wei Ma (Chief, Application Branch)
Chandra Kola (Senior Software Developer)
Mathew Rothstein (Application Developer)
 - **NLM International Programs:**
Julia Royall



- **HealthNest Staff:**
Simon Ndira
Harold Mugeni
Catherine Kizza



Charles Isabirye and Ronnie Ogwang







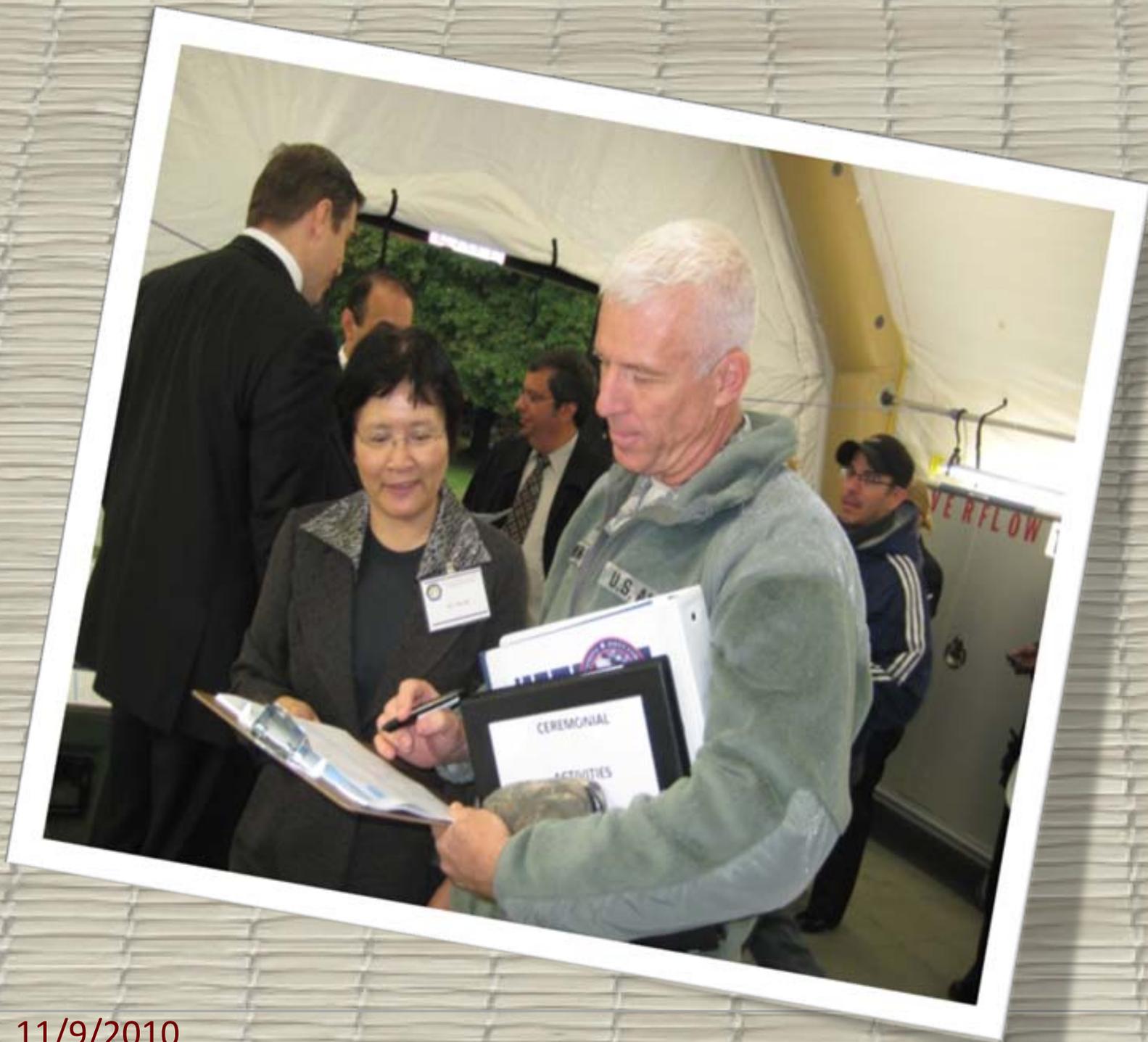


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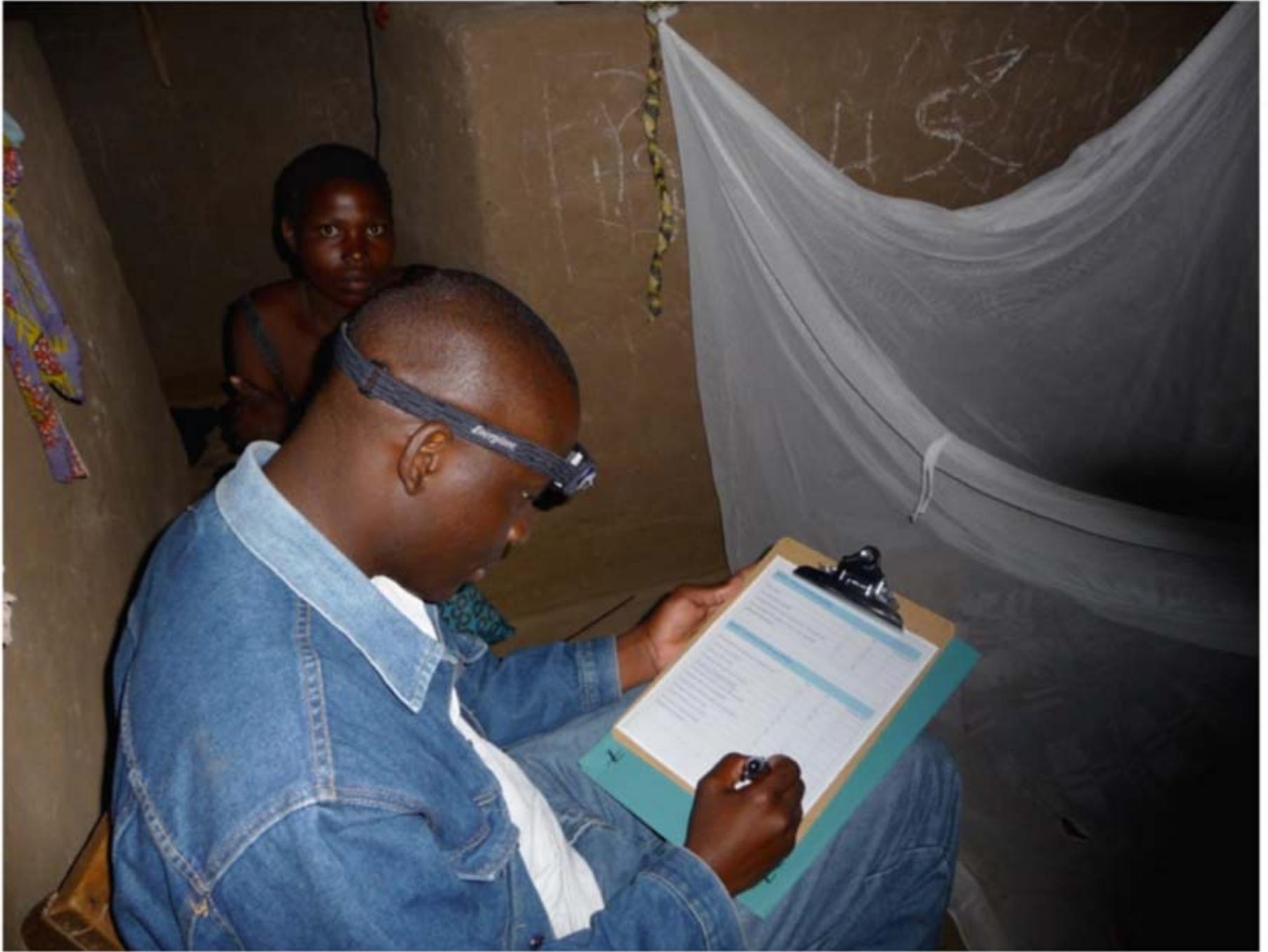






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