

The Bo (and Kenema) Lab Experience

August, 2014- September, 2015



It all started in Kenema...



Kenema

- Team 1 (3 people) arrived at Kenema Government Hospital on August 19th to set up the lab and began testing on August 22nd, 2014
 - No electricity or running water at first
 - Most of the rooms were being used as storage
 - Had to modify part of the Lassa lab to be our “hot lab”
- Consisted of a Hot lab and 2 rooms in a portable trailer for the extraction room/clean room partitioned off and PCR/office room
- Team 2 arrived on September 9th.
- Tested 1470 samples in Kenema from August 22nd to Oct 1







Clean room



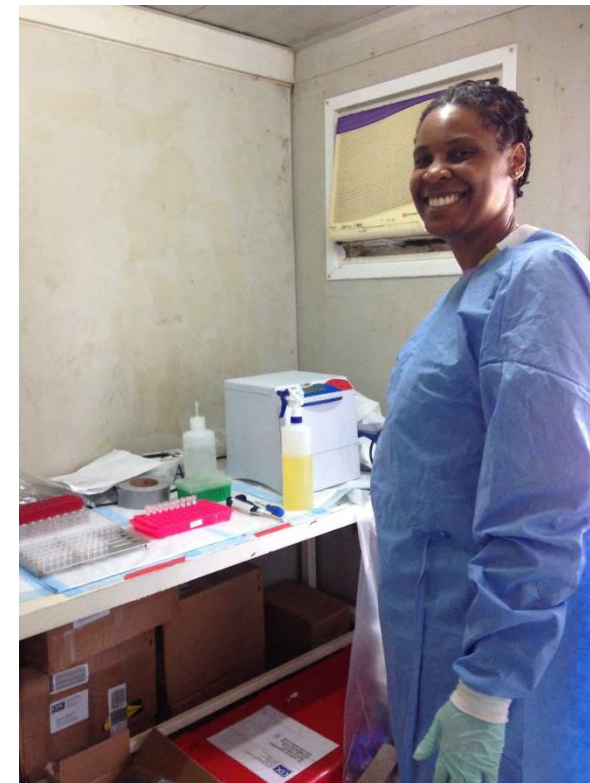
RNA room



Generator



PCR/Office



Extraction room



The best days in Kenema....





Now on to Bo...

- First assessment of the Bo space at the MSF compound was on Sept 22nd
 - Begin construction of the “hot lab”
 - Re-visit on Sept 27th and hot lab was almost complete
- Transitioned from Kenema to Bo on Oct 2nd with no disruption in testing
 - Morning run was done in Kenema and afternoon run in Bo
- Teams 2 and 3 were first teams to test in Bo



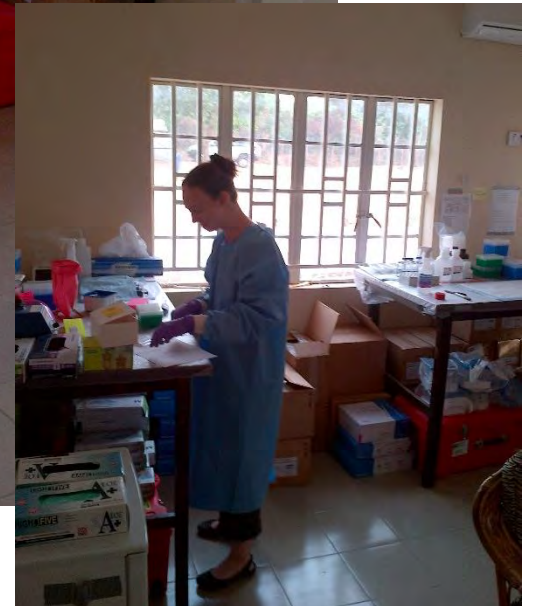
Clean Room



Before



After



Main PCR/Office Room

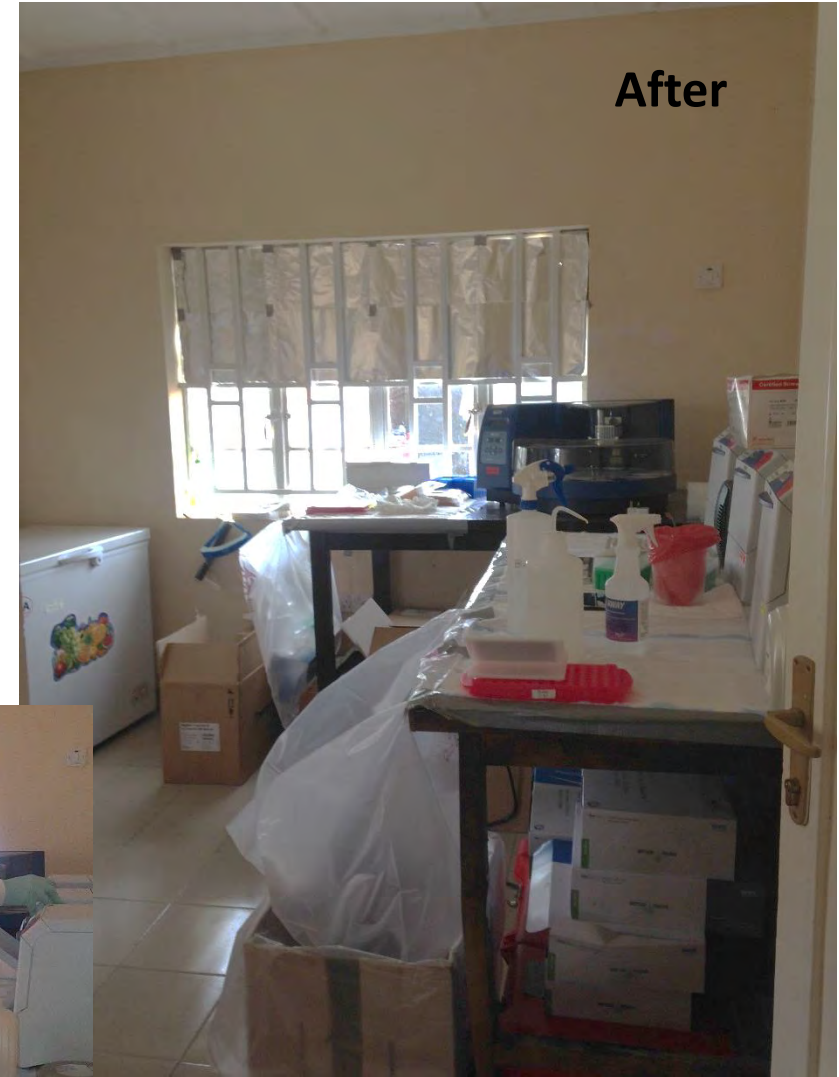


RNA Extraction Room

Before



After





Hot lab

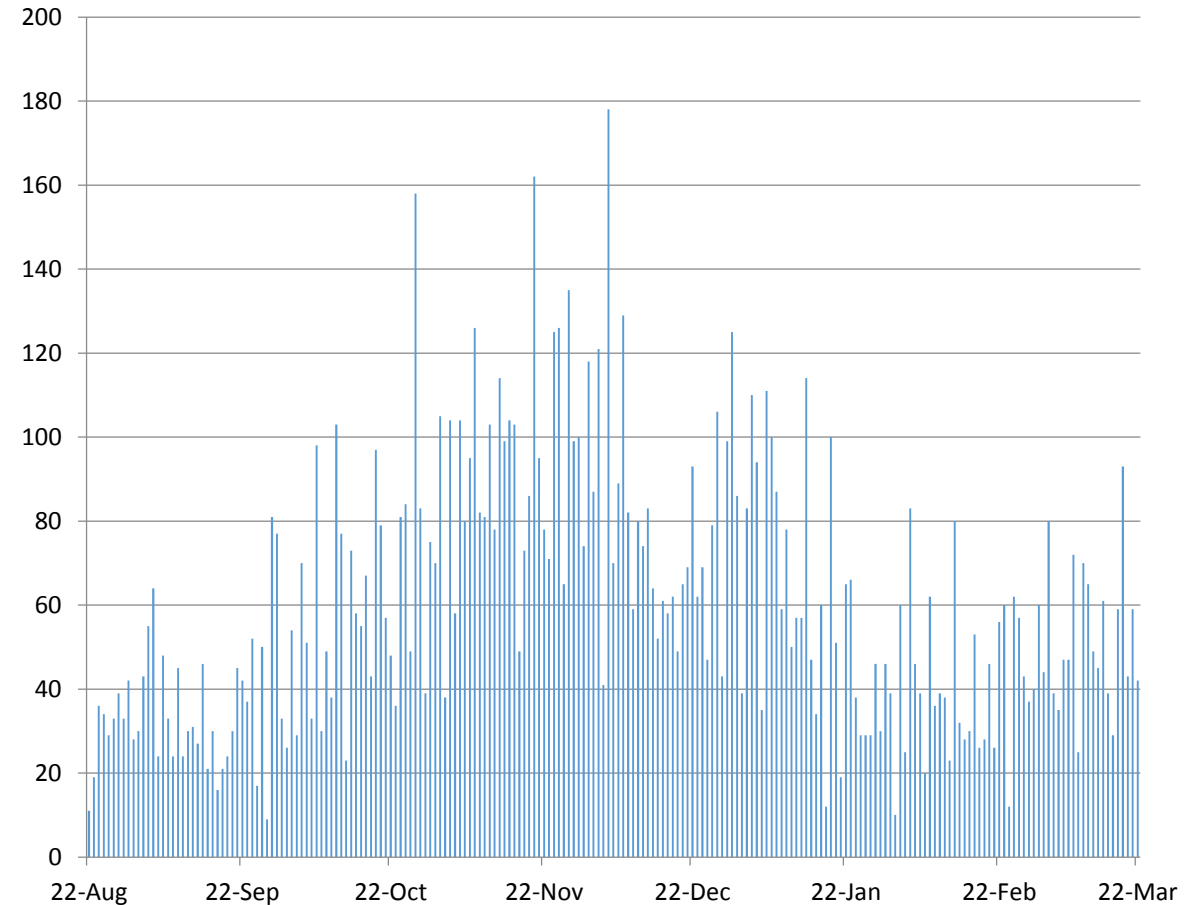


MSF EMC



Testing

- Peak testing occurred Oct-Dec
 - November average samples tested per day reached 97
 - Highest number 180 (in July, 2015)
- On average 71% of samples were tested on the day they arrived at the lab
- 99.9% were tested same day or next day
- Received samples for ~7 months from 12 of 14 districts
- Samples were mainly whole blood and cadaver oral swabs





Helicopter



- Due to bad roads, treacherous driving conditions with multiple accidents and a death, very long distances especially for drivers in motorcycles and ambulances, Bobbie Rae and Mike Staley worked hard to use the free UN helicopter to deliver samples to the Bo lab.
 - Mike, after visiting some remote areas, extended his tour to work only on convincing the UN pilots to allow specimens on their helo
 - Pick up and delivery began around the second week in November during team 5
 - Samples were picked up 3 times per week from Koinadugu, Makeni/Bombali, and Kono districts



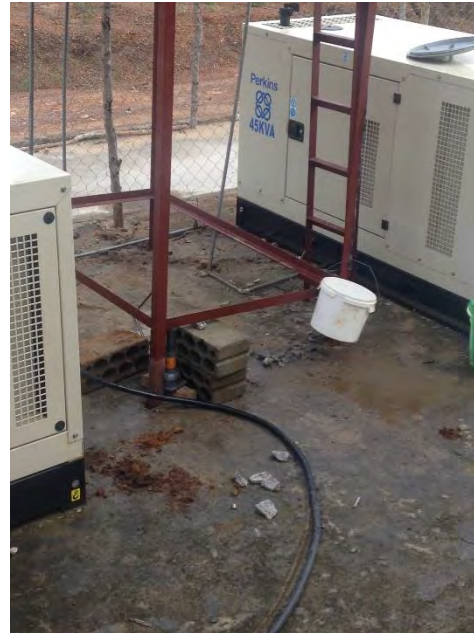
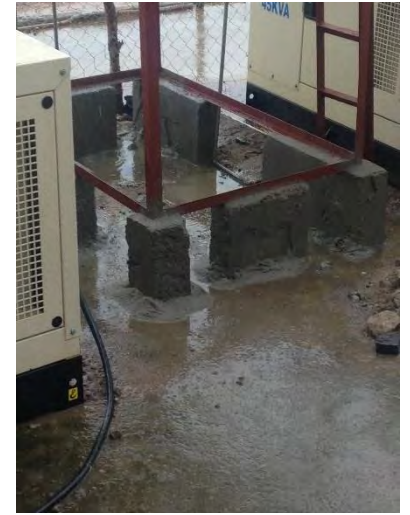
Specimens



Bo lab problems...



The Leaning Tower of Diesel



[illegible][illegible]

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Digested blood/coffee grounds* in vomit	Yes	No	Unk
Coughing up blood (hemoptysis)	Yes	No	Unk
Bleeding from vagina,	Yes	No	Unk
other than menstruation			
Bruising of the skin	Yes	No	Unk
(petechiae/ecchymosis)			
Blood in urine (hematuria)	Yes	No	Unk
Other hemorrhagic symptoms	Yes	No	Unk
If yes, please specify: <u>drawing</u>			
Other non-hemorrhagic clinical symptoms:	Yes	No	Unk
If yes, please specify: _____			

EBOLA Clinical Specimens and Laboratory Testing

Sample # 5298

Date of Specimen Collection: 3-2-11 / 11:30 (DD.MM.YYYY)

Estimated Event

6476
64

Patient's Last Name: [REDACTED]		First Name: [REDACTED]	
Age: <u>22</u> Unit ☐ Years ☐ Months		Gender: ☐ Male ☐ Female	
Permanent Residence:			
Head of Household: <u>Richard Kwanza</u>		Village/Town: <u>Rede, 16 km south</u>	
District: <u>Wunduli</u>		Chiefdom: <u>Amakulanda</u>	
		Mobile phone #: <u>098 21886</u>	
Date Patient First Became Sick: <u>4/11/11</u>		(DD.MM.YYYY)	
Specimen/shipping instructions:			
☒ Label sample with patient name, date of collection, and case ID			
☒ Send sample cold with a cold/ice pack, and packaged appropriately.			
☒ Collect whole blood in a purple top (EDTA) tube green or red top tubes acceptable if purple not available			
☒ Preferred sample volume = 4ml (minimum sample volume = 2ml)			

Has this patient had a sample submitted previously? ☒ Yes ☐ No ☐ Unknown BUT NOT RELEASED

Sample Type: ☒ Whole blood ☐ Skin biopsy

☐ Post-mortem heart blood ☐ Other specimen type, specify: _____

DATE: 04-07-95

Address: [Redacted]

District: MUMBAI Village/Town: MORRIS

Mobile phone #: 030-26-15-3

14223

Patient's Occupation:

☐ Healthcare worker (includes anyone involved with the patient: nurse, ambulance driver, hospital cleaner, etc.)

Position: _____

☐ Other, please specify occupation: House wife

Location Where Patient Became ill: _____

Village/Town: _____ District: _____ Chief/dw: _____

Date Patient First Became Sick: 04-07-95

Read each one aloud and mark an answer for every symptom occurred during this illness (not only right now):

Fever	☐ Yes	☒ No	☐ Link	Headache	☐ Yes	☒ No	☐ Link
Nausea/dizziness	☐ Yes	☒ No	☐ Link	Difficulty breathing	☐ Yes	☒ No	☐ Link
Diarrhea	☐ Yes	☒ No	☐ Link	Difficulty swallowing	☐ Yes	☒ No	☐ Link
Conjunctivitis (red eyes)	☐ Yes	☒ No	☐ Link	Sore throat	☐ Yes	☒ No	☐ Link
Intense fatigue/weakness	☐ Yes	☒ No	☐ Link	Hiccups	☐ Yes	☒ No	☐ Link
Abnormalities of appetite	☐ Yes	☒ No	☐ Link	Unpleasant smelling	☐ Yes	☒ No	☐ Link
Abdominal pain	☐ Yes	☒ No	☐ Link	If yes, please specify: _____	☒ Yes	☐ No	☐ Link
Muscle pain	☐ Yes	☒ No	☐ Link	Stomach pain	☐ Yes	☒ No	☐ Link
Joint pain	☐ Yes	☒ No	☐ Link	If yes, please specify: _____	☒ Yes	☐ No	☐ Link

At the time of this report, is the patient hospitalized or being admitted to the hospital? ☐ Yes ☒ No ☐ Link

If yes, Date of Hospital Admission: 04-07-95 District: _____

Hospital Name: _____

Is the patient now, or will he/she soon be, in an Isolation treatment unit? ☐ Yes ☒ No ☐ Link

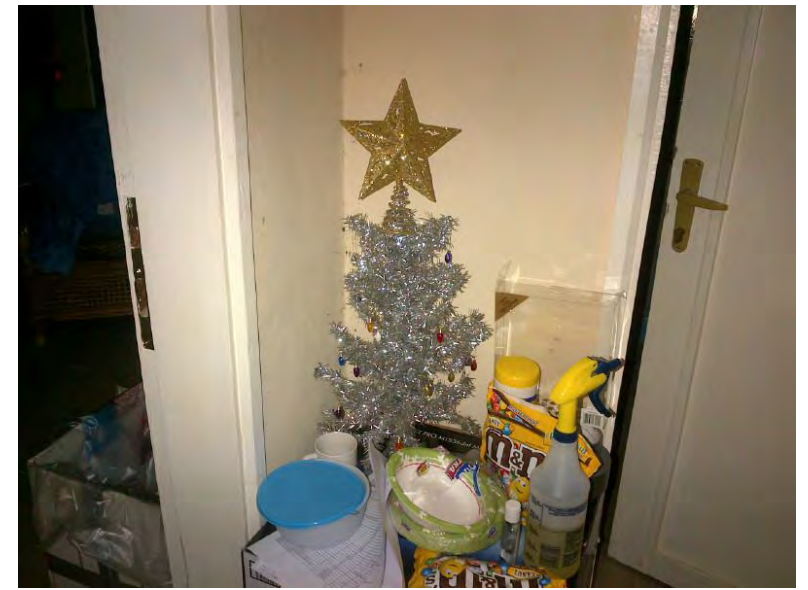
If yes, date of admission (or future admission) to the Isolation Unit: _____

Was the patient hospitalized or visited a clinic previously for this illness (this includes any type of care: physician, traditional healer, etc.)? ☐ Yes ☒ No ☐ Link

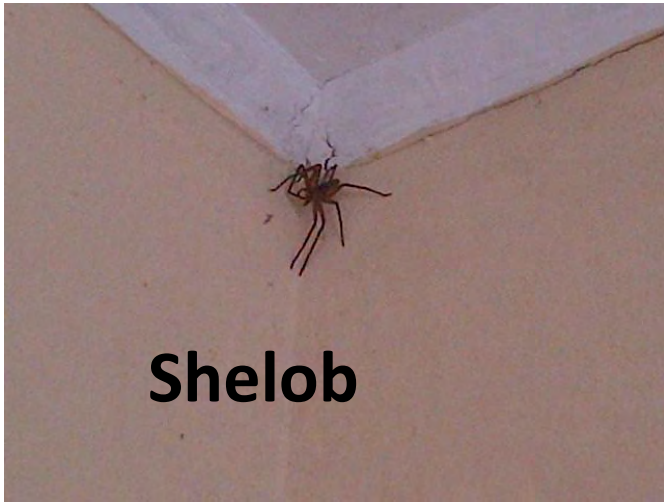
If yes, Date of Hospitalization: 04-07-95 District: _____

Hospital Name: _____

Holidays/Birthdays in Bo



Lab Mascots of Kenema/Bo



Shelob

KGH



Charlotte



Seven



Chompy

Last Patient Discharged from Bo



January 25th? Aruna was the last patient in the Bo EMC and was declared Ebola free and released.



Accomplishments

- 26,254 samples tested to date
- The lab has been operational for 406 days; no days off or disruptions in testing
- Viral persistence in male survivors pilot study testing began on May 23rd and we have tested almost 500 semen samples
- STRIVE (Sierra Leone vaccine trial) testing began on May 24th and we tested 51 samples from 30 participants
- 34 people from 17 different branches throughout CDC were trained in Atlanta on the Bo lab protocols and procedures and then deployed to help keep the Bo lab operational
- 19 teams of 4 people and 1 team of 3 consisting of a team lead and 3 laboratorians

Team 1



Team 3



Team 5



Team 2



Team 4



Team 6



Team 7



Team 8



Team 9



Team 10



Team 11



Team 12



Team 13



Team 15



Team 14



Team 16



Team 18



Team 17



Team 19



Team 20



Thank You!

UC Davis

Kim Dodd

Rickettsial Zoonoses Branch

Chris Paddock

Rachael Priestley

Galina Zemtsova

Jamie Perniciaro

Kim Slater

Clinical and Environmental

Microbiology Branch

Laura Rose

Bacterial Special Pathogens Branch

Robyn Stoddard

James Graziano

Arboviral Diseases Branch

Brandy Russel

Christin Goodman

Aaron Brault

Jane Basile

Janae Stovall

Office of Technology and Innovation

Angela Sanchez

Gastroenteritis and

Respiratory Virus Laboratory Branch

Mike Bowen

Slavica Rustempasic

Virology, Surveillance and

Diagnosis Branch

Shannon Emery

Jorn Winter

Measles, Mumps, Rubella, and Herpes Virus

Laboratory Branch

Raydel Anderson

Laboratory Preparedness

and Response Branch

Lauren Andersen

Pox and Rabies Branch

Johanna Salzer

Immunology and Pathogenesis Branch

Jessica Belser

David Wang

Wen-Pin Tzeng

Feng Liu

Chronic Viral Diseases Branch

Martin Steinau

Enteric Diseases Laboratory Branch

Molly Freeman

Maryann Turnsek

Infectious Disease Pathology Branch

Dianna Blau

Inorganic and Radiation Analytical Toxicology Branch

Gulya Shakirova

Denise Tevis

Bacterial Diseases Branch

Scott Bearden

Chris Sexton

Laboratory Research Branch

Meredith Pyle

Thank You!

Logistics Support Branch

Allen Hyde

Gary Goolsby

Reed Sheridan

EOC logistics group

EOC Laboratory Group

Medecins Sans Frontieres

Sierra Leone logistics especially Mike Staley and Adam Lofton

Kenema Government Hospital

Viral Special Pathogens Branch

Photos from Tara Sealy, Brian Bird, Bobbie Rae Erickson, Shelley Campbell, Dianna Blau, Aridth Gibbons, Mike Flint