

My COVID Story

Addis Ababa, Ethiopia



2020: Started with Puppies—
What could go wrong?

COVID19 in Ethiopia



Source: Nations Online Project

- Population: ~109 Million (~3xCalifornia)
- Size: About 2x Texas
- Decentralized public health system
- National molecular virology lab
 - Flu, VHF, measles, AFI... ALL the viruses!
 - Three laboratory technicians
 - Three ABI7500 Fast
 - Excel spreadsheets

February 3, 2020

The virus's most vulnerable target is Africa, many experts said. More than 1 million expatriate Chinese work there, mostly on mining, drilling or engineering projects. Also, many Africans work and study in China and other countries where the virus has been found.

If anyone on the continent has the virus now, "I'm not sure the diagnostic systems are in place to detect it," said Dr. Daniel Bausch,

Wuhan
Coronavirus

LIVE Latest Updates What We Know How

major drivers of epidemics," Dr. Fauci said. Most people get ill from someone they know to be sick — a family member, a co-worker or a patient, for example.

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If anyone on the continent has the virus now, "I'm not sure the diagnostic systems are in place to detect it," said Dr. Daniel Bausch, head of scientific programs for the American Society of Tropical Medicine and Hygiene, who is consulting with the W.H.O. on the outbreak.

February 9, 2020

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Instructions for life science research use only. Not tested for use in diagnostic procedures. For *in vitro* use only.

TIB
MOLBIOL

Instructions For Use

LightMix[®] Modular SARS and Wuhan CoV E-gene **530**
Cat.-No. 53-0776-96 Roche SAP n° 09 155 368 001
Kit with reagents for 96 PCR reactions 20 µl for detection of WH-Human_1 genomic RNA [lyophilized]

1. Content, Storage and Expiry

1 Vial yellow cap 96 reactions CoV (lyophilized)
1 Vial black cap RNA Positive Control Cp ~ 30

Storage at Arrival:
Store cooled or at ambient temperature
Do not freeze the lyophilized reagents.

- Kits are stable for one year after production (store 4°C to 25°C in the dark). See lot-specific expiry date.
- Reconstituted reagents are stable for two weeks if stored protected from light and cooled (2°C to 8°C).
- Dissolved reagent can be stored long-term if frozen (-15°C to -25°C). Avoid multiple freeze-thaw cycles.
- Reconstituted positive controls must be stored frozen. Minimize multiple freeze-thaw cycles.

2. Additional Reagents required

LightCycler[®] Multiplex RNA Virus Master Cat.-No. 06 754 155 001

3. Introduction

Coronaviruses (CoV) are positive-stranded RNA viruses from the Coronaviridae family. The four common human pathogen strains 229E and NL63 from the Alpha group, and OC43 and HKU1 from the Beta group

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But....

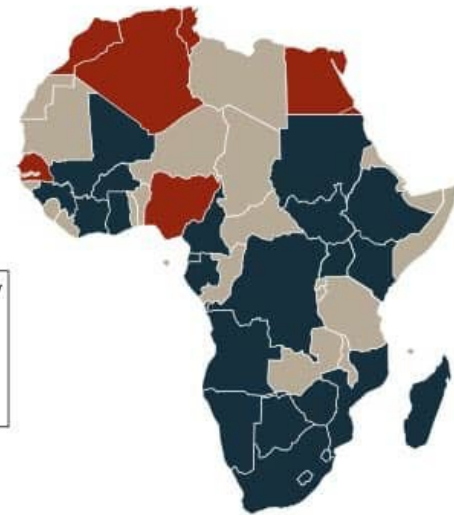
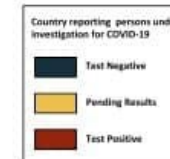
No Taq

“It's like ten thousand spoons when all you need is a knife.”

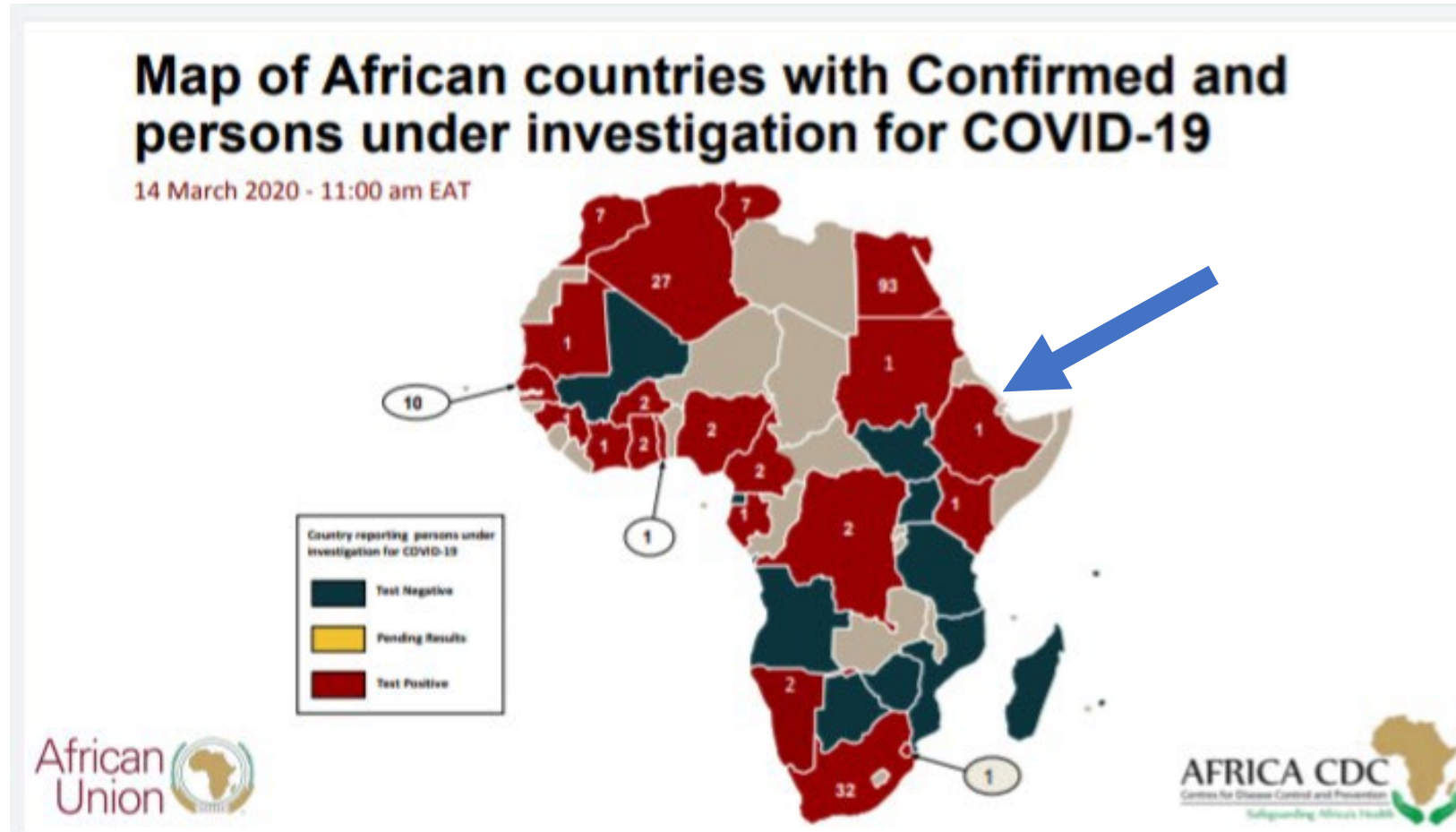
-Alanis Morissette

Map of African countries with diagnostic capacity for COVID-19

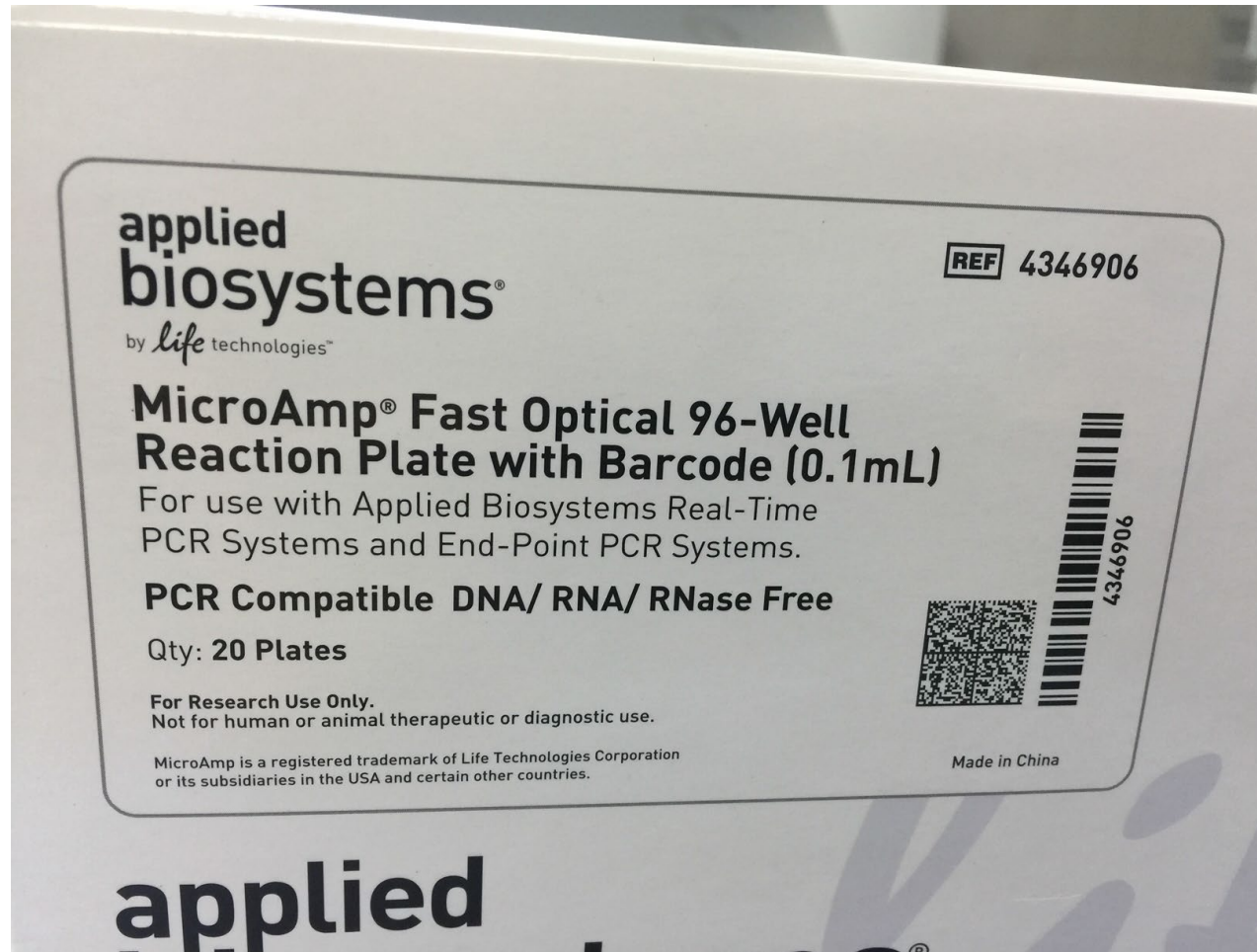
2 March 2020



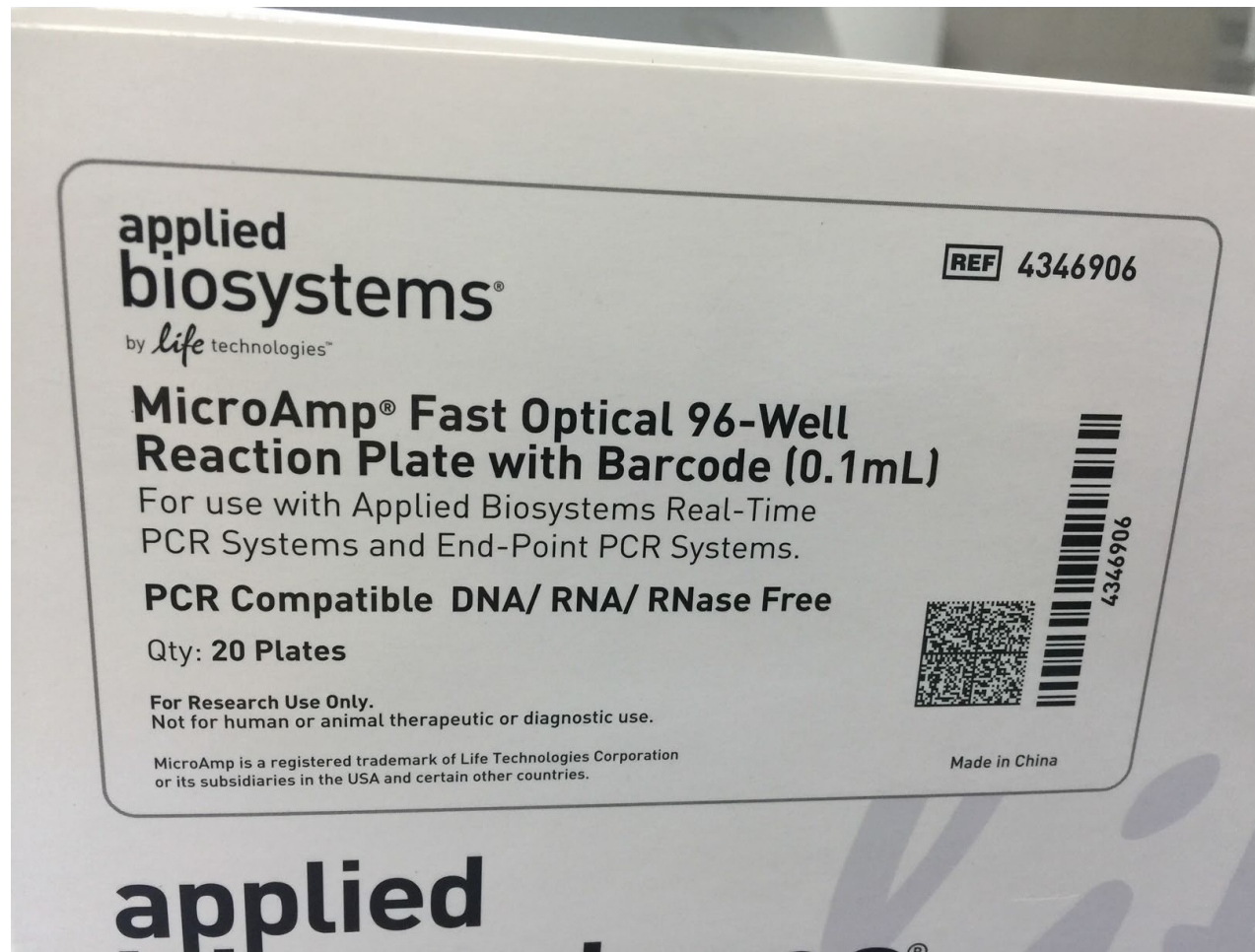
March 13, 2020



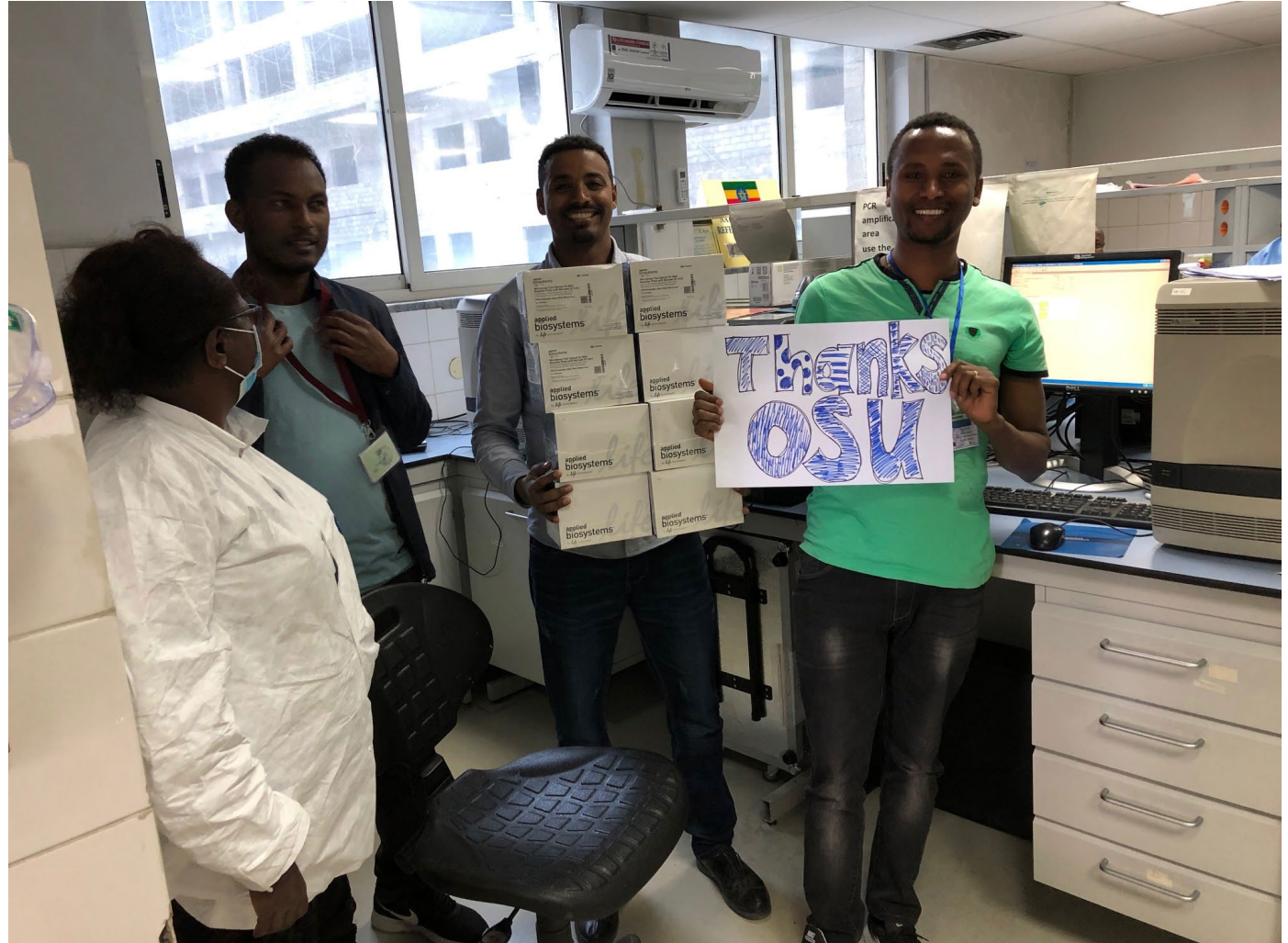
10 PCR Plates



10 PCR Plates in the whole country

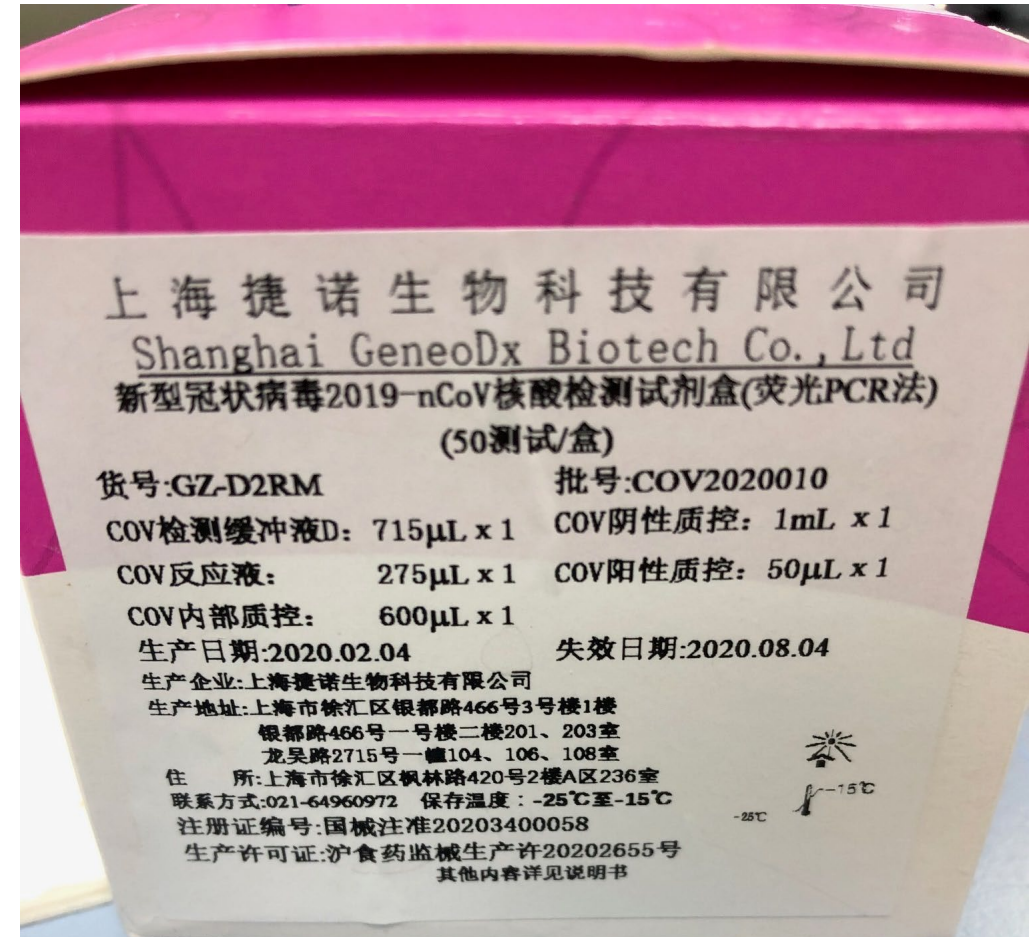


SOS to OSU



Testing Evolution and Timeline

- February 7-April 7:
 - 1 lab, 3 laboratory techs working 24 hours a day
 - 1 PCR platform (ABI 7500 FAST)
 - 5 PCR kits (TibMolbiol, Da'an, BGI, Pontic, GeneoDx)
 - Some kits had no instructions in English





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- February 7-April 7:
 - 1 lab
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 - 5 PCR kits (TibMolbiol, Da'an, BGI, Pontic, GeneoDx)
- April 7 and beyond: rapid expansion
 - Up to 53 labs
 - 13+ PCR platforms
 - 9+ PCR kits

A Few Challenges...

- Stock and supply of consumables and reagents
- Training
 - Many labs had no prior capacity for PCR
 - Took place at the national molecular virology lab with the ABI 7500 FAST
 - Testing and extraction kits de jour– sometimes TibMolbiol, sometimes Da'an, sometimes chemical extraction and sometimes heat-based extraction methods
 - Limited to two days in Addis, no on-site training
- Monitoring quality
 - No site visits
 - No EQA program
 - Non-regulated laboratories (CLIA, CAP, ISO)
 - Different machines, different kits, different levels of expertise
 - A CT of 30 on one machine/kit is different on another



Xpert Technology Evaluation

Assay for the Diagnosis of Extra-Pulmonary in Addis Ababa, Ethiopia

... for Extra Pulmonary Tuberculosis (EPTB) are as
... and smear negative pulmonary TB. The existing
... TB cases has been far below satisfactory and continues
... for the Ethiopian TB control program. Thus, timely
... addition of rapid and improved diagnostics which are
... fic. In this study, we evaluated the diagnostic yield of Xpert
... presumed EPTB cases in Ethiopia.

Sex	Sensitivity
men	68.2%(57.7-77.2)
men	68.8%(51.4-8
	68.9%(48.7
	57.1%(43
	78.6%

... Xpert MTB/RIF assay
... lymph nodes and pleura
... diagnosis of body fluids

Xpert HIV-1 Qual Assay

... ground. Early Inf...
... level of the nat...
... diagnostic challenges (i...
... prolonged turnaround
... he need for high...
... specific needs to de...

Objective

To assess the feasibility
To test all aspects of pr...
Qual (EID) in large scale im...
To assess integration of TB and HIV

... After successful verification (100%
... routine testing was commenced. All the
... sh HIV-1) was detected in 47.8% of the
... tested from week to week and the average
... two months, based on baseline assess...
... time infants. From 3 to 5 months to 5 to 1...
... implementation of Xpert HIV-1 Qual as...
... of ART initiation and repeat confirmatory

... The pilot showed that the Xpert
... testing of HIEI after sample collect...
... as possible, if they tested positive
... validity of this assay makes it suit...
... able with high case load
... demonstrated that it is possible
... GeneXpert machines

For more information
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