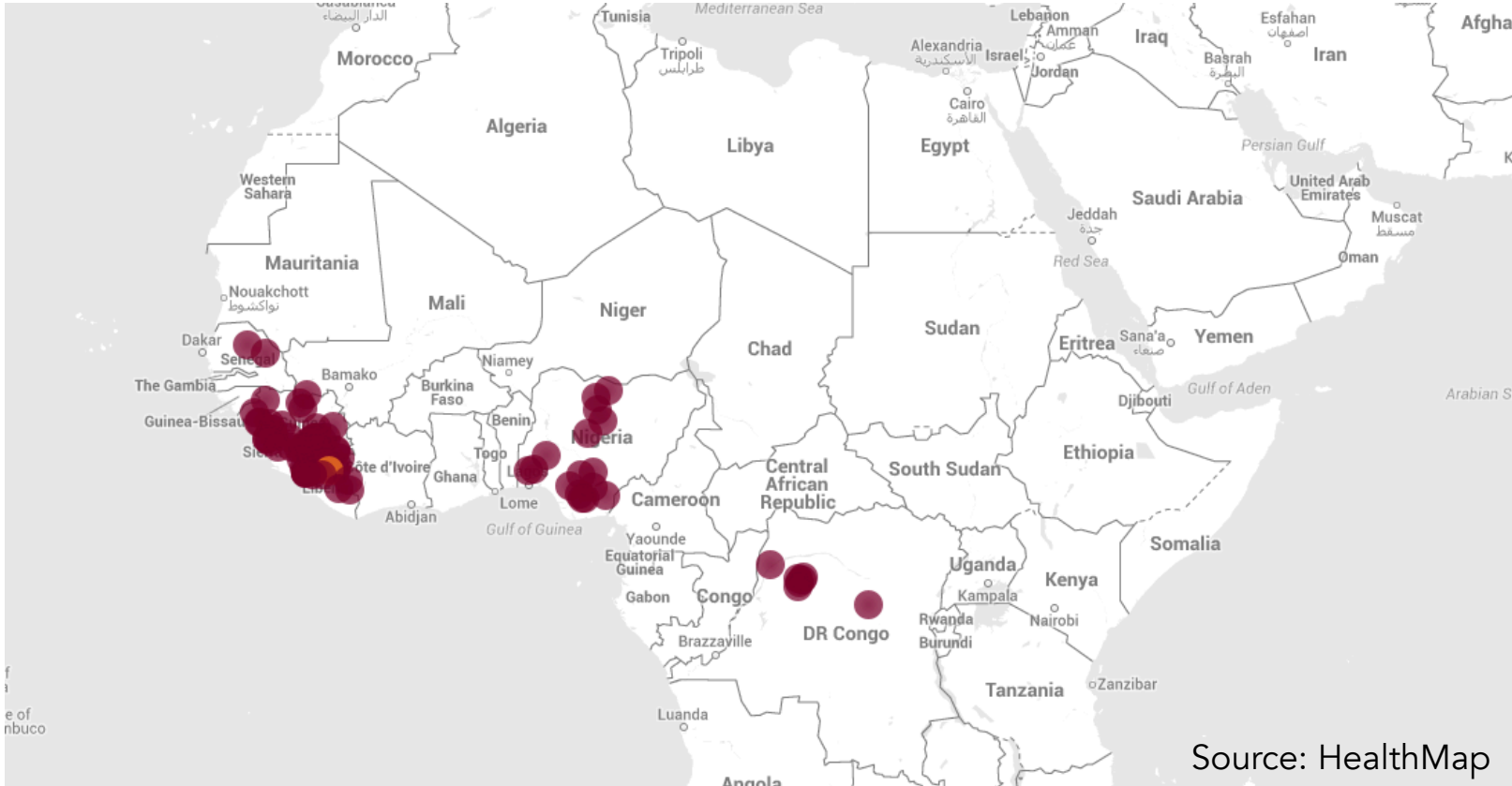
2014 West Africa Ebola Outbreak

- Majority of cases in Liberia, Guinea and Sierra Leone
- Transported to Nigeria and Senegal

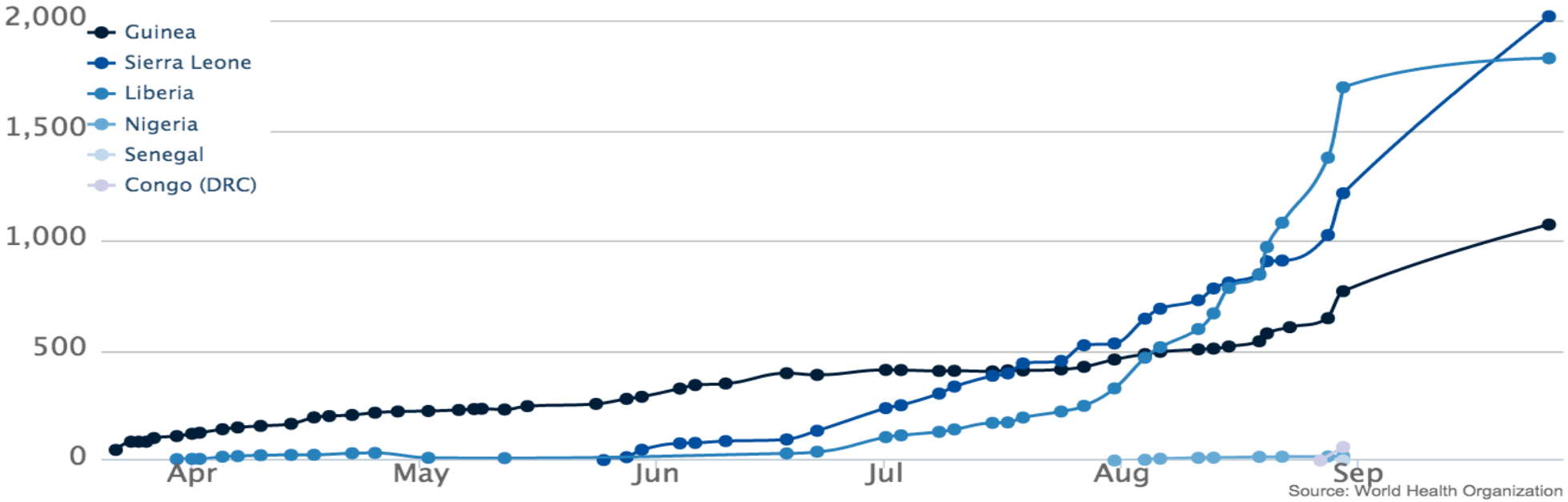
Since 22 March 2014

- Over 3,000 deaths
- Over 6,500 cases
- ~50% mortality rate

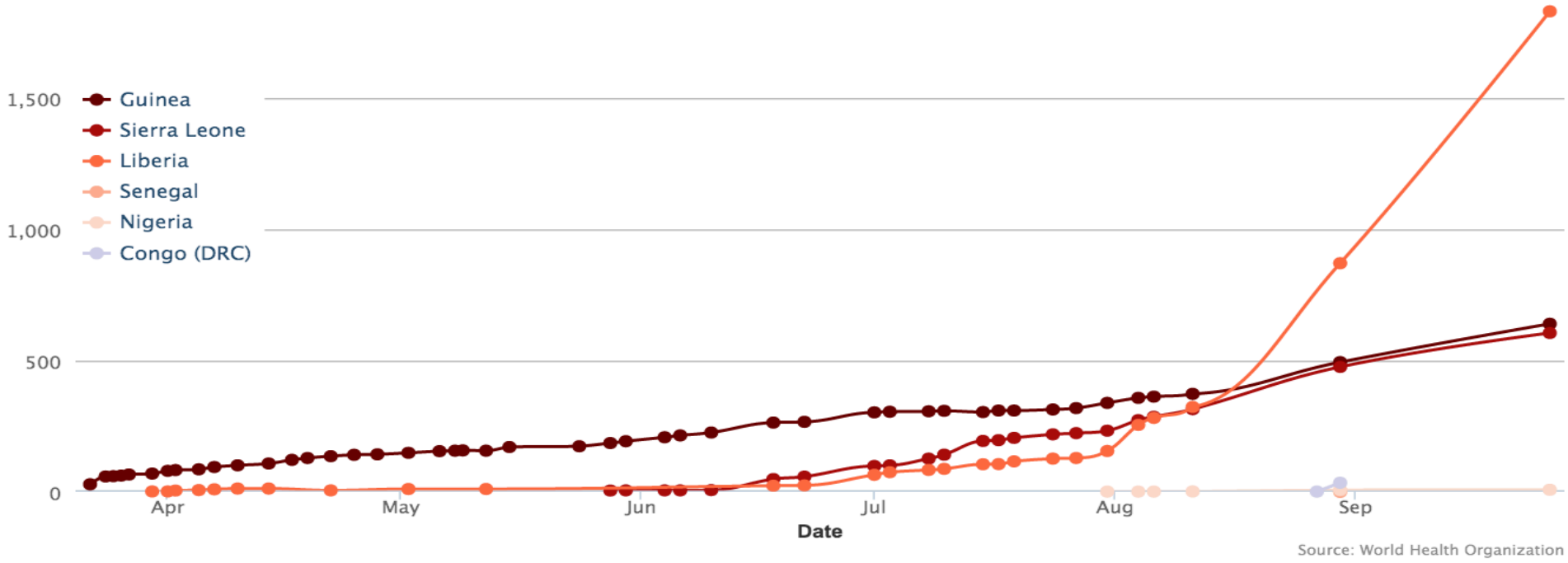


Source: HealthMap

Cases

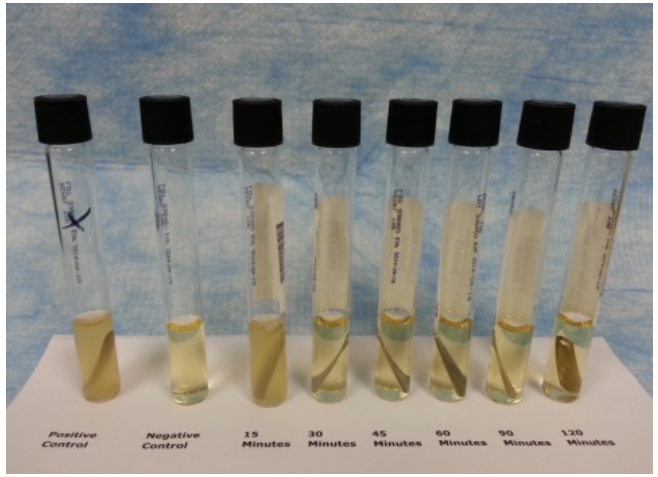


Deaths



Decontamination of Electronic Devices with Chlorine Dioxide Gas

- Tested to be non-destructive to electronics by use of 15 decon cycles on a simulated device and 5 decons on an iStat device without measurable damage to electronics.
- Process creates heat 80-120°F temp
- 30 minute spore kill demonstrated



Protocol

- Perform a surface decon of the equipment. Remove any soil or fluids using appropriate PPE and disinfectants.
- Open kit and tape chlorine dioxide (CD) indicator with purple check marks facing in the up direction within the sealable bag. Place one in the center and one in the corner. Decon should occur in shaded, well ventilated area (outside is ideal in case of bag leak).
- Open the mylar bags containing Part A and Part B and place into some type of cup container (ideally disposable plastic) that can hold at least 50 mls of material and fluid.
- Add ~15 mls of water to the Part A and Part B container. Quickly, mix gently, and place into the center of the sealable bag.
- Place your item to be deconned in the bag and ideally lifted off of the surface of the CD mixture and bag.
- Seal bag, record time, and observe the CD indicator, Open after a minimum of 30 minutes (60 minutes ideal) and when the CD indicator changes from lighter purple to pink) . The bag will generate heat and pressure during the gas phase of the process.
- After 30 minutes and CD indicator change, remove the device, wipe down equipment with a water solution and dry. Use gloves and open bag in a well ventilated area and shaded area. CAUTION: Gas generated in bag is strong and there will be chlorine residue on the equipment that will irritate skin and mucous membranes.
- Seal bag and properly dispose of the bag and components. At this point the bag is not considered medical waste.

Old School…

New School?

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Equipment Decontamination

Current system

2 gallon and 10 gallon bags

Two powder packets combined

Water added to powder and bags rapidly sealed

Ideal system

1 m^3 and 0.5^3 m fixed containers

Ports for addition of dry and liquid components

Personnel Decontamination

Current system

Personnel spray one another with bleach mist prior to removing PPE.

Difficult to insure topical coverage.

Ideal system(s)

Bleach foam spray

Cubicle

Point of Care Diagnostic Devices

Current system

Single agent assays (Ebola virus)

Ideal multiplex system(s)

Ebola virus

Plasmodia sp

S. typhii

Lassa fever virus

Improved Patient Transport

Current system

Standard clothing

Public or private vehicles

Ideal system(s)

Ventilated patient clothing that protects other personnel

Modified vehicle

Data Collection and Management

Current system

Ad hoc

Ideal system(s)

Real time monitoring of patient census, outcomes, personnel, supplies

Fieldable devices