Ebola SitRep

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Latest Developments

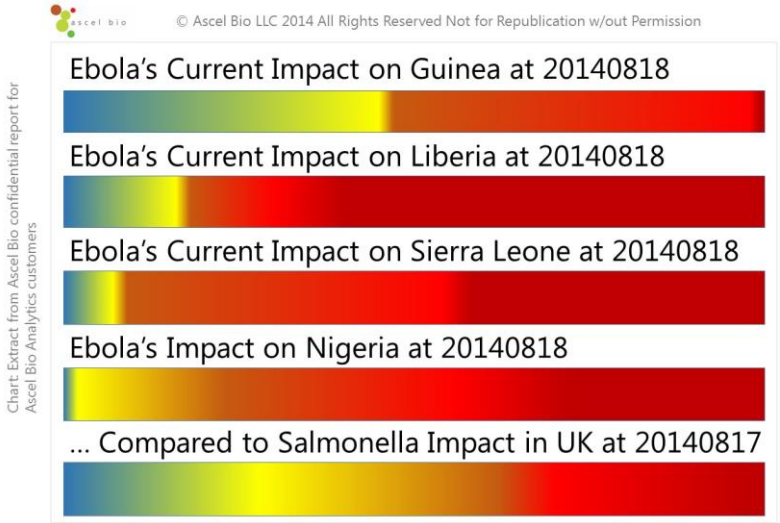
Crisis conditions have worsened in Sierra Leone.
Crisis conditions have stabilized at what Ascel Bio considers a realistic baseline in Nigeria.
Crisis conditions have greatly decreased in Guinea and have slightly decreased in Liberia.

- Ascel Bio ranks these countries by the level of Ebola-caused community disruption as follows [from worst to best]: (4) Liberia conditions are the worst; (3) Sierra Leone community disruption is less than Liberia; (2) Nigeria conditions are better than both Liberia and Sierra Leone; and, conditions in Guinea are best of the four.
- Case counts and deaths continue in West Africa. As of reporting there have been 4 deaths from Ebola in Nigeria, on a total of 12 cases, though nothing confirmed outside of Lagos or beyond the original contact list.
- The WHO did declare a Public Health Emergency of International Concern. Global public health response has risen.
- There remain reports of testing for Ebola cases in non-Africa countries, as public health offices increase vigilance. This is a positive development and is likely to continue.

Watch Notice

The Watch Notice is maintained for Ebola virus activity in the African countries of Guinea, Liberia, Sierra Leone, and Nigeria. The level of crisis caused by the current Ebola outbreak remains far more severe on a relative basis than the level of crisis caused by any other disease anywhere else in the world, as measured by Ascel Bio. To demonstrate the difference, Infectious Disease Impact Scale (or "IDIS", see final page) measurements of outbreak impact on a country-by-country basis are provided in the following "Impact Heat Bars".

Chart 1: Current IDIS probabilities for Ebola Guinea, Liberia, Sierra Leone, and Nigeria compared to a major Salmonella outbreak in the UK.



At left, a graphical representation of the spectrum of probabilities that Ebola is causing an Infectious Disease Impact Scale Category 2 to Category 6 level crisis in each country, compared to the spectrum of crisis level probabilities caused by a recent new Salmonella outbreak in UK. The IDIS scale is described on the final page of this report.

Blue is lowest level of crisis, yellow is bad but still relatively normal. The oranges and deep reds are indications of serious crisis. A typical influenza season has no more than 5-6 percent orange, with no red and just 30% yellow.

Detailed Assessment

The heat bars from the current week's IDIS show that the situation deteriorated in Guinea and Liberia. In Nigeria the heat bars indicated a stable state of community crisis. In Nigeria, transmission was documented in that country.

Chart 1 (again)

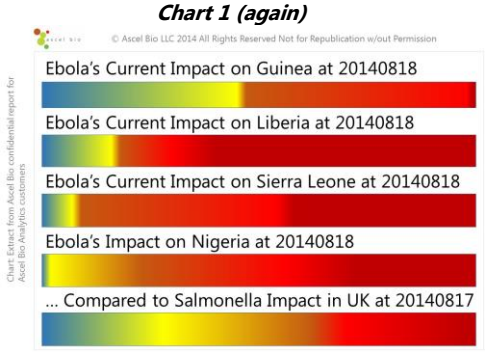


Chart 2: 20140804 Ebola Impact Heat Bars

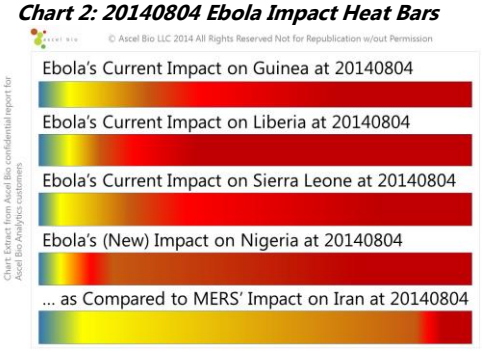
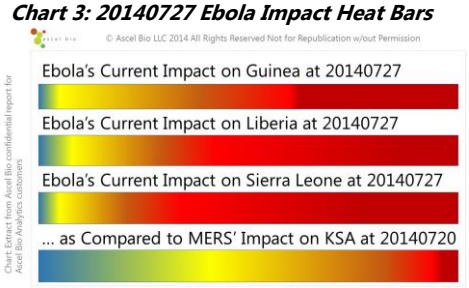


Chart 3: 20140727 Ebola Impact Heat Bars



The above charts and other assessments found below were prepared through Ascel Bio's updated review of English and French language news articles archived by and available through the Dow Jones Factiva database, and our continued reference the historic Ebola library going back to 1995[*]. Ascel Bio has analyzed these historic records of reports on Ebola outbreaks using Ascel Bio's Exigence software[†]. Ascel Bio outbreak analysts have then conducted a review of the outputs, with a particular focus on measuring the level of disruption Ebola outbreaks have had on communities over time, and circumstances that contributed to disruption.

Key issues noted during the review by Ascel Bio of the raw articles and Exigence output are as follows:

1. Response efforts are having a major positive impact on levels of crisis in Guinea. The situation on the ground is showing less indication of disaster conditions.

2. Response efforts are showing signs of a positive impact in Liberia. The situation has improved, but is still showing signs of disaster conditions. This is significant turnabout, as on 20140804 Ascel Bio reported that disruption levels caused by Ebola in Liberia were approaching the disruption levels seen in the worst ever Ebola outbreak, in Kikwit in 1995.

3. Crisis conditions in Sierra Leone have worsened. Ascel Bio has noted IDIS Category 7 conditions in localized pockets of Sierra Leone

4. Crisis conditions in Nigeria have 'stabilized' at a level showing less community crisis than in the first week after Patrick Sawyer. Patrick Sawyer was a Liberian who died in Lagos Nigeria. It can take up to 21 days for symptoms to begin to appear (with an average of five to seven days). So far, all reported cases were on the original contact list. We are vigilant for cases reported that were not on the original contact list as an important threshold for re-evaluation of the situation in Nigeria.

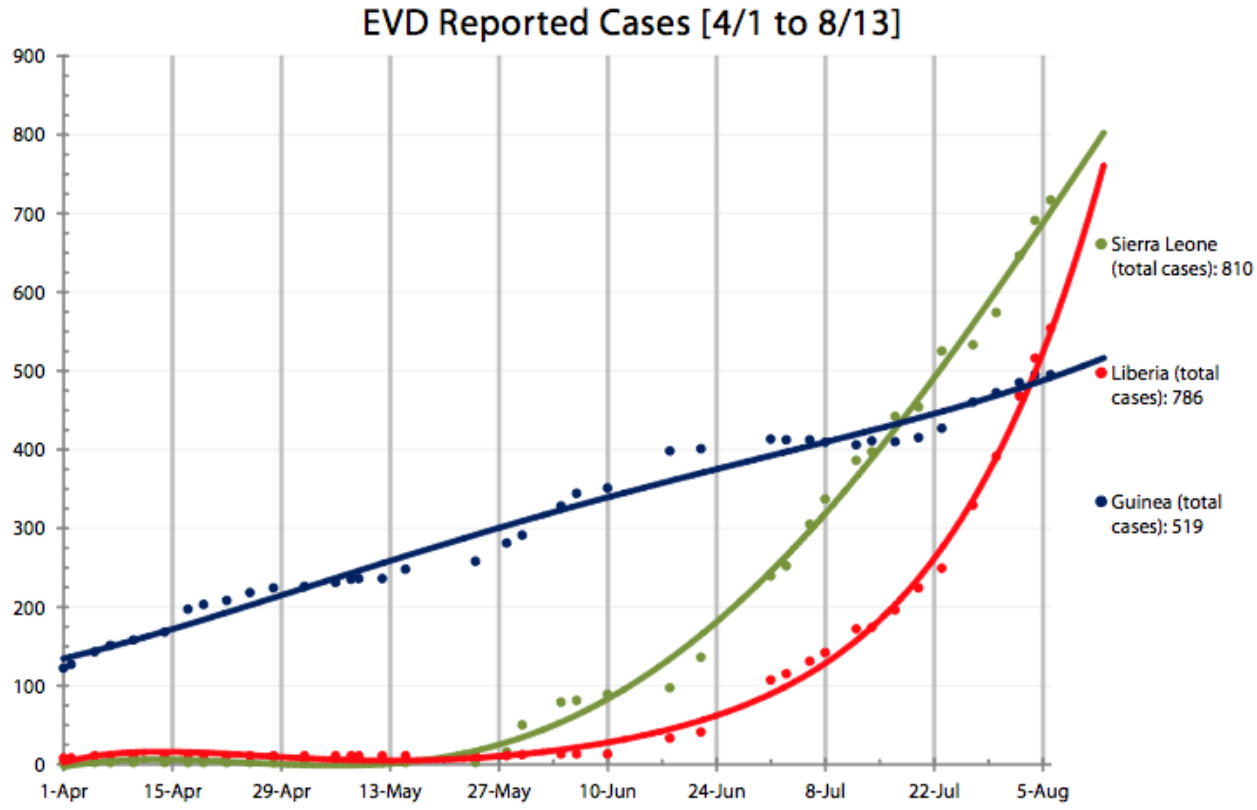
Again, in each country, Ascel Bio is watching closely for any indication that residents of currently affected areas are fleeing en masse to new locations. As noted above, Ascel Bio has already observed pockets of IDIS Category 7 conditions, which is a driver for mass migration. Should this indicator continue to be observed, the situation would be assessed as a true IDIS Category 7 event, with implications for further spread of the epidemic into previously uninvolved countries. Additional indicators including the use military force to detain and isolate victims, border closures, and the social stigmatization of the infected have been seen in previous outbreaks. This is the cascade/sequence of indicators we are watching for.

[*] Note, Nigeria was only included beginning in the 20140804 SitRep because there had only just been more than seven days of available media on this new outbreak. Prior to 20140727 there was not a sufficient amount of reporting for Ascel Bio to produce what it considered would be an accurate assessment for Nigeria.

[†] Exigence is Ascel Bio software that provides a text analytics tagging tool and enables contextualization of significant biological events. Exigence's proprietary Boolean language enables reliable tagging of text reports. Ascel Bio provides its proprietary taxonomy of indicators that captures approximately 200 infectious diseases and 150 indicators for indigenous countermeasures, medical and veterinary response, clinical impact, epidemiological features, and social response.

Validation

Local epi curves as provided by Samaritan's Purse are validating our prior assessments.



30-Day and 60-Day Projection

The projections posted by Ascel Bio to our clients on 20140804 remain in place:

> *A major increase in international responders would begin to mitigate the number of infections, but Ascel Bio forecasts this outbreak to continue to affect Sierra Leone, Liberia and Guinea over the next 3+ months, albeit at lesser and lesser magnitudes of disruption. This Ebola outbreak has happened on an unprecedented geographic scale and each country-based outbreak is projected to play out in full: from spread within country, to work towards containment, and eventual containment. The review by Ascel Bio of prior Ebola outbreaks suggests that smallest and best contained outbreaks can be brought under control in 1-2 months. On average prior Ebola outbreaks take 3-4 months to fully contain. The Sierra Leone, Liberia, and Guinea outbreaks are likely to take at least another 30 to 60 days to contain. WHO intervention (see below) would have a positive impact.*

International Travel & Translocation Assessment

The assessment posted by Ascel Bio to our clients on 20140804 remain in place:

> *There are no changes to Ascel Bio's assessment that the risk of transmission of Ebola during air travel is low. A number of airports in countries in Asia and Europe are already alert to the possibility of Ebola translocation from the affected countries. The risk of disease translocation leading to sustained transmission on another continent is very low. Screening measures (ongoing in many countries), isolation, quarantine and contact tracing will be the immediate response measures enacted. A further devolution of conditions on the ground could cause larger scale migrations, including fleeing across borders.*

Key Indicators

The following indicators posted by Ascel Bio to our clients on 20140804 remain in place:

- *Evidence that case count incidence (i.e. the rate of new cases) are dropping in each country, which would signal that containment is working.*
- *Measurements of tension between the public and officials, which will impact the success of containment strategies.*
- *Levels of medical infrastructure strain, which will impact fatalities and containment.*
- *Airport closures into and out of affected countries.*
- *Increases in migration caused by fear of the disease.*

General Scenarios:

Certain scenarios posted on 20140804 and in months previous have been validated. The following scenarios posted by Ascel Bio to our clients on 20140804 remain in place:

Probability	Scenario: Any next progress in case count reductions will be temporary before becoming permanent.
80%	Ascel Bio's assessment of the past Ebola outbreaks through 1995 suggests that • Ebola is eventually contained and the number of cases tends to slow as the response grows. • However, when a country starts seeing a decrease in cases (due to an increase in response measures, social awareness) they start to relax, the media mentions the prospect of containment, and seemingly out of the blue, an uptick in cases occurs. This is generally attributed to a relaxation of the response. A redoubling of the effort leads to ultimate containment.
20%	There will be no relaxation of countermeasures until containment is complete.

Probability	Scenario 3: Possible cases of Ebola will emerge in international cities connected to affected countries.
80%	Ascel Bio expects there will be small numbers of cases, which can be handled by alert public health authorities. In 1996, a doctor traveled back to South Africa and was unknowingly in the beginning stages of Ebola. His nurse was infected before authorities realized the patient had Ebola. The entire country was anxious about an outbreak, but it never happened. The two patients had over 350 contacts with other humans who had not used barrier nursing procedures, and no one else became ill. If there ever were a serious outbreak of infectious disease in the United States, public health officials would create containment areas where the sick can be treated with minimal threat to the greater public.

20%	There will be no emergence of 1-2 cases internationally.

Recommendations:

The following recommendations posted by Ascel Bio to our clients on 20140804 remain in place:

1. *Careful and thorough review of absolutely every step required to emergency evacuate a sick foreign national to a home country. In particular, reviews of all contracts with service personnel required and checking that contracts are valid and would be honored. Gap analysis, and assessments of where redundant planning may be required to ensure successful repatriation of sick personnel.*

2. *Regular updated identification / monitoring of medical facilities with both properly trained and available medical personnel. Clear review of all policies and procedures relating to the local transfer of personnel and/or their families who suspect they have been stricken Ebola to these facilities. Consideration of the retention of additional trained personnel if local medical facilities are overwhelmed.*

3. *Review of WHO, CDC, and local public health messages in local language, and (re)dissemination of educational materials providing preventive guidance. Efforts may be considered that seek ground truth on compliance with this guidance. Clear communication with staff that willful avoidance of preventive measures creates unacceptable risk.*

4. *Consideration of local travel bans and, conversely, consideration of the potential demands / implications of requests from personnel for support with migration to "safer" countries.*

5. *Consideration of local travel bans, and addition restrictions on visits to the dead or sick.*

6. *Consideration of provision of crisis counseling to affected personnel.*

WILSON—INFECTIOUS DISEASE IMPACT SCALE (IDIS)	
0	**The unreported infectious disease event:** Daily, routine infectious diseases; provision of warning about these are not recognized to be non-routine and are considered negligible.
1	**The reported infectious disease event:** A typical infectious disease event reported by a community reflects sensitivity to public health or medical significance.
2	**The infectious disease event associated with routine organized response:** Often reflecting locally well-known diseases that nevertheless generate a demand for routine, local organization-level time-sensitive action.
3	**Infectious disease event associated with non-routine organized response:** These are essentially the beginnings of a community crisis, where there is a recognized requirement for time-sensitive, ***non-routine*** organization-level decisions that may affect a local community's activities of daily living.
4	**Infectious disease event associated with social disruption due to human intervention:** Humans themselves, through the use of aggressive public health countermeasures, may impact a community to the point of straining various aspects of vital processes that promote community integration such as work, education, organized activities, social play of children, healthcare, the ability to buy consumer products, maintenance of physical facilities, and protection from criminal acts.
5	**Infectious disease event associated with social disruption due to direct effect of pathogen transmission:** Some pathogens, through mass transmission and incapacitation of patients, may impact a community to the point of straining various aspects of vital processes that promote community integration. The key difference between Category 4 and 5 is in the former human action is disrupting community integration, whereas in the latter the pathogen itself is degrading community function.
6	**Infectious disease event associated with disaster conditions**: This is the typical modern day end-point of strain induced by an infectious disease event when cultural protections fail and individuals of a community physically abandon their dwellings or those vital processes necessary for community integration.
7	**Infectious disease event associated with apocalyptic indicators:** Typically reserved for historical examples such as isolated indigenous peoples confronting an insurmountable infectious disease threat. The community involved begins to exhibit loss of community integration to the point of even abandoning family members.