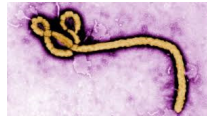


Ebola- Lessons learned so far



Christopher Whitty

The Foundation for Science and Technology

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



Public Health
England



Department
for International
Development

“A public health emergency of international concern” (WHO).

- “The largest, most complex and most severe we've ever seen”
Margaret Chan, WHO
- “ [Ebola] has gone beyond health issues... It has gone to the areas of affecting social and economic situations, it may even affect political stability.” Ban Ki Moon, UN
- “The biggest health problem facing our world in a generation”
David Cameron



Ebola is a tragedy for families and health services, but much of the economic damage is due to panic.

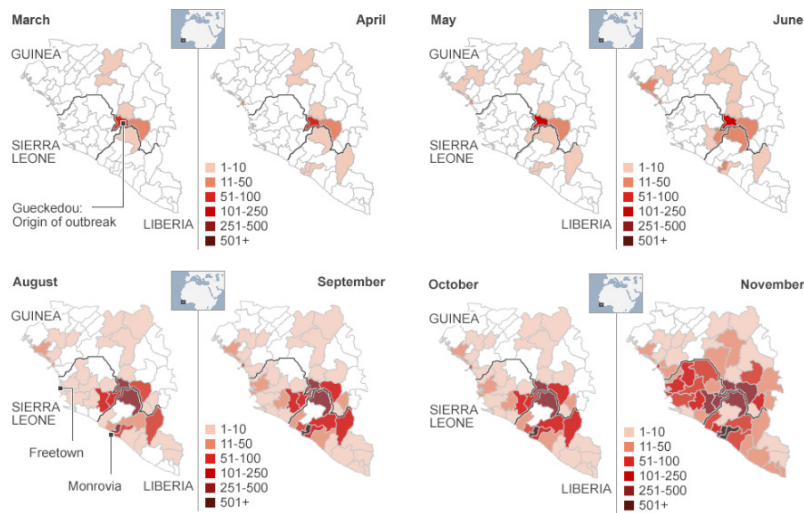
- Ebola is a disease of panic.
- “The Ebola epidemic continues to cripple the economies of Liberia, Sierra Leone, and Guinea.” (World Bank).
- Cf SARS- around \$40 bn wiped off the world economy- less than 1000 people died.



A serious gap- April to August 2014

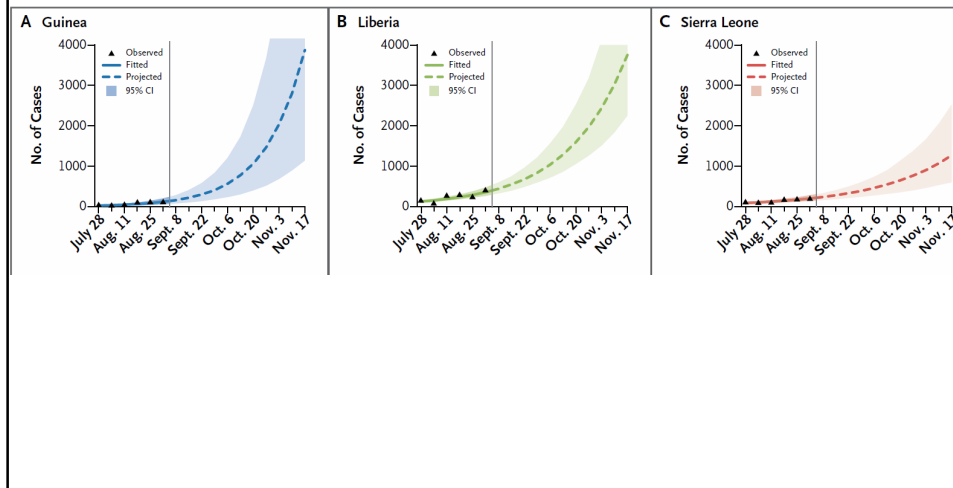
(adapted from BBC, data from Ministries and WHO).

How the virus spread: Ebola death toll




District data for July not available
Source: WHO, national health ministries and HDX

Ebola Virus: The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. *WHO- NEJM Aug 2014*



Multiple groups from the UK acted, largely in concert, to address this major global threat.

- NGOs- including MSF, Save the Children.
 - Academic- Kings College London, London School of Hygiene & Tropical Medicine, Oxford University.
 - NHS
 - Wellcome Trust, MRC.
 - Many individual doctors, nurses and public servants who volunteered.
 - The heaviest burden fell on West African medical and nursing staff.
- 
 - Department for International Development.
 - Department of Health.
 - Army, Navy, MOD.
 - Public Health England.
 - Cabinet Office.
 - No 10.
 - FCO.

Interventions to get R_0 below 1.

- Reduce transmission in hospital and other healthcare settings.
- Reduce transmission around death and safe burial.
- Reduce transmission in the community by shortening the time between first symptoms and isolation.
- Increase social distancing.

Reducing transmission for funerals and other peri-death rituals.

- Local burials involve washing and touching the body.
- We know how to do medically safe burials.
- The challenge is doing it in a socially acceptable way.
- Funeral rites central to all societies.
- The period just before death also important.
- 'High charisma' individuals.
- The **role of anthropology**.



Dr Umar Khan
(Sierra Leone Telegraph)

Shortening the interval between first symptoms and isolation.

Not yet clear what was most effective.

- Ebola first symptoms are very non-specific.
- Similar to early malaria, pneumonia, influenza, typhoid, dysentery.
- By the time it is obviously Ebola- highly infectious.
- Community care centres.
- Reduce barriers- distance, stigma, cost etc.



Increasing social distancing- primary prevention.

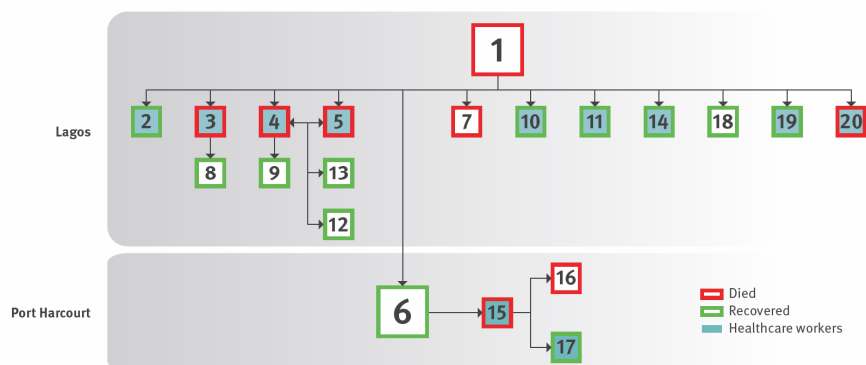
- Ebola is very difficult to catch in the community- needed to make it even more so.
- Key is rational acceptable and achievable social interventions.
- Many had serious downsides: closing schools, roads, markets. Which had real impact on Ebola?



The heavy burden on healthcare workers: Ebola virus disease outbreak in Nigeria, July-Sept 2014

F O Fasina. Eurosurveillance

Transmission tree of the Ebola virus disease outbreak in Nigeria, July-September 2014

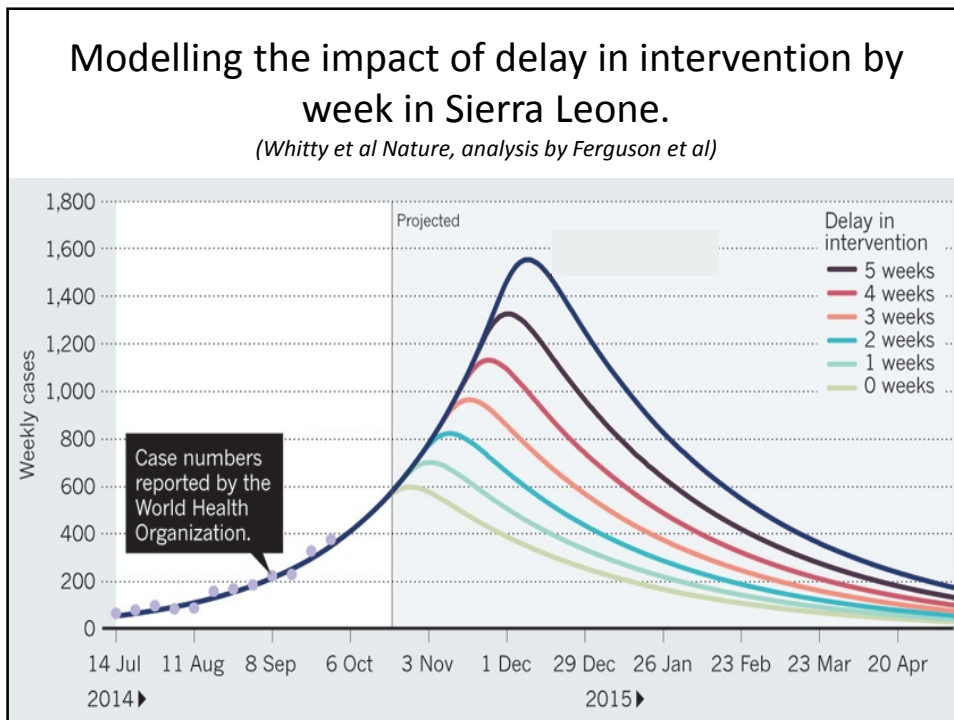
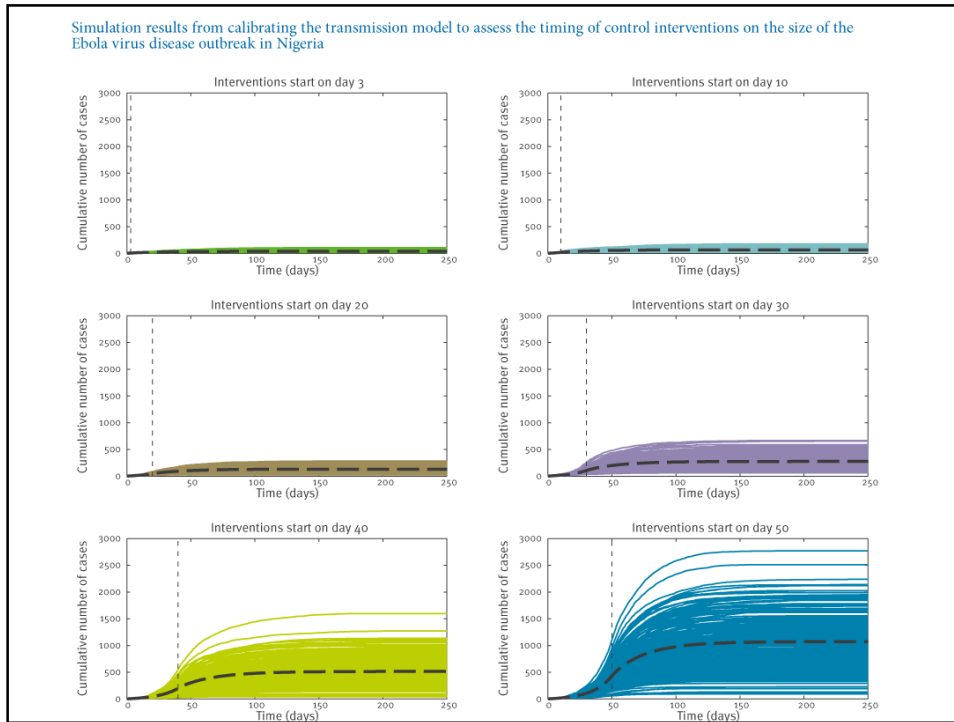


Between a rock and hard place.

- Massive epidemiological advantage to rapid reaction.
- This depends on healthcare workers (HCWs).
- The initial incidence of Ebola in HCWs estimated around 8-10% per person per year. Over 70% died.

Photo Sylvain Cherkaoui/Cosmos for MSF

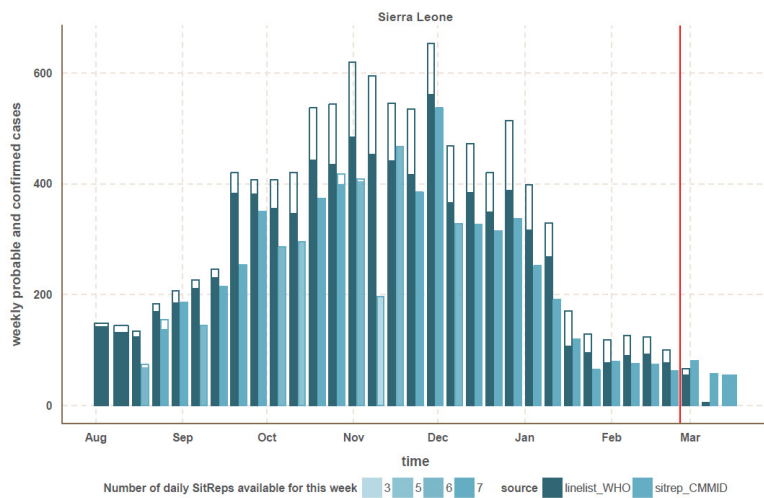


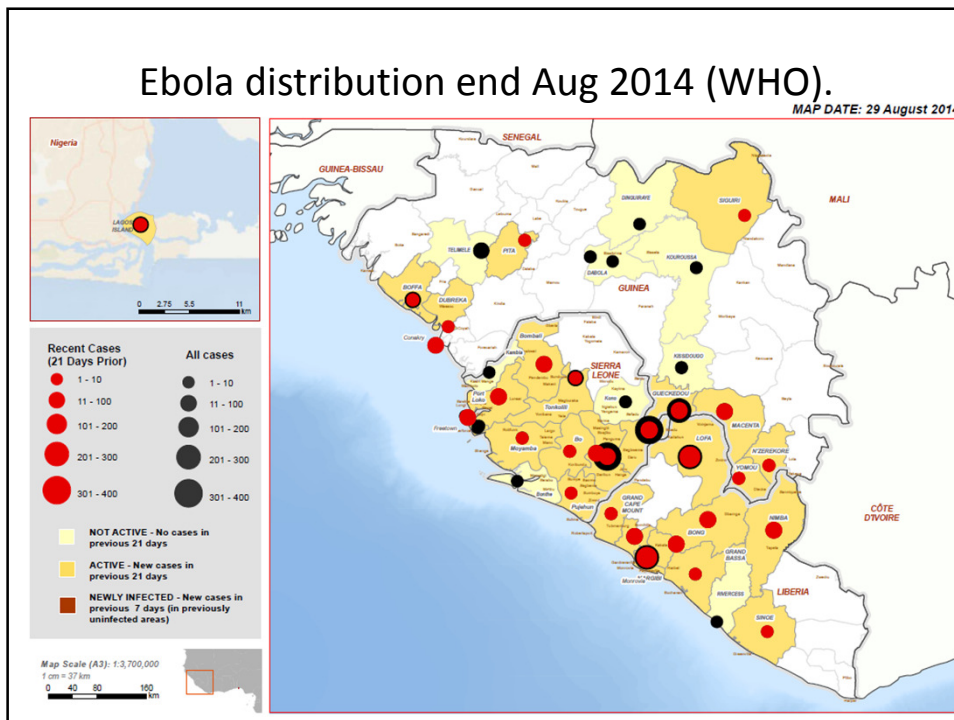
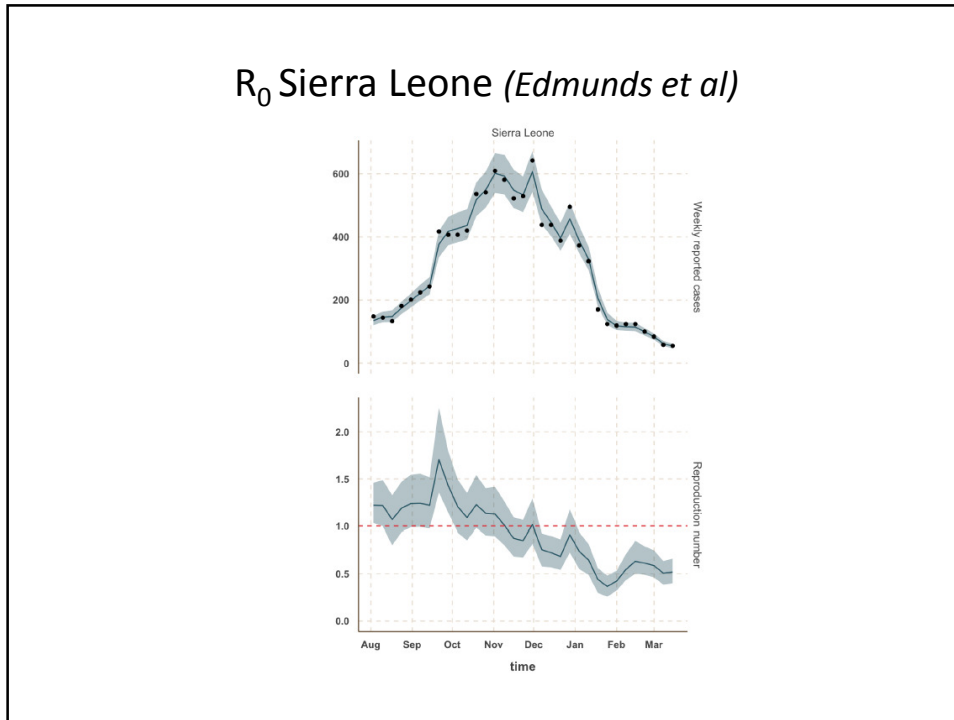


Hospital building, training, burials, command and control (and a lot of politics)

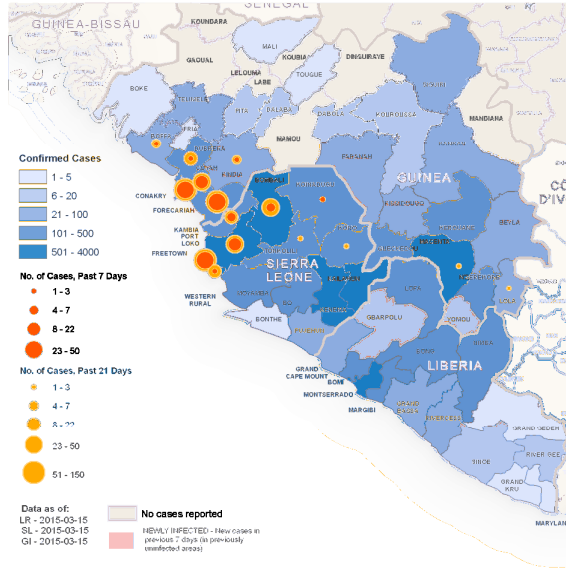


Sierra Leone Aug-Jan 2014: 'If you can keep your head whilst all around you...'

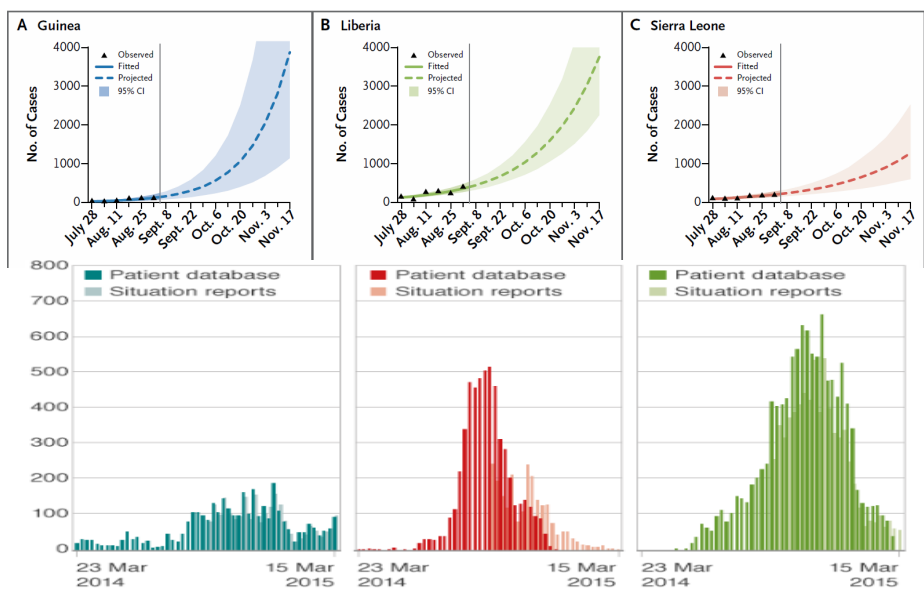




Ebola distribution Mar 2015 (WHO).



Ebola Virus: The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. *WHO- NEJM Aug 2014, WHO/BBC 2015*



UK government support to research

Initial phase all about getting R_0 below 1

- Modelling
- Anthropology
- Vaccines
- Diagnostics



Phase 2- partial control. Prepared to add:

- Trials- older and novel therapeutics
(Wellcome leading)

Working out the UK Government's responsibility for research in centres it funds not easy

- Ethics
- Local authorisation
- WHO list
- ?Scientific review
- Safety of NHS staff

- Clinical research of simple interventions was too slow.



What lessons can we learn from things that went well in Sierra Leone/UK?

- Courageous volunteers, Sierra Leonean and international.
 - Systematic UK response using whole of government, Wellcome, NGOs, private sector.
 - Strategic focus on R_0 .
 - Armed forces integration (both UK and Sierra Leonean) around epidemiology.
 - Safe burials.
 - Integration of sciences:
 - epidemiology
 - modelling
 - anthropology
 - water and sanitation
 - clinical and public health for UK domestic response
- Getting Ebola vaccines through Phase 1 trials very fast.

Lessons needed from things that went less well or badly (science) include:

- The delay from April to August.
- Ebola vaccines not being through Phase 1 prior to epidemic.
- Slow start to clinical studies.
- In some countries hysteria was allowed to trump public health.

