Ebola - Lessons learned so far

Christopher Whitty
The Foundation for Science and Technology

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

• “The largest, most complex and most severe we’ve ever seen” Margaret Chan, WHO

• “The biggest health problem facing our world in a generation” David Cameron

• “[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
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.

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.
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.
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?
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*
Modelling the impact of delay in intervention by week in Sierra Leone.

(Whitty et al Nature, analysis by Ferguson et al)
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...’
R₀ Sierra Leone (Edmunds et al)

Ebola distribution end Aug 2014 (WHO).
Ebola distribution Mar 2015 (WHO).

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.