Preventing the next pandemic?

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Ebola Virus: Democratic Republic of Congo
Confirmed and probable Ebola virus disease cases by week of illness onset

As of November 09*
- 319 cases
- 284 confirmed
- 35 probable
- 199 deaths
- CFR 62%

*Data: MoH DRC 27 Oct 2018

3 UK Public Health Rapid Support Team
Forecasting the future

Plethora of innovations, tools and scientific knowledge to try to predict where and when the next outbreak might happen.
Changing relationships

![Diagram showing the relationships between Human, Pathogen, Vector, and Environment.](image)
Drivers of emergence & transmission

Source: Microbial Threats to Health, Institute of Medicine, 2003
Physical & environmental factors

Population Growth
Urbanisation
Overcrowding
Climate change
Human behaviours, trade and travel

2m people cross an international border every day
Social, political & economic factors

Yemen 2018

Poverty
Conflict
Health system collapse
Broken public health systems

Break down of surveillance
Break down of disease control programmes
Break down of effective care and treatment
Increases risk of outbreak
Discourages presentation
Undermines response

Diphtheria in the Russian Federation and Newly Independent States

Source: World Health Organisation 1999
Epidemic intelligence: global
Epidemic intelligence: frontline
Response has to start locally

The initial rate-limiting factor in preventing the spread of infectious diseases is not the international outbreak response.

It is the response at the ‘frontline’ – in communities and countries at risk.
Strengthen the frontline

- **Trained skilled workforce** in multiple disciplines needed at community and national level
- **Stock pile supplies**: drugs, vaccines, infection prevention control equipment, transport, communication ...
- **Preparedness planning** - Joint External Evaluations - National Action Plans

Massive scale up of in-country and external support for preparedness

- **Participation** – from case/community to capital
Rapid response teams & global reservists

**International RRTs**, eg.
- New Africa CDC Epidemic Response Team & African Volunteer Health Corps: local-regional-continental surge philosophy
- External RRTs: US CDC, China CDC, Institute Pasteur, Robert Koch Institute etc.
- UK Public Health Rapid Support Team: triple task of response, research & capacity-building;
- Strengthening of GOARN network

More importantly: **National RRTs**
The RRT concept is taking off at country level: eg. Nigeria, DRC, Sudan, South Africa, Indonesia....
Strengthen global response

WHO Health Emergencies Programme

New stakeholders

Better coordination

Fast, flexible, responsive funding

- Africa CDC
- World Bank
- NGOs
- National/International RRTs
- Public Health Institutes/CDCs
- Philanthropic organisations
- Research & Innovation bodies: CEPI, GLOPID-R

CFE….PEFF
UK DfID.....CDC-ERF
EDCTP........EC-DGRI
START Network......
Research has to be an integral part of response

Outbreak interventions can only be fully evaluated when there are cases.

Slow change in mind sets:

- Ebola vaccine (rVSV ZEBOV) – used in three outbreaks & >28,000 in current outbreak
- Monitored Emergency Use of Unregistered & Investigational Interventions (MEURI) – experimental therapies
- Real–time sequencing to understand transmission & target intervention
Step change to prevent the next pandemic

Better methods to anticipate disease threats & hotspots

A solid flow of information on suspect cases

Preparation & funding in place for fast & effective response

Build frontline human capacity & public health systems

International capacity to boost and backstop the frontline

Research for better tools & interventions
Thank you

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