Surveillance in the 21st Century
What and How?
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The opinions expressed are those of the speaker
And do not represent Chatham House....
So we will discuss...

WHAT are current threats (what we lose sleep over)

HOW are we to track them and understand them (what we may lose sleep over)

What are solutions on the horizon and where are missing pieces....(what we should lose sleep over)
What are emergent threats?

- Currently identified, Major concern - respiratory transmission
- Shifting, drifting and mixing
- Current threats, but is the next one is likely the “big one”?
New Emergent Infections - The Drumbeat

Zika Virus: What you need to know

Zika is:

- A virus spread through Aedes species mosquito bites. Aedes mosquitoes also spread dengue and chikungunya viruses.
- A risk to anyone traveling to a region of the world where Zika virus is found.

Global risk

Outbreaks have occurred in parts of Africa, Southeast Asia, and the Pacific Islands. In May 2015, Brazil reported the first outbreak of Zika virus in the Americas.

Zika virus is not currently found in the United States. However, cases of Zika have been reported...
Influenza-
Global Pandemic Influenza GISRS.. The oldest (1952)
network of sharing

- H5 N1- Still circulating

- H1N1 Pandemic- A cautionary tale?

- H7N9- Still also around

- Plasticity and intensity, interface with agriculture... surveillance
MERS CoV

- More than 1200 cases on Arabian Peninsula, Mortality 36%
- Recent large nosocomial outbreak in Korea
- Countries in or near the Arabian Peninsula with MERS cases: Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, United Arab Emirates (UAE), and Yemen.
- Countries with travel-associated MERS cases: Algeria, Austria, China, Egypt, France, Germany, Greece, Italy, Malaysia, Netherlands, Philippines, Republic of Korea, Thailand, Tunisia, Turkey, United Kingdom (UK), and United States of America (USA).
Bill Gates Greatest Fear

- Gates estimates that the next Spanish flu-like epidemic could kill 33 million humans in 250 days. That number of people would be about equal to the population of Canada.

- "We've created, in terms of spread, the most dangerous environment that we've ever had in the history of mankind,"
Lessons from Ebola

- Even a modestly transmissible disease can create an epidemic if adequately neglected.
- Politics can trump technical risk assessment nationally, regionally, and globally.
- Community “engagement” is critical and in the end was the answer (Liberia).
- You can spend a lot of money and resources with nothing left behind.
- The road to failure is paved with partner good intentions. Coordination is essential.
The situation before... and after?

**Ebola-affected countries have some of the lowest health spending in the world**

Low government and private spending on health affects the number and quality of doctors, nurses, clinics, hospitals, medicines and supplies.

**Total health expenditure per capita (USD)**

- **Guinea**: $24.80
- **Liberia**: $44.40
- **Sierra Leone**: $95.80
- **Sub-Saharan Africa (avg)**: $101.30
- **Nigeria**: $115.00
- **World (avg)**: $1,047.80
- **USA**: $9,145.80

New constructs in Disease Ecology

Safeguarding both human health and the natural systems that underpin it

It is time for a new discipline.

Reports & Publications

Planetary Health | Economist
How? Will *Technology* “keep up” with Nature?

- Rapid whole genome sequencing—quick answers for poor countries?
- Information technology— is the “leapfrog” over... need for robust systems
- Need for collaborative work
- Share innovation such as the Early Alert Response system with the South....
Global Microbial Identifier

- The database holds two types of information: 1) genomic information of microorganisms, linked to, 2) metadata of those microorganism such as epidemiological details. The database will include all genera of microorganisms: bacteria, viruses, parasites and fungi.
Stealth Threats: Pan drug resistance

- Following emergence of NDM – 1 plasmid mediated resistance (2010) new awareness
- Breach of last antibiotic drug class for gram negatives.
- Rapid Sequence analytics could facilitate.
Internet Based Surveillance...coming of age

- EAR aims to produce a single, common, web-based platform where all GHSI partners are able to access a list of possible, probable and credible CBRN and pandemic influenza threats, identified from open source, web-based medical intelligence systems. These reports are subjected to a generic risk assessment by subject matter experts from across the participating countries...

Tensions moving forward

“Global Health Security”

Poor Countries may mistrust the agenda

Capacity Building - Reparations

Incentives for Reporting

IHR Compliance

• How much securitization?
• Is it the North protecting themselves
• Who can assure sustainability?
• Why Report?
• Is IHR enough?
Bill Gates - “Lessons from Ebola, The next pandemic”

“First, there is a critical need to reinforce basic public health systems, including primary health care facilities, laboratories, surveillance systems, and critical care facilities, among other components....”

NEJM March 2015.
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As we move forward....

- Vulnerability is global and local—inadequate health systems are an unacceptable global risk
- Surveillance needs to be transparently linked to interventions and direction
- A long term holistic commitment is necessary
Thank you!

Onward an upward....