Hunting black swans in Global health

Ebola: a well prepared disaster

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Ebola: The epidemic of epidemics

- Epidemic of **swing door poverty**
- Epidemic of **misunderstanding**
- Epidemic of **orphans**
- Epidemic of **the unexpected**
- Epidemic of **mismanagement**
- Epidemic of **poverty terror**
An epidemic of publications

Figure S20. Subjective classification for current outbreak focus or, alternatively, for the indicated...
Global brain had all the knowledge and several alarm signals but chose to ignore both
Constantly producing & consuming disasters

"In pandemics good isn’t good enough"

Tweet citing chief medical officer Sierra Leone at Sixty-eighth World Health Assembly 18th May 2015
Survey in 4 remote regions: Liberia (Sept. 2014):
3 of 6 doctors had fled
Nurses didn't show up
Rubber gloves & sterile equipment for birth assistance missing
No access to running water or handwashing
2 of 19 centres had isolation facilities; no water
6 of 19 health centers access to mobile phone

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6340a3.htm?s_cid=mm6340a3_w

Cholera epidemic
Guiné-Bissau 1987
6000 cases in 7 weeks
Cholera challenges in 1987?

Unsafe burials w. washing and eating
"Abduction" of patients from hospital facilities
Sneeking corpses out of quarantine areas disguised as passengers in bush taxies
No training of staff: staff infecting staff
No isolation routines
Doctors disappeared
International community slow to react
WHO invisible

Gulu 2000 outbreak

Be good listeners and avoid bad management types

See full interview with Tony Oryema at www.globalhealthminders.dk
Money attracts wrong kind of health workers and managers
  Jeopardizing safety
  Lack clinical skills
  Barriers to learn and adapt
  Lack coordinating skills
  Terror management

The terrible truth

The inverse mortality risk

Health care workers, lacking necessary equipment to provide safe treatment, were dying at even faster rates than patients
Fatal neglect of boring hygiene
Resistance to change in 7 dysfunctional WHO's?

\[ r = f(n^m) \]

- \( r \) = internal resistance to new ideas
- \( n \) = number of employees
- \( m \) = number of managerial levels

Hard talk: WHO's knowledge problem

"Local academics and intellectuals being hired as consultants by the bi- and multilateral donors and often produce 'ritualised' reports that are neither critical nor innovative"

Tobias Denkus, Malmö University
http://aidnography.blogspot.dk/2010/10/corruption-consultants-and.html
UN developed complete organ failure

Medical training: Send in the Cubans!


(Cuban medical doctor)

- Care-giver (physical, mental and social): including comprehensive continuous curative, preventive, and rehabilitative care
- Decision-maker: choosing the best way to address health problems, often within resource constraints, equitably benefiting patients and communities
- Communicator: persuading individuals, families, and communities to adopt healthy lifestyles and become partners in the health effort
- Manager: assimilating and sharing knowledge within multidisciplinary teams, working in partnerships for social development
- Community leader: understanding the determinants of health in the physical and social environment, taking positive interest in community health activities benefiting large numbers of people
- Teacher: helping patients and families to manage common conditions; training non-physician health workers to fill the human resource gap

Nothing to see here

- 75% die from dehydration (NOT from media friendly bleeding)
- Double drip made headlines....
- 25% of ebola (EVD) cases stem from funerals
- 30% without known source of infection
- 25% found Postmortem!
- Fishermen continued to deliver fish to neighbouring countries

Soap, water, isolation, fluid, contact tracing.

Global Health doesn’t have a brain
A human brain

- Plans
- Purpose driven
- Moral and value
- Interacts
- Critical self reflection
- Strategy
- Observes
- Gathers information systematically

Willfull blindness
Failing to see patterns & ignoring facts

"Ebola is always a highly localized, short-term, typically rural event"
Evidence is not the plural of anecdotes.

All maps from Guiné contradicted this by showed every sign of epidemic expansion. But local health authorities, Ministry of health and the local WHO stuck to the doctrine in spite of the overwhelming facts.

"Ebola is always a highly localized, short-term, typically rural event."

“It is unclear to the panel why early warnings, from May through to July 2014, did not result in an effective and adequate response.”
“Although WHO drew attention to the ‘unprecedented outbreak’ at a press conference in April 2014, this was not followed by international mobilization and a consistent communication strategy”
An epidemic is a disease of society

Opportunity to see weak spots
Unique view into everyday reality of substandard health care
Nassim Nicolas Taleb’s metaphor for unexpected financial events. Extended the concept to describe high-profile, difficult to predict rare events in history and present.
in spite of its outlier status, human nature makes us invent explanations for its occurrence after the fact, making it explainable and predictable

The narrative of the black swan: a political tool when we fail big time
WHO established the narrative that this was an unexpected unprecedented event

The only black swan

Was the **REACTION** to the outbreak, the **CAUSE** for the reaction and the **DELAY** in reaction
Epidemics do not drop from heaven

And they don’t evolve in a vacuum

7 genes that rocked the world
Ebola outbreak was a perfect storm: cross-border epidemic in countries with weak public health systems that had never seen Ebola before.

7 genes did what politicians & media failed:

- **Revealed** countries’ lack of political commitment to global health security
- **Destroyed** WHO’s credibility
- **Highlighted** non-compliance with international health law

www.thelancet.com Vol 385 May 9, 2015
7 genes stripped global health research naked

Medical research and development model *ill suited* to address the world’s health priorities

7 genes that showed us we need more of what we haven’t got

We wait for biomedicine to fail – *THEN we call in social science*

Social Pathways for Ebola Virus Disease in Rural Sierra Leone, and some Implications for Containment

*By PLOS Neglected Tropical Diseases*

*Posted: October 31, 2014*
Sierra Leone minister of health: ‘We thought health workers were better informed’

Denial, ignorance or fatal neglect?

The origin of the Ebola outbreak in West Africa has been traced to the likely confluence of a virus, a bat, a two-year-old child and an underequipped rural health centre in Guiné – and fatal global ignorance.

Huff, A.R.; Winnebah, T. Ebola, Politics and Ecology: Beyond the ‘Outbreak Narrative’
http://opendocs.ids.ac.uk/opendocs/handle/123456789/5853#.VWWA8T9EIM8
Denial, ignorance or fatal neglect?

Demography, patterns of land use and of human-wildlife interaction are all implicated in zoonotic ‘spillover’ events

Huff, A.R.; Winnebah, T. Ebola, Politics and Ecology: Beyond the ‘Outbreak Narrative’
http://opendocs.ids.ac.uk/opendocs/handle/123456789/5853#.VWWA8T9EiM8

Large forest blocks should be protected from fragmentation within a landscape so that wildlife-human contact is minimized, and conditions are avoided for unusual species assemblages to occur that increase the risk of transmission of the Ebola virus from its natural reservoir(s) to new hosts including humans; and

“...humans’ management of forested African landscapes may have promoted the Ebola virus ‘jumping’ to a human”

http://www.efasl.org/site/
Increases bat diversity
Increases human wild-life contact
Some patterns of deforestation facilitates bat-human contact

http://www.efasl.org/site/

7 genes that exposed us to structural violence in health

social structures and institutions causing harm by preventing people from meeting their needs and by focusing on low risk groups

Ebola and Lessons for Development. IDS PRACTICE PAPER IN BRIEF 16
FEBRUARY 2015. http://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/5849/ID557%20Online.pdf?sequence=1
7 genes that exposed total global vulnerability

We are only as safe as the *most fragile states*

incubation period longer than even the farthest plane ride

7 genes that exposed a US state as a fragile unprepared state...!

Texas hospital with untrained staff

*No interpreter service*

*No standards inspite of SARS, bird flu etc.*

*Direct flights from West Africa*
15,000 cases – *but only one alerted the UN*

7 genes that made history

(With delay) the UN declared it a *threat to international peace and security* (second time in history) – but it took a cross atlantic case (Texas case)
7 genes that put migration back into global health

New and better prediction models needed

www.thelancet.com Vol 385 May 9, 2015

7 genes that rocked the world

Exposed that social determinants also act at country and regional level
7 genes that militarized pacifists

_Doctors without Borders (and other NGOs)_ called for a _military response_ to the Ebola epidemic, after 43 years of discouraging military intervention in other humanitarian crises.

7 genes that did what superpowers failed

Fundamental reform of WHO
Global emergency response fund
7 genes made more noise than the really big killers

HIV/AIDS, malaria, TB, diarrhoea, pneumonia, maternal mortality

7 genes that told the truth about human beings:

*What kills us* may be very different from what frightens us or substantially affects our social systems
Was the epidemic a black swan?

NO!

A well prepared disaster that we were warned about 30 years ago

“The results seem to indicate that Liberia has to be included in the Ebola virus endemic zone. Medical personnel in Liberian health centers should be aware of the possibility that they may come across active cases and thus be prepared to avoid nosocomial epidemics”

http://www.nytimes.com/2015/04/08/opinion/yes-we-were warned-about-ebola.html

Note: this was uncovered by a journalist—not WHO or researchers

Global health or global amnesia?
Ebola virus in bats and humans in West Africa since 2005 (at least)

Human blood samples collected in Sierra Leone, Liberia and Guinea between 2006 and 2008 from patients with suspected Lassa fever but tested negative for Lassa virus & malaria found that 8.6 per cent, of 220 samples tested were positive for Ebola Zaire antibodies


http://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/5853/ID561%20Online.pdf?sequence=1
Not a new virus or a sudden mutation

Virus present, bats present, transmission ongoing since 1992
So why the fuzz?

The virus doesn’t decide on it’s own whether it wants to be severe

It has the potential – but human behaviour and the environment determines severity
Humans change behaviour and their environment

That could be the black swan

Measles, Cholera, TB and Dengue

Can also change severity caused by changes in human behaviour
The new normal is crises

Caused by our lack of understanding of human behaviour & it’s consequences

Migration is the new normal

“Where the borders of the three countries intersect is now the designated hot zone, where transmission was intense and people in the three countries continued to reinfect each other”
Who’s to blame for WHO failure?

WHO funding levelled off after 20 years of constant increase

Other global health investors have grown US and other channel more funding to National research and GH organisations

Shifted balance of power away from the WHO

WHO’s Regional Office for Africa (AFRO) has a record and reputation for failure second to none in global health today.”

Richard Horton, Chief Editor, The lancet
Margaret Chan WHO Director-General’s speech at the Sixty-eighth World Health Assembly 18th May 2015

The world was ill-prepared to respond to an outbreak that was so widespread, so severe, so sustained, and so complex. WHO was overwhelmed, as were all other responders. The demands on WHO were more than ten times greater than ever experienced in the almost 70-year history of this Organization.

"A rapidly transmitted disease in the world’s poorest countries, that’s what WHO was created for, and it just utterly failed. It was unconscionable."

-Lawrence Gostin, a professor of global health law at Georgetown University

WHO still working with the black swan narrative

http://www.who.int/dg/speeches/2015/68th-wha/en/

But it was just a failure

http://www.npr.org/sections/goatsandsoda/2015/05/21/408289115/who-calls-for-100-million-emergency-fund-doctor-swat-team

Margaret Chan WHO Director-General’s speech at the Sixty-eighth World Health Assembly 18th May 2015

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“WHO does not have the operational capacity or **culture** to deliver a full emergency public health response”

(Draft of external review of WHO ebola response)

http://www.npr.org/sections/goatsandsoda/2015/05/21/408289115/who-calls-for-100-million-emergency-fund-doctor-swat-team
Outdated institutions tackling future challenges

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**Challenges—Outdated Institutions**

We are chasing the whirlwind of 21st-century diplomacy with an international system still tethered to 19th-century patterns of state behavior and cooperation. Caught in the middle are intergovernmental organizations, such as WHO, which appreciate the disease trends but remain accountable to sovereign states and their interests.⁷⁶

Professor David P. Fidler, in Evidence to UK House of Commons Select Committee

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*We live in a star wars civilization with Stone Age emotions, medieval institutions and Godlike technology*


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The darker side of global public health

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**2002:**
Chinese authorities lied about SARS cases for fear of trade & tourism effect

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**2004:**
Thailand withheld information on avian flu cases for fear of tourism

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**2014:**
Ebola epidemic declared March 2014, WHO aware but didn’t declare emergency until 8th of August for fear of interrupting tourism, making affected countries angry and for fear of interfering with annual pilgrimage to Mecca
Experience is a ticket to a train that has already left

Ebola teams from Uganda were not welcome in Liberia: their experience from 7 epidemics was unwanted

http://www.globalhealthminders.dk/interview-six-times-i-fought-a-war-against-ebola-and-beat-it/#comment-11121

6 lessons we refuse to learn
1. Impact
Uncontrolled pandemics are devastating

- 1918 influenza pandemic killed 50 mill people within a year
- HIV/AIDS has killed 40 mill since 1981
- Pandemics disrupt societies and economies and cause widespread secondary effects

2. Inequalities
Pandemics love poverty

Pathways by which poverty increases risk include: inadequate sanitation, poor nutrition, crowded living conditions, lack of healthcare services, poor infection control, lack of public health infrastructure and poor governance
3. Uncertainty is a condition

The emergence, origin & transmission routes of individual pandemics are unpredictable

Uncertainty around transmissibility of new infectious agents and seriousness (case fatality) during early stages

4. Controllability

Most pandemics can be controlled but socio-economic and environmental context, speed and preparedness can change that
5. Panic & rage

Fear is natural with new threats. Frequently translates into panic and outrage in the face of pandemic diseases.

6. Media

Social epidemics, panic and fake facts spread fast. Effective risk communication is key to managing this response.
Politicised epidemics: Sierra Leone

When the first cases emerged in Kailahun, heartland of the main opposition party, they prompted rumours: country’s ruling party had set up ‘death squads’ to take whole communities to treatment centres in order to administer a lethal injection.


Politicised epidemics: Liberia

People accused President Ellen Johnson Sirleaf of deliberately poisoning citizens and of exaggerating the scale of the epidemic in order to receive international donor money.

The Lancet Feb 2015

- Why didn’t WHO declare stage 3 emergency = slowed response
- West African context added to complexity: few doctors, civil war/post-conflict, low trust
- Guinea: initial public “success” was not true: many hidden patients
- Guinea was not used to UN presence = conflict
- Guinea government not used to “loud” NGOs like MSF
- Suboptimal rural strategy used in urban setting
- Top-down approach in Liberia better in suburban/urban case detection and quarantines


Three epidemics in one

![Graph showing the number of new cases each week in Liberia, Sierra Leone, and Guinea from Dec 2013 to Apr 2015]
Mortality and the darling factor

27th May 26,971 cases (confirmed and probable) with 11,122 deaths (41 %)


Health worker case fatality

Guiné  56 %
Sierra Leone  68 %
Liberia  80 % (illegal home clinics?)
The multiple girl effect?

• Girls and women more likely to be infected by men who have recovered: virus in semen for 7 weeks
• Women at higher risk as the majority of the health-care workers are women
• women tend to be the ones caring for the sick at home and preparing the dead for funerals.
• Pregnant women seeking antenatal care more likely to be exposed to infected healthcare workers.


During Ebola 2014

Pregnant women attending antenatal care dropped by 30 % (Sierra Leone)

Attended births dropped from 52 % to 38 % (Liberia)
Women die initially and men later?

Ebola graveyard, Gulu, Feb 2015

Ebola teaching us resilience

Not only focus on visible manifestations of ill-being without changing the (social and health) structures that underpin them
Current epidemic has raised new questions

Sexual transmission
Handling of hospital waste
Subclinical cases
Modes of transmission: superspreaders
Survivors role in continuos spread / care
Endemicity

Current epidemic has raised new questions

New global interest in non-communicable diseases has shifted focus and funding away from infectious diseases

Resurgence in Guiné:
unsafe burials, bodies secretly transported to home, still no burning of corpses

New strategy:
Incentives to relatives for information
Including taxi drivers in health promotion

Resurgence Guiné

- Donor Darlings and donor devils:
- Guiné got less economic support than Liberia or Sierre Leone – but 5 times bigger
- All labs in Guiné = 100 ebola tests per day
- One lab in Monrovia = 200 test per day
Sierra Leone lost 9% of its doctors in 7 months

Koroma and Li, Infectious Diseases of Poverty 2015, 4:10
http://www.idpjournal.com/content/4/1/10

The trouble is that the so-called brain drain in Uganda and elsewhere is not the cause of this dearth of health-care workers. It is only a symptom of health-care systems that are already in crisis. The ultimate solution is not to discourage professionals from working abroad; it is to ensure better training and more amenable working conditions. That way, we health-care professionals can focus on the task at hand: providing health care to our people.

http://www.project-syndicate.org/commentary/developing-countries-doctor-shortage-by-serufusa-sekidde-2015-05

Crowd sourcing epidemic- and environmental surveillance
An African CDC

Social scientist feel they are called in too late, run over by medical researchers
Psychologists also want to help

- A more precise system to risk stratify geographic settings susceptible to disease outbreaks
- Reconsideration of International Health Regulations Criteria to allow for earlier responses to localized epidemics before they reach epidemic proportions
- Increasing flexibility of the World Health Organization director general to characterize epidemics with more detail

http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001804
Split WHO in two

WHO's professional staff:

43.8% medical specialists
0.1% are economists
1.4% lawyers
1.6% social scientists

Margaret Chan’s plan to change WHO

- Establish a $100 million emergency reserve fund that can finance field operations for up to three months in response to an infectious disease outbreak;

- Create a rapid response team that can be deployed quickly to provide services on the ground;

- Set up a review committee to consider improvements to the International Health Regulations and their requirements that states set up robust disease surveillance systems; and

- Develop a semi-autonomous committee within WHO, insulated from political pressures, that will have responsibility for declaring global health emergencies.
Losing the grip – easing political pressure

Ebola? – what’s that?

“...the most common final end to a pandemic is what I call profound amnesia. SARS? What’s that? We are not yet at ‘Ebola? What’s that?’ But I guarantee you we will be there. And that’s the real problem.”

Howard Markel, MD, PhD, the George E. Wantz Distinguished Professor of the History of Medicine at the University of Michigan [Source]
Losing the grip – easing political pressure

“That's exactly what happened after H1N1 in 2009 – we lost the grip”
Julio Frenk, former minister of health Mexico, now Havard


Preparedness epidemic

9/11 got us on the wrong track down a blind alley
Before September 14

most researchers in global health would not have considered it good public policy to allocate limited resources toward developing an effective vaccine against Ebola virus disease

BRICS countries (Brazil, Russia, India, China and South Africa) (25% of global GNI):

Very little
Disorganised
Unfocused
Ebola wasn’t the Black swan

We wanted it to be

I’m not totally useless.

I can be used as a bad example.
Evidence doesn’t solve any problems

People talking to people do

Viruses and Epidemics do what they do

It’s our response that can model them
Researchers, public health officials and WHO should have and could have imagined

How Ebola would explode in an African suburban slum area

We need researchers to look around corners

More creative imagination needed in considering future infectious disease scenarios and in planning
Infectious diseases are like people: they are born, grow and die. But it's only through the actions of human beings that they can complete that life cycle. It's up to human beings to break it.

Dr. Sakoba Keita, Guinea’s National Ebola Response Coordinator

Crises is the new normal

Lets prepare for normal