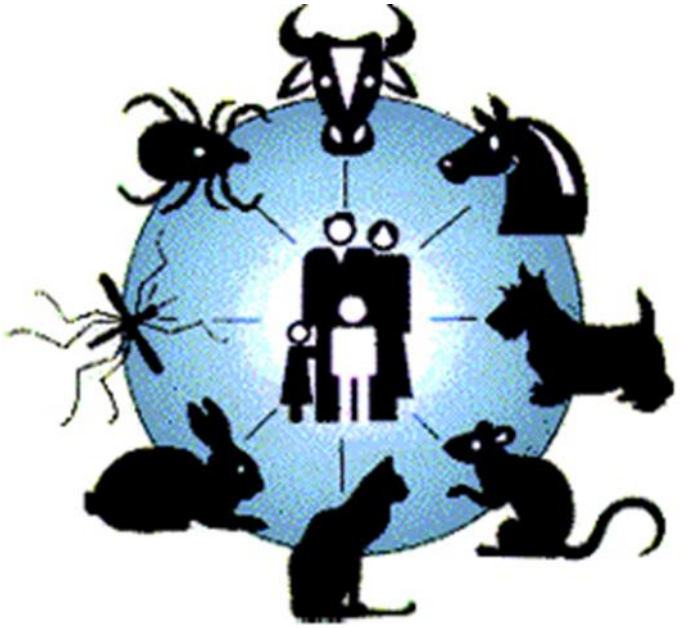
Ministry of Defence

BIOLOGICAL THREATS
EMERGING (ZOONOTIC) DISEASES
PREPAREDNESS & INFORMATION SHARING



Cdr Dr Stef Stienstra
Royal Dutch Navy Reserve
1-Civil-Military-Interaction Command

CBRN Centres of Excellence
An initiative of the European Union

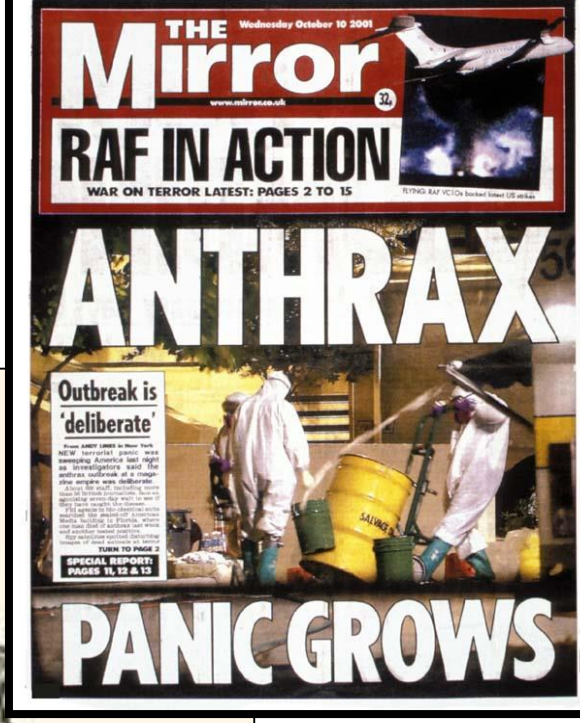


CBRN Public Health issue

After a major terrorist attack or industrial incident, first areas of concern are public order, victims, and public health. But, exactly in those first hours, it is important to secure forensic evidence and to have all relevant information available to save life.

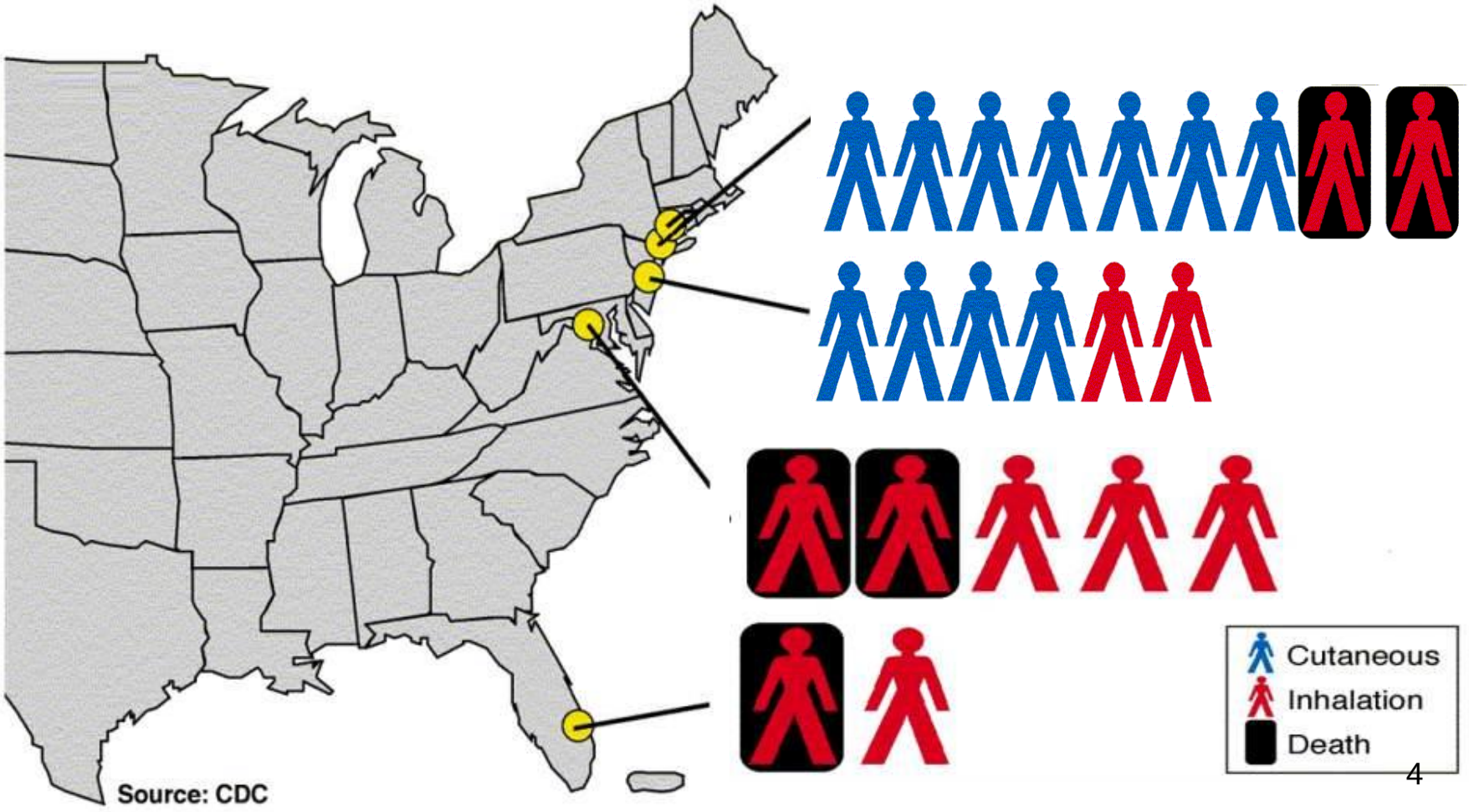
Media influence





Media attention overwhelming

Confirmed Anthrax Cases Associated with Bioterrorism: United States, October 2001



CDC
SAFER • HEALTHIER • PEOPLE™
EMERGING INFECTIOUS DISEASES

Research

A Large Outbreak of Legionnaires' Disease at a Flower Show, the Netherlands, 1999

Jeroen W. Den Boer,*† Ed P.F. Yzerman,‡ Joop Schellekens,* Kamilla D. Lettinga,§ Hendriek C. Boshuizen,* Jim E. Van Steenbergen,¶ Arnold Bosman,* Susan Van den Hof,* Hans A. Van Vliet,* Marcel F. Peeters,# Ruud J. Van Ketel,§ Peter Speelman,§ Jacob L. Kool,* and Marina A.E. Conyn-Van Spaendonck*

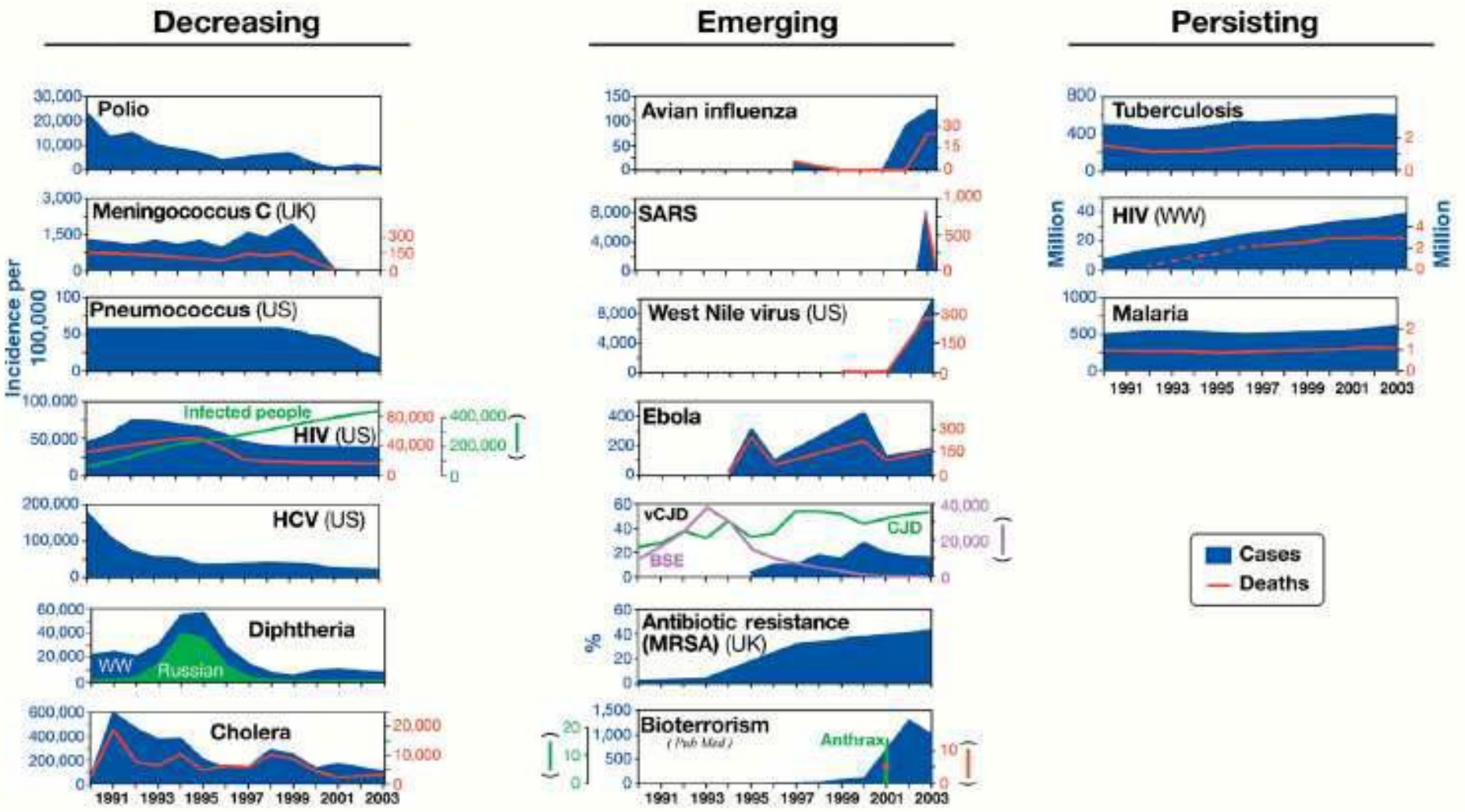
*National Institute of Public Health and the Environment, Bilthoven, the Netherlands;

In 1999, an outbreak of Legionnaires' disease affected many visitors to a flower show in the Netherlands. To identify the source of the outbreak, we performed an environmental investigation, as well as a case-control study among visitors and a serologic cohort study among exhibitors to measure exposure to possible sources. Of 77,061 visitors, 188 became ill (133 confirmed and 55 probable cases), for an attack rate of 0.23% for visitors and 0.61% f… spas in halls 3 and 4 of the ex… were culture positive for *Legio… three genotypes found in both… the isolates from 28 of 29 cult… who paused at the whirlpool s… risk for becoming ill. This stud… may be an important health ha…



Total cases	188
Confirmed	133
Probable	55
Median age	66 years (20–91)
Incubation period	
Median	7 days (2–19 days)
Hospitalized	163 (87%)
Mechanical	34 (21%)
Mortality	21 (11%)

Selection of emerging diseases



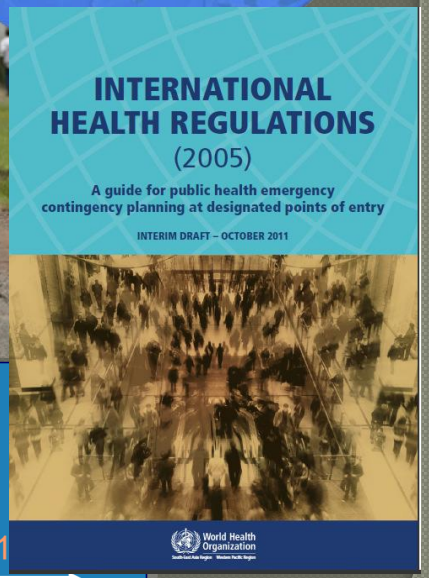
Less than 20% of the world is prepared to respond pandemics

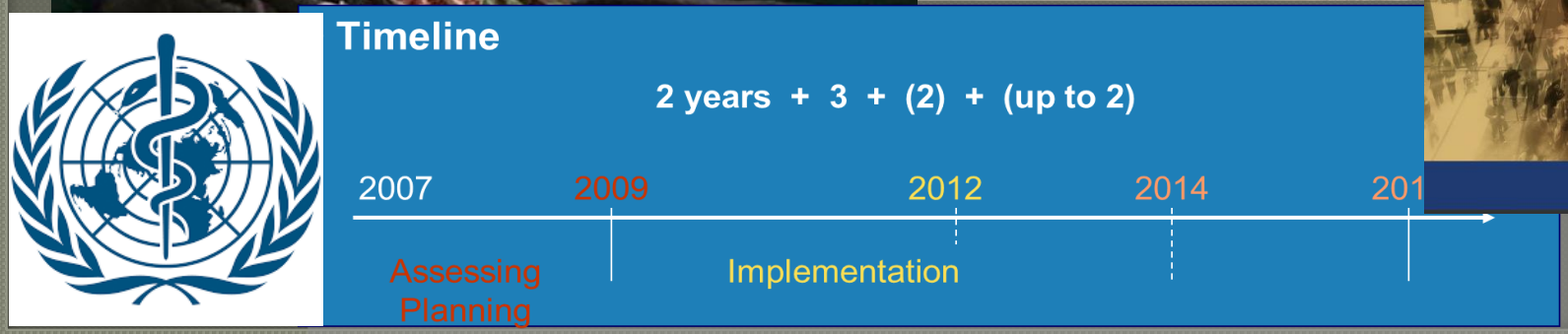
- All 194 countries of the world committed to WHO International Health Regulations
- June 2012 deadline – only 16% fully prepared to detect and respond to pandemics











Interpretation of IHR Questionnaire

Component	8.2	Laboratory biosafety and biosecurity
Indicator	8.2.1	*Laboratory biosafety and laboratory biosecurity (Biorisk management[71]) practices in place and implemented

8.2.1.1 Are biosafety guidelines accessible to laboratories?

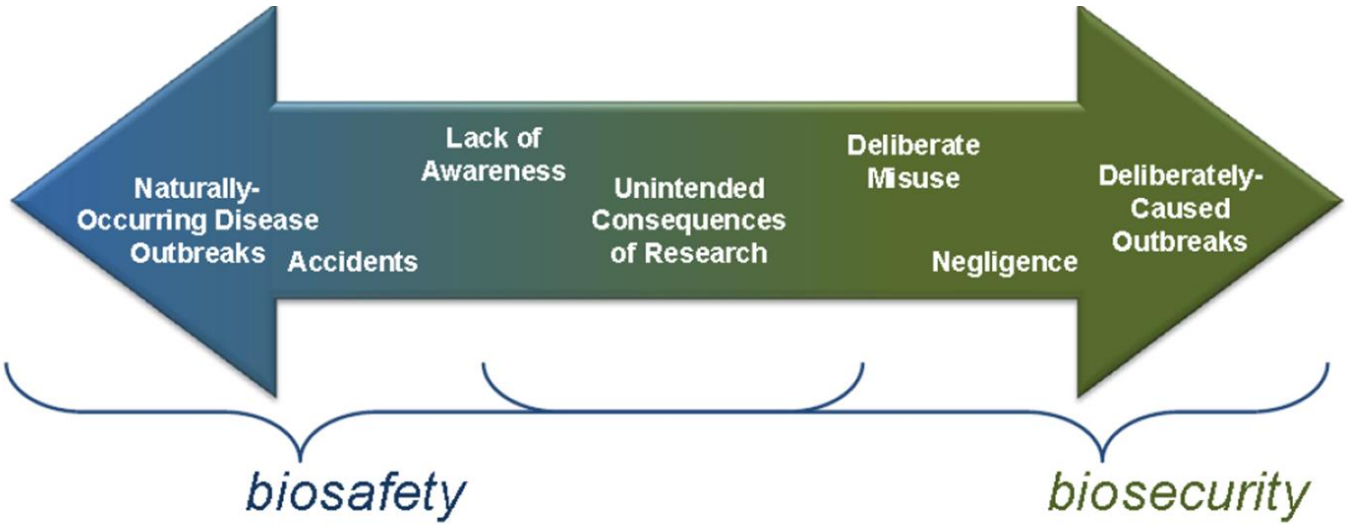
8.2.1.2 Are regulations, policies or strategies[72] for laboratory biosafety available?

8.2.1.3 Has a responsible entity[73] been designated for laboratory biosafety and laboratory biosecurity?

8.2.1.4 Are relevant staff trained in laboratory biosafety and laboratory biosecurity guidelines?

8.2.1.5 Has an institution or person[74] responsible for inspection, (could include certification of biosafety equipment) of laboratories for compliance with biosafety requirements been identified?

8.2.1.6 Has a biorisk[75] assessment been conducted in laboratories to guide and update biosafety regulations, procedures and practice, including for decontamination and management of infectious waste?



Biosecurity & Biosafety

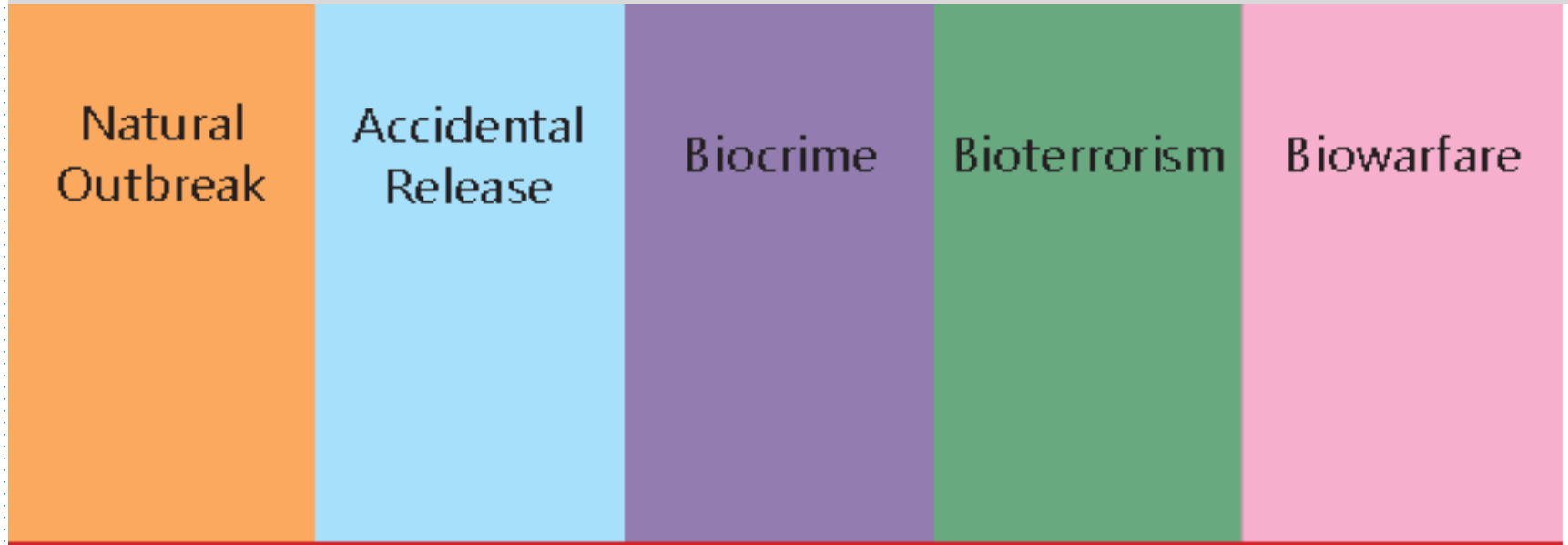
- **Biosafety** describes the containment principles, technologies and practices that are implemented to prevent the unintentional exposure to biological agents and toxins, or their accidental release
- **Biosecurity** describes the protection, control and accountability for biological agents and toxins within laboratories, in order to prevent their loss, theft, misuse, diversion of, unauthorized access or intentional unauthorized release

(adapted from WHO/CDS/EPR/2006.6 and CWA 15793:2011)

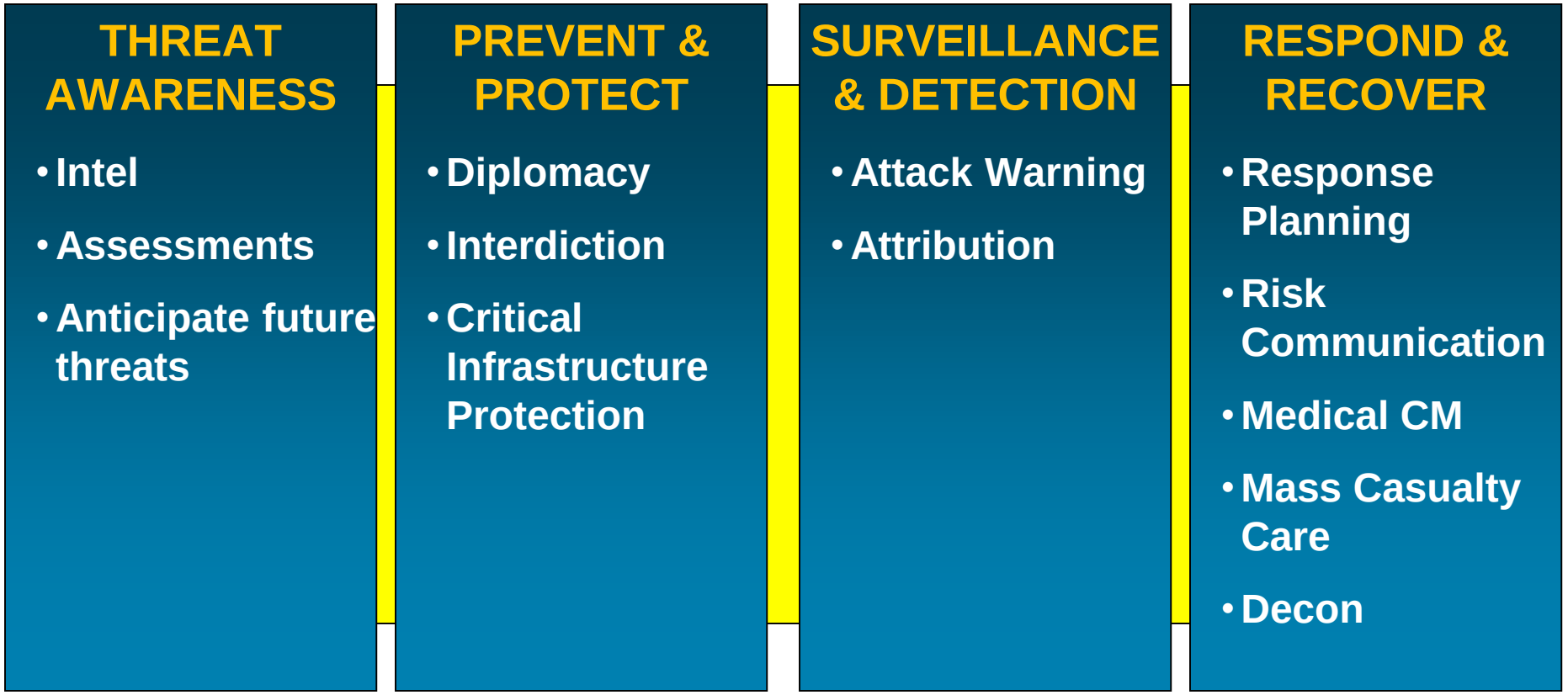
Biosafety is to keep bad bugs from people,
Biosecurity is to keep bad people from bugs

Spectrum of Biorisks

The probability or chance that a particular adverse event, accidental infection or unauthorized access, loss, theft, misuse, diversion or intentional release, possibly leading to harm, will occur



An integrated end-to-end biodefense strategy



Essential four pillars of national biodefense

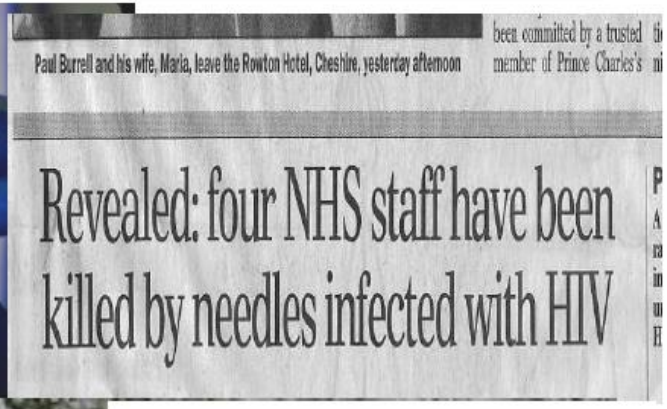
CBRN
Centres of Excellence
An initiative of the European Union

Bio-risk is real







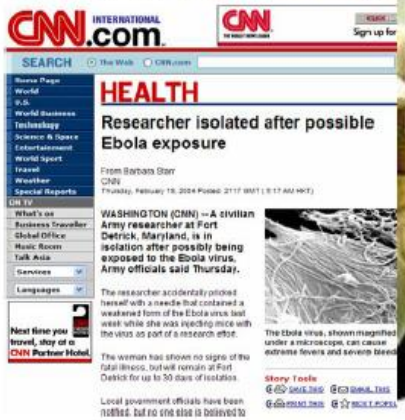






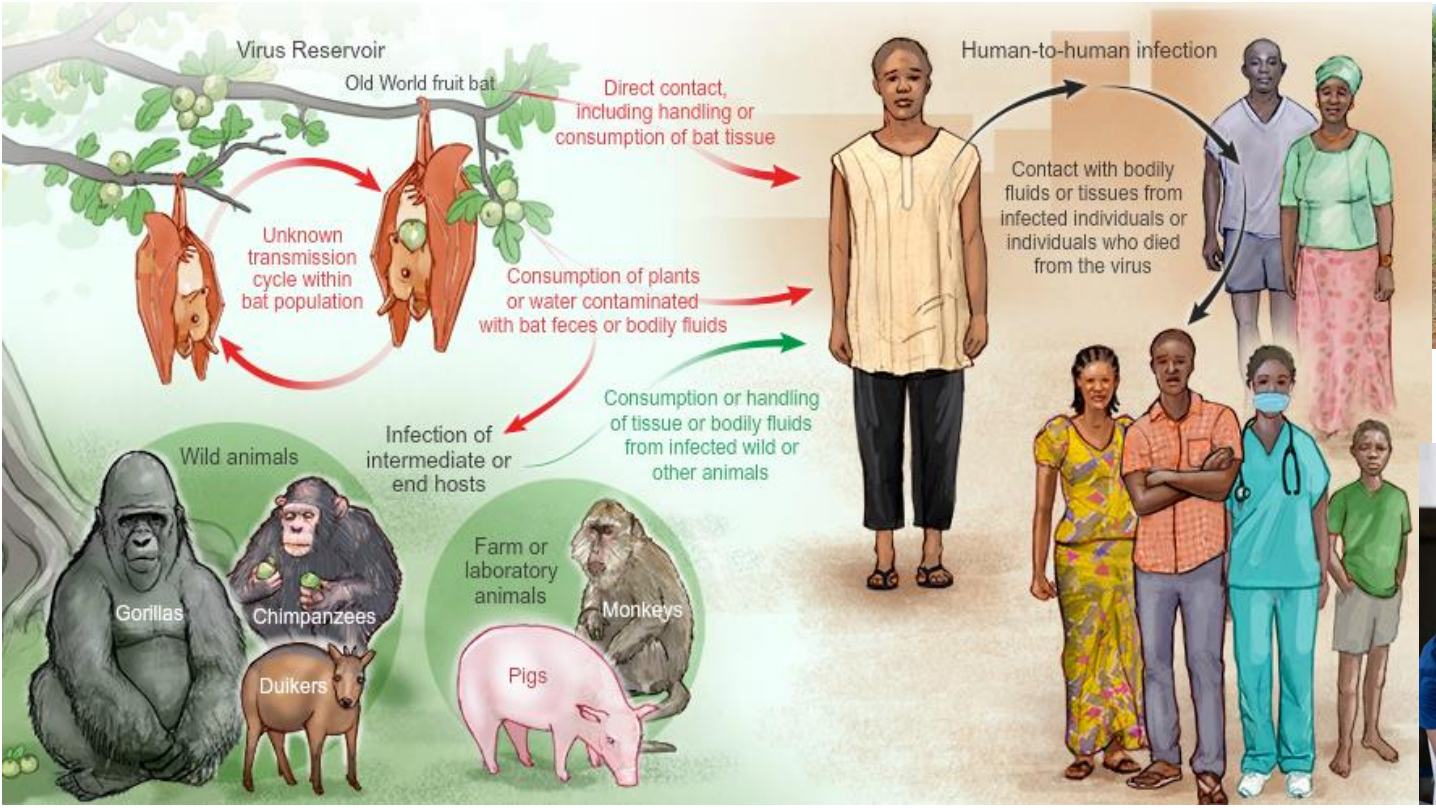








Transmission routes





Most virolent in dying patient

Only by contact









Incubation time and travel

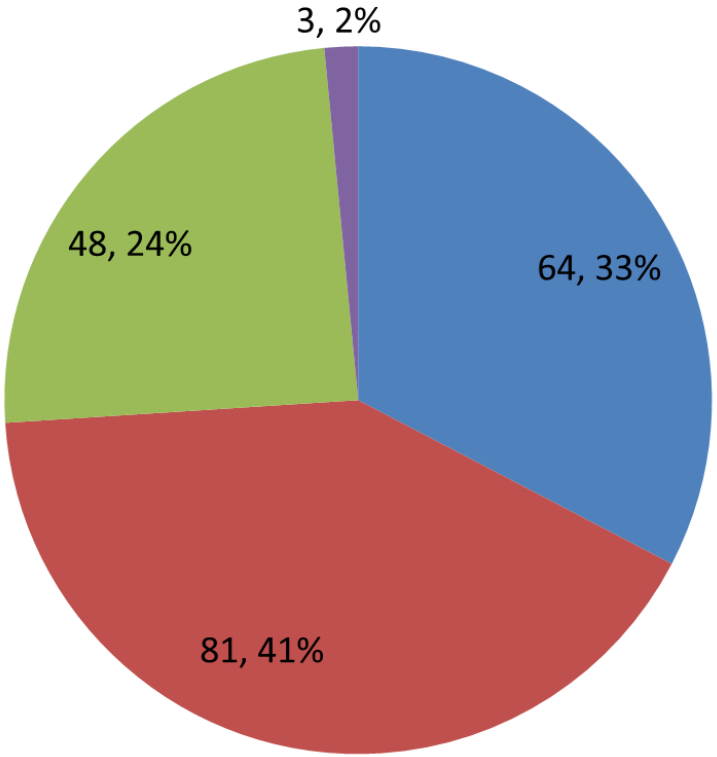
Table 1. Model Parameters and Fitted Values for a Model of an Ebola Epidemic in Liberia and Sierra Leone, 2014.

Parameter	Liberia Fitted Values	Sierra Leone Fitted Values
Contact Rate, Community (β_I)	0.160	0.128
Contact Rate, Hospital (β_H)	0.062	0.080
Contact Rate, Funeral (β_F)	0.489	0.111
Incubation Period ($1/\alpha$)	12 days	10 days
Time until Hospitalization ($1/\gamma_H$)	3.24 days	4.12 days
Time from Hospitalization to Death ($1/\gamma_{DH}$)	10.07 days	6.26 days
Duration of Traditional Funeral ($1/\gamma_F$)	2.01 days	4.50 days
Duration of Infection ($1/\gamma_I$)	15.00 days	20.00 days
Time from Infection to Death ($1/\gamma_D$)	13.31 days	10.38 days
Time from Hospitalization to Recovery ($1/\gamma_{IH}$)	15.88 days	15.88 days
Daily probability a Case is Hospitalized (ι)	0.197	0.197
Case Fatality Rate, Unhospitalized (δ_1)	0.500	0.750
Case Fatality Rate, Hospitalized (δ_2)	0.500	0.750

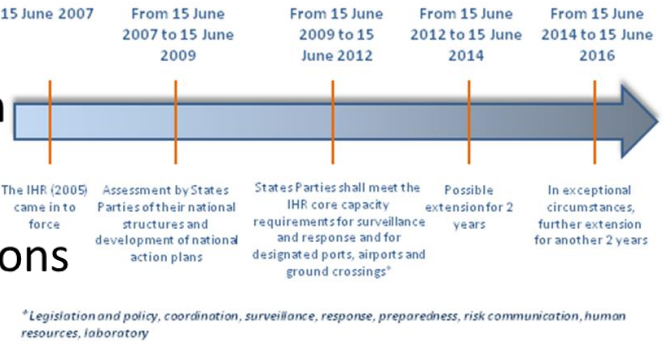


Image from openflights.org

So, where are we now with IHR Globally?

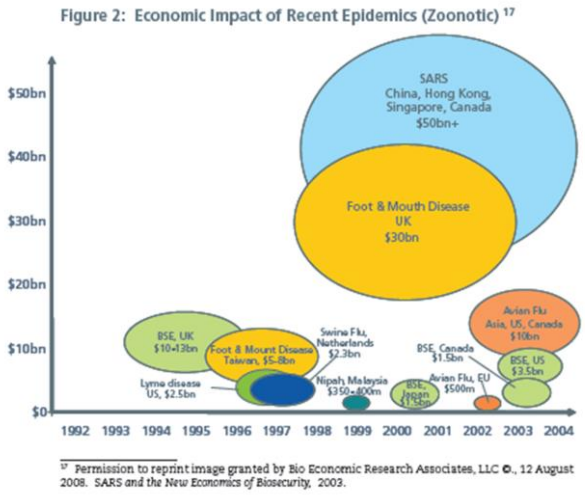


- Fully Implemented
- 2-year extension requested
- no communications
- Member State agreed to IHR at a later date



*Legislation and policy, coordination, surveillance, response, preparedness, risk communication, human resources, laboratory







US Global Health Engagement program & EU

GSHA Partner Nation Announcement by President Obama at G20 Summit in Turkey 6 November 2015:

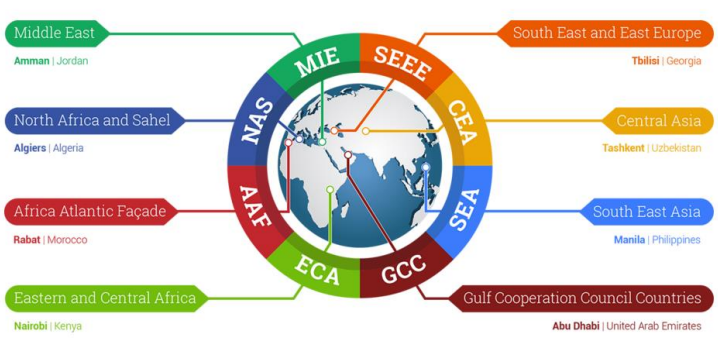
- Bangladesh, Burkina Faso, Cambodia, Cameroon, Cote d'Ivoire, Democratic Republic of Congo, Ethiopia, Georgia, Ghana, Guinea, Haïti, India, Indonesia, Jordan, Kazakhstan, Kenia, Laos, Liberia, Mali, Mozambique, Pakistan, Peru, Rwanda, Senegal, Sierra Leone, Tanzania, Thailand, Uganda, Ukraine and Vietnam.
- US DoD has already GHE assets (laboratories, bio-survellance emergency operations centers) active in a number of these countries and is poised to support the mission to prevent, detect and to respond to biological threats.
- DoD Cooperative threat reduction (CTR) / Cooperative Biological Engagement Plan (CBEP)
- Armed Forces Health Surveillance Center / Global Emerging Infections Surveillance and Response Systems Division (GEIS)
- PEPFAR; DAHHP; DIMO (15,000 participants in 2015); DTRA; etc

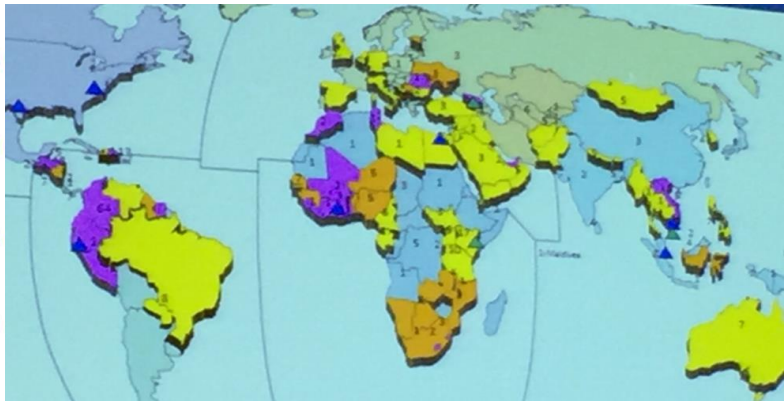
> USPHS; Military, Contractors, NGOs, IOs, GOs, Local Health Authorities

unicri
United Nations Interregional Crime and Justice Research Institute

European Commission

CBRN Centres of Excellence
An initiative of the European Union





Tradition of Humanity in armed forces operations

CIMIC ?

Civil effects ?

Nation building ?











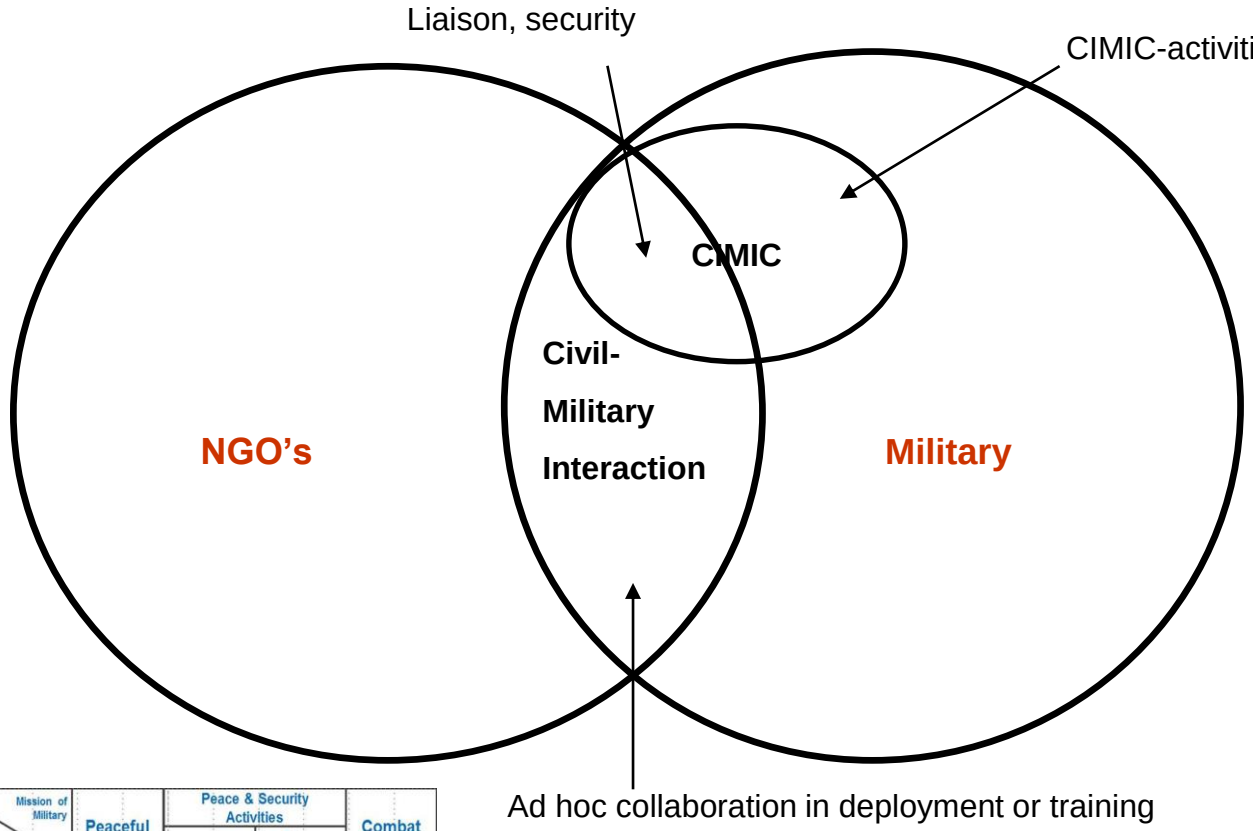






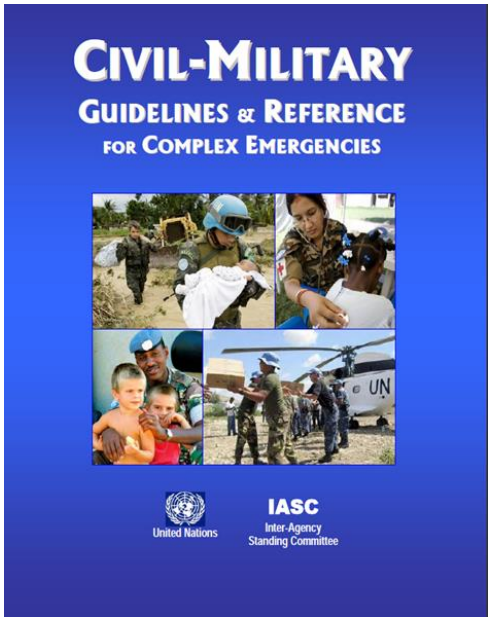
IASC Inter-Agency Standing Committee

Where do NGO's and Military troops meet each other ?



Mission of Military / Humanitarian Tasks	Peaceful	Peace & Security Activities: Peacekeeping	Peace & Security Activities: Peace Enforcement	Combat
Direct Assistance	Maybe	Maybe	No	No
Indirect Assistance	Yes	Maybe	Maybe	No
Infrastructure Support	Yes	Yes	Maybe	Maybe

CBRNe-incidents
=
Public Health effects

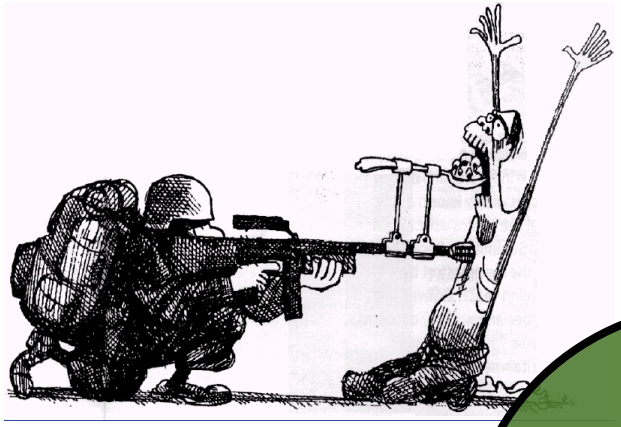


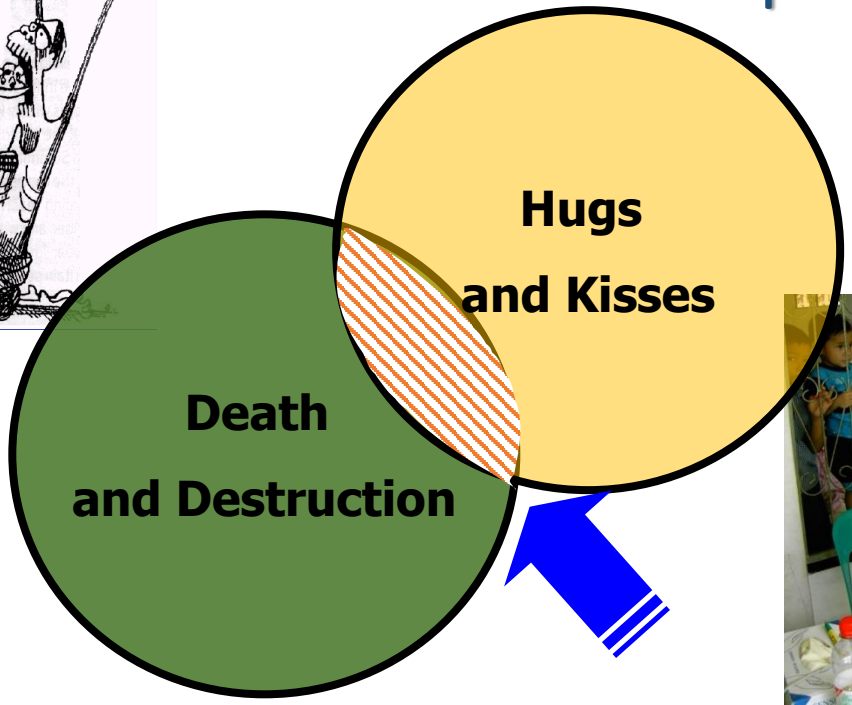
Last resort;
bridge-truck-cookie

The CIMIC "Battlespace"



Competition with NGOs?







„What do we want from our Military –
a sort of Oxfam with guns?"

GBR Labour MP 1998

Inter-Agency Standing Committee (IASC)

IASC Inter-Agency Standing Committee

Chaired by ERC Stephen O'Brien



OCHA
UNICEF (UN Children's Fund)
WFP (World Food Programme)
WHO (World Health Org.)
FAO (Food & Agriculture Org.)
UNHCR (UN Refugee Agency)
UNFPA (UN Population Fund)
UNDP (UN Development Programme)
UN Habitat

NGO Consortia
Interaction (US-based)
SCHR (Steering Committee on Humanitarian Response)
ICVA (Intl. Council of Voluntary Agencies)

RC & RC Movement
ICRC
IFRC

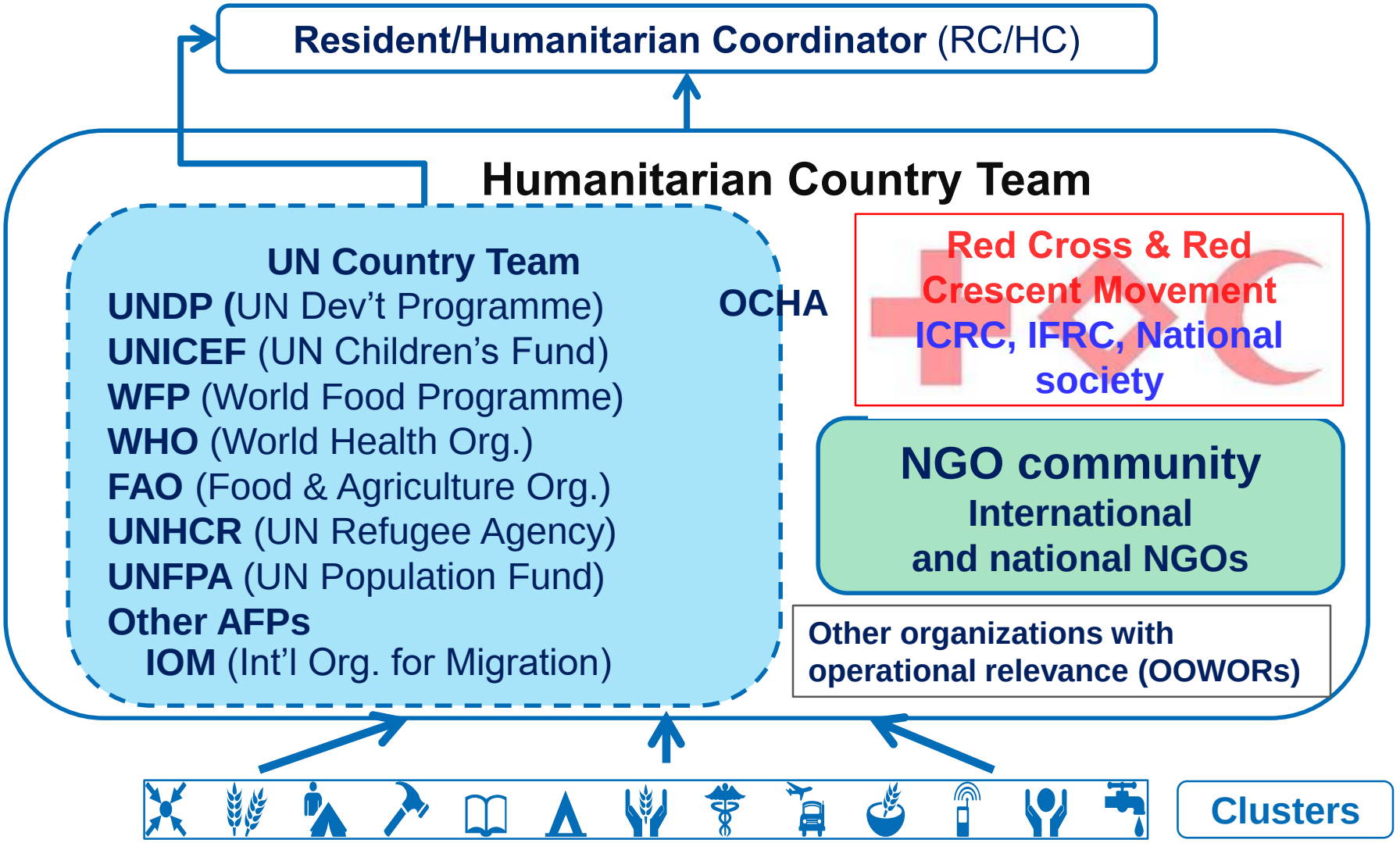
OHCHR (Office of the High Commissioner for UN Human Rights
IOM (International Org. for Migration)
World Bank Special Rapporteur on the HR of IDPs

OCHA United Nations Office for the Coordination of Humanitarian Affairs

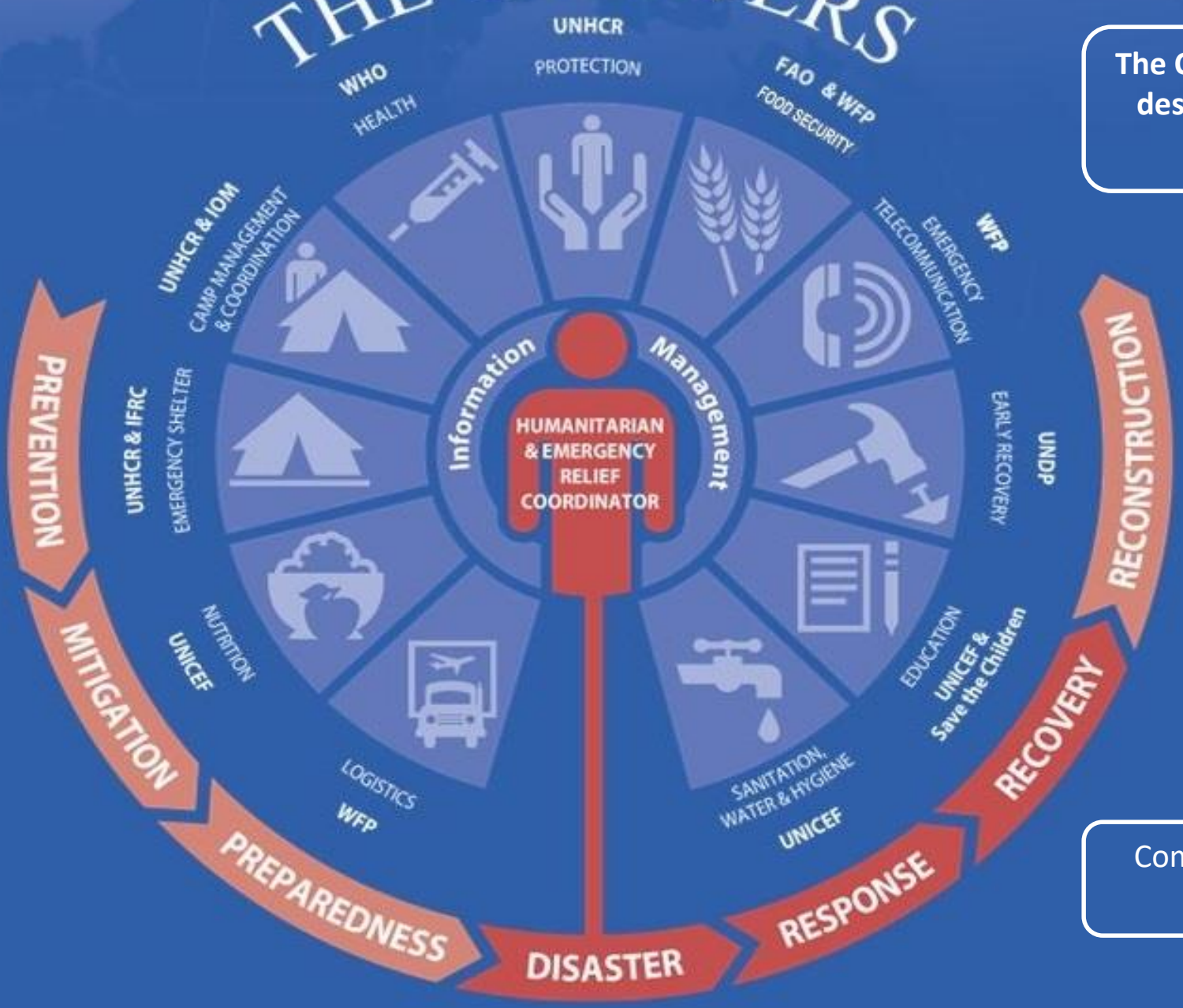
1. Humanity- address human suffering wherever it is found
2. Impartiality- aid without discrimination
3. Neutrality- not taking sides in hostilities or controversies
4. Operational Independence- not influenced by military, political, economic objectives



III. The Humanitarian Country Team (HCT)



THE CLUSTERS



The Cluster Approach is designed to provide:

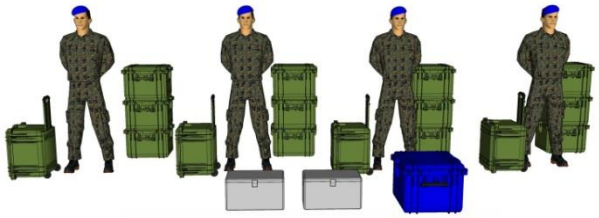
Predictability, Accountability and Partnership in all response sectors

Better support for national-led response tools

Common standards and tools

The European Mobile Lab - EMLab

Transfer of military know-how



















UN Mission for Ebola Emergency Response (UNMEER)



Under the strategic guidance of the SG's Special Envoy, David Nabarro, and the operational direction of the SG's Special Representative, Anthony Banbury, the mission will harness the capabilities and competencies of all the relevant United Nations actors under a unified operational structure to reinforce unity of purpose, effective ground-level leadership and operational direction, in order to ensure a rapid, effective, efficient and coherent response to the crisis.

UNMEER will work closely with governments and national structures in the affected countries, regional and international actors, such as the African Union (AU) and the Economic Community of West African States (ECOWAS), and with Member States, the private sector and civil society.

The World Health Organization (WHO) will be responsible for overall health strategy and advice within the Mission.



PSYOPS challenge



- Some local leaders spread rumors that "the white people" were conducting experiments, infecting Sierra Leonians or cutting off people's limbs.
- Doctors Without Borders warned that widespread belief that Ebola does not exist threatened to spread the disease regionally.
- Today the word "Ebola" carries so much stigma that few ailing individuals even seek diagnosis.

Better control

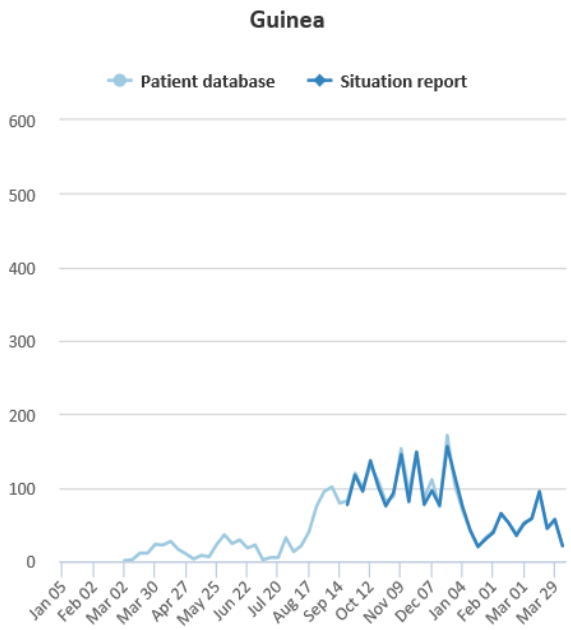


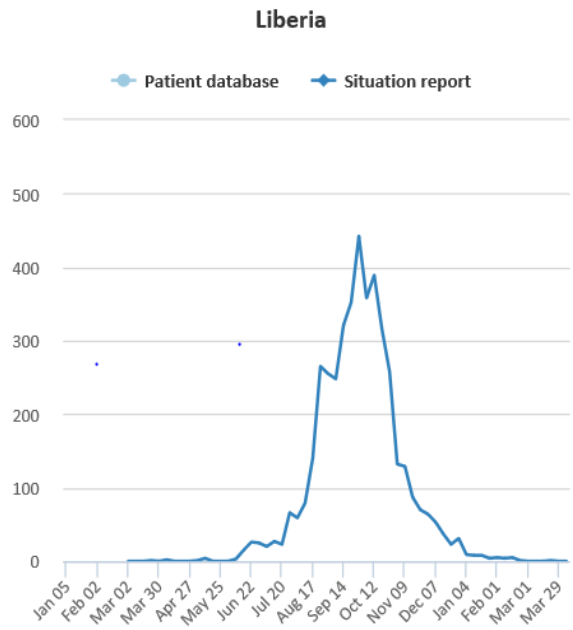
Public awareness

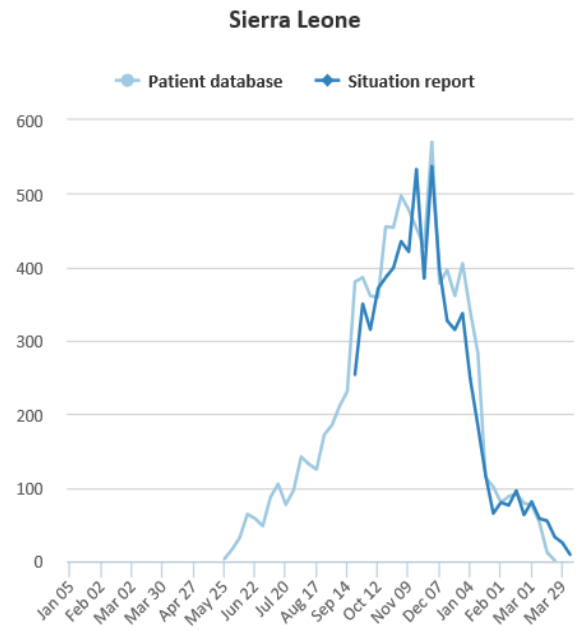


Better control

Cases in the most affected countries







- A total of 30 confirmed cases of Ebola virus disease (EVD) were reported in the week to 5 April. This is the lowest weekly total since the third week of May 2014. Case incidence in Guinea decreased to 21, compared with 57 confirmed cases the previous week. Liberia reported no confirmed cases. Sierra Leone reported a fifth consecutive weekly decrease from 25 confirmed cases in the week to 29 March to 9 in the week to 5 April.

Military in Humanitarian Aid

Strengths

- Flexibility / Mobility
- Protection / safe haven
- Communication
- Intelligence
- Logistics
- Medical Support (Mobile hospitals; standard of care)

Ref.: LSHTM & Oxford University, Qualitative study, Refugee Studies, Programme Documentation Centre, 2001

Weaknesses

- Relatively short deployments
- Intercultural (in-)competence
- Cooperation / communication with civilian actors
- “Armed” forces
- No neutrality or impartiality
- Competition with NGOs
- Medical treatment standards

The next Epidemic – Lessons from Ebola





- "All countries could identify trained military resources that would be available for epidemics; in a severe epidemic, the military forces might have to work together"
- "The conversation should include military alliances such as NATO which should make epidemic response a priority"

Bill Gates, New England Journal of Medicine, March 19, 2015

Any questions?



Civil-Military-Interaction Command

Stef.Stienstra@inter.nl.net