

**Health Security Threats  
Associated with CBRN Materials  
Covered Under the IHR: The  
WHO public health perspective**



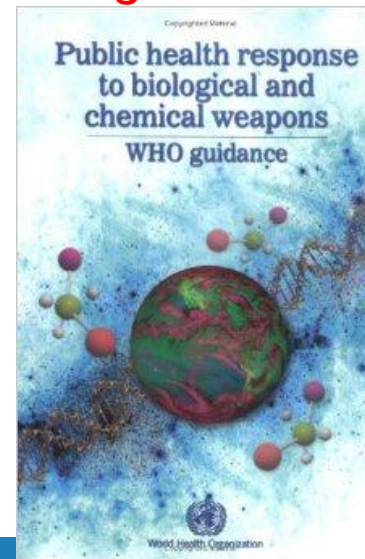
**World Health  
Organization**

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# Background

# Setting the scene: Some history of WHO efforts on CBW

- **Early 1950s:** UN approached WHO to investigate allegations of BW use during Korean War- investigation not carried out.
- **1959:** WHO contributed to the First Pugwash International Conference of Scientists to assess chemical and biological weapons.
- **1968:** UN requested WHO's contribution for the UN report *Chemical and Bacteriological (Biological) Weapons and the Effects of their Possible use*.
- **1970:** WHO publishes the First edition of *Health aspects of chemical and biological weapons*
- **Since 1972** has been interacting with the Biological and Chemical Weapons Conventions
- **1992** after the 3<sup>rd</sup> Review Conference of the Biological and Toxin Weapons Convention, and establishment of VEREX (verification protocol process), WHO has been involved in the BWC process as an observer
- **2004** WHO publishes the second edition of *Health aspects of chemical and biological weapons as Public health response to biological and chemical weapons*



World Health  
Organization

# WHA Resolution 55.16 (18-05-2002)

## Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health

- Underlining that the WHO focuses on the possible public health consequences of a CBRN incident, regardless of whether it is natural, accidental or deliberate;
- Acknowledging that natural occurrence or accidental release of CBRN material could have serious global public health implications and jeopardise the public health achievements of the past decades;
- Recalling resolution WHA54.14 on global health security: epidemic alert and response, which stresses the need for all Member States to work together, with WHO and other technical partners, in addressing health emergencies of international concern
- Recalling resolution WHA45.32 on the International Programme on Chemical Safety, which emphasized the need to establish or strengthen national and local capacities to respond to chemical incidents;



# WHA55.16 Continued

## Urges Member States

- *to treat any deliberate use as a global public health threat*, and to respond to such a threat in other countries by sharing expertise, supplies and resources as well as have **disease surveillance plans** and **collaborate** to enhance national capacity

## Requests the Director-General

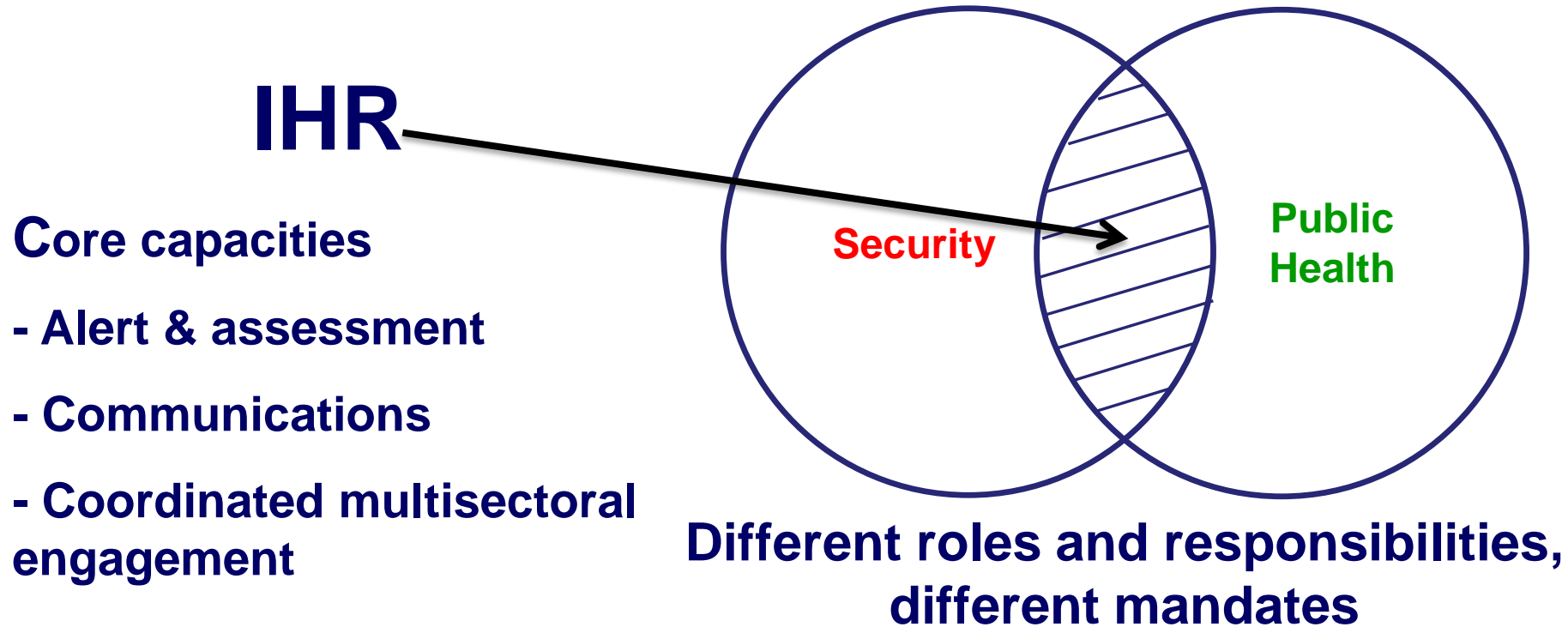
- *to strengthen global surveillance*;
- *to provide tools and support for Member States*, particularly developing countries, *in strengthening their national health systems*;
- *to continue to issue international guidance and technical information*;
- *to examine the possible development of new tools*”



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# Public health and security interface

# CBRN and their consequences represent a threat to both public health and security

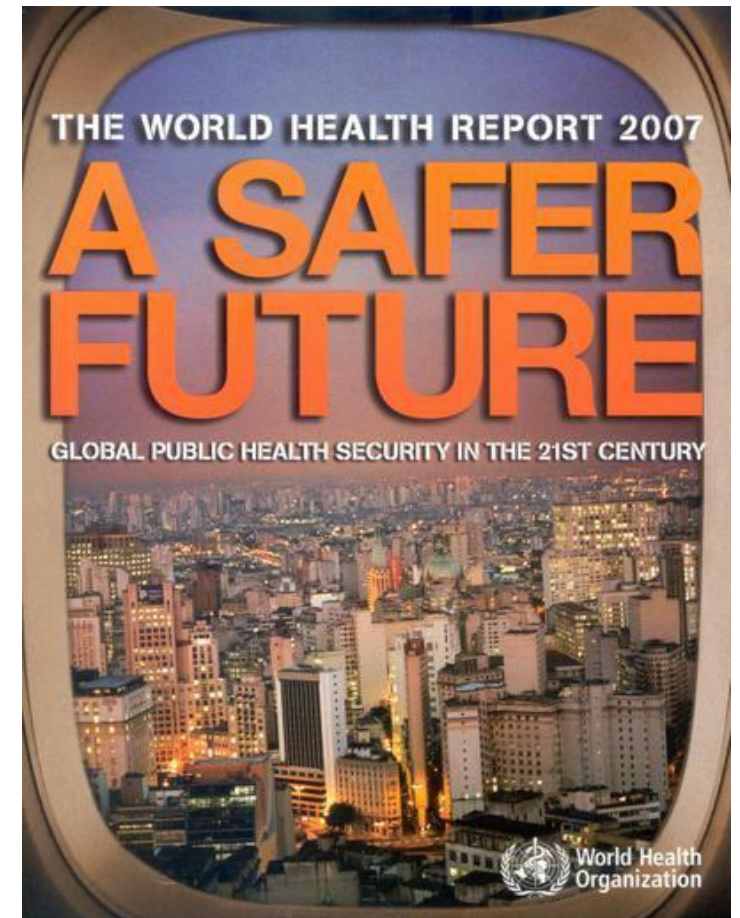


*WHO differs fundamentally from the IAEA and the OPCW as it is not in any way empowered to monitor or to verify compliance with international disarmament or non-proliferation agreements*

# Global public health security

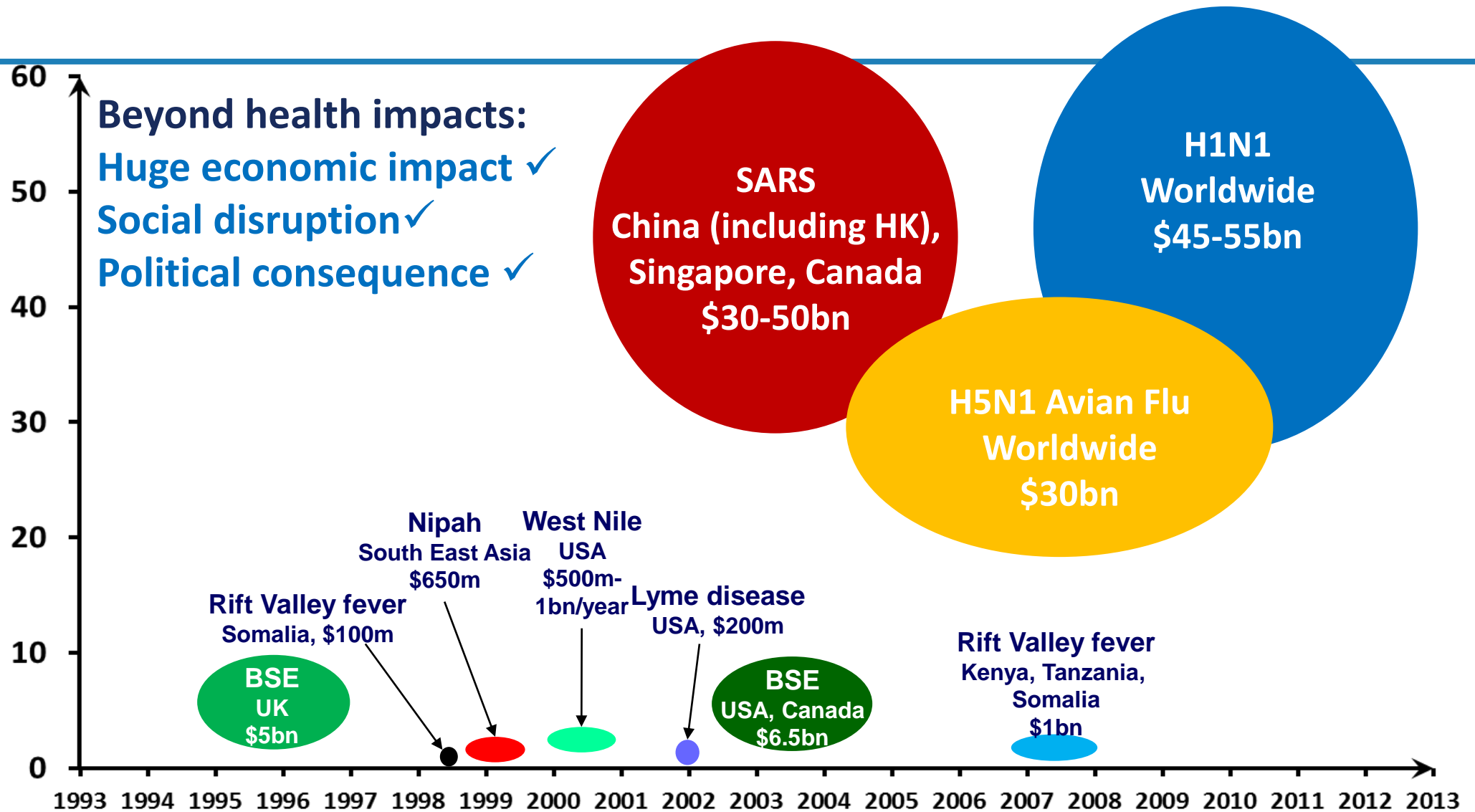
## The World Health Report 2007:

*“the activities required, both proactive and reactive, to minimize vulnerability to **acute public health events** that endanger the collective health of populations living **across geographical regions and international borders**”*





# Impacts: Far beyond “cases and deaths”



Figures are estimates and are presented as relative size. Adapted from BioEra 2011

# SARS: Impact on global travel

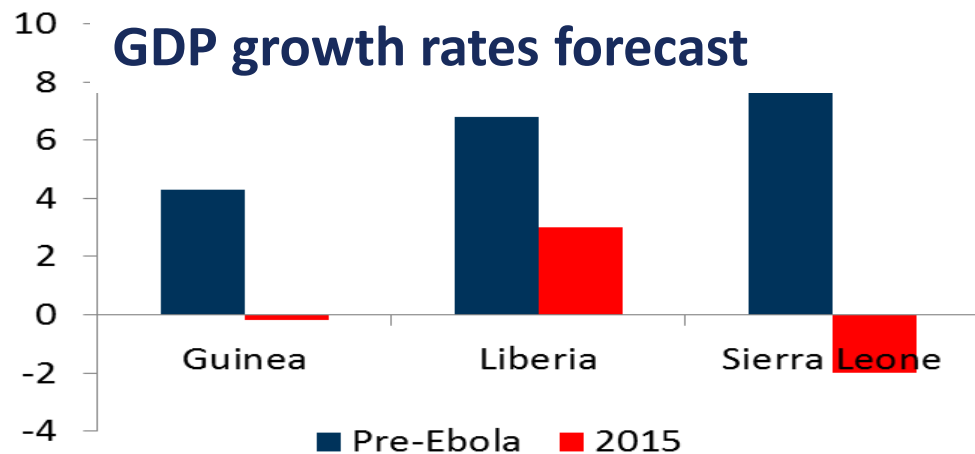


Singapore airport

Hong Kong Airport

Time	Flight	Destination	Gate	Status
17:00	GA 659	Singapore	18 (at 18:10)	
17:20	MU 698	Shanghai/Peking		Cancelled
17:45	KA 654	Shanghai/Peking		Cancelled
17:50	KA 430	Kashang		Cancelled
17:50	KA 904	Xiamen		Cancelled
17:50	KA 904	Beijing		Cancelled
17:55	KA 700	Dubai		Cancelled
17:55	MU 9030	Harjing	36 (Now Boarding)	
18:00	CA 420	Chongqing	04	
18:00	MU 204	Xian	20 (Boarding Soon)	
18:00	PR 307	Manila	24	
18:05	AJ 315	Dubai	30 (Boarding Soon)	
18:05	KA 660	Fuzhou		Cancelled
18:20	CK 402	Taipei	67	
18:25	MU 510	Shanghai/Peking	10	
18:30	90 995	Singapore	21 (Boarding Soon)	
18:35	KA 672	Hangzhou		Cancelled
18:40	AC 006	Vancouver		Cancelled
18:45	CI 616	Taipei	28	
18:50	TG 603	Bangkok	42	
18:55	KA 612	Harjing		Cancelled
19:10	CK 111	Sydney	47	
19:10	CK 135	Melbourne		Cancelled
19:15	DF 088	Melbourne	18	
19:15	MU 536	Shanghai/Peking	15	
19:15	QZ 070	Auckland	25	
19:20	KA 906	Beijing		Cancelled
19:20	90 999	Singapore		Cancelled
19:25	PR 872	Taipei		Cancelled
19:25	CZ 3078	Hakasa	32	
19:40	SI 119	Manila	21	
19:40	CA 116	Beijing		Cancelled
19:40	CK 488	Taipei		Cancelled
19:40	CK 973	Manila		Cancelled
19:45	CI 542	Taipei	25	
19:50	MU 7002	Taiyuan		Cancelled
20:00	CK 775	Singapore		Cancelled
20:00	UA 696	Singapore		Cancelled
20:05	CI 618	Cebu	36	
20:10	CZ 307	Shanghai	30	
20:10	QF 088	Sydney		Cancelled
20:15	KA 608	Shanghai/Peking	20	
20:15	TG 830	Taipei		Cancelled
20:20	CK 107	Auckland	1	
20:25	KA 451			
20:25	KA 438	Kashang		Cancelled
20:45	CK 454	Taipei		Cancelled
20:45	TG 607	Bangkok	42	
20:50	CI 618	Taipei		Cancelled
20:50	CZ 3070	Dubai	32	
21:00	PR 958	Taipei	36	
21:05	PR 311	Manila		
21:10	QF 138	Sydney	19	
21:45	KA 434	Kashang	27	
21:45	KA 486	Taipei		Cancelled
21:50	CK 408	Taipei	4	
21:50	CK 906	Manila	31	
21:55	CI 672	Kashang		
21:55	90 002	San Francisco		
22:00	AM 783	Ho Chi Minh		
22:00	CK 783			
22:05	CI 996	Taipei		Cancelled
22:05	CK 708	Bangkok		Cancelled
22:25	EA 783	Bangkok	62	
22:30	CK 482	Dubai		
22:55	CK 462	Taipei		Cancelled
23:10	UH 721	Manila		Cancelled
23:20	CK 103	Cairo		
23:30	CK 103	Sydney		

# Ebola: Economic Impacts



## 2015 Sub-Saharan Africa estimates

If limited spread **-US \$550 Million**

If significant spread **-US \$6.2 Billion**

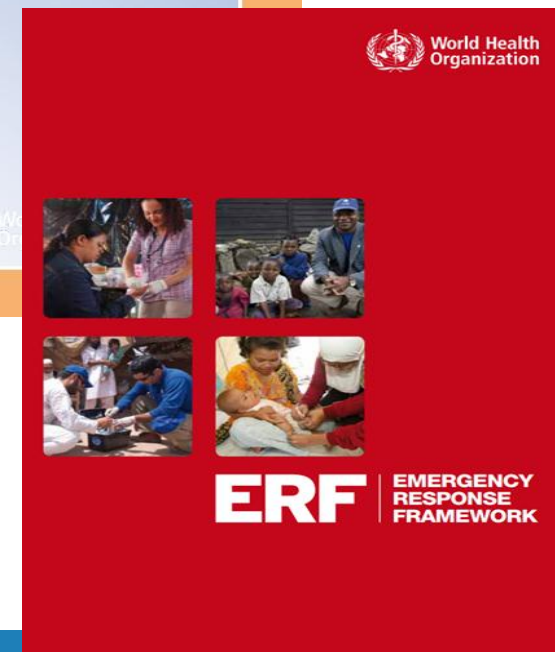
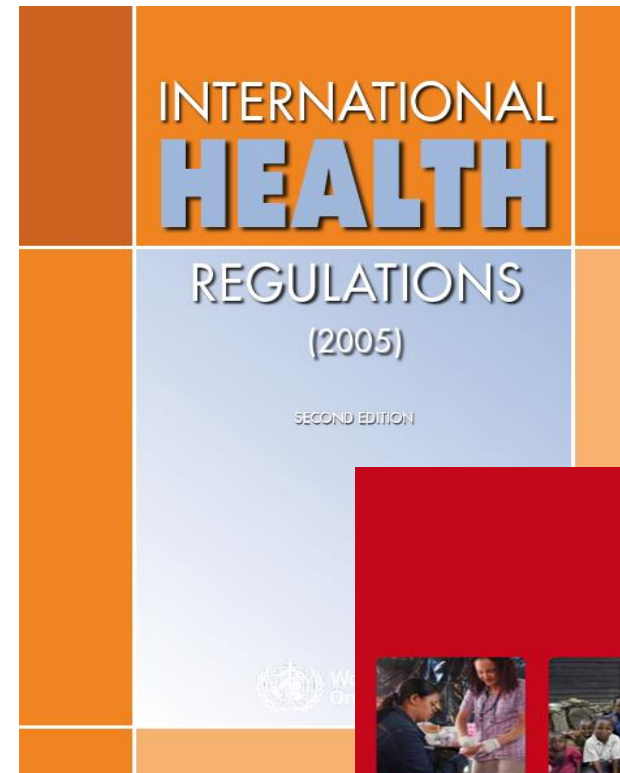
Data Source: World Bank (2015)



# Solution: Global Efforts

- **Global mandates and frameworks**
  - WHO Constitution
  - **International Health Regulations or IHR (2005)**
  - WHO serves as Health Cluster Lead
  - ***WHO Emergency Response Framework***

**Collaborative coordinated  
multisectoral approach**



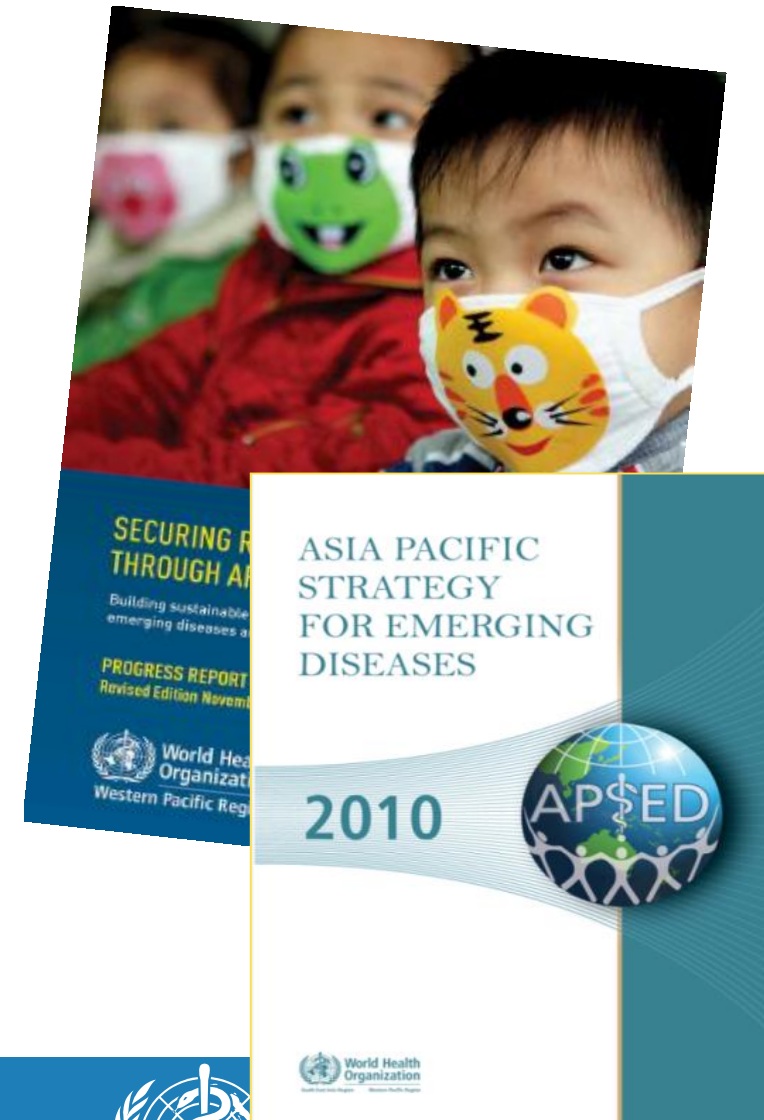
# Solution: Regional tools

## The Asia Pacific Strategy for Emerging Diseases (APSED)

- A bi-regional tool to help two WHO – Regions (SEAR and WPR) meet IHR core capacity requirements
- A common framework to prepare for – and respond to emerging disease outbreaks and other public health incidents

Developed in 2005 and updated in 2010

Multi-hazard approach



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# WHO Response: Global and regional frameworks

# Legal framework: International Health Regulations (2005)

## INTERNATIONAL HEALTH

### REGULATIONS (2005)

SECOND EDITION



- Legally-binding public health law which **came into force in 2007** about procedures to protect public health
- Their aim is to ensure **public health security** while minimizing interference with international transport and trade
- Does not distinguish between **natural, deliberate or accidental and is all hazard** (infectious, chemical, radiological, foodborne, etc.)
- Has two fundamental components
  - **Internationally** coordinated monitoring, information sharing & response
  - Strengthening of core **national public health capacities** to detect, assess, respond and recover in every single country, including at points of entry

# What are the International Health Regulations?

- **Strong national public health systems** able to maintain active surveillance of diseases and public health events; investigate detected events; report; assess public health risk; share information; and implement control measures.
- **Effective global systems, networks and tools** for containing public health threats, able to carry out continuous global risk assessment, and prepared to respond to unexpected events with the potential for international relevance.

*For effective management of public health emergencies of international concern (PHEIC) [i.e. Ebola outbreak declared PHEIC on 8 August 2014]*



# IHR Core capacities



1. National legislation, policy and financing
2. Coordination
3. Surveillance
4. Response
5. Preparedness
6. Risk communication
7. Human resources
8. Laboratory

# Preparedness, Surveillance and Response at WHO

## ● Preparedness

- IHR core capacity building in all countries
- For specific threats: vaccine stockpiling, disease specific prevention, antimicrobial resistance, **CBRN threats**, etc
- **Preparedness for specific events** e.g. mass gathering
- Health system resilience and emergency preparedness
- Whole of society engagement



# Preparedness, Surveillance and Response at WHO

- **Surveillance, risk assessment and operational communication**
  - Event-based surveillance and media monitoring
  - Early warning systems in vulnerable population
  - Scientific approaches to risk assessment of acute public health
  - Communication to all countries via the IHR Event Information Site for taking action

Saudi Arabia | Coronavirus...



2014-07-10 | Event Update 2014-07-10

On 5, 6, 8 and 10 July 2014, the National IHR Focal Point of Saudi Arabia (SAU) has reported the diagnosis of an additional six (6) cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection. Details of the 6 cases are as follow:

**Reported on 5 and 6 July 2014:**

• A 52-year old male, non-national and resident of Jeddah city, Mecca region. He is an electrician working...

Event Update 2014-07-12  
United Arab Emirates (the) | Coronavirus

Event Update 2014-07-10  
Guinea | Ebola Virus Disease

Event Update 2014-07-10  
Saudi Arabia | Coronavirus Infection

Event Update 2014-07-08  
Guinea | Ebola Virus Disease

## Latest Announcements

2014-06-08 - 2014 FIFA World Cup Brazil  
Epidemic Intelligence Reports, 5 June...

2014-07-09 - Information on detection of  
vials containing variola virus DNA -...

2014-06-22 - Update on polio in central  
Africa - 22 June 2014

2014-06-30 - Multiple Salmonella serovars  
linked to chia seed products - Update...

2014-06-19 - Multiple Salmonella serovars  
linked to chia seed products - Update...

All Announcements



# Preparedness, Surveillance and Response at WHO

## ● Strategic Health Operations

- Provides the infrastructure and operational platforms for response
- Links emergency operation centres for coordinated responses
- Provides incident command structure to public health operations

## ● Response

- Support to Ministries of Health for outbreak investigation and public health interventions
- Coordinate international support through networks e.g. Global Outbreak Alert and Response Network (GOARN)
- Coordination of UN Health Cluster in emergencies
- Field logistics and telecommunications requirements for operations



# WPRO review of the 2013 IHR core capacity monitoring survey: Radiation and chemical emergencies

- Ten countries in the region (WPRO) have full or almost full core capacity for radiation emergencies.
- More than a half of the countries in the region need to develop national programme components and to have access to laboratories and relevant institutions for both chemical and radiation emergencies, and to develop national policies, plans or strategies for radiation emergencies.
- A little over 50% of the countries responded with full score for the designation of national focal point and effective coordination among relevant authorities for both chemical and radiation emergencies.
- In general, WHO provides support to countries to undertake health risk assessment, communicate the results, implement health protection measures and medical treatment and rehabilitation of those exposed to the chemicals or radiation. In addition, WHO can provide advice on health implications of mitigation measures proposed or undertaken by the countries.



# Recommendations

- Update the regional list of experts and institutions for chemical and radiation emergencies regularly
- Explore using the capacities of Poisons Centres, WHO Collaborating Centres related to chemical safety and REMPAN members in chemical or radiation emergencies
- Engage the countries that have full national core capacity in supporting other countries
- Support countries with identified gaps in core capacity to develop chemical safety or radiation safety programmes

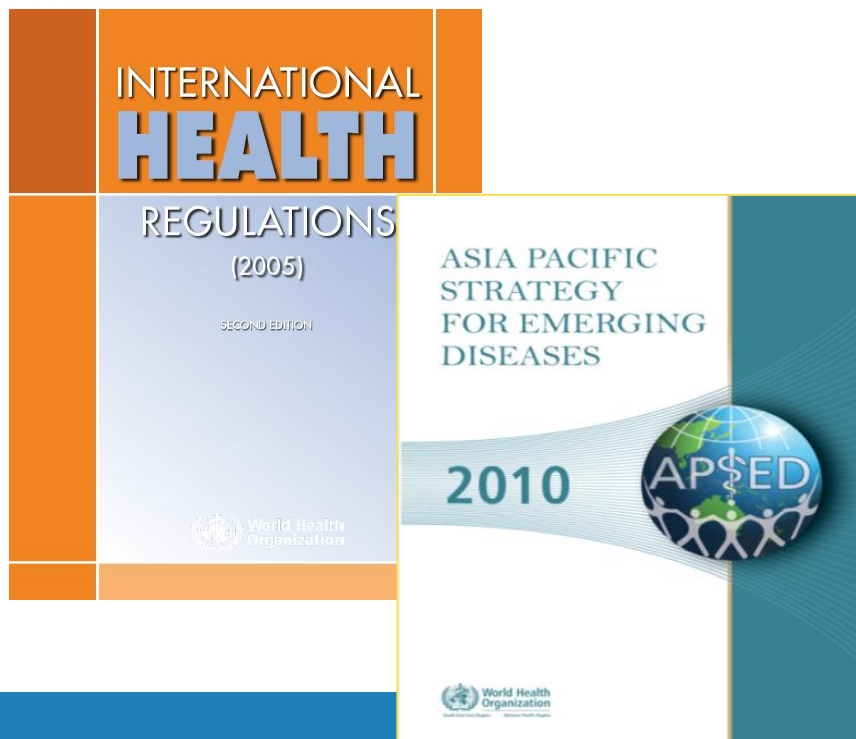
# Recommendations

- Support countries to establish and maintain effective communication and coordination between the health, environment and other relevant authorities
- Provide guidance on what constitutes national core capacity for chemical and radiation emergencies in low risk countries –
- Make available the information on what WHO can do to support countries in responding to a chemical or radiation emergency
- Develop a classification system for chemical events – may be aligned with actions required under IHR.

# APSED: a regional tool

## Asia Pacific Strategy for Emerging Diseases (APSED):

A bi-regional tool to help meet IHR core capacity requirements –



**Generic platform** for ✓  
preparedness, alert and  
response

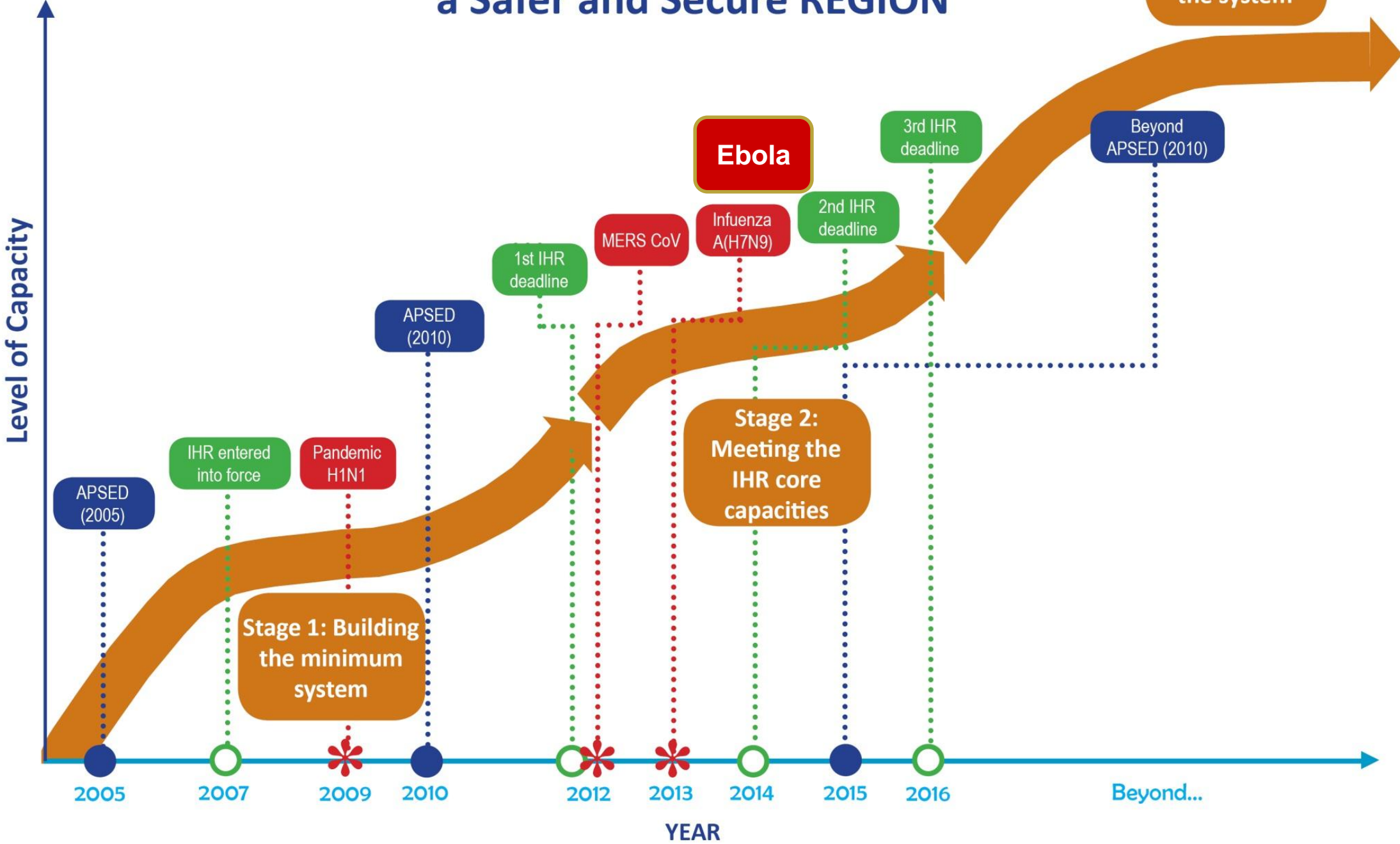
**Step-wise approach** to ✓  
capacity development

**Connects** stakeholders at ✓  
national and regional levels

**Emphasises value of learning** ✓  
from real world events



# Our Collective JOURNEY towards a Safer and Secure REGION



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# **CBRN emergencies: a threat to global public health security**



# Responding to a CBRN event

- WHO's role is to manage the public health consequences and communicate real-time public health risk assessments and recommendations and coordinate with other agencies involved in response
- WHO has developed and tested specific SOPs for response to an alleged use, including specific indicators of non-natural sources of infection.



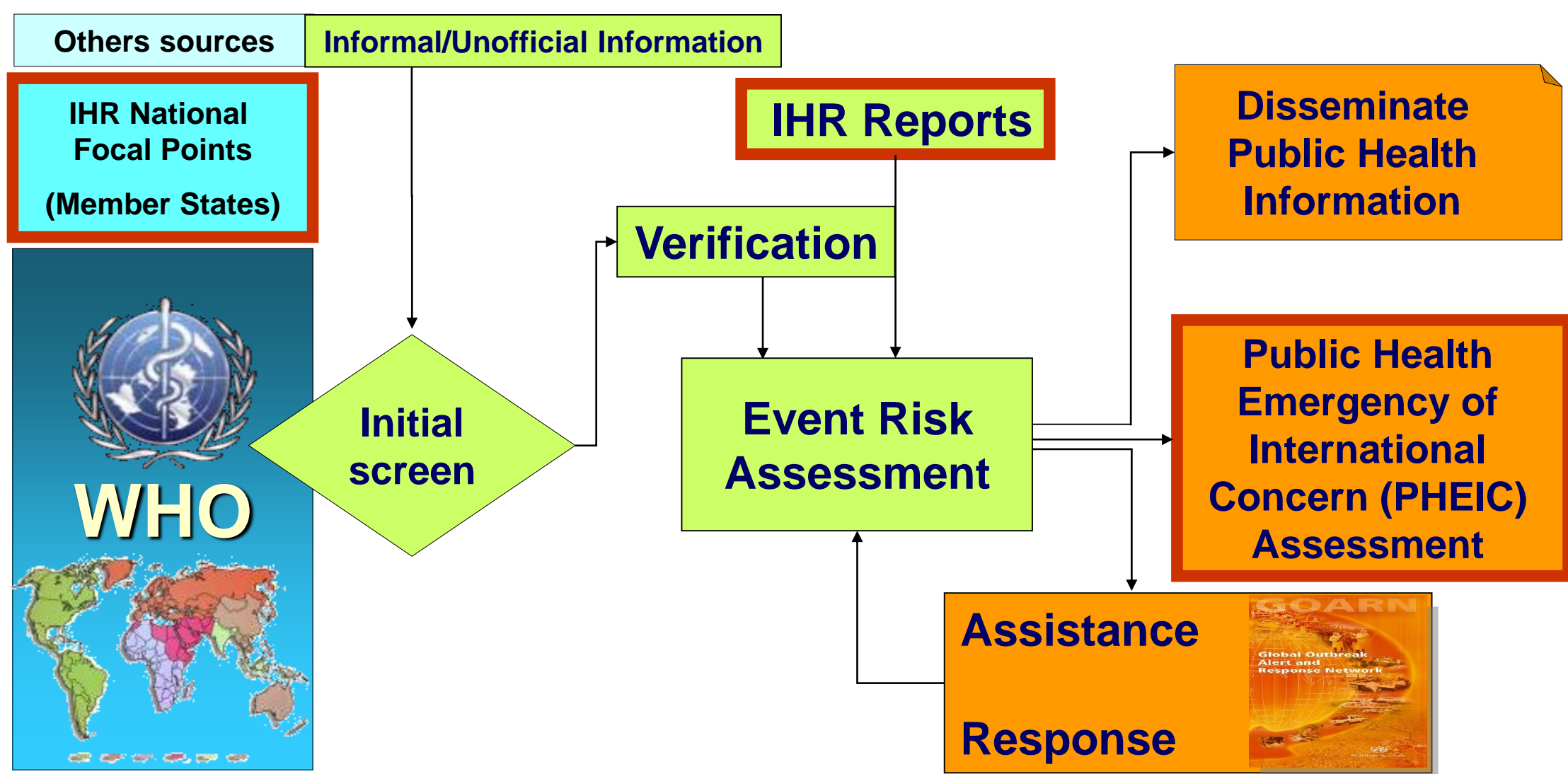
# WHO deliberate event indicators and SOPs

- WHO is developing **internal strategies**,
  - Alert and response procedures would be largely the same in cases of natural vs. deliberate events. Context of the intervention changes...

## **Differentiating** between a natural and deliberate events

- Alert signals (claims and hoaxes)
  - Clinical and epidemiological findings
  - Laboratory findings
  - Specific high-risk diseases
  - Evidence of biological agent dissemination (munitions)
- **Decision-making** for deliberate events treatment:
    - Treat as deliberate event
    - Increased preparedness and monitoring
    - Treat as natural event

# Risk/Event Management Process



# Public Health Event Response under the International Health Regulations

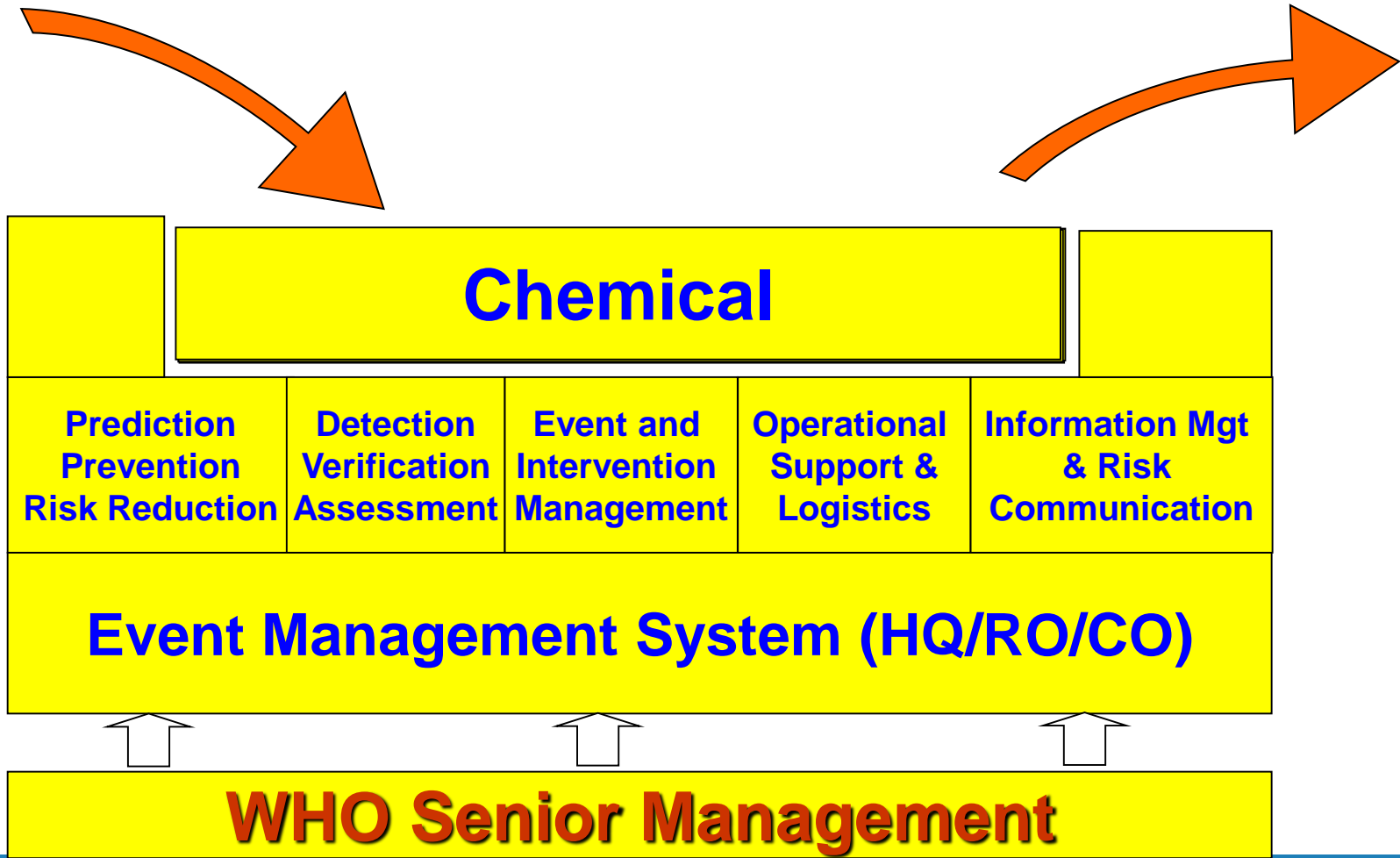
CHEMICAL

RADIATION

FOOD

EPIDEMIC

*"Payload and Platform" concept of operations*



**Chemical**

Prediction  
Prevention  
Risk Reduction

Detection  
Verification  
Assessment

Event and  
Intervention  
Management

Operational  
Support &  
Logistics

Information Mgt  
& Risk  
Communication

**Event Management System (HQ/RO/CO)**

**WHO Senior Management**

# CBRN Response Challenge



**No single institution has all the capacity!**



Infe



Health  
Organization

# Selected existing multi-lateral security initiatives

- **Biological and Toxin Weapons Convention:** the 2014 session was on the international response mechanisms.
- **UN Secretariat:**
  - UN Security Council Resolution 1540 on the proliferation of WMD,
  - UNSG mechanism for investigation CBW use
  - UN Counter-terrorism Inter-agency Task Force
- Observer status and technical participation in Working Groups of the G7+ Mexico Health Ministers **Global Health Security Action Group (GHSAG)**
- Established ongoing activities and technical liaison with the **International Committee of Military Medicine (ICMM)**
- **G8: Global Partnership Programme** Against the Spread of Weapons and Materials of Mass Destruction – Global health security initiative
- Technical cooperation with the **Organisation for the Prohibition of Chemical Weapons (OPCW)**





# Informal information sharing and technical cooperation for deliberate events response



Other UN  
OCHA, UNHCR



World Health  
Organization



ICRC



Organization for the  
Prohibition of  
Chemical Weapons



UN Office for  
Disarmament  
Affairs



INTERPOL



***Ongoing (informal)*** contact between organizations to share information and undertake preparedness activities related to possible/suspected events of deliberate nature.



# Targeted collaboration with external partners

- Formal mechanisms exist (for example, with the UN, FAO, OIE, IASC (Inter-Agency Standing Committee), EC and IAEA) and ad hoc technical interactions also occur with organizations such as Organisation for the Prohibition of Chemical Weapons (OPCW), G8, the Global Health Security Action Group (GHSAG), UNEP/OCHA, NATO and INTERPOL.
- WHO has worked with the latter two organizations to provide disease and threat-specific technical guidance, and to insure that awareness of the public health impact and requirements of various relevant incidents is reflected in their training and exercise materials.

# Liaison with the UNSC Resolution 1540

- In April 2004, the UN Security Council (UNSC) adopted **Resolution 1540**, which establishes legally binding obligations on all UN Member States to have and enforce appropriate and effective measures against the proliferation of nuclear, chemical, and biological weapons (WMD), their delivery systems
- WHO **submits reports**, when required and appropriate, to the UNSCR 1540 Committee on activities undertaken related to the implementation of UNSCR 1540, including through highlighting **previous WHO participation in outreach events and training courses for regional 1540 focal points** on biosecurity activities.
- The **Director of the Department of Global Capacities and Response** was identified as the WHO focal point for requests for assistance from UN Member States in line with the mandate of WHO under the IHR (2005).

# Organisation for the Prohibition of Chemical Weapons (OPCW)

## 1. Ongoing technical cooperation

- OPCW fact-finding mission (OPCW FFM) to investigate allegations of use of chemical weapons in the Syrian Arab Republic
- WHO has provided technical support to this mission, related to epidemiological/public health expertise as well as methodology oversight related to these aspects of the investigation

## 2. Ongoing cooperation related to potential cross-organizational training opportunities



# WHO support to a UN investigation of alleged, deliberate use (UNSGM)

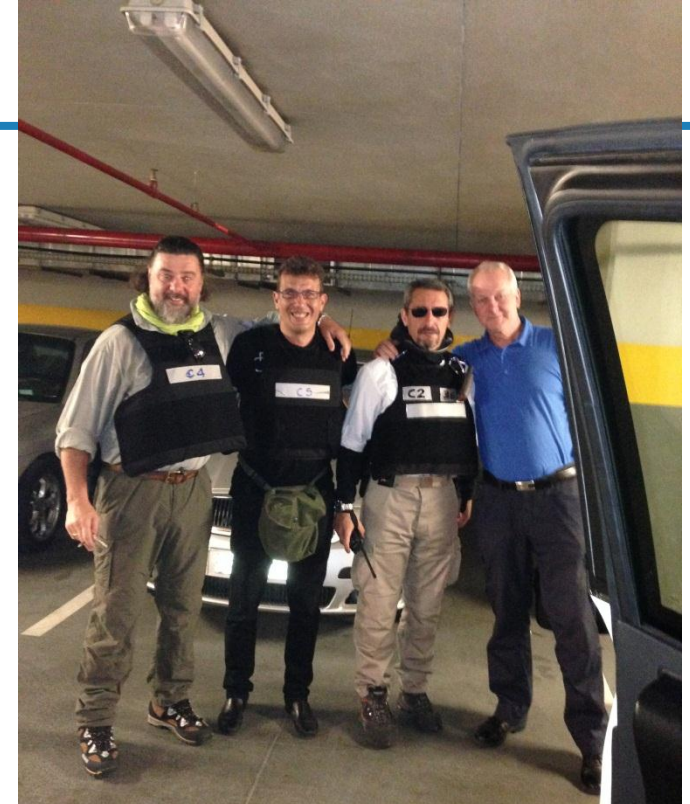
- Seconding staff to UN Office for Disarmament Affairs (UNODA)/UN Secretary General (UNSG) for field missions
- Sharing and contributing to risk assessment
- Logistical and material support
  - Biomedical sampling equipment
  - Personal protective equipment
- Clinical and epidemiological expertise and tools for investigation
- Background information on epidemiological profile of the country
- Access to expert networks e.g. toxicology, clinical, GOARN

# 2013 UN Mission in Syria: factual background

- Request from the Government of Syria to the SG to investigate the alleged use of CWs in the proximity of Aleppo, on the 19 March 2013.
- On 20 March France and UK files requests to UNSG too. Different locations/events were also requested for inclusion in the investigation (Homs, Damascus)
- Agreement by the SG to establish a “...*United Nations investigation on the possible use of chemical weapons in Syria*”.
- Request from the UNSG to OPCW and WHO to contribute with technical expertise to the mission (21 March). WHO Director General agreed to provide technical support, as per UNODA/WHO MOU (2011).

# WHO's involvement in the Syria investigation

- 5 WHO staff part of UN team, 3 deployed to Syria
  - 2 Chemical specialists
  - 2 Medical officers
  - Security officer
- WHO lead the biomedical team (biomedical sampling and victim interviews, medical personnel interviews, forensic epidemiology)
- WHO Country office provided logistical support for materials and equipment
- Provided baseline public health information
- Hazard detection tools used to identify open source information



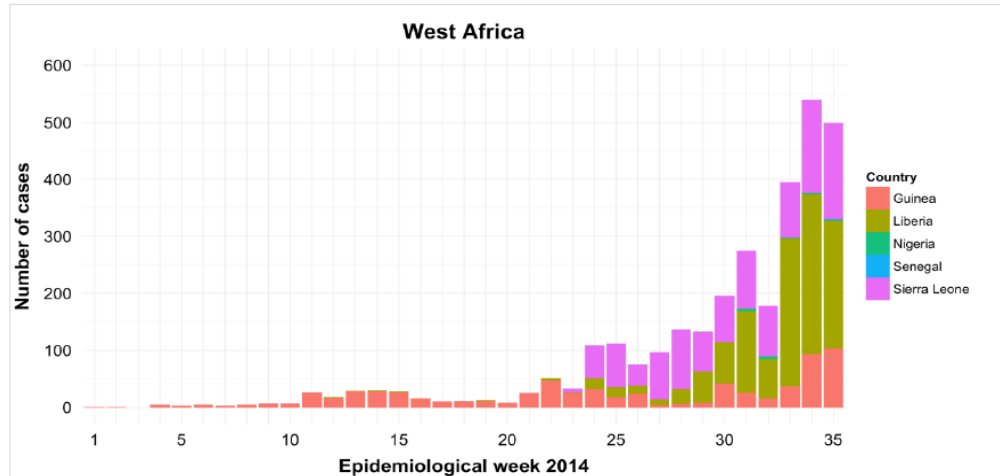
# Findings: UN Investigation Mission in Syria

- By the date of submission of the Final Report on 13 December 2013, a total of **16 allegations of chemical weapons use in Syria** were received by the UN SG.
- **7 allegations** were investigated by the mission team, which concluded:
- *“On the basis of our analysis of the evidence gathered during our investigation between April and November 2013 and the laboratory results obtained, the conclusion is **that chemical weapons have been used in the ongoing conflict** between the parties in the Syrian Arab Republic.....This result leaves us with the deepest concern.”*



# Ebola Virus Disease (EVD) in West Africa as of 31 Aug 2014

Epidemic curve of cases of EVD in West Africa



Largest Ebola outbreak ever report (n=3685 including 1841 deaths)

5 countries affected in West Africa

Widespread transmission in Guinea, Liberia and Sierra Leone including urban and rural settings

Unprecedented number of HCWs affected

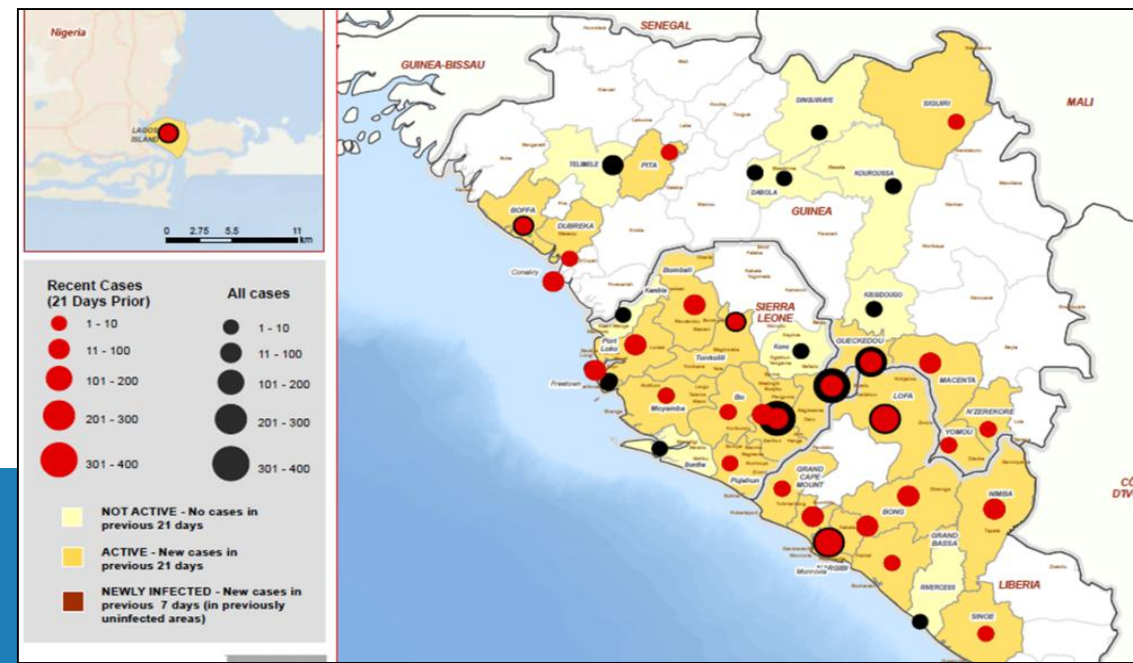
Social, political and economical consequences

UN estimates \$600 million needed

8 Aug 2014 - Declaration of a Public Health Emergency of International Concern (PHEIC) as per IHR (2005)

Framework for Action to guide country preparedness in line with APSED

Ebola outbreak reconfirms importance of fundamental capacity development



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# Thank you!