LRRD 접근으로 바라본 북한 보건의료 개발협력

2017. 8. 25

황나미

KIHASA 한국보건사회연구원
Korea Institute for Health and Social Affairs
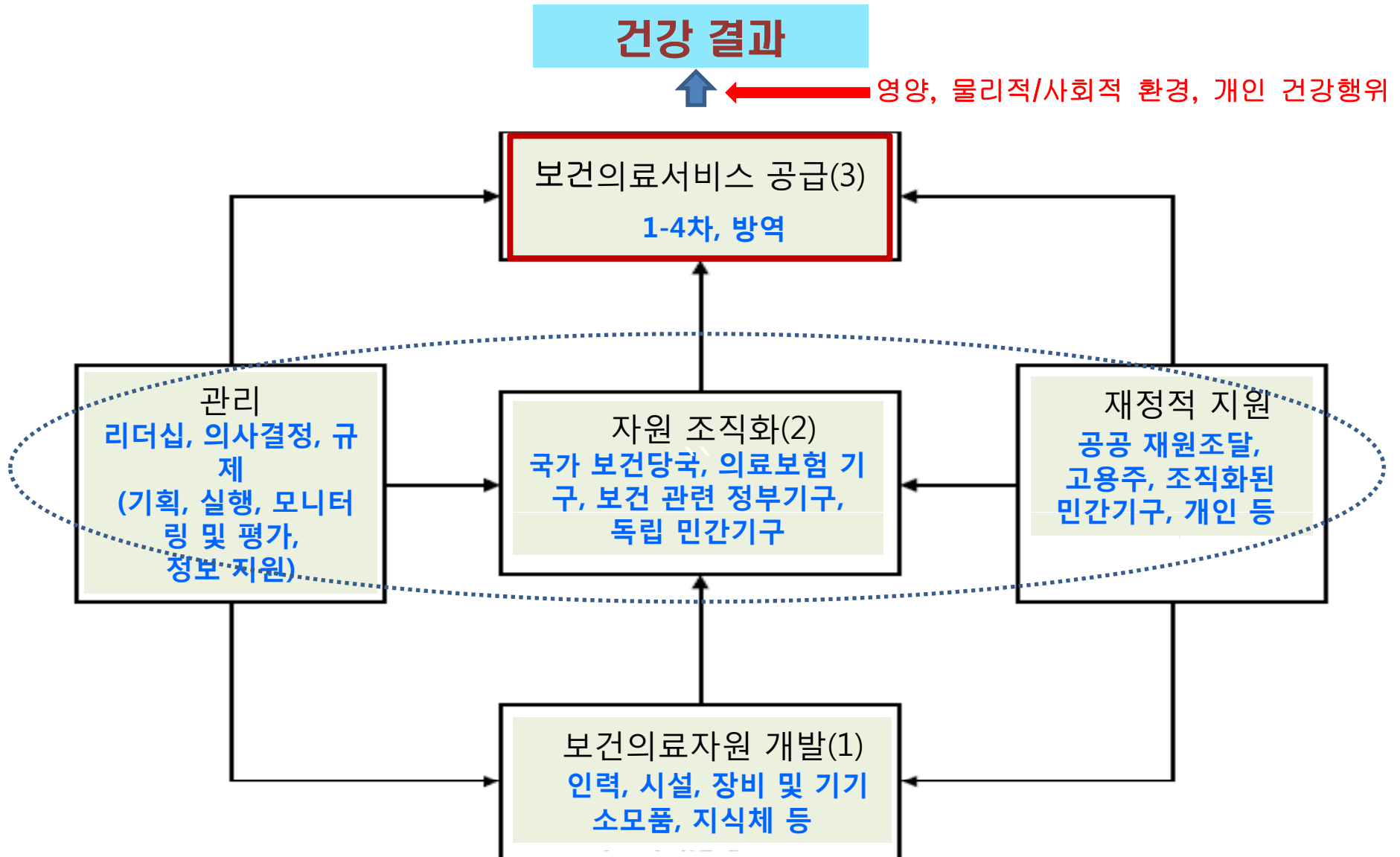
순 서

1. 보건의료체계 구성요소

건강 결과

영양, 물리적/사회적 환경, 개인 건강행위

보건의료서비스 공급(3)

1-4차, 방역

관리
**리더십, 의사결정, 규제
(기획, 실행, 모니터링 및 평가,
정보 지원)**

자원 조직화(2)
**국가 보건당국, 의료보험 기구, 보건 관련 정부기구,
독립 민간기구**

재정적 지원
**공공 재원조달,
고용주, 조직화된
민간기구, 개인 등**

보건의료자원 개발(1)
**인력, 시설, 장비 및 기기
소모품, 지식체 등**

자료: Kleczkowski.(1984), National health systems and their reorientation towards health for all, WHO

2. 북한 보건의료체계 구축, 운용 및 결과

1) 북한 의료자원

구 분		교육 과정
의사 : 의사		전국 11개 의학대학 의학부(연 2,200여명 양성) 6-7년제 교육 ※ 특설학부 및 통신학부(야간): 5년 이상 근무한 조의사 또는 간호사 대상- 이수과정 수료자(약 4년)가 시험 통과 후 의사 자격 부여
조의사*		중등의사전문학교(시·도 의학전문학교), 3년
고려의사		의학대학 고려의학부 6년
위생의사*		의학대학 위생학부 6년
구강의사		의학대학 구강학부 6년
약제사	약제사	평양 및 각 도 의학대학 약학부: 5-6년 과정
	고려약제사	함흥 및 사리원 고려 약학대학
조산원		시·도 2년제 고등의학전문학교 조산과*
간호원		시·도의 2-3년제 간호전문학교, 6개월(병원 자체양성)
의료 보조인력		고등의학전문학교 2-3년제 조제사*, 뢴트겐, 물리치료 및 보철반

※ 평양 과기대: 의대 설립(2014.5) - 의과, 구강과, 약학, 보건(3년제 임상실습대학원) 및 간호대(4년제)

● 활동 의료인력 및 특성

– **북한 총 의사 수 : 인구 1만 명당 35명(WHO, 2016)**

　　　　　　　　　※ 위생의사, 고려의사 및 조의사(3년 교육과정) 포함
　　· 남한의 인구 1만 명당 21명

– **양·한방 협진을 위한 교과목 연계 및 치료효과 제고**

　　· 의학부: 고려의학, 침구학 등 6개 과목 교육

　　· 고려의학부: 1,2년차 임상학부, 3년차 양한방, 4-6년 고려의학 교과목 구성

– **전문의 자격증 제도 도입 중**

　　· 졸업과 동시에 의사자격 부여 ： 6급-1급 으로 지식 및 기술 평가
　　· 임상 수련 등을 위한 교육여건이 열악하여 의료인력 양성체계 미흡 및 지식/기술적
　　　　　　　　　　　　　　질 수준 낙후
　　· 의학대학 내 전문의 과정 신설('16) : 내과, 외과, 산부인과, 소아과, 소생과,
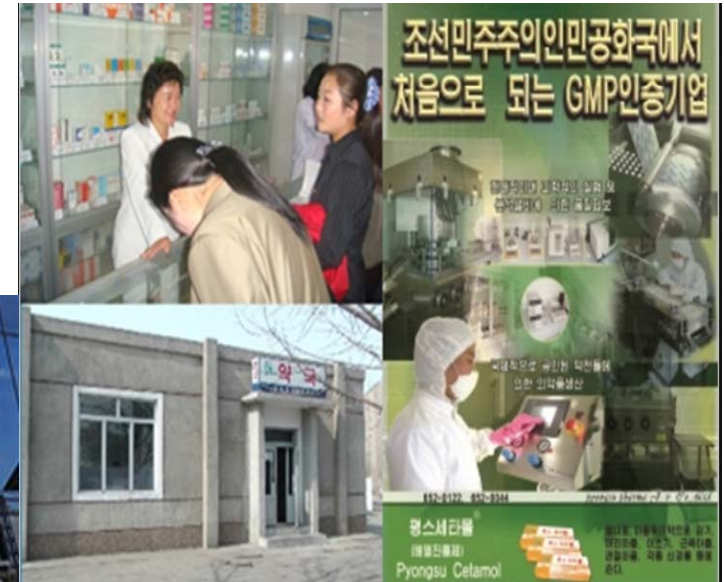　　　　　　　　　　　　안·이비인후과

🔵 보건의료시설

– 의료기관 수

- **평양** : **평양의학대학병원**, **조선적십자병원 및 특수병원**

- **각 시도 종합병원**, **특수병원**,

- **요양원** (682**개소**)

- **리 단위 병원**(1,608**개소**)

- **리** . **동 진료소** (6,263**개소**)　※ 위생방역소 (235개소), 고려병원(370 여개소),
  광업, 산업, 철도, 국방 등 타 부처　의료시설 미포함

- 제약시설

• 제약공장: 순천, 흥남, 라남, 평양(고려약 중심)
　　　　　　 정성제약, 남포어린이약, 신의주마이신 등

• 약품판매: 약매대 허가설치

2] 자원 조직화 및 재원

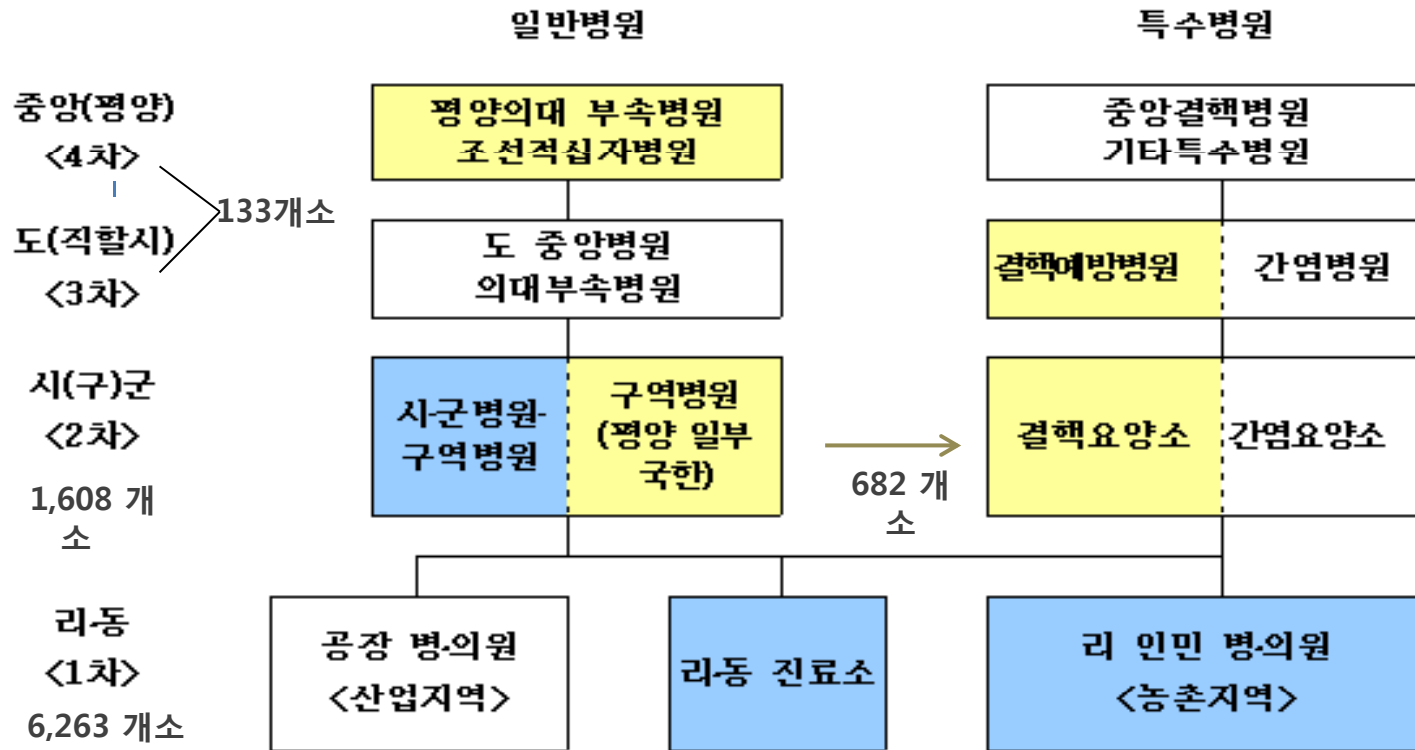|	북 한	남 한
보건의료 자원	인력: 의사, 조의사, 위생의사 시설: 결핵, 간염 서비스 전달체계, 위생방역소	인력: 면허 17종, 자격 66종의 인력 시설: 요양병원
자원 조직화	국가 직영체계에 의한 일원적 관리체계	별도의 특수법인(공단에 의한 통합관리체계)
재정적 지원	국가 재정 월급의 1% 사회보장비 공제	보험료+ 일부 국가재정 + 본인부담금 (사회보험방식 + 공공부조)
관리 운영	무상치료제- 단일체계	진료행위별 수가제
보건의료서비스	1,2,3,4차 전달체계	1, 2차 전달체계: 본인부담비율 차등

3] 정책 및 관리

● **보건의료서비스 공급 실태**

- **전반적 무상치료제 차별진료**
  · 90%**이상 주민 소외, 약 또는 진단, 이송시 별도 개인부담 지불**
  · **약 구입을 위해** 90%**이상이 별도 의사에게 돈 지급 또는 약매대, 장마당 구입**

- **예방의학적 방침**
  · **위생선전, 호담당의사**
  · **예방접종**(민족 면역의 날, 민족건강어린이날)

- **의사담당구역제 형식적**
  · **무의사** '리' **지역 해소**
  · **위생선전**

- **주체적인 민족의학으로서의 고려의학**
  · **의약품 생산 부족 : 1차진료의 80%이상 고려의학 의존 [과거 30%]**

- **1~4차에 이르는 보건의료서비스 전달체계 붕괴**

4] 의료서비스 공급체계

일반병원   특수병원

중앙(평양) ⟨4차⟩

평양의대 부속병원
조선적십자병원

중앙결핵병원
기타특수병원

133개소

도(직할시) ⟨3차⟩

도 중앙병원
의대부속병원

결핵예방병원 | 간염병원

시(구)군 ⟨2차⟩
1,608 개소

시군병원-구역병원 | 구역병원 (평양 일부 국한)

682 개소

결핵요양소 | 간염요양소

리·동 ⟨1차⟩
6,263 개소

공장 병·의원 ⟨산업지역⟩

리동 진료소

리 인민 병·의원 ⟨농촌지역⟩

주: 1) 위생방역소 235개소
   2) 고려병원 370 여 개소: 병원내 조제실 및 약제실은 고려약과/신약과 별도 운영
   3) 광업, 산업, 철도, 국방 등 타 부처 의료시설 미포함
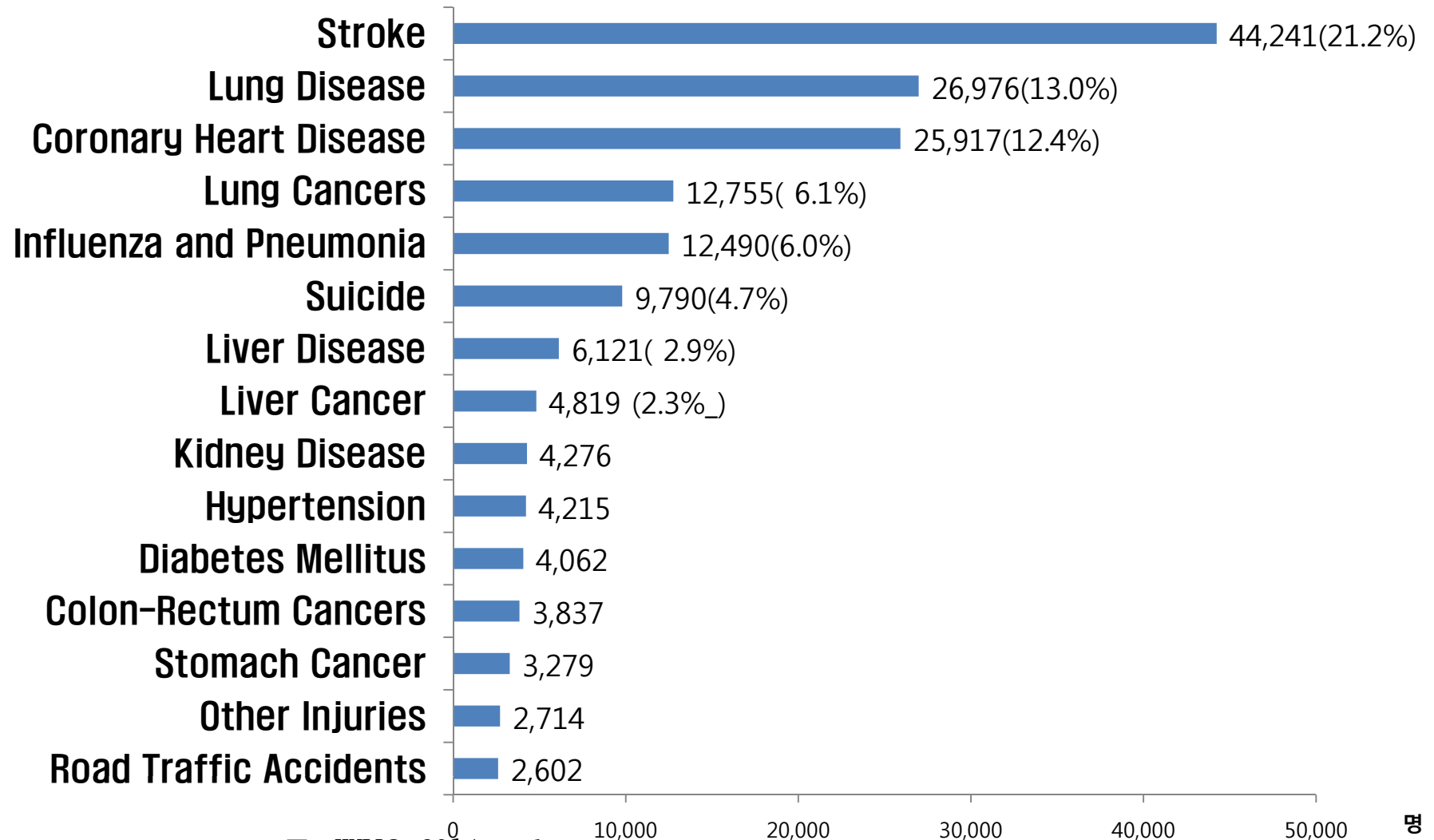자료: Ministry of Public Health in DPRK, 2014

5) 인구사회 지표 및 건강 결과

총 인구수, 주요 보건지표

	북 한	남 한
총 인구수('16)	25,115 천명	51,736 천명
평균기대수명('15)	71.7세	82.3세
평균 건강수명('15)	64세	73.2세
합계출산율(TFR)	1.89('14)	1.17('16)
65세 이상 인구	10.2%('14)	13.2%('16)
국민 1인당 GNI	138만원	2968 만원

자료: 통계청 (2015),WHO(2016)
　　　CIA(2016),The World Fact book
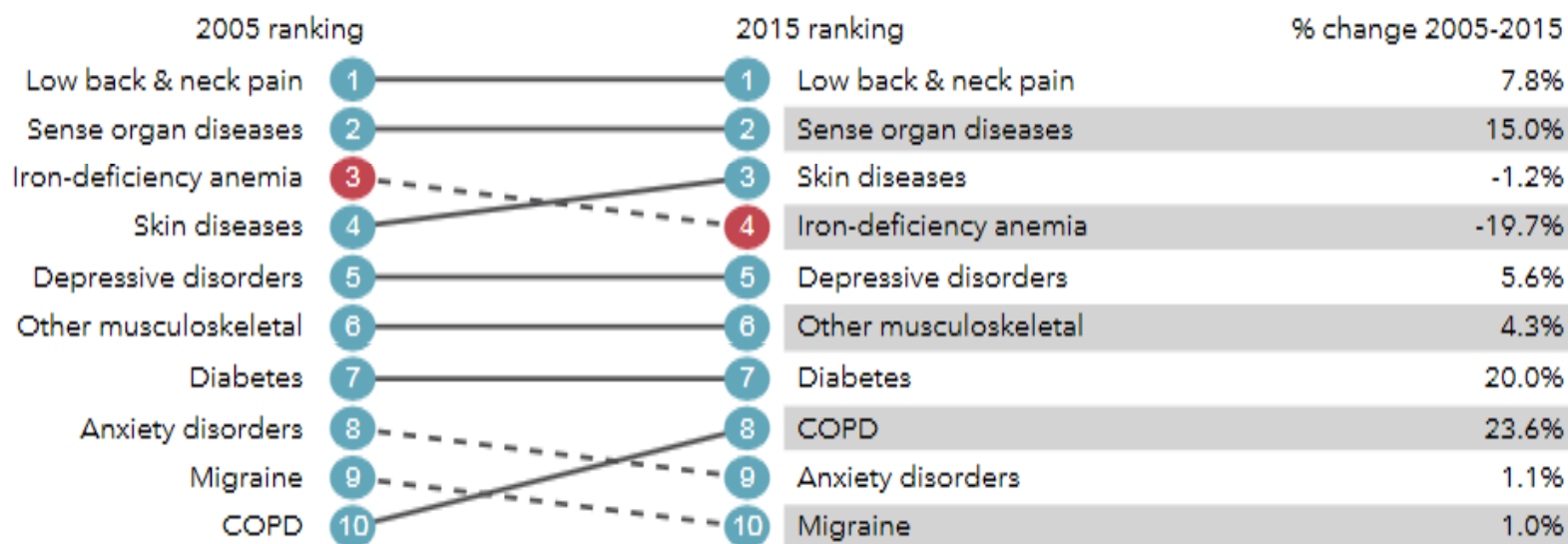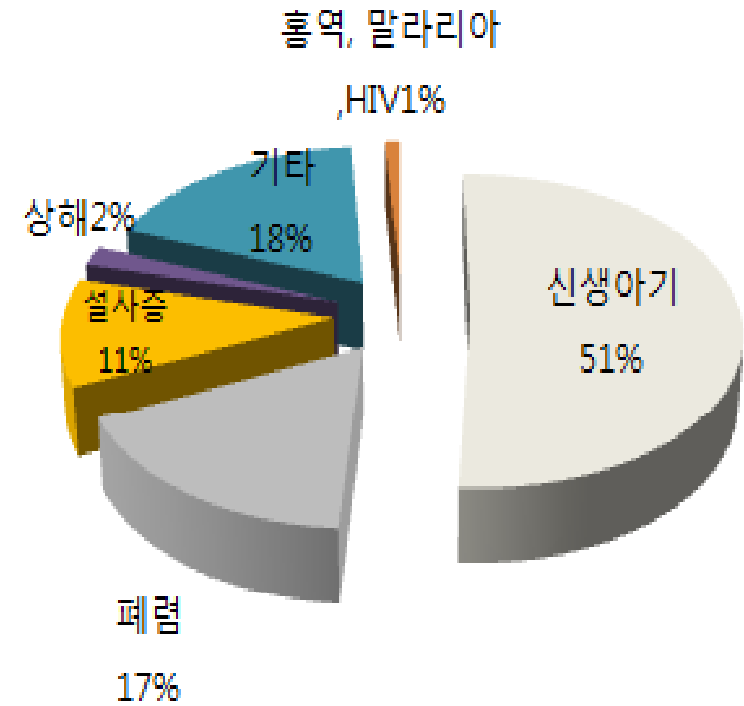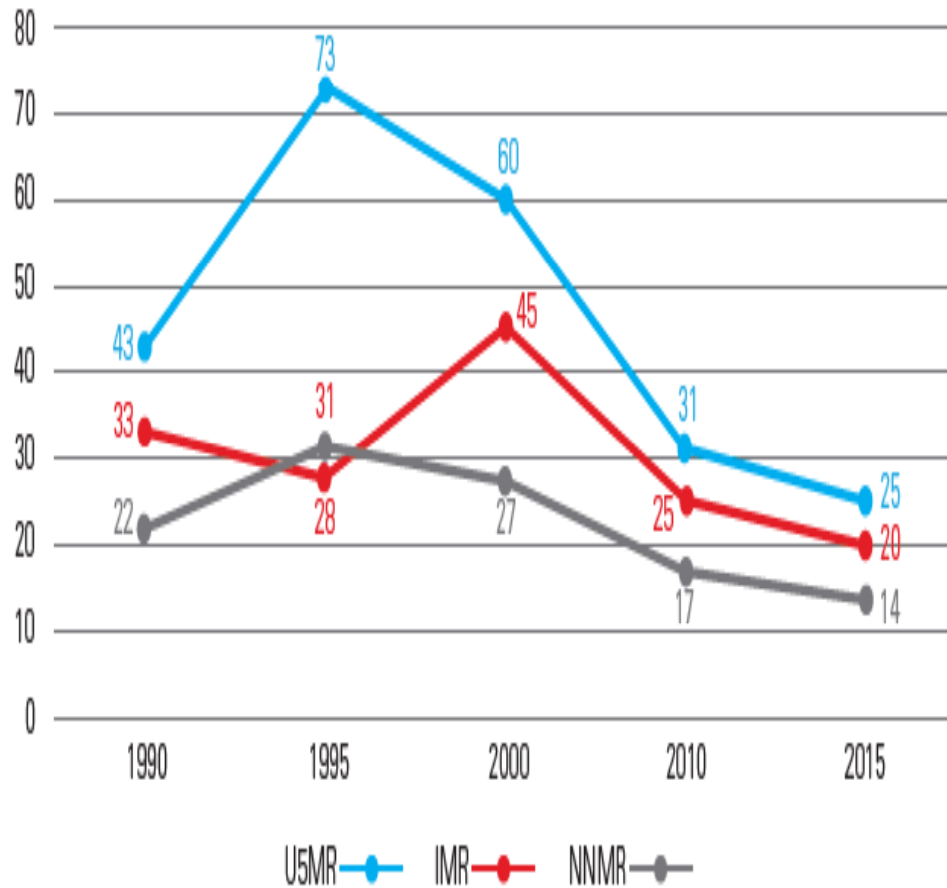　　　Ministry of Public Health(2014),Annual Health Report

주요 사망원인

사망원인	사망자수 (비율)
Stroke	44,241(21.2%)
Lung Disease	26,976(13.0%)
Coronary Heart Disease	25,917(12.4%)
Lung Cancers	12,755(6.1%)
Influenza and Pneumonia	12,490(6.0%)
Suicide	9,790(4.7%)
Liver Disease	6,121(2.9%)
Liver Cancer	4,819 (2.3%_)
Kidney Disease	4,276
Hypertension	4,215
Diabetes Mellitus	4,062
Colon-Rectum Cancers	3,837
Stomach Cancer	3,279
Other Injuries	2,714
Road Traffic Accidents	2,602

명

주: WHO 2014 update

자료: http://www.worldlifeexpectancy.com/country-health-profile/north-korea

건강부담/ 장애의 주 원인 및 건강문제

🔴 Communicable, maternal, neonatal, and nutritional diseases

🔵 Non-communicable diseases

🟢 Injuries

2005 ranking			2015 ranking	% change 2005-2015
Low back & neck pain	1	1	Low back & neck pain	7.8%
Sense organ diseases	2	2	Sense organ diseases	15.0%
Iron-deficiency anemia	3	3	Skin diseases	-1.2%
Skin diseases	4	4	Iron-deficiency anemia	-19.7%
Depressive disorders	5	5	Depressive disorders	5.6%
Other musculoskeletal	6	6	Other musculoskeletal	4.3%
Diabetes	7	7	Diabetes	20.0%
Anxiety disorders	8	8	COPD	23.6%
Migraine	9	9	Anxiety disorders	1.1%
COPD	10	10	Migraine	1.0%

Leading causes of YLDs in 2015 and percent change, 2005-2015

신생아, 영아, 5세 미만 아동 사망률 : 1990-2015

U5MR   IMR   NNMR

- 1990: 43 (U5MR), 33 (IMR), 22 (NNMR)
- 1995: 73 (U5MR), 28 (IMR), 31 (NNMR)
- 2000: 60 (U5MR), 45 (IMR), 27 (NNMR)
- 2010: 31 (U5MR), 25 (IMR), 17 (NNMR)
- 2015: 25 (U5MR), 20 (IMR), 14 (NNMR)

홍역, 말라리아 ,HIV1%
기타 18%
상해2%
설사증 11%
신생아기 51%
폐렴 17%

자료: UNICEF, Country Profile-DPRK, 2009
WHO(2010) Count down to 2015, Report 2010

3. 국제 개발협력 패러다임

1] 인도적 지원과 개발원조 개념

humanitarian assistance

인도적 지원(humanitarian aid)	개발원조(development assistance)
• 긴급성에 중점	• 지속가능성에 중점
• 단기 파급효과	• 장기 파급효과
• 전제조건 거의 없음	• 협상이 필요한 전제조건 있음
• 원조자에 의한 필요도 조사	• 수혜자 욕구 충족을 위한 체계적 접근
• 투입(inputs) 중심의 전달	• 투입, 전문성, 능력 배양
• 일방적	• 파트너십과 팀워크
• 원조자가 주인의식	• 파트너와 함께 주인의식

자료: Zellweger Kethi (2005), North Korea: Development Cooperation in the Context of a Changing Environment.

2) 인도적 지원 (humanitarian aid) 원칙

- **Humanity :** 고통받는 자에 대한 인간애, 생명보호 및 인간존엄성 보장

- **Neutrality :** 정치, 인종, 종교 또는 이데올로기적 본질에 개입하거나
  논쟁, 어떤 입장에도 서지 말아야

- **Impartiality :** 오직 필요(need)에 기초한 가장 긴급한 재앙의 문제를
  공평하게

- **Independence :** 정치적, 경제, 군사 또는 다른 목적으로부터 독립적

by UN, ICRC

인도지원 활동계획 (Common Humanitarian Action Plan: CHAP) 원칙

1. 사정에 의거한 요구(assessed need)
   통해 위기상황 파악

2. 지원대상이 취약계층에게 전달 보장
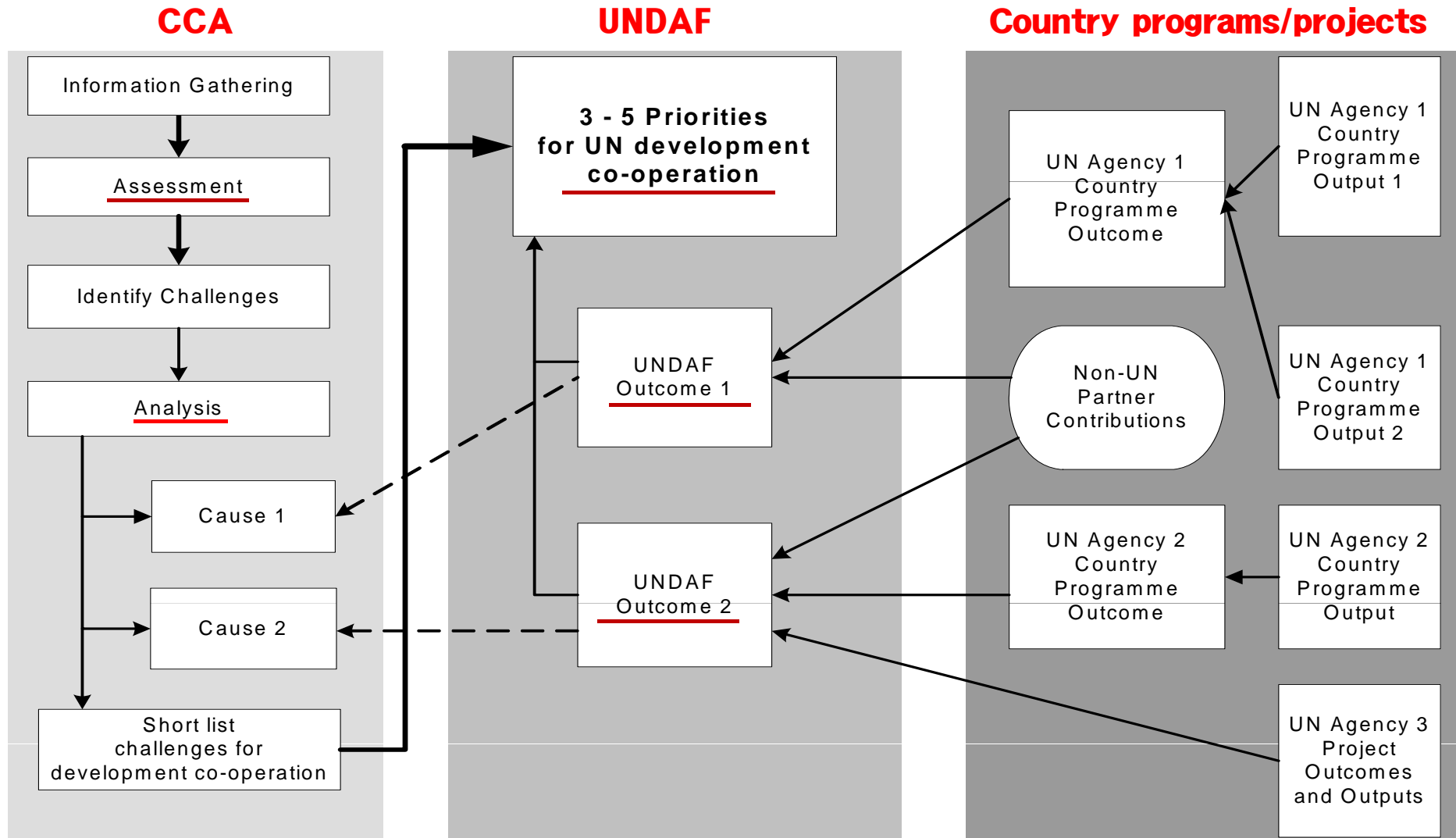
3. 위기상황 평가, 모니터링 및 분석을
   위한 접근 허용

4. 접근이 허용되는 지역에만 지원
   (No access, No aid)

Report

Analyze the Context

Revise the Plan

Assess Needs

Build Scenarios

Monitor & Evaluate

Set Goals

Implement a Coordinated Programme

Identify Roles & Responsibilities

Plan the Response

CHAP

Appeal for Funds
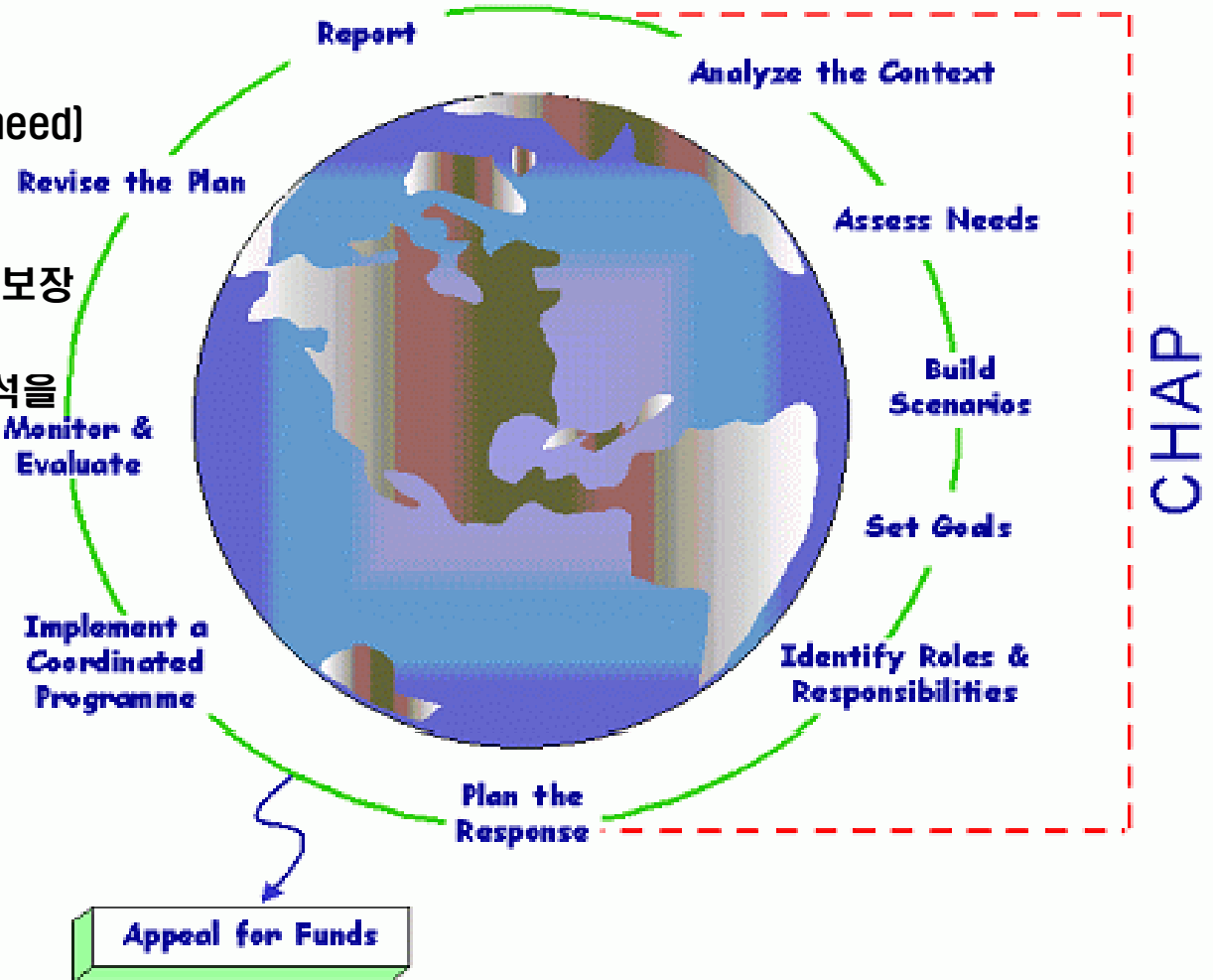
※ 북한은 2004년 8월 통합지원절차(Consolidated Appeal Process;CAP)
거부로 2005년 이후 공식적 국제기구 지원 감소

Paris Declaration (2005) for Aid Effectiveness

1 Ownership (Partner countries)

Partners set the agenda

2 Alignment (Donors - Partner)

Aligning with partners' agenda | Using partners' systems

3 Harmonisation (Donors - Donors)

Establishing common arrangements | Simplifying procedures | Sharing information
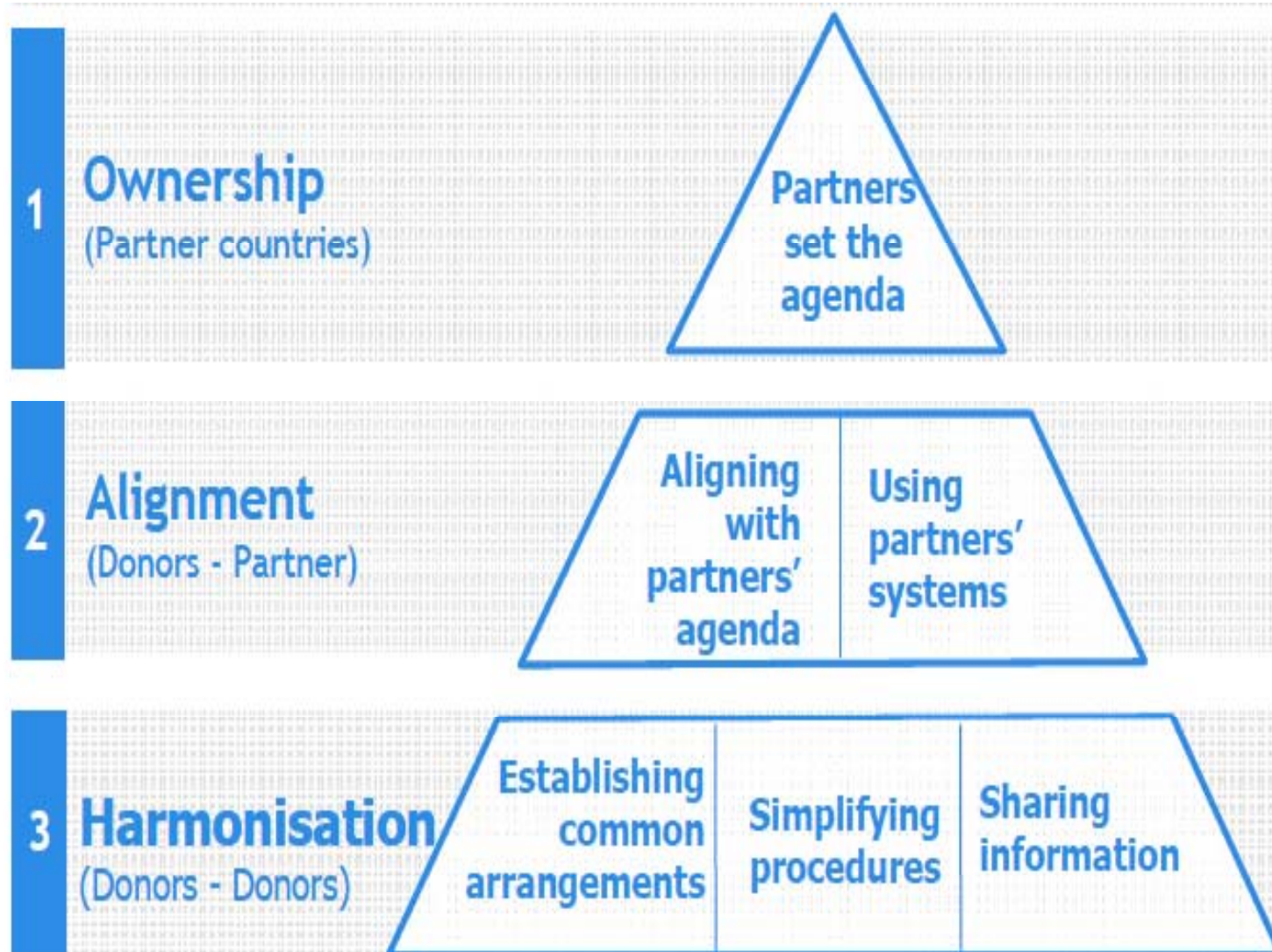
2] 개발원조 로드맵 : UN Country Program Process

CCA

- Information Gathering
- Assessment
- Identify Challenges
- Analysis
- Cause 1
- Cause 2
- Short list challenges for development co-operation

UNDAF

- 3 - 5 Priorities for UN development co-operation
- UNDAF Outcome 1
- UNDAF Outcome 2

Country programs/projects

- UN Agency 1 Country Programme Outcome
- Non-UN Partner Contributions
- UN Agency 2 Country Programme Outcome
- UN Agency 1 Country Programme Output 1
- UN Agency 1 Country Programme Output 2
- UN Agency 2 Country Programme Output
- UN Agency 3 Project Outcomes and Outputs

자료: UN, Common Country Assessment and UN Development Assistance Framework, July 2004

개발원조 계획 수립 과정

UNDAF RESULTS MATRIX

- INDICATORS, BASELINE, TARGET
- MEANS OF VERIFICATION
- RISKS AND ASSUMPTIONS
- ROLE OF PARTNERS

Assessment

Analysis

Prioritizing development challenges

Clarifying expected results and the role of different actors

Designing country programs and projects

Monitoring and evaluation
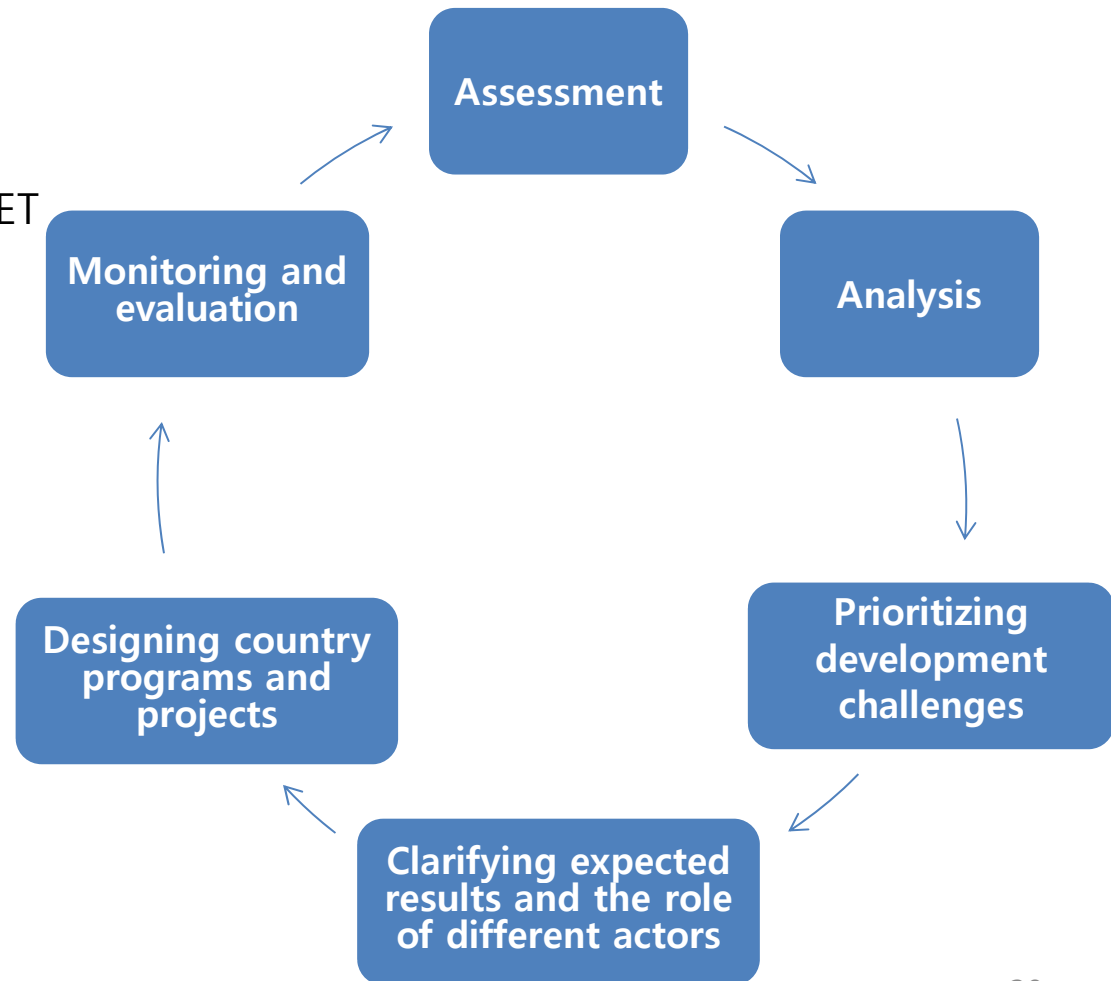
4. Relief, Rehabilitation and Development: LRRD

	긴급구호(Relief)	회복, 복구(Recovery, Rehabilitation)	개발(Development)
목표	• 생명 구조 • 고통경감	• 긴급상황 이전, 또는 정상상태로 복구	• 경제·사회적 상황의 개선
대상	• 긴급상황에 노출된 사람들	• 긴급상황에 노출된 사람들	• 사회 전체
기본 원칙	• 필요에 기반한 인도주의 (needs-based) • 독립성 • 공평성 • 중립성	• 개발 원칙의 제한적 적용 (인도주의적 원칙이 허용하는 범위 까지)	• 주인의식 • 일치(alignment) • 상호 신뢰할 수 있는 결과 도출
선호하는 협력파트너	• 없거나, 시민사회	• 지역사회 및 지방정부	• 중앙 및 지방정부

자료: Julia Steets, "Donor Strategies for Addressing the Transition Gap and Linking Humanitarian and Development Assistance

1) 효과 및 효율 제고와 지속가능한 개발협력 전략

● **개발 및 복구와 연계된 지원 :**
   Linking Relief, Rehabilitation and Development(LRRD)

- 개발협력 사업이 지원의 일부

- 지원이 개발복구에 도움이 되는 방향으로 추진

- 북한 정부, 국제기구와 파트너십 ➡ **통합화, 전문분담화, 협력화**

Cluster approach

- 조정과 조율

- 권한, 전문성, 중복과 각 분야간 격차 최소화를 위한 특성화, 전문화 지원기구

식량안보
유엔세계식량계획(WFP)/
국제연합식량농업기구(FAO)

보건
세계보건기구(WFO)

물류
유엔세계식량계획
(WFP)

긴급통신
유엔세계식량계획
(WFP)

영양관리
국제연합아동기금
(UNICEF)

교육
국제연합아동기금
(UNICEF)/
아동구호기금
(Save the
Children)

보호
유엔난민기구
(UNHCR)

인도적 지원
및 재난 대응
조정기관

조기복구
유엔개발계획
(UNDP)

캠프 조정 및
캠프 관리
국제이주기구(IOM)/
유엔난민기구
(UNHCR)

물, 위생 관리
국제연합아동기금
(UNICEF)

쉘터
국제적십자사연맹
(IFRC)/
유엔난민기구
(UNHCR)

출처: UN OCHA

24

5. 북한 보건의료 도전 과제와 LRRD 접근전략

1] WHO의 북한과의 최우선 보건의료 협력 전략 : 2014- 2019

(1)   Prevent and control of NCDs.

(2)   Address women's and children's health to reduce vulnerability and promote disaster risk reduction.

(3)   Prevent and control communicable diseases.

(4)   Strengthen health systems to improve service delivery.

(5)   Ensure WHO country presence to support sustainable national health development.

2] 북한 보건의료 상황분석의 개념 틀 : UNICEF
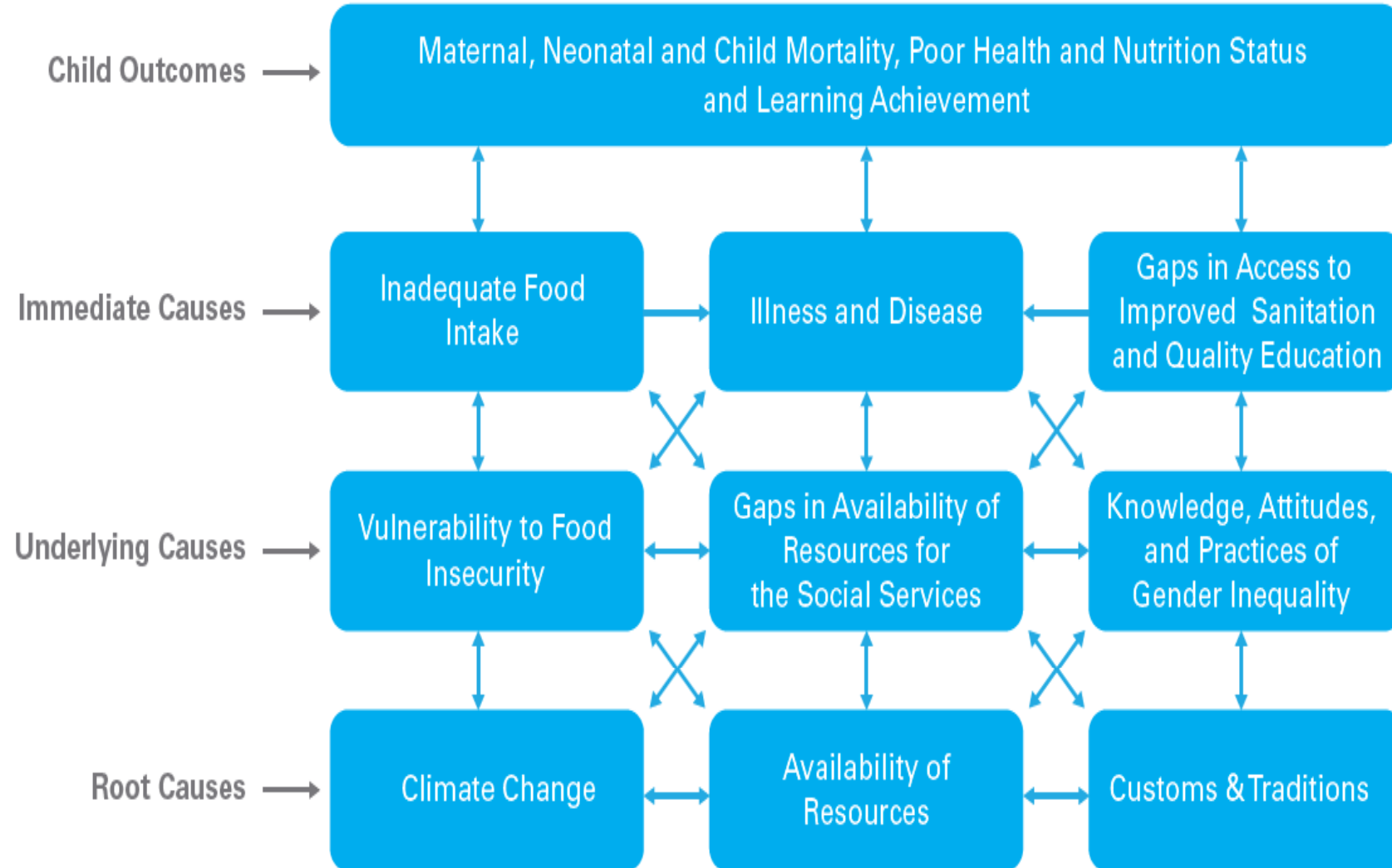
주) 상수도 시설 유지 비율 : 학교 56%, 보건의료시설 54%, 유치원 50%, 보육원 38%

3) LRRD 를 통한 남북 보건의료 협력

Rehabilitation Development 와 Sustainability

- 분명하게 정의된 목표와 Effectiveness 명시
- 남북간 사업계획 협상
- 북측의 Network of Administrators
- 북측의 일정부분 참여: 어떤 내용, 형태로든
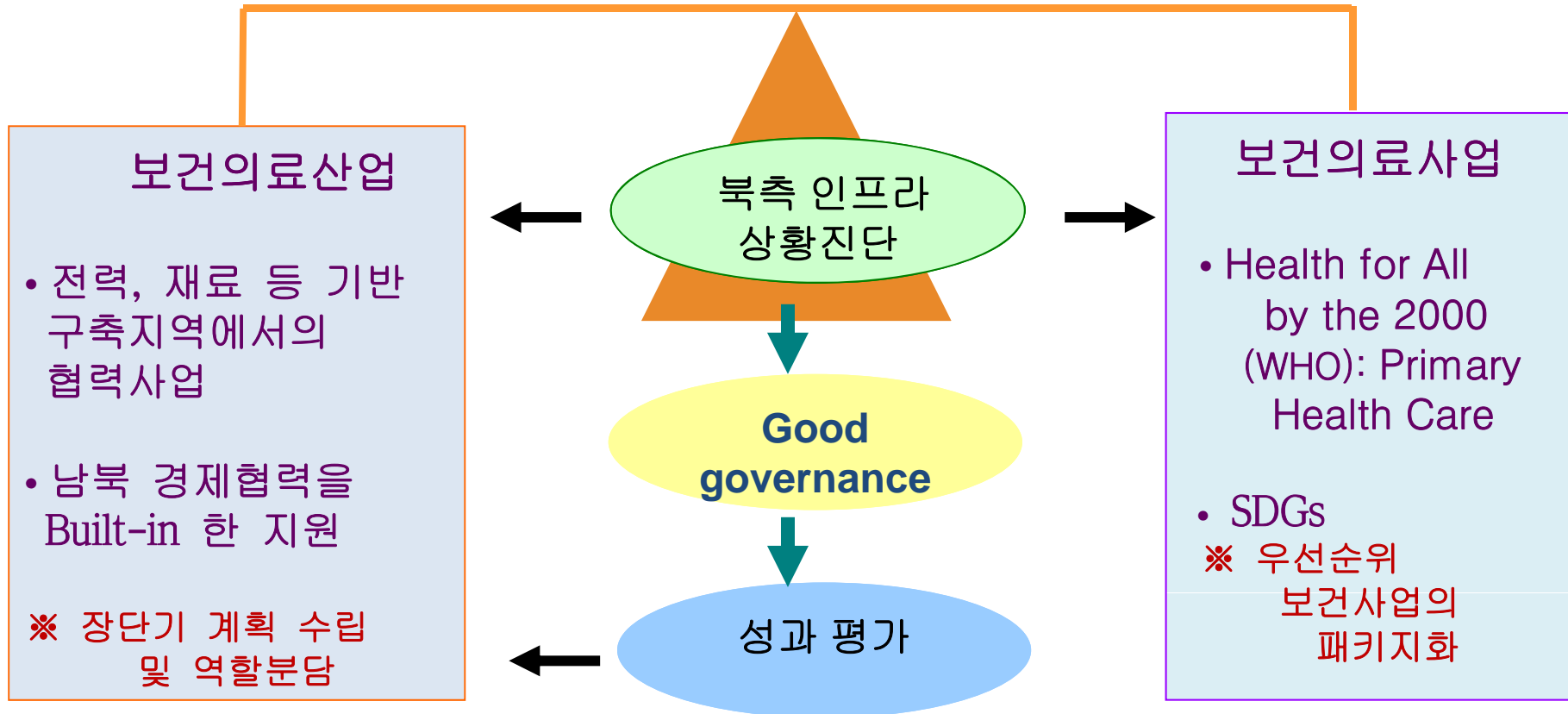- 기술적 노하우에 대한 교육프로그램 병행

(Bossert, 1990)`

Need-based Governance system : Governance and Sustainable Human Development (UNDP,1997)

- Empowerment
- Cooperation
- Equity
- Sustainability
- Security

Good governance is, among other things, participatory, transparent and accountable. It is also effective and equitable. And it promotes the rule of law. Good governance ensures that political, social and economic priorities are based on broad consensus in society and that the voices of the poorest and the most vulnerable are heard in decision-making over the allocation of development resources.

LRRD

북한 경제성장률
GNP 3.9% (2016년) 출처: 한국은행

보건의료산업

- 전력, 재료 등 기반 구축지역에서의 협력사업

- 남북 경제협력을 Built-in 한 지원

※ 장단기 계획 수립 및 역할분담

북측 인프라 상황진단

Good governance

성과 평가

보건의료사업

- Health for All by the 2000 (WHO): Primary Health Care

- SDGs
※ 우선순위 보건사업의 패키지화

District-wide , Sector –wide approach

일차보건의료(Primary Health Care)

- 영양 지원 및 식량 생산
- 모성과 영유아 건강관리 : IMCI
- 예방접종
- 흔한 질병의 예방과 치료
- 흔한 질병의 의약품 구비
- 전통의료 (고려의학) 활용
- 보건교육
- 안전한 식수 및 기본적인 환경위생

4) 보건분야 LRRD 접근을 위한 과제

● **남북 보건의료 협력 제도적 기반**

– 인도적 대북 지원사업 처리에 관한 규정 (1999)
  - '대북 지원사업'이란 '인도적 목적으로 시행하는'
  - '보건의료'는 '보건 위생상태의 개선 및 영양결핍 아동과 노약자 등을 지원하는 사업'(제2조 정의)

– 남북 교류협력에 관한 법률 (1990)
  - '협력사업'이란 남한과 북한주민이 공동으로 하는 보건의료 모든활동

– 남북협력기금법
  - 문화,학술,체육 분야 협력사업에 필요한 자금의 전부 또는 일부의 지원
  - 그 밖에 민족의 신뢰와 민족공동체 회복에 이바지하는 남북교류협력에 필요한 자금의 융자·지원 및 남북교류·협력을 증진하기 위한 사업의 지원(제8조 기금의 용도)
  - 북한주민에 대하여 인도적 목적으로 시행하는 일반구호, 긴급구호, 개발지원 등에 소요되는 비용의 지원 또는 융자를 위하여 필요한 경우

● **재원, 기술 전문화, 경험 노하우 축적**

4) LRRD 접근을 위한 과제

● **List of CRS Purpose Codes**

DAC 5 CODE	CRS CODE	DESCRIPTION
110		**EDUCATION**
120		**HEALTH**
121		**Health, general**
	12110	Health policy and administrative management
	12181	Medical education/training
	12182	Medical research
	12191	Medical services
122		**Basic health**
	12220	Basic health care
	12230	Basic health infrastructure
	12240	Basic nutrition
	12250	Infectious disease control
	12261	Health education
	12262	Malaria control
	12263	Tuberculosis control
	12281	Health personnel development

List of CRS Purpose Codes

DAC 5 CODE	CRS CODE	DESCRIPTION
130		**POPULATION POLICIES/PROGRAMMES AND REPRODUCTIVE HEALTH**
	13010	Population policy and administrative management
	13020	Reproductive health care
	13030	Family planning
	13040	STD control including HIV/AIDS
	13081	Personnel development for population and reproductive health

List of CRS Purpose Codes

DAC 5 CODE	CRS CODE	DESCRIPTION
140		**WATER AND SANITATION**
	14010	Water sector policy and administrative management
	14015	Water resources conservation (including data collection)
	14020	Water supply and sanitation - large systems
	14021	Water supply - large systems
	14022	Sanitation - large systems
	14030	Basic drinking water supply and basic sanitation
	14031	Basic drinking water supply
	14032	Basic sanitation
	14040	River basins' development
	14050	Waste management / disposal
	14081	Education and training in water supply and sanitation
321		**INDUSTRY**
	32168	Pharmaceutical production

List of CRS Purpose Codes

DAC 5 CODE	CRS CODE	DESCRIPTION
700		**HUMANITARIAN AID**
720		**Emergency Response**
	72010	Material relief assistance and services
	72040	Emergency food aid
	72050	Relief co-ordination; protection and support services
730		**Reconstruction relief and rehabilitation**
	73010	Reconstruction relief and rehabilitation
740		**Disaster prevention and preparedness**
	74010	Disaster prevention and preparedness

한반도 우리민족 건강하게

감사합니다

신종 감염병에 대한
WHO 전략과 초국가적 대응

: : : : : : : : : : :

통일보건의료 리더쉽 아카데미

2017.8.25

안 동 일 교 수
연 대 보 건 대 학 원
국 제 보 건 학 과

CASE 1

2007년 개성공단

의사 김 열정씨: 서울 소재 A 종합병원 감염내과 의사. 매주

화요일 개성으로 출근하여 개성공단내 한국 NGO가 설립한

개성 한마음 병원에서 한국인 근로자 5만명과 북한 근로자

30만명을 대상으로 진료하고, 수요일 저녁 서울로 돌아와

나머지 요일은 A 병원에서 근무하는 열성파 의사.

수요일 아침

김 열정씨는 몸이 의실의실 춥고, 기침이 나서 열을 재보았더니 섭씨 38도. 오전 근무만하고 오후 일찍 서울로 돌아가려고 쉬면서 텔레비전을 보다가 서울에 메르스 (MERS) 첫 환자가 의심된다는 발표를 듣게 됨.

메르스가 의심되는 환자는 바로 김 열정씨가 근무하는 A병원에 현재 입원 중. 발표에 의하면 환자는 지난주 월요일 (즉 9일전) 오전 열이 나서 A병원 감염내과에 내원했었는데, 내원 당시 환자는 최근 중동 출장을 마치고 귀국한 사실을 의료진에게 알리지 않았다고 함.

A 병원에는 감염내과 의사가 전부 두 사람인데 월요일 오전의 감염내과 외래는 김 열정씨가 맡아서 함. 본인이 메르스 의심 환자를 진료했을 가능성이 높다고 생각하게 된 김 열정씨는 어젯밤에 개성 한마음 병원 개원 2주년 기념 저녁 만찬때 10여명의 북측 VIP 인사들과 한 테이블에서 식사를 했던 사실이 생각나면서 멍해짐.

Fact Sheet on MERS (메르스)
코로나 바이러스에 의한 신종 전염병으로 중동 지역에서 시작
잠복기는 평균 5일 (2-14일)
증상 은 고열 기침으로 시작 → 호흡곤란에 이르기도 함
치사율은 20%
전염은 환자와 가까운 접촉 (기침, 같은 방이나 입원/진료실)에 의함
항바이러스제는 효과가 없고 경우에 따라 인공호흡기등 중증 치료를 요하기도 함

HISTORY OF EID*
&
TECHNICAL BACKGROUND

::::::::::::

1

*emerging infectious disease

베르나르 베르베르 '제3인류'에 담긴

사망자 수로 본 전쟁 Top 11

시기	전쟁명	사망자
1939~1945년	제2차 세계대전	6천5백만 명
1949년~	중국 마오쩌둥 정권의 숙청	4천5백만 명
1914~1918년	제1차 세계대전	2천2백만 명
1950년~	러시아 스탈린 정권의 숙청	1천3백만 명
1950년~	한국 6.25 전쟁	280만 명
1955년~	수단 내전	190만 명
1975~1979년	캄보디아 크메르 루주	180만 명
1954년~	베트남 독립전쟁	170만 명
1980년~	아프가니스탄 소련과의 전쟁 그리고 탈리반과의 전쟁	160만 명
1967~1970년	나이지리아 비아프라 분리 독립 전쟁	130만 명
1980~1988년	이라크 대 이란 전쟁	120만 명

D.I AHN

*역사 속의
전염병

7500만 명
14세기 흑사병 대유행
유럽 인구 3분의 1가량인 7500만 명 사망

14세기 유럽 흑사병

5000
1918~1919년 스페인 독감
2000만~5000만 명 사망

1918년 스페인 독감

1816~1826년 아시아 대역병(콜레라)
인도·중국 등지에서 1500만 명 사망 **1500**

19세기초 아시아 콜레라

1618~1648년 신성로마제국(독일)
'30년 전쟁' 중 선페스트·티푸스로 800만 명 사망 **800**

17세기초 신성로마제국 흑사병

165~180년 로마제국 천연두 500만 명 사망 **500**

1918~1922년 러시아 티푸스 대유행 300만 명 사망 **300**

1865~1917년 아시아 대역병 200만 명 사망 **200**

1957~1958년 아시아 독감 200만 명 사망 **200**

1902~1904년 아시아 대역병 인도 등 100만 명 사망 **100**

1889~1890년 중앙아시아 독감 100만 명 사망 **100**

1968~1969년 홍콩 독감 세계에서 100만 명 사망 **100**

1881~1896년 유럽·러시아 콜레라 80만 명 사망 **80**

1899~1923년 러시아 콜레라 유행 50만 명 사망 **50**

2009~2015년 신종플루(H1N1) 20만 3000여 명 사망 **20**

1665년 천연 대역병 영국에서 10만 명 사망 **10**   자료:WHO, 위신 종합

* HIV 3000만명

4

SARS

EMERGING INFECTIOUS DISEASES

West Nile virus
>15,000 deaths in
the United States

HIV
>30 million deaths

2002–2003
SARS coronavirus
774 deaths

Ebola virus
>1,553 deaths

Hendra virus
Four deaths

2012–2013
MERS coronavirus
54 deaths

1918

Nipah virus
>250 deaths

1981

1968

2014-16

1957

2009

1937

Ebola
Zika

1976

2002

1997

1999

2012

1994

2013

1977

'Spanish flu'
H1N1 influenza
~50 million deaths

'Hong Kong flu'
H3N2 influenza
~700,000 deaths

'Russian flu'
H1N1 influenza

'Avian flu'
H5N1 influenza
>371 deaths

'Swine flu'
H1N1 influenza
>15,000 deaths

1957–1958
'Asian flu' H2N2 influenza
~100,000 deaths

1999–2002
H9N2 and H7N7 influenza
One death

'Avian flu'
H7N9 influenza
44 deaths

6

Nature Reviews | Immunology

EPIDEMIOLOGICAL MODEL

INFECTIOUS DISEASE

MICROBIAL AGENT

HUMAN HOST

ENVIRONMENT
(external to the host)
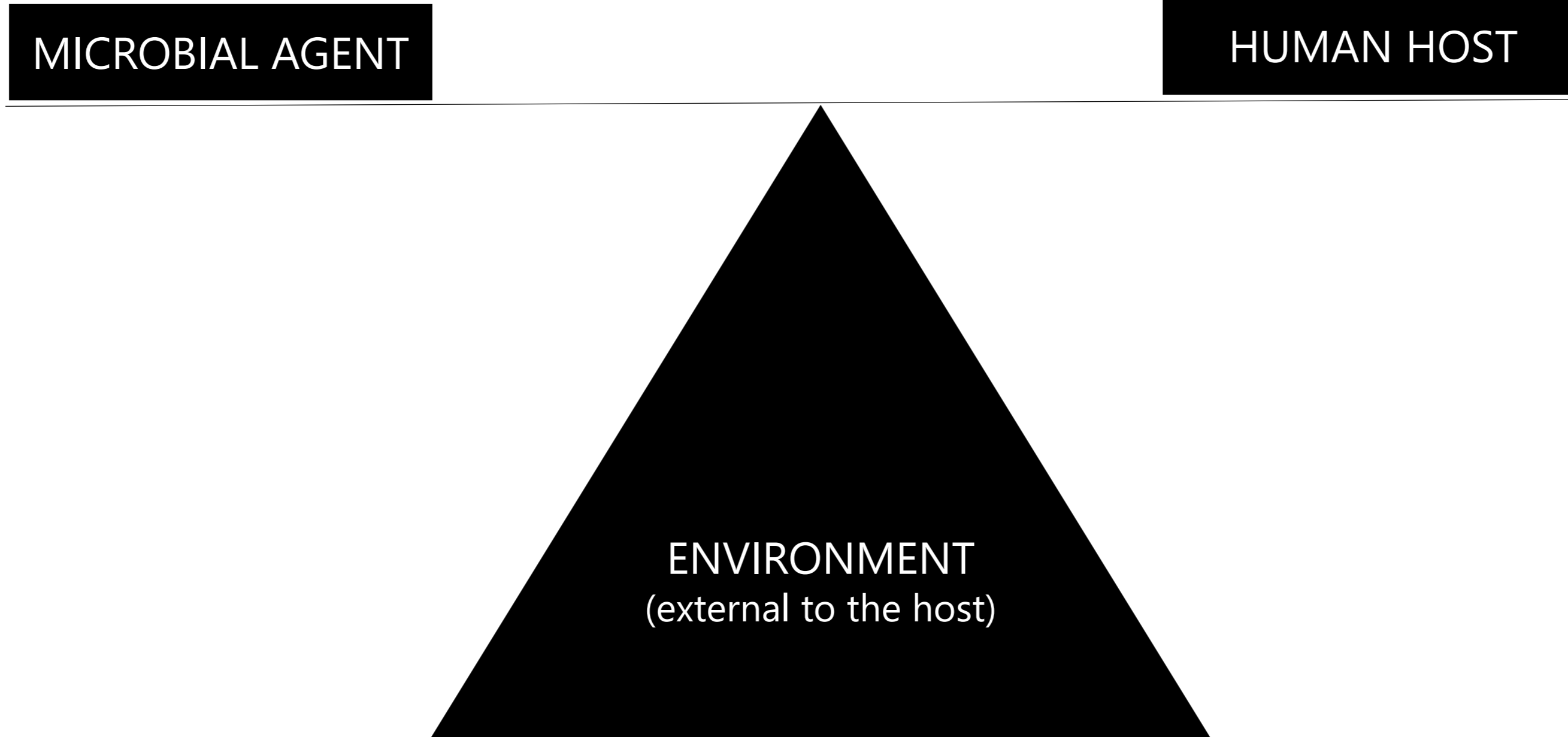
HOST SHIFTING

ANIMAL TO ANIMAL

ANIMAL TO HUMAN

HUMAN TO HUMAN

PANDEMIC

Nature Reviews | Immunology
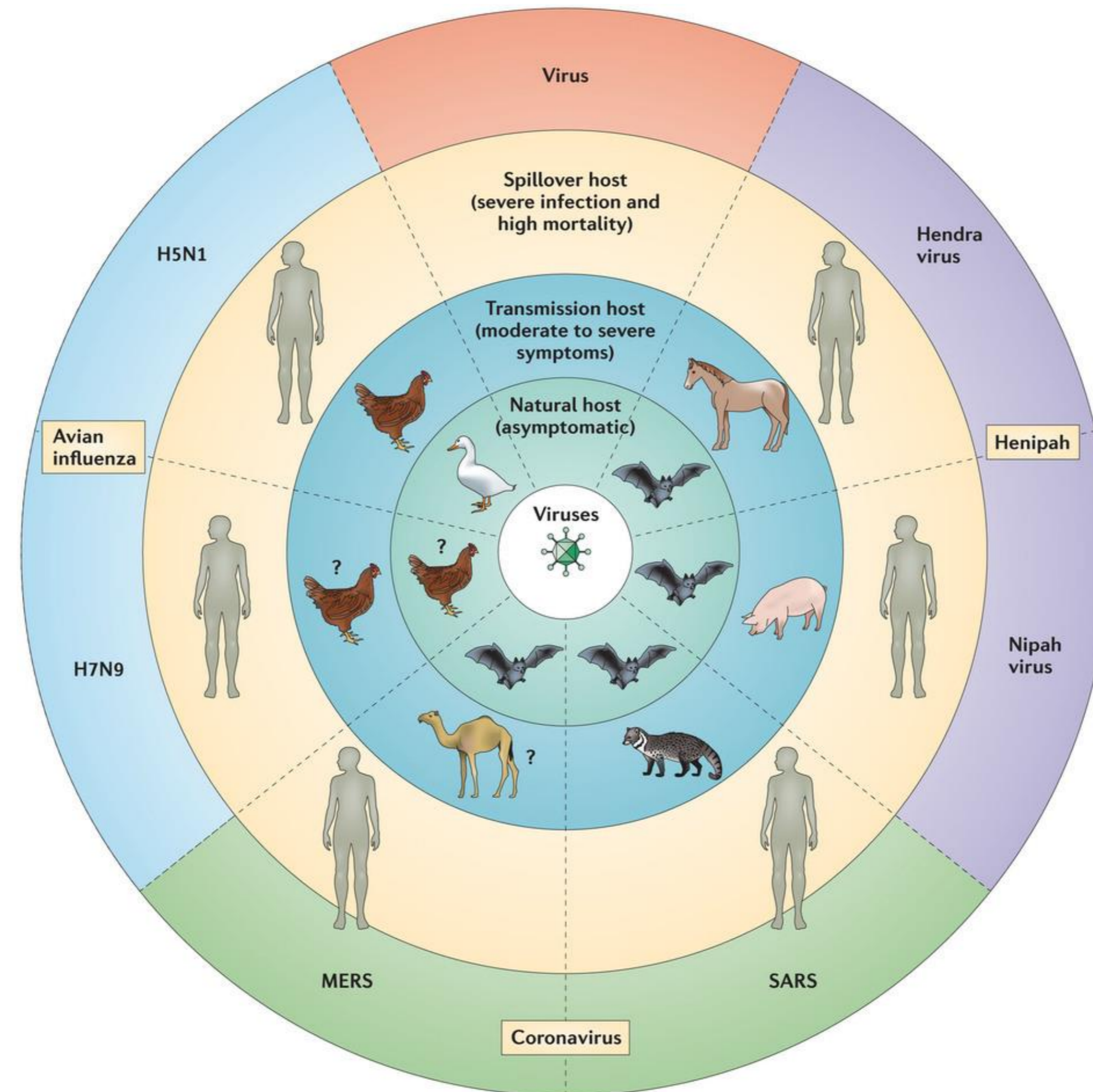
'자연의 역습'이 낳은 살충제 계란

김성모 기자   홍준기 기자

입력 : 2017.08.18 03:03

42 **f** 7 **y**

[부메랑으로 돌아온 환경파괴]

고온다습한 환경·공장식 축사, 닭진드기 급증하자 살충제 남용
치사율 높은 살인진드기 등 감염병 옮기는 곤충들 급증
수온 오르자 해양생태계 변화... 맹독 문어·뱀·해파리도 나와

'자연이 화났다' 사람을 공격하는 곤충·동물들

최근 문제되는 원인	닭진드기	작은소참진드기(살인진드기)	파란선문어	독성 해파리
	기후변화로 진드기가 서식하기 좋은 고온다습한 날씨 많아져	기후 변화로 해수 온도가 상승해 제주·울산 해역에서도 발견	기후 변화에 따른 수온 상승, 해양 오염, 해양 구조물 건설 등으로 증가 추정	
피해	- 닭의 빈혈·폐사, 산란율 저하 - 화학적 방제로 살충제 계란 등 문제 발생	치사율 높은 중증열성혈소판감소증후군(SFTS) 감염 환자 증가	독성으로 인한 피해 우려	2000년 이후 독성 해파리가 연안에 대량 출현해 문제(사망 사고로도 이어져)

자료·사진=성형주 기자·질병관리본부·국립수산과학원

9

PANDEMIC PHASES

WHO

FIGURE 3
PANDEMIC INFLUENZA PHASES (2009)

TABLE 3
WHO PANDEMIC PHASE DESCRIPTIONS AND MAIN ACTIONS BY PHASE

	ESTIMATED PROBABILITY OF PANDEMIC	DESCRIPTION	MAIN ACTIONS IN AFFECTED COUNTRIES	MAIN ACTIONS IN NOT-YET-AFFECTED COUNTRIES
PHASE 1	Uncertain	No animal influenza virus circulating among animals has been reported to cause infection in humans.	Producing, implementing, exercising, and harmonizing national pandemic influenza preparedness and response plans with national emergency preparedness and response plans.	
PHASE 2		An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.		
PHASE 3		An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.		
PHASE 4	Medium to high	Human-to-human transmission of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.	Rapid containment.	Readiness for pandemic response.
PHASE 5	High to certain	The same identified virus has caused sustained community-level outbreaks in at least two countries in one WHO region.	Pandemic response: each country to implement actions as called for in their national plans.	Readiness for imminent response.
PHASE 6	Pandemic in progress	In addition to the criteria defined in Phase 5, the same virus has caused sustained community-level outbreaks in at least one other country in another WHO region.		
POST-PEAK PERIOD		Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.	Evaluation of response; recovery; preparation for possible second wave.	
POSSIBLE NEW WAVE		Level of pandemic influenza activity in most countries with adequate surveillance is rising again.	Response	-
POST-PANDEMIC PERIOD		Levels of influenza have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.	Evaluation of response; revision of plans; recovery.	

PANDEMIC PHASES

WHO

Animal infection only

Animal → human (no human to human)

Human → human (family cluster only)

Human → human in community

Human → human > two countries in one WHO Region
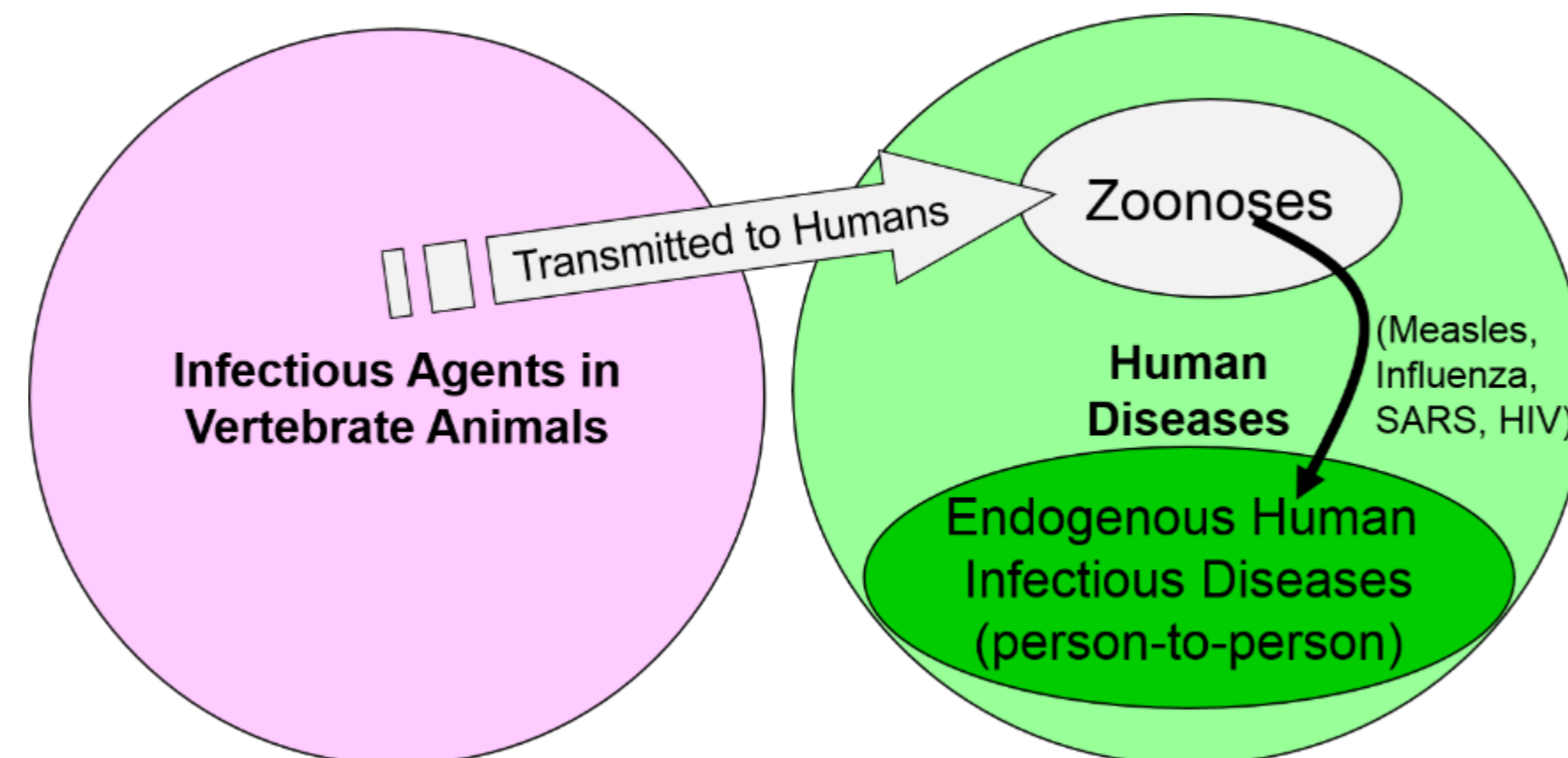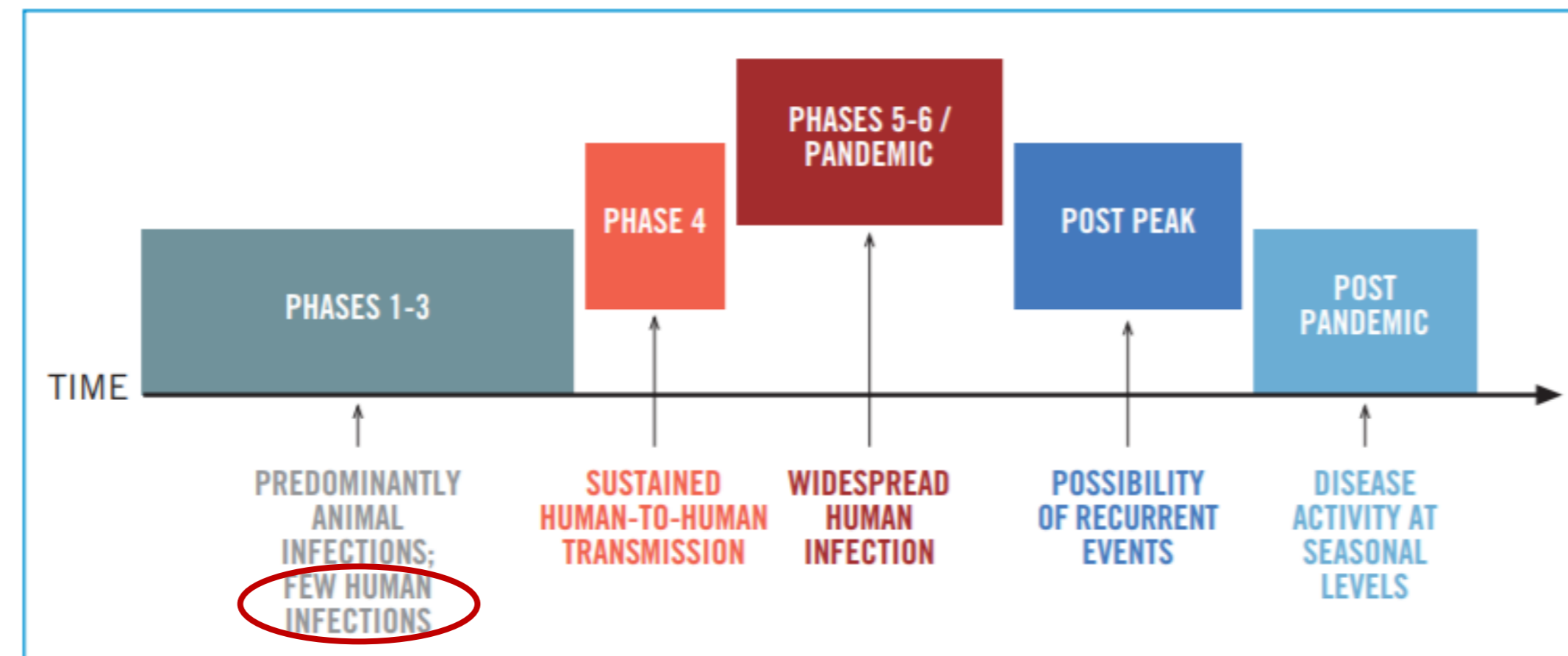
Human → human > 2 WHO Regions

TABLE 3
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PANDEMIC PHASES

WHO

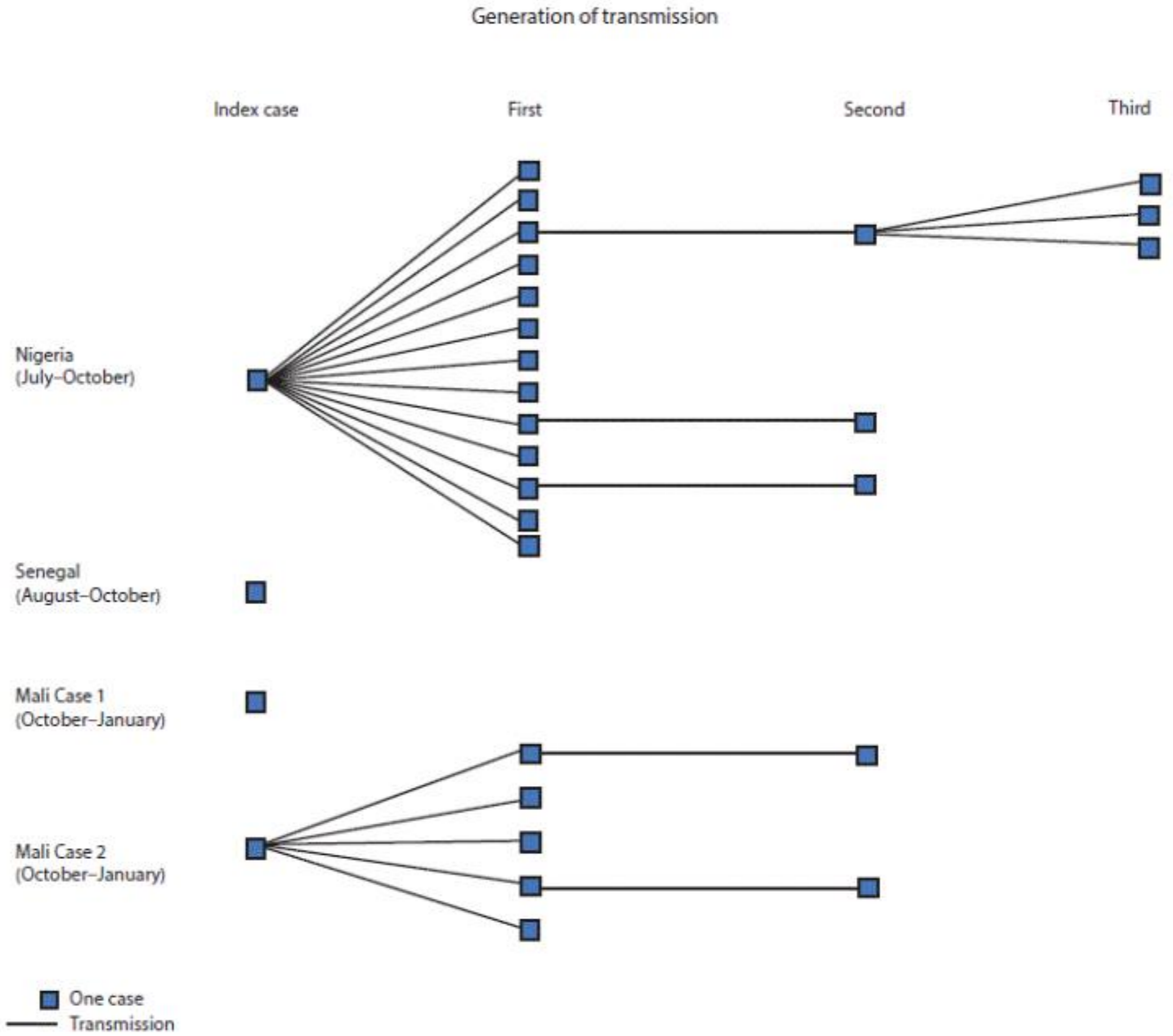

FIGURE 3
PANDEMIC INFLUENZA PHASES (2009)
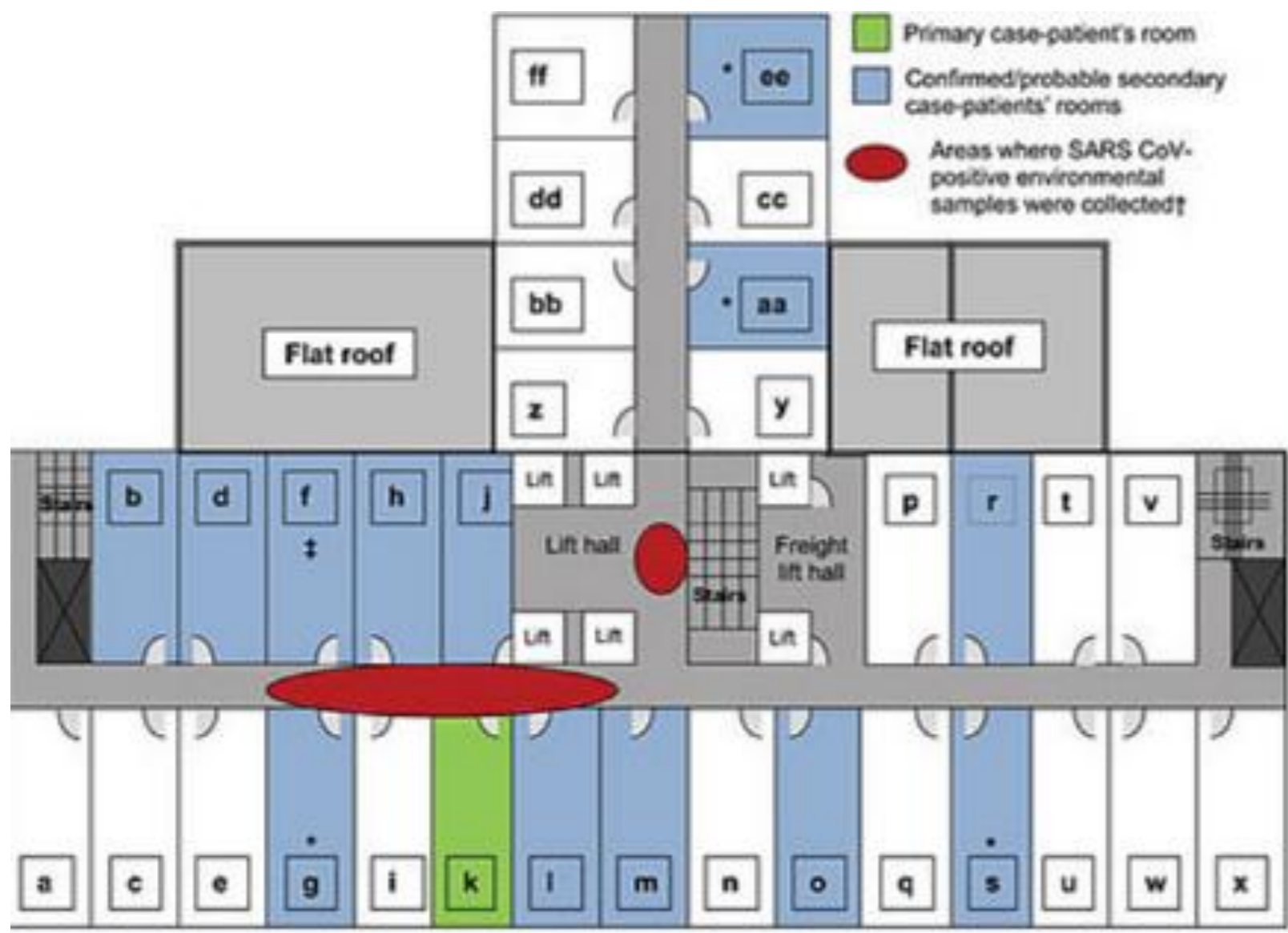
HUMAN TRANSMISSION
&
CASE FATALITY

2

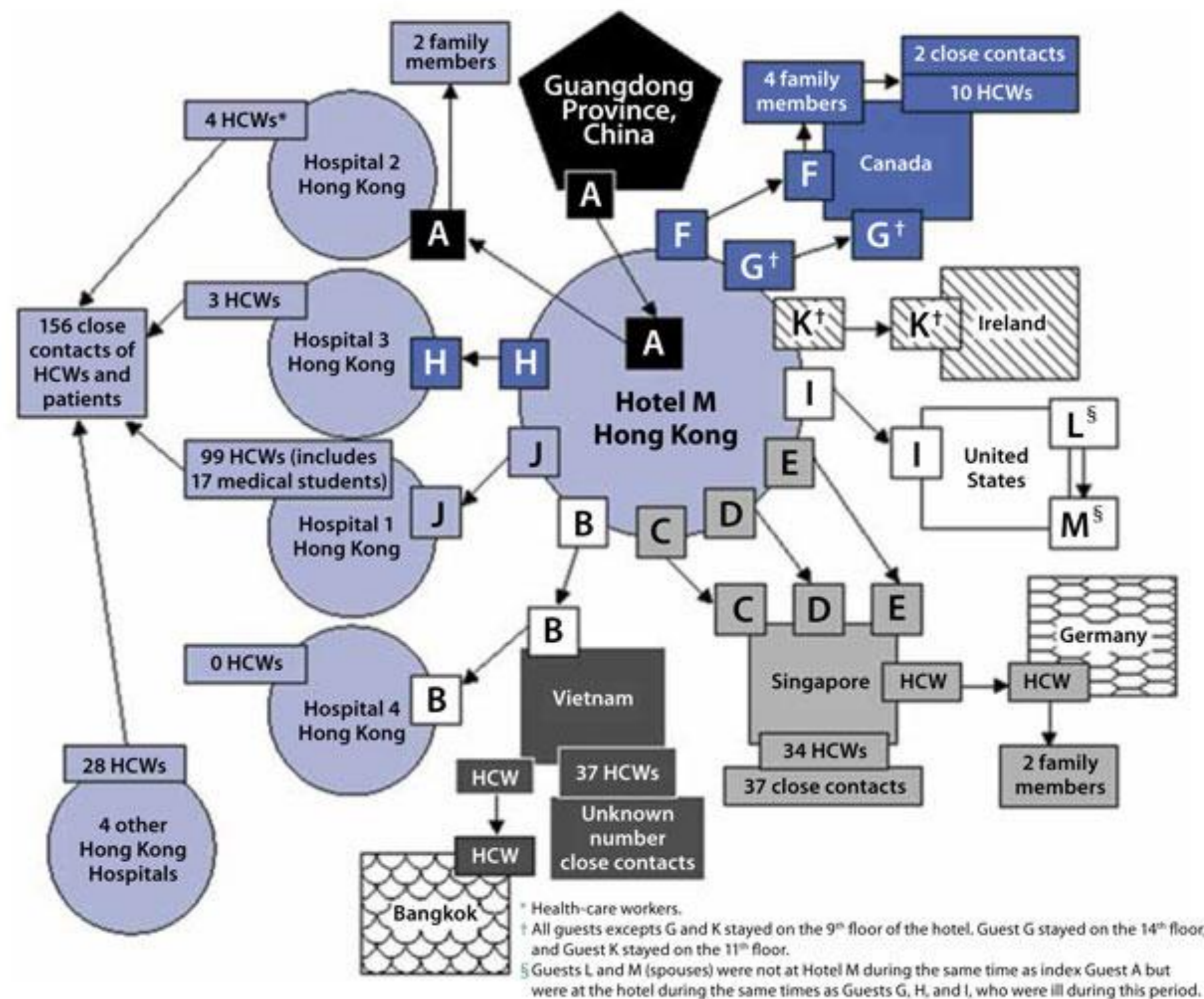# TRANSMISSION / CONTACT TRACING

Generation of transmission

SUPER-SPREADING OF SARS

METROPOLE HOTEL IN HONGKONG
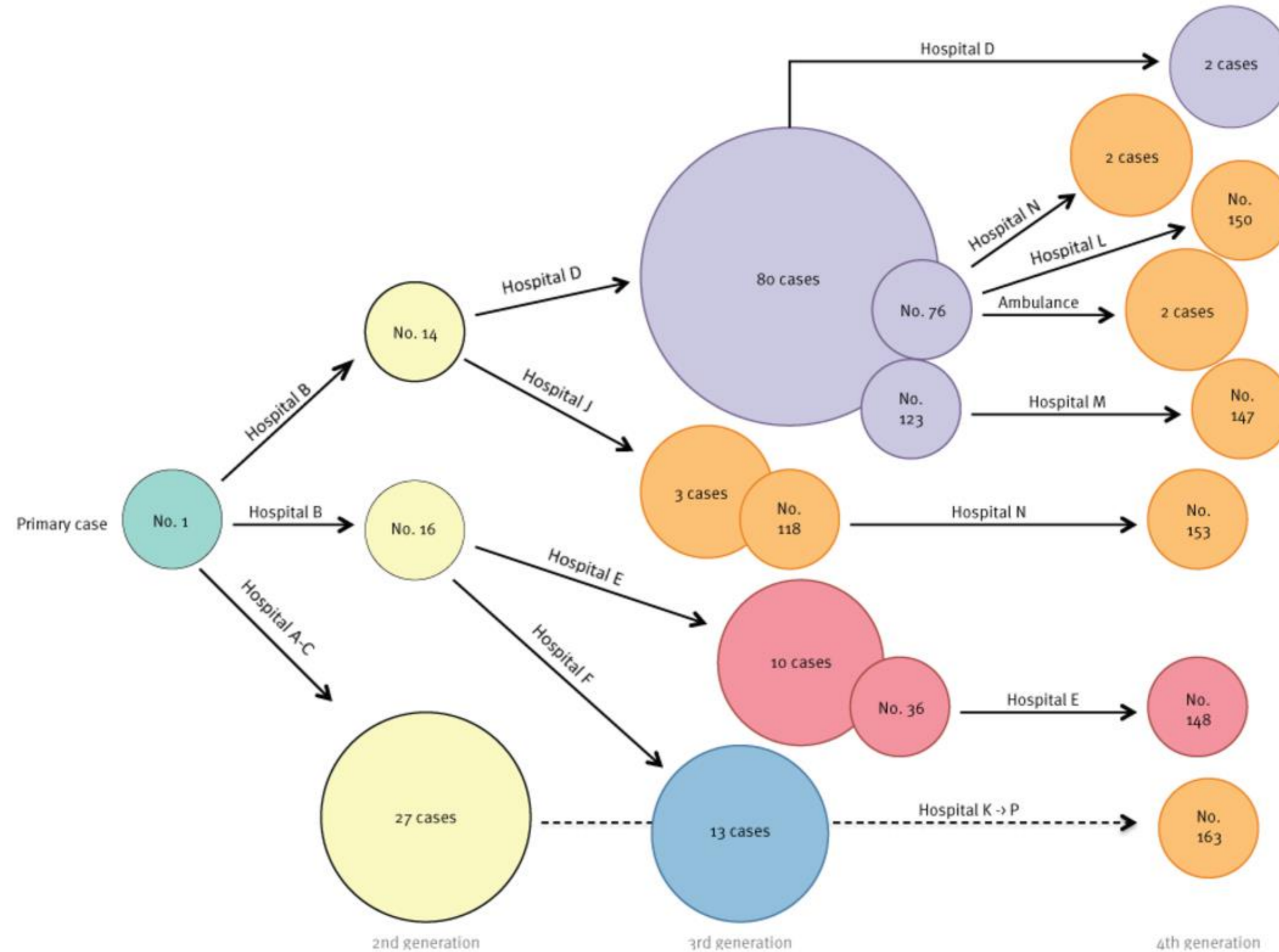

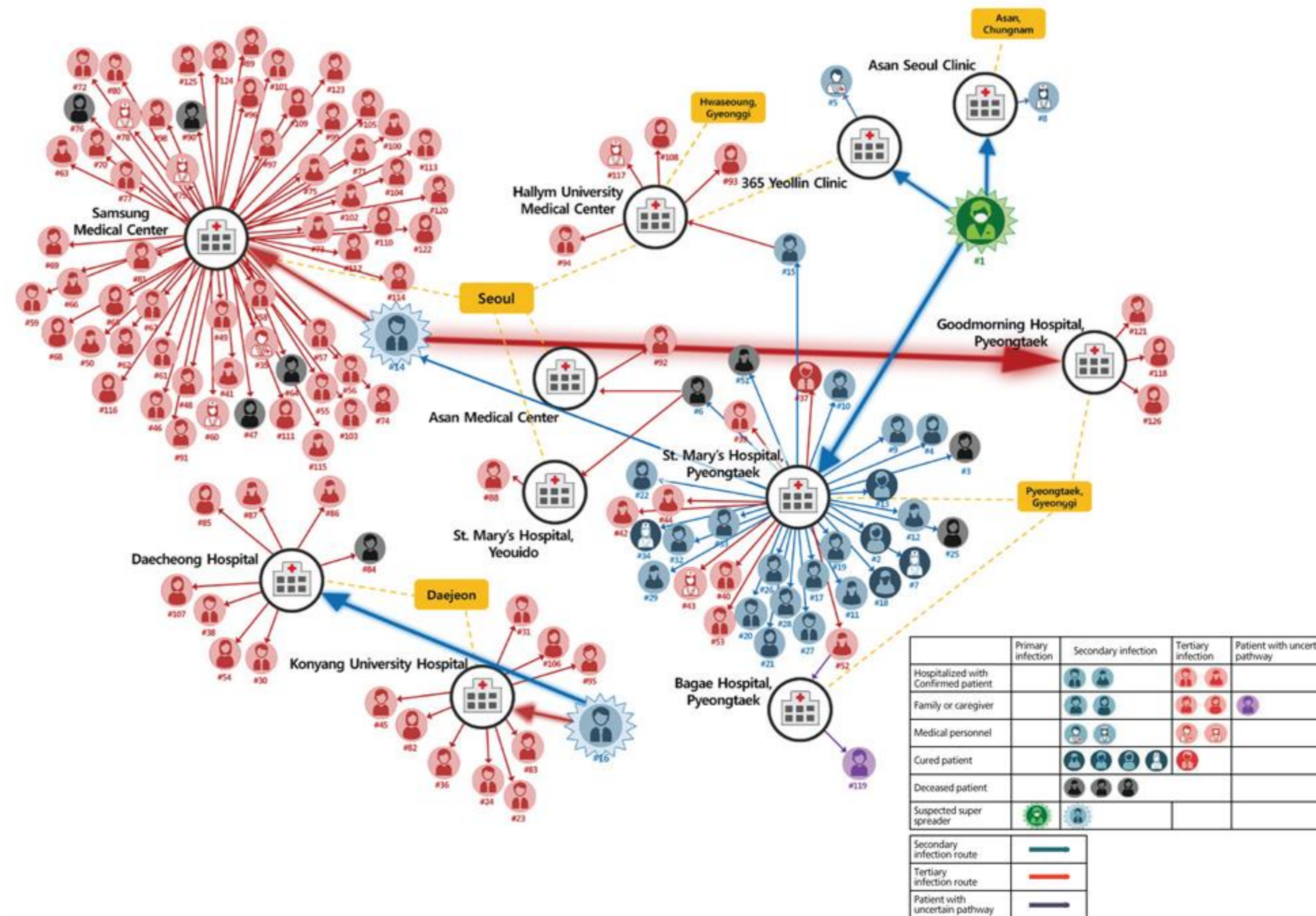Chain of Transmission Among Guests at Hotel M — Hong Kong, 2003

MERS IN KOREA

FIGURE 2

Simplified transmission diagram illustrating the superspreading events associated with Cases 1, 14, 16 and fourth-generation infections of MERS-CoV, South Korea, 11 May–19 June 2015 (n = 166)

MERS IN KOREA

Distribution of transmission of Middle East respiratory syndrome coronavirus clusters and suspected super spreader in South Korea (20 May to 12 June, 2015).

Disease Case Fatality Rates
Average % of infected who die
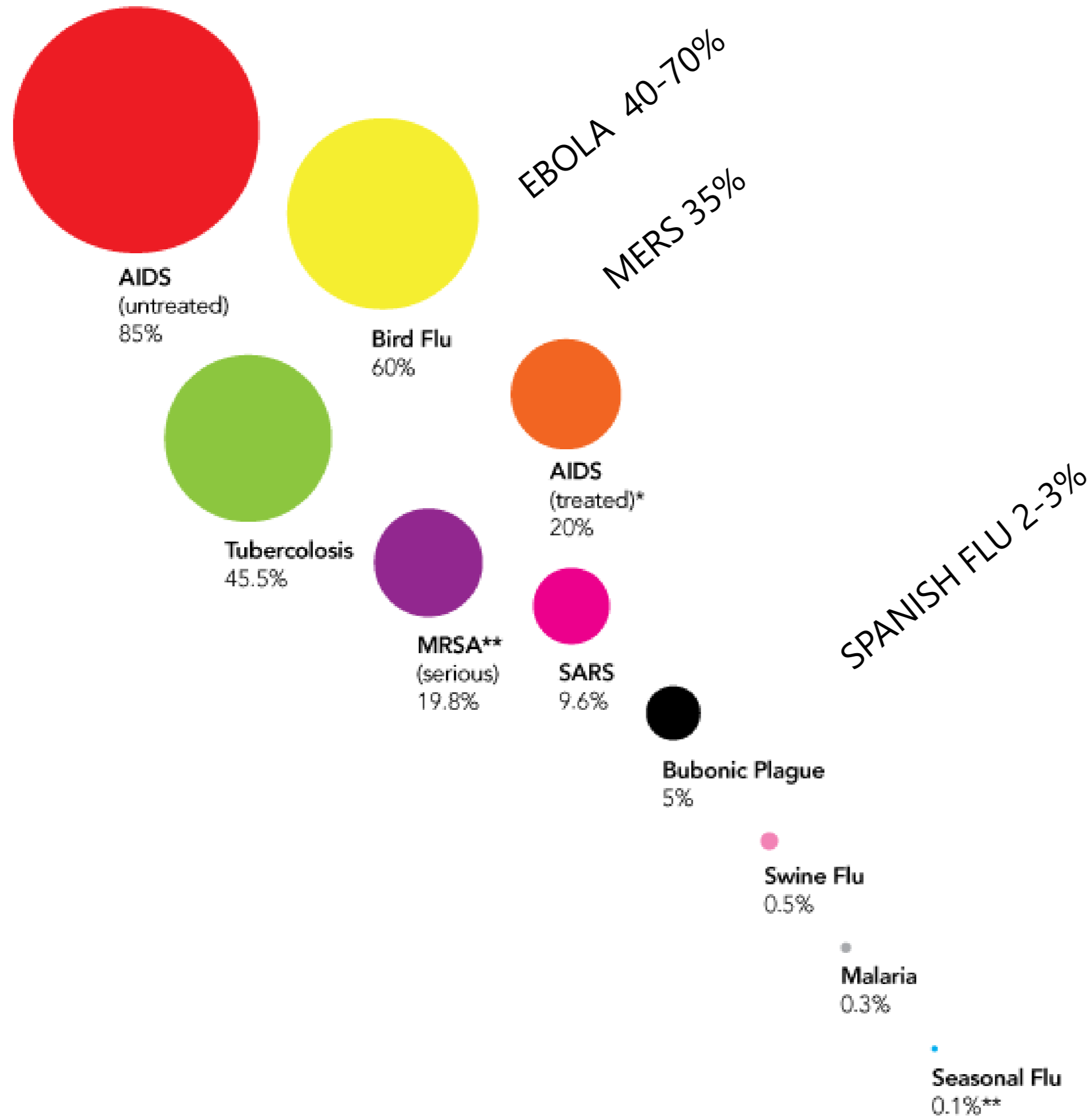
EBOLA 40-70%

MERS 35%

SPANISH FLU 2-3%

AIDS
(untreated)
85%

Bird Flu
60%

Tubercolosis
45.5%

AIDS
(treated)*
20%

MRSA**
(serious)
19.8%

SARS
9.6%

Bubonic Plague
5%

Swine Flu
0.5%

Malaria
0.3%

Seasonal Flu
0.1%**

D.I AHN

COUNTRY RESPONSE
&
WHO STRATEGY

: : : : : : : : : : : :

3

INTERNATIONAL HEALTH REGULATION

IHR (Dr Kavita Yadav)

What are International Health Regulations (IHR)?

- The International Health Regulations (IHR) are an international legal instrument that is binding on 194 countries across the globe, including all member states of the World Health Organization (WHO).
  - The United States is one of these member states.

- IHR are intended to:
  - help prevent the spread of disease across borders
  - outline the minimum requirements for functional public health system that allows countries to quickly detect and respond to disease outbreaks in their communities

Why new IHR

- → 1995--Ebola virus outbreak in Central Africa captures global attention; WHA calls upon WHO Director-General to overhaul the IHR

- The recent increase in trade and tourism.

- → 2003--SARS spreads from China to 25 other countries via air travel

- → 2005--WHA adopts the revised International Health Regulations (2005)

NOTIFICATION & COMMUNICATION FLOW

IHR

✓ 1969 IHR

FRAMEWORK
IHR

WHO Director-General — Determine whether an event constitutes a PHEIC and recommend measures

Emergency Committee — Advise

WHO IHR Contact Points — Receive, assess and respond to events notified

Coordinate → **Other relevant organizations (IAEA etc.)**

National IHR Focal Points — Consult with or notify WHO of any events that may constitute a PHEIC

Communicate ↔ **Relevant ministries/Sectors/Back to State/Local**

Detect, assess, and report urgent or unexpected events

Public health and event-based surveillance systems within a country

Report

The IHR require that all countries can:
- DETECT — Make sure surveillance systems and laboratories can detect potential threats
- ASSESS — Work together with other countries to make decisions in public health emergencies
- REPORT — Report specific diseases, plus any potential international public health emergencies
- RESPOND — Respond to public health events

We share a responsibility to protect our world from outbreaks of infectious diseases and other health threats. The goal of the IHR is to stop events in their tracks before they become international emergencies.

Source: Report to the Director General of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation, November 2014

CDC

National IHR Focal Points (NFPs)
- Important role in implementation of IHR
- The national centre for communications with WHO:
  - On a 24/7 basis (by telephone, fax, email)
  - NOT an individual person
- To notify PHEIC to WHO
- To respond to requests for verification of information of such events.
- Support field investigations, provide early diagnosis and provide technical guidance to states for timely and effective response to PHEIC
- Co-ordination with state units and WHO

IHR

- Travel ban (Canada during SARS, Brazil olympic)
- National emergency declaration

- An extraordinary public health event which
  - constitutes a public health risk to other countries through international spread of disease
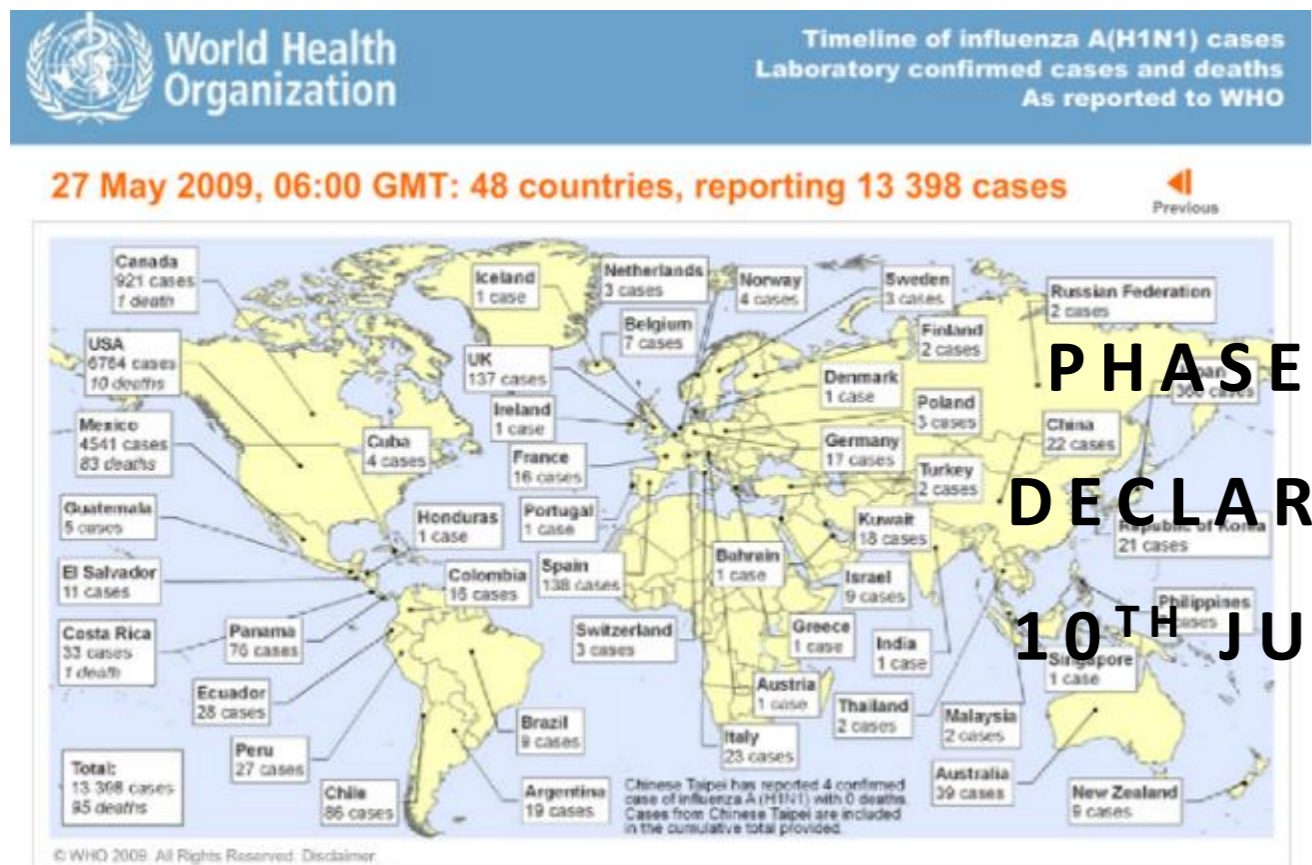 - potentially requires a coordinated international response

23

PANDEMIC INFLUENZA 2009

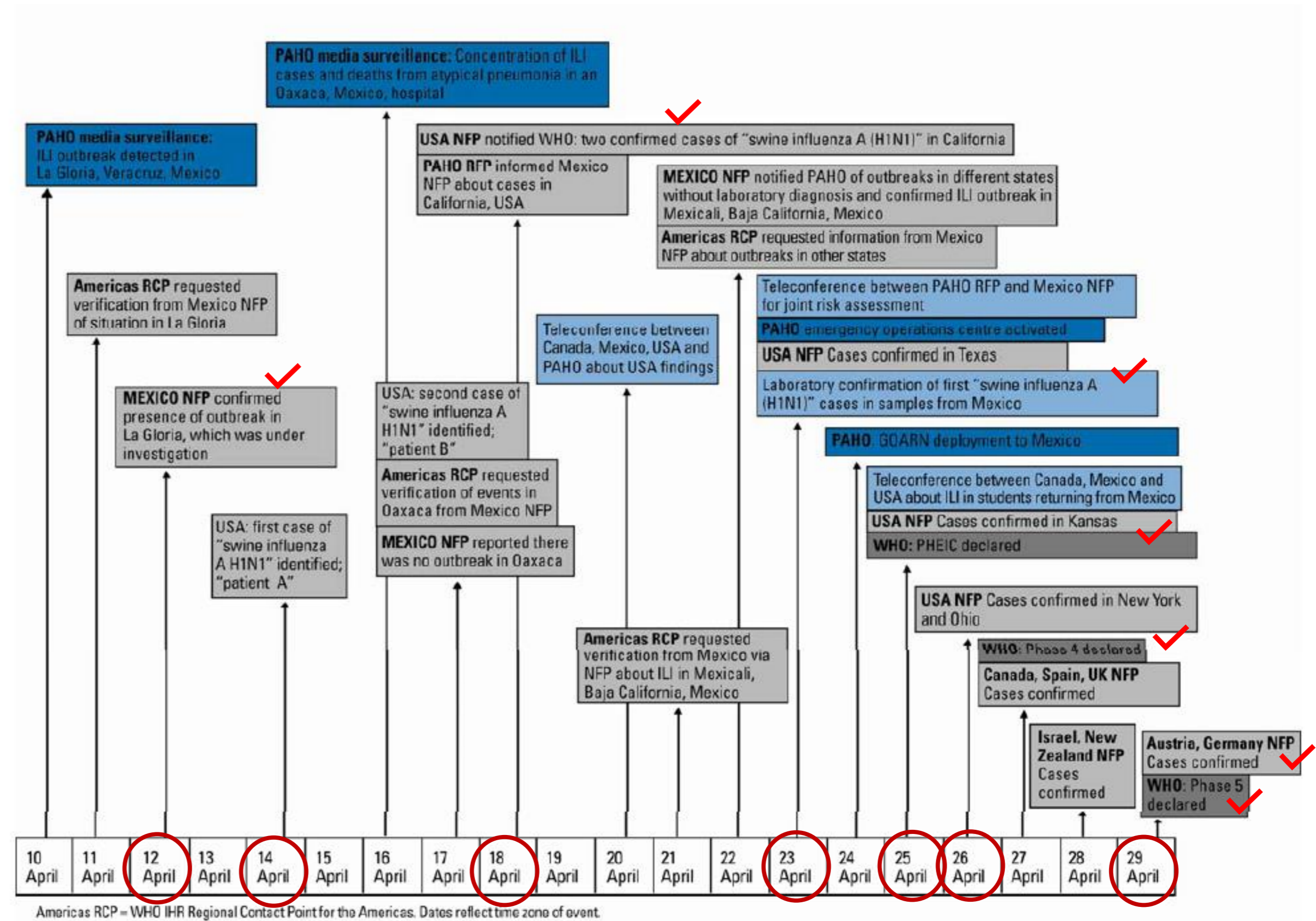Fig. 2.2 Selected early events 2009
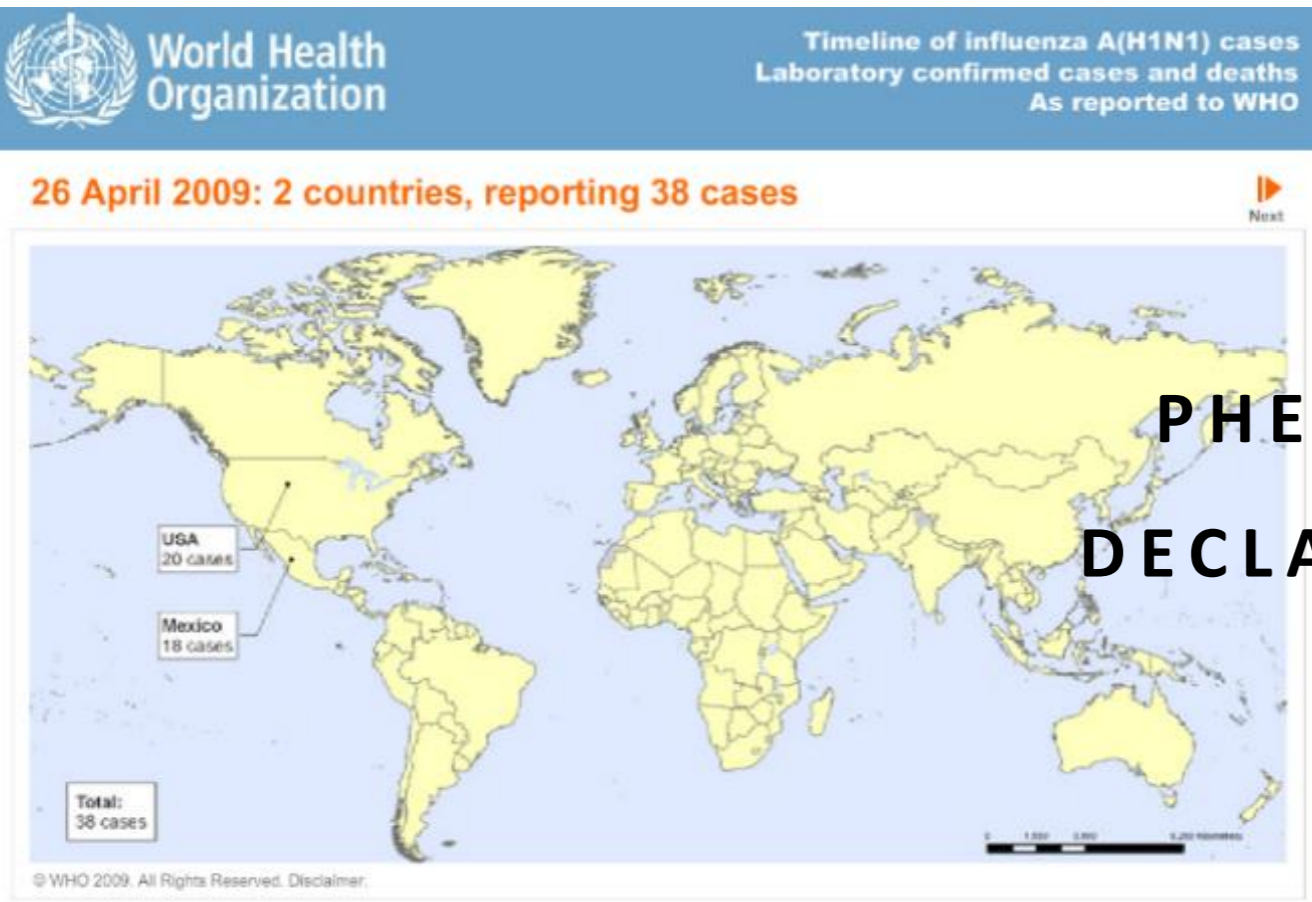
PHEIC DECLARED
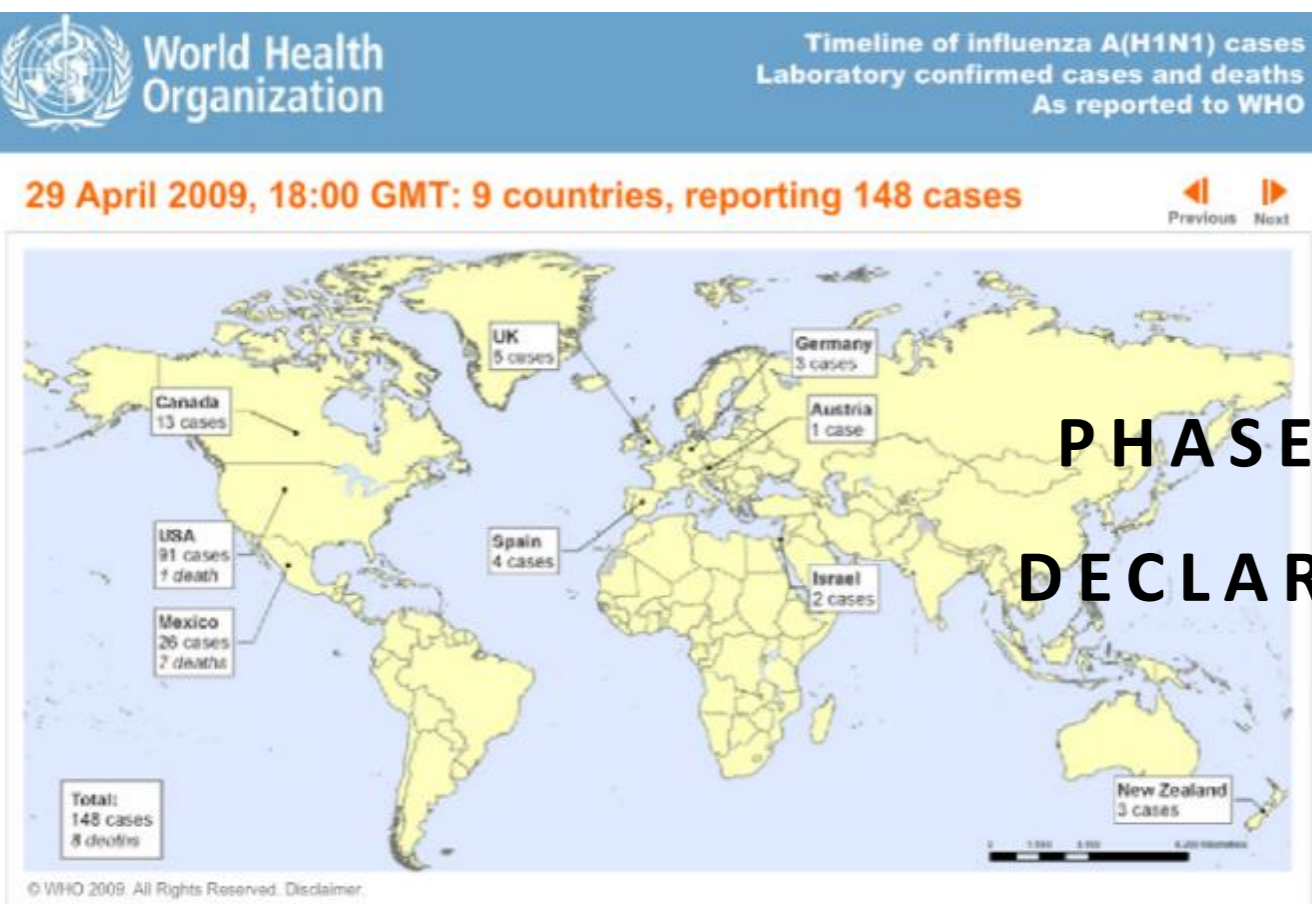
PHASE 5 DECLARED

PHASE 6 DECLARED 10TH JUNE

GHSA

GLOBAL HEALTH SECURITY AGENDA

GHSA & IHR

APSED

ASIA PACIFIC STRATEGY FOR EMERGING DISEASE

WHO 2010

Vision
An Asia Pacific region prepared to mitigate the risk and impact of emerging diseases and other public health emergencies through collective responsibility for public health security.

Goal
To build sustainable national and regional capacities and partnerships to ensure public health security through preparedness planning, prevention, early detection and rapid response to emerging diseases and other public health emergencies.

Objective 1 Reduce risk

Objective 2 Strengthen early detection

Objective 3 Strengthen rapid response

Objective 4 Strengthen effective preparedness

Objective 5 Build sustainable partnerships

Focus Areas

- Surveillance, Risk Assessment and Response
- Laboratories
- Zoonoses
- Infection Prevention and Control
- Risk Communications
- Public Health Emergency Preparedness
- Regional Preparedness, Alert and Response
- Monitoring and Evaluation
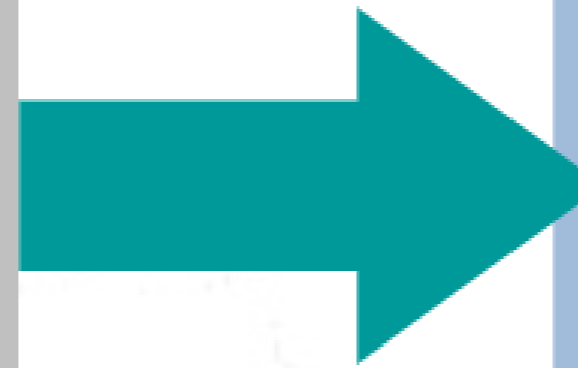
8 FOCUS AREAS

APSED (2005)

1. Surveillance and Response
2. Laboratory
3. Zoonoses
4. Infection Control
5. Risk Communication

APSED (2010)

1. Surveillance, Risk Assessment and Response
2. Laboratory
3. Zoonoses
4. Infection Prevention and Control
5. Risk Communication
6. Public Health Emergency Preparedness
7. Regional Preparedness, Alert and Response
8. Monitoring and Evaluation

APSED

FOCUS AREA 1:
### Surveillance, Risk Assessment and Response

APSED (2010)

1. **Surveillance, Risk Assessment and Response**
2. Laboratory
3. Zoonoses
4. Infection Prevention and Control
5. Risk Communication
6. Public Health Emergency Preparedness
7. Regional Preparedness, Alert and Response
8. Monitoring and Evaluation

- Sensitive and timely surveillance systems can trigger early alerts and rapid response to minimize the impact of a potential outbreak.

- **Key components**
  - Event-based surveillance
  - Indicator-based surveillance
  - Risk assessment capacity
  - Rapid response capacity
  - Field epidemiology training

FOCUS AREA 6:
Public Health Emergency Preparedness

APSED (2010)

1. Surveillance, Risk Assessment and Response
2. Laboratory
3. Zoonoses
4. Infection Prevention and Control
5. Risk Communication
6. **Public Health Emergency Preparedness**
7. Regional Preparedness, Alert and Response
8. Monitoring and Evaluation

- Comprehensive plans and well-prepared systems can reduce the negative health, social and economic impacts of public health emergencies

- **Key components**
  - Public health emergency planning
  - National IHR Focal Point functions
  - Points of entry preparedness
  - Response logistics
  - Clinical case management

EBOLA - SYSTEM FAILURE

ALMOST NO SYSTEM

TO BE UTILISED

BY DISESE SPECIFIC PROGRAM

Figure 1: Estimated gap in numbers of doctors, nurses and midwives in Liberia, Sierra Leone, Guinea and Guinea-Bissau
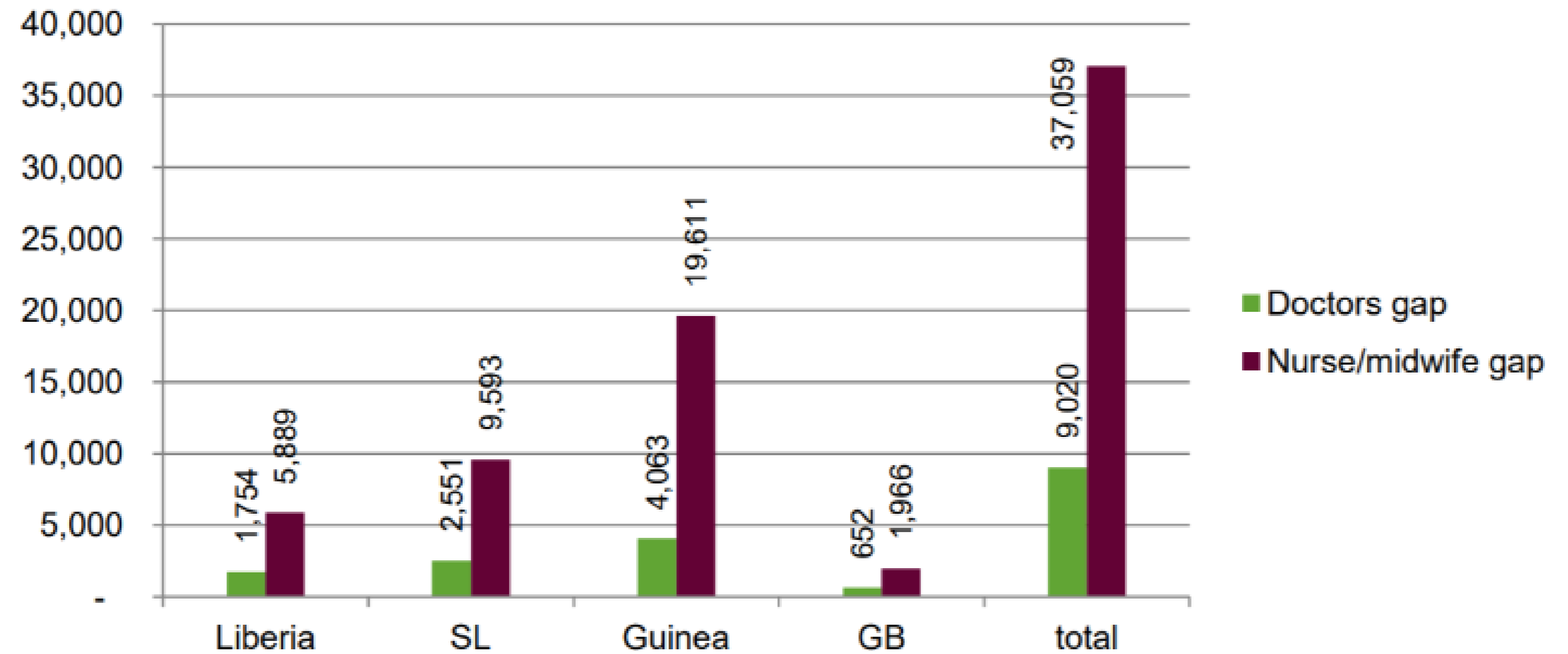
Note: Estimates by Oxfam, based on the WHO minimum standard of 2.3 doctors, nurses and midwives per 1,000 persons. See Annex 1 for calculations.

북한 당국이 해야 할 / 할 수 있는 일

남한 당국이 해야 할 / 할 수 있는 일

김 열정씨가 해야 할 / 할 수 있는 일

CASE 1

2007년 개성공단

의사 김 열정씨: 서울 소재 A 종합병원 감염내과 의사. 매주

화요일 개성으로 출근하여 개성공단내 한국 NGO가 설립한

개성 한마음 병원에서 한국인 근로자 5만명과 북한 근로자

30만명을 대상으로 진료하고, 수요일 저녁 서울로 돌아와

나머지 요일은 A 병원에서 근무하는 열성파 의사.

수요일 아침

김 열정씨는 몸이 의실의실 춥고, 기침이 나서 열을 재보았더니 섭씨 38도. 오전 근무만하고 오후 일찍 서울로 돌아가려고 쉬면서 텔레비전을 보다가 서울에 메르스 (MERS) 첫 환자가 의심된다는 발표를 듣게 됨.

메르스가 의심되는 환자는 바로 김 열정씨가 근무하는 A병원에 현재 입원 중. 발표에 의하면 환자는 지난주 월요일 (즉 9일전) 오전 열이 나서 A병원 감염내과에 내원했었는데, 내원 당시 환자는 최근 중동 출장을 마치고 귀국한 사실을 의료진에게 알리지 않았다고 함.

A 병원에는 감염내과 의사가 전부 두 사람인데 월요일 오전의 감염내과 외래는 김 열정씨가 맡아서 함. 본인이 메르스 의심 환자를 진료했을 가능성이 높다고 생각하게 된 김 열정씨는 어젯밤에 개성 한마음 병원 개원 2주년 기념 저녁 만찬때 10여명의 북측 VIP 인사들과 한 테이블에서 식사를 했던 사실이 생각나면서 멍해짐.

Fact Sheet on MERS (메르스)
코로나 바이러스에 의한 신종 전염병으로 중동 지역에서 시작
잠복기는 평균 5일 (2-14일)
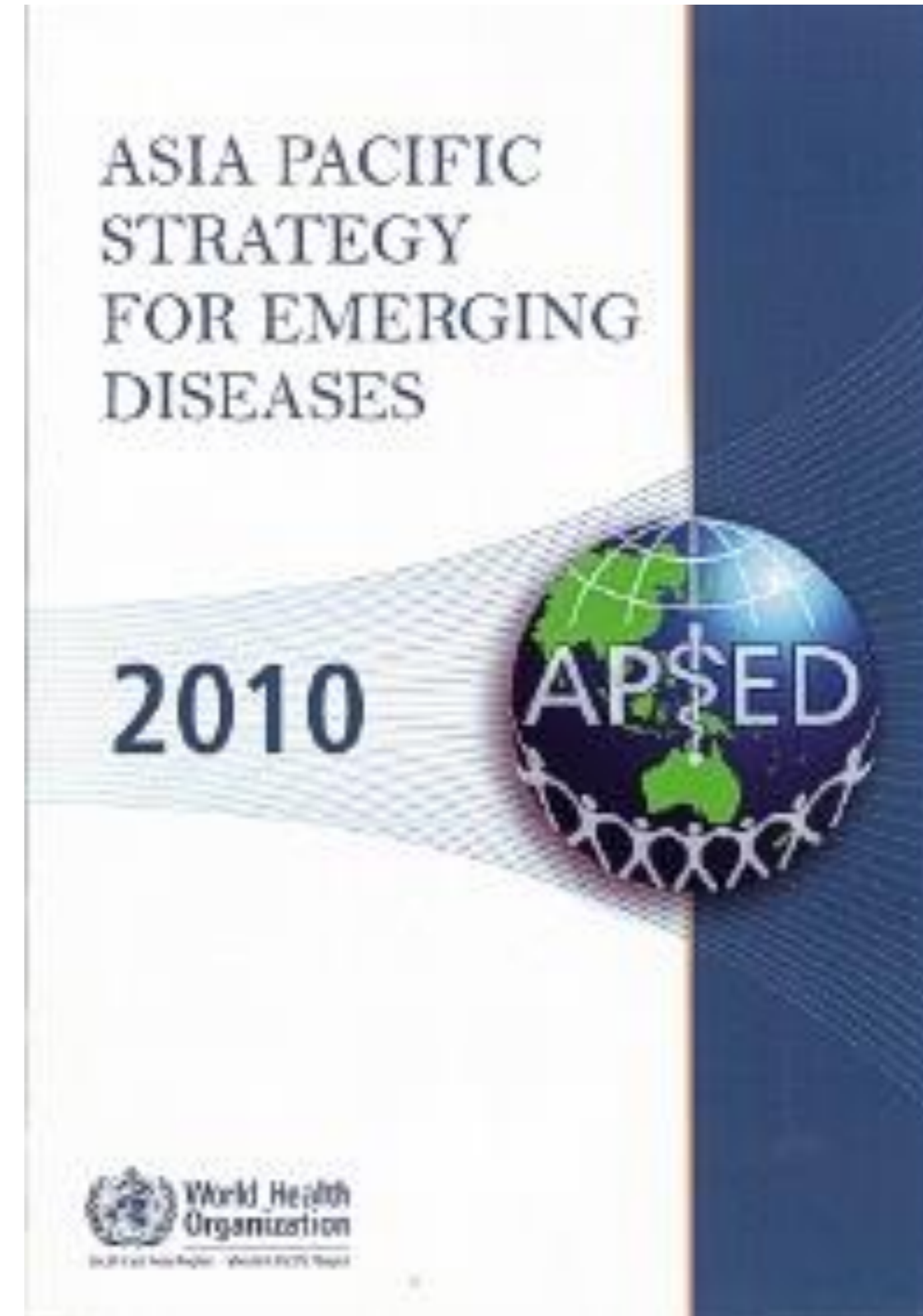증상 은 고열 기침으로 시작 → 호흡곤란에 이르기도 함
치사율은 20%
전염은 환자와 가까운 접촉 (기침, 같은 방이나 입원/진료실)에 의함
항바이러스제는 효과가 없고 경우에 따라 인공호흡기등 중증 치료를 요하기도 함

thanks

ahndongil@gmail.com

ASIA PACIFIC
STRATEGY
FOR EMERGING
DISEASES

2010 APSED

World Health
Organization

ASIA PACIFIC STRATEGY FOR EMERGING DISEASES

2010

APSED

World Health Organization

South-East Asia Region   Western Pacific Region

Table of Contents

ABBREVIATIONS AND ACRONYMS

APSED	Asia Pacific Strategy for Emerging Diseases
CBRN	chemical, biological, radiological and nuclear
EBS	event-based surveillance
EIS	(IHR) Event Information Site
EQA	external quality assurance
FET	field epidemiology training
GOARN	Global Outbreak Alert and Response Network
IBS	indicator-based surveillance
IHR	International Health Regulations
INFOSAN	International Food Safety Authorities Network
IPC	infection prevention and control
IQC	internal quality control
M&E	monitoring and evaluation
NFP	National IHR Focal Point
PHEIC	public health emergency of international concern
POE	points of entry
PPE	personal protective equipment
RRT	rapid response team
TAG	Technical Advisory Group
WHO	World Health Organization

Foreword

The *Asia Pacific Strategy for Emerging Diseases* (APSED) was developed in 2005 to meet the challenges of emerging diseases that pose serious threats to regional and global health security. It provided a common framework to strengthen national and regional capacities to manage emerging diseases, improve pandemic preparedness and comply with the core capacity requirements of the International Health Regulations (2005).

Implementation of APSED over the past five years in the 11 countries that comprise the WHO South-East Asia Region and 37 countries and areas that make up the WHO Western Pacific Region provided important lessons in pandemic response and demonstrated the need to further strengthen public health emergency preparedness and improve monitoring and evaluation.

The Asia Pacific Technical Advisory Group on Emerging Infectious Diseases, at its fourth annual meeting in July 2009, reviewed the significant achievements obtained in the five priority areas identified in the original strategy: surveillance and response; laboratory; zoonoses; infection control; and risk communications. The Technical Advisory Group recommended that APSED be updated to enhance the gains already achieved in the original five priority areas and use the achievements as a foundation to address a wider range of acute public health threats.

The recommendation of the Technical Advisory Group led to a series of intensive country-level assessments and discussions, as well as a biregional consultation that brought together regional and global experts, along with public health officials from various Member States. Those assessments and consultations led to a draft *APSED (2010)* in which three new focus areas have been added: public health emergency preparedness; regional preparedness, alert and response; and monitoring and evaluation. The draft *APSED (2010)* was reviewed and endorsed by the Technical Advisory Group at its fifth annual meeting in July 2010.

The development of the original APSED in 2005 was greatly influenced by several events in the Asia Pacific Region, including the emergence of severe acute respiratory syndrome (SARS) and avian influenza A(H5N1), and also by the adoption of the International Health Regulations (2005).

Since that time, the Asia Pacific region has experienced an increasing number of threats to public health, including the establishment of avian influenza as an endemic disease in some areas, the onset and subsequent global spread of pandemic influenza (H1N1) 2009, and a large number of other acute events with significant public health impact.

The past five years have also led to a greater appreciation of the need to acknowledge and strengthen links among agencies responsible for confronting acute public health threats. These include animal health authorities, departments concerned with the response to humanitarian emergencies, and those tasked with food, chemical and radiological safety. *APSED (2010)* aims to establish stronger links among these related public health programmes, thereby ensuring a joint approach to preparedness and response to all public health emergencies.

We all recognize that regional and global public health security cannot be achieved without strong mechanisms for international cooperation. One of the great successes of APSED and its alignment with the International Health Regulations (2005) has been the ability to draw together a wide range of partners, including Member States, donors, multilateral organizations and technical agencies. By engaging with all partners in this way and working towards a common vision, we also build regional solidarity, resilience and self-reliance.

We continue this journey in the aftermath of pandemic influenza (H1N1) 2009, which although not as severe as initially feared, tested public health and health care systems, revealing strengths and weaknesses but also providing opportunities to learn lessons and to improve our preparedness for future pandemic threats.

We certainly will continue to face new challenges as we move forward. But we can do so knowing that a strong foundation has been established, and that, thanks to the updated *Asia Pacific Strategy for Emerging Diseases*, we have a clear direction for the future.

Samlee Plianbangchang, M.D., Dr.P.H.
Regional Director
South-East Asia Region

Shin Young-soo, M.D., Ph.D.
Regional Director
Western Pacific Region

Executive Summary

In recent years, the Asia Pacific region has been an epicentre for emerging diseases, resulting in significant impacts on health, social and economic development. Protecting the region from acute public health threats is, therefore, a top priority. The *Asia Pacific Strategy for Emerging Diseases* (APSED) was launched in 2005 as a common strategic framework for countries and areas of the region to strengthen their capacity to manage and respond to emerging disease threats, including influenza pandemics. In June 2007, the revised International Health Regulations (2005), known as IHR (2005), entered into force, calling upon countries and the World Health Organization (WHO) to strengthen their core capacities to detect, report and respond to acute public health events in order to build a global public health defence system. APSED serves as a road map to guide all countries in the region towards meeting the IHR (2005) core capacity requirements, thus ensuring regional and global health security.

Over the past five years, considerable progress has been made in the development and strengthening of the required core capacities. Incorporating recommendations from Member States and learning from experiences in implementing the original *Asia Pacific Strategy for Emerging Diseases*, which was jointly developed by the WHO South-East Asia Region and the WHO Western Pacific Region, as well as the response to pandemic influenza (H1N1) 2009, an updated strategy, *APSED (2010)*, has been developed. *APSED (2010)* will be implemented by building on the achievements of the original APSED, while recognizing variations in existing capacity levels across countries. It is intended that *APSED (2010)* will further support progress towards meeting IHR (2005) obligations and consolidate gains already made in establishing collective regional public health security. While *APSED (2010)* continues to focus on emerging diseases, it also seeks to maximize the benefits already achieved by widening its scope to include other acute public health threats and by identifying additional areas of synergy and special situations to which the Strategy can make important contributions.

APSED (2010) has expanded its scope to include eight "focus areas":

> (1) surveillance, risk assessment and response;
>
> (2) laboratories;
>
> (3) zoonoses;
>
> (4) infection prevention and control;
>
> (5) risk communications;
>
> (6) public health emergency preparedness;

(7) regional preparedness, alert and response; and

(8) monitoring and evaluation.

Focus areas 1 to 6 concentrate on national and local capacity-building, focus area 7 addresses WHO regional capacity, and focus area 8 covers both national and regional monitoring and evaluation of *APSED (2010)* implementation.

While *APSED (2010)* is a common framework for all countries and areas, the individual situation and context in each of the 48 countries and areas of the Asia Pacific region must be considered when implementing the Strategy. This will require countries to develop individual APSED implementation plans to suit their own context and needs.

The intended audience for *APSED (2010)* is expected to be ministries of health, agencies working on emerging diseases in animal health sectors, food safety authorities and departments concerned with the management of other public health emergencies. Development agencies, donors and other partners are also strongly encouraged to use this framework to prioritize support to countries and thus maximize efficient use of resources.

In considering how *APSED (2010)* will be implemented, the collective and coordinated actions of Member States, technical experts, WHO and partners will be essential in ensuring that the goals and objectives are achieved. A multisectoral approach is most likely to enhance coordination, collaboration and harmonization among multiple national and regional stakeholders. It is of critical importance that capacity-building is supported by sustainable financing mechanisms and adequate human resources. Thus, countries and partners will be requested to develop and support a strategic approach to mobilizing the necessary resources to implement the Strategy at country and regional levels.

In order to ensure effective coordination and oversight of the Strategy, it is expected that the Asia Pacific Technical Advisory Group (TAG) on Emerging Diseases will continue to function. The TAG will be the key mechanism for provision of technical advice on the development and implementation of the Strategy.

SECTION 3: Focus Areas and Actions

This section describes each focus area, including its key components and proposed strategic actions that should be implemented for systematic capacity-strengthening.

Table 3.1 *APSED (2010)* focus areas and key components

Focus area	Key components
1. **Surveillance, risk assessment and response**	▪ Event-based surveillance ▪ Indicator-based surveillance ▪ Risk assessment capacity ▪ Rapid response capacity ▪ Field epidemiology training
2. **Laboratories**	▪ Accurate laboratory diagnosis ▪ Laboratory support for surveillance and response ▪ Coordination and laboratory networking ▪ Biosafety

3. **Zoonoses**	▪ Coordination mechanism for:
	  o sharing of surveillance information
	  o coordinated response
	  o risk reduction
	  o research

4. **Infection prevention and control**	▪ National infection prevention and control (IPC) structure ▪ IPC policy and technical guidelines ▪ Enabling environment (e.g. facilities, equipment and supplies) ▪ Supporting compliance with IPC practices
5. **Risk communications**	▪ Health emergency communications ▪ Operation communications ▪ Behaviour change communications
6. **Public health emergency preparedness**	▪ Public health emergency planning ▪ National IHR Focal Point functions ▪ Points-of-entry preparedness ▪ Response logistics ▪ Clinical case management ▪ Health care facility preparedness and response
7. **Regional preparedness, alert and response**	▪ Regional surveillance and risk assessment ▪ Regional information-sharing system ▪ Regional preparedness and response
8. **Monitoring and evaluation**	▪ Country-level monitoring (including workplan and APSED/IHR indicators) ▪ Regional-level monitoring: Technical Advisory Group ▪ Evaluation

3.1 Surveillance, risk assessment and response

Surveillance, risk assessment and outbreak response capacity is a prerequisite for effective management of emerging disease outbreaks and other acute public health events. Effective national surveillance systems generate reliable information for timely risk assessment that informs rapid public health actions.

3.1.1 Key components

The key components required for an effective system of surveillance, risk assessment and response at the national and local levels are:

- event-based surveillance (EBS);

- indicator-based surveillance (IBS);

- risk assessment capacity;

- rapid response capacity;

- field epidemiology training (FET).

EBS is the organized and rapid capture of information about events that are a potential risk to public health. Information may be found in internet-accessible information sources such as news media sites, disease reporting networks, and other ad hoc reports transmitted through formal and informal channels. EBS can provide near real-time data on potential and confirmed disease outbreaks and other public health events, including events related to the occurrence of disease in humans, such as clusters of cases of disease and events related to potential human exposure (e.g. diseases and deaths in animals, contaminated food or water, and environmental hazards, including chemical, radiological and nuclear events).

Figure 3.1   Surveillance, risk assessment and response framework
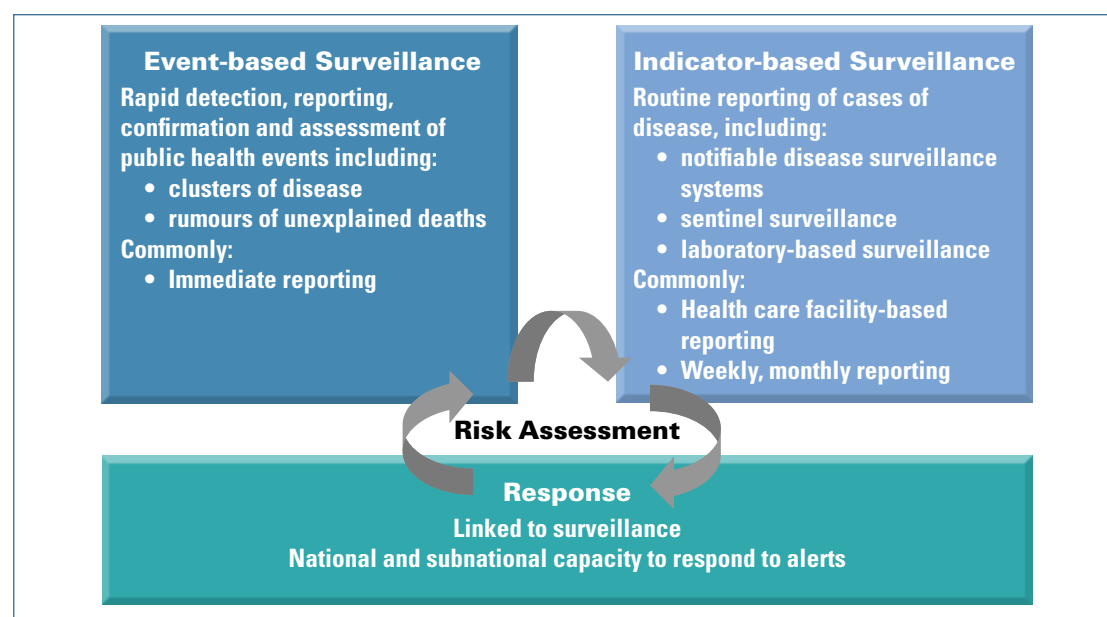
IBS is the systematic collection and analysis of timely, reliable and appropriate data on priority diseases, syndromes and conditions. Data collection follows a predefined format and includes specific case or syndrome definitions. Data reporting and analysis occur regularly, typically once a week, and alert or epidemic thresholds are often used to identify outbreaks. IBS aims at outbreak detection, monitoring of disease trends and disease control programmes and programme planning. Use of appropriate information and communication technology (ICT) tools may aid in improving the quality of collection and collation of surveillance data at the national and local levels.

Risk assessment is a systematic process for gathering, assessing and documenting information to assign a level of risk for a potential public health event. This enables objective evidence-based decisions while giving consideration to the uncertainties and limitations of the information available at a particular point in time. It involves understanding the identity and character of a hazard and evaluating the risk of an adverse outcome in a population following exposure to that hazard. The process can also assess the risk associated with potential intervention measures. During an event, risk assessment is an ongoing process, not a one-time activity.

Rapid response capacity in this context refers to the ability to mobilize a routine and rapid investigation of and response to public health events at national and local levels. This includes development and deployment of rapid response teams (RRTs) to any level in the public health sector.

IBS and EBS are complementary and both are essential components of national surveillance systems. Surveillance information is used to help risk assessment, which in turn informs public health actions. Surveillance, risk assessment and response often require effective multilevel, multidisciplinary and multisectoral coordination. *APSED (2010)* provides a framework for Member States to create a robust system of surveillance, risk assessment and response that includes the above interlinked components, as described in Figure 3.1.

The surveillance and response system should be sensitive and broad enough to allow detection of other public health events, including non-infectious disease events (e.g. chemical and food safety-related events) and flexible enough to be adapted to special situations (e.g. mass gatherings, natural disasters). The surveillance and response priorities of each country should be informed through risk mapping so that any identified needs can be met.

FET has proved invaluable in establishing national capacities for early detection, prompt investigation and effective response to public health events. FET focuses on learning by doing in a work setting and building competencies applicable to emerging disease outbreaks and other public health events.

3.1.2 Strategic actions

- Continue to strengthen the existing EBS, IBS and rapid response components of national surveillance and response systems.

- Expand the scope of training of RRTs to support an all-hazards approach, with a specific focus on the initial assessment of events.

- Strengthen risk assessment capacity at all levels.

- Conduct national risk and vulnerability mapping to identify threats to public health, exposure factors, and the risk and protective factors that increase or decrease the adverse impact of an outbreak or other acute public health event on the population at risk.

- Build on existing mechanisms to promote and strengthen multidisciplinary and interagency coordination for surveillance, risk assessment and response.

- Consider the use of appropriate information and communication technology tools to support surveillance, risk assessment, and response activities.

- Strengthen field epidemiology training.

3.2 Laboratory

Efficient and reliable public health laboratory services are an essential component of any public health system that aims to effectively respond to emerging diseases.

Timely, accurate laboratory diagnosis in a safe environment is a cornerstone of any surveillance and response system for emerging diseases and other public health events. Strengthening national and regional capacity for accurate laboratory diagnosis, laboratory-based surveillance and networking, and biosafety is therefore an essential component of efforts to ensure regional health security. Public health laboratory capacity-building will continue to focus on emerging diseases under *APSED (2010)*, and these activities need to be coordinated with the *WHO Asia Pacific Strategy for Strengthening Health Laboratory Services (2010–2015)* and distinct regional strategies on the prevention and containment of antimicrobial resistance.

3.2.1 Key components

The key components of laboratory capacity-building to support emerging disease management are:

- accurate laboratory diagnosis;

- laboratory support for surveillance and response;

- coordination and laboratory networking;

- biosafety.

Accurate and timely laboratory diagnosis is essential for evidence-based clinical case management and also informs surveillance and risk assessment. Strong diagnostic capacity is therefore necessary to ensure implementation of appropriate measures to

reduce risk and mitigate the impact of disease outbreaks. Laboratory capacity needs to be established in all countries for the diagnosis of potential emerging diseases. This involves ensuring that internal quality control (IQC) and external quality assurance (EQA) are in place. In addition, links with reference laboratories will further enhance the capacity of public health laboratories and help with identification of unusual or new pathogens.

Support should be given to strengthen or establish links between public health laboratories and other laboratories that may need to be involved in surveillance, risk assessment and response activities, including clinical, veterinary and research laboratories. It is also important to strengthen laboratory capacities at the local level to support early detection of disease events and more routine surveillance activities. There is a need to provide incentives to recruit and retain skilled laboratory staff at the local level (e.g. provincial and district levels).

Because laboratory capacity varies within and between countries—and experience in dealing with different infectious agents is similarly uneven—national, regional and global laboratory networks are vital to support public health surveillance and responses. Laboratory networking between local and national reference laboratories needs to be strengthened and coordination among public health, clinical, food, veterinary and other laboratories ensured. Links should also be established with regional and global reference laboratories that provide highly specialized services. For example, chemical analysis and toxicology are unavailable or unobtainable in many countries. There is also a need to advocate for the formulation of policies and agreed procedures to facilitate seamless sharing of samples, reagents, training materials, guidelines and the experiences of laboratory management between national and regional reference laboratories.

Safe laboratory environments and safe practices are required to avoid staff members and other people from becoming infected by the hazardous agents they are handling or if there is an accidental release of the agent. Laboratory biosafety is best addressed by strengthening programmes through policy development, promotion of best practices through training and quality improvement activities, and ensuring that levels of biosecurity applied to every laboratory are matched to levels of assessed risk (i.e. according to the agent handled).

3.2.2 Strategic actions

- Strengthen accurate laboratory diagnostic capacity for priority emerging diseases through national IQC and EQA.

- Strengthen laboratory support and participation in emerging diseases or public health event surveillance, risk assessment and response systems.

- Ensure effective laboratory referral systems through strengthening national, regional and international laboratory networking and coordination with other laboratory services (such as animal and food laboratories) and highly specialized laboratory services.

- Strengthen laboratory biosafety activities to ensure diagnoses of emerging diseases are conducted in safe environments.

3.3 Zoonoses

Zoonotic diseases (i.e. zoonoses) are described as diseases or infections that are naturally transmissible from vertebrate animals to humans and vice versa. Recent evidence has shown that approximately 60% of all human diseases currently recognized and about 75% of emerging diseases that have affected humans over the last three decades have originated from animals. Prevention, detection and control of zoonotic diseases are therefore essential components of any national emerging diseases programme. Regionally and globally, the importance of zoonotic diseases has been recognized with the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE), and WHO working in collaboration with each other and with other partners to contribute to the concept of "One Health".

Strengthening generic capacity in national surveillance, risk assessment and response systems, as well as other APSED focus areas such as risk communications and laboratory services, will help to ensure early recognition of, rapid response to, and prevention and control of zoonotic diseases.

Given the unique nature of zoonotic diseases, ensuring sustainable and effective coordination and collaboration mechanisms between the human and animal health sectors is vitally important and needs to be further strengthened. In addition, reducing the risk of transmission of zoonotic diseases from animals to humans often requires close collaboration and links with the food safety, environment and wildlife sectors. Experiences and lessons learned from avian influenza A (H5N1) in the region over the past few years provide a good foundation to consolidate and strengthen national and regional coordination mechanisms for surveillance information-sharing and coordinated responses by human and animal heath sectors.

3.3.1 Key components

The key components of zoonoses coordination and collaboration are:

- sharing of surveillance information;

- coordinated response;

- risk reduction; and

- research.

Timely sharing of data collected through human health, animal health and food safety surveillance networks is critical to facilitate early reporting of zoonoses of public health importance. Coordination between human health, animal health, wildlife and other sectors will facilitate rapid epidemiological investigation and risk assessment of events and implementation of any required control measures. Advocacy is required to explore ways to consolidate, improve and sustain such coordination and collaboration mechanisms.

Reducing the risk of disease transmission at the human–animal interface is key to zoonoses prevention. In the past, it has occasionally been necessary to apply urgent interventions in a somewhat ad hoc manner because good evidence on risk-reduction measures was unavailable. A greater effort is therefore required to further identify and implement evidence-based measures to reduce the risk of animal-to-human transmission in a more sustainable way.

This will require collaborative research on zoonotic diseases in order to provide evidence for intervention and policy formulation. Strengthening operational research activities will require investment by both the animal and human health sectors.

Figure 3.2 Zoonoses coordination mechanism
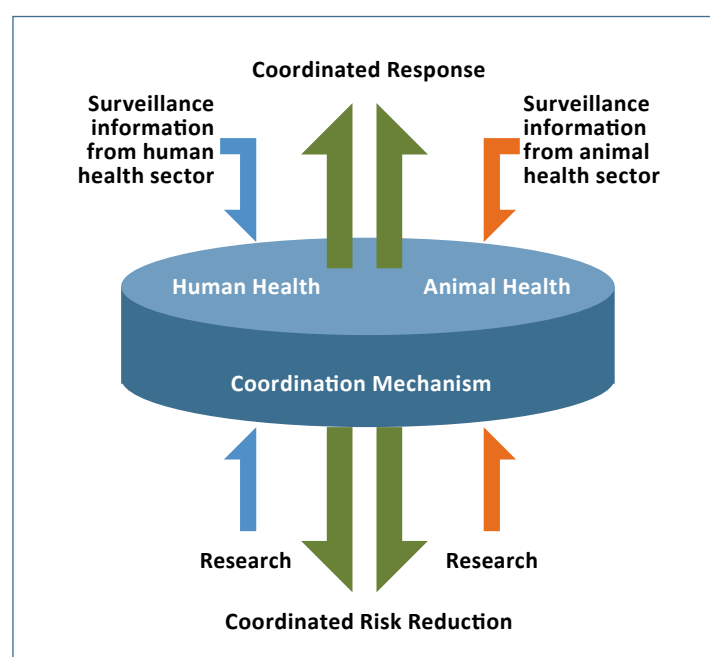
3.3.2 Strategic actions

- Continue to strengthen and maintain existing zoonoses coordination and collaboration mechanisms for sharing of information and coordinated response through links or connections with surveillance, risk assessment and response systems in the human health, animal health, wildlife and food safety sectors.

- Determine long-term risk-reduction measures for priority zoonoses and implement sustainable risk-reduction activities through promoting best practices at the human–animal interface, collaborating with food safety programmes and implementing appropriate risk communications activities.

- Identify and strengthen collaborative operational research on zoonoses and share research findings and lessons learnt in a timely manner to inform public health action, whenever appropriate.

3.4 Infection prevention and control

Establishing effective infection prevention and control (IPC) practices in health care settings is essential to reduce the risk of transmission of emerging diseases to health care workers, patients, their families and the community. Systematic establishment of good IPC practices is a challenge, and there is room for significant improvement in many hospitals and other health care facilities in the region. IPC is not always considered a priority in many countries when compared with other activities required for responding to an outbreak.

Good IPC practices are especially important in health care facilities when outbreaks occur because of the risk that facilities will become epicentres for the spread of infection. In addition, infections in staff can critically affect delivery of health care services and provision of surge capacity when it is most needed.

It is important to acknowledge that IPC measures applied during an outbreak should be built on a solid foundation of good daily practice, i.e. that high-quality IPC practice in hospitals and other health care facilities are a prerequisite for effective outbreak response. There is now widespread consensus on the infrastructure and policies that should be established to underpin good IPC practice. Much remains to be done, including advocacy for implementation. Local IPC experts should be supported to be effective practitioners, trainers and advocates. Similarly, national centres of excellence should be identified, acknowledged and supported to eventually become IPC resources for countries and the region.

3.4.1 Key components

The following components have been identified as priorities under the Strategy:

- national IPC structure;

- IPC policy and technical guidelines;

- enabling environment (including facilities, equipment and supplies); and

- supporting compliance with IPC practice.

The establishment of effective IPC practice is best achieved by establishing strong IPC programmes, starting with health care facilities at the national level. These programmes should be led by multidisciplinary IPC committees and underpinned by dedicated staff, appropriate surveillance systems and mechanisms for quality improvement.

IPC policies and technical guidelines should be determined at the national level and adapted for local implementation.

Effective IPC practice also require establishment of safe working environments, including the physical infrastructure of hospitals and other health care facilities, regular supply of commodities and good administrative controls (e.g. arrangements for safe and appropriate management of health care waste).

Implementation of appropriate IPC practice can be monitored in a number of ways, including surveillance for hospital-acquired infections and antimicrobial resistance. However, standards of practice are probably ensured most effectively by establishment of programmes for continuous quality improvement (e.g. audit followed by feedback and support to address any issues identified).

3.4.2 Strategic actions

- Conduct IPC needs assessments that are helpful for advocacy, policy development, and monitoring and evaluation.

- Establish and strengthen organizational structure of national IPC programmes, including strengthening national and local multidisciplinary IPC committees, designating an IPC focal point within the Ministry of Health, and establishing a national IPC resource centre.

- Develop and implement evidence-based IPC policies and technical guidelines.

- Enable a supportive environment for IPC practice, including facilities, equipment and supplies.

- Establish mechanisms to support compliance with IPC practice.

- Identify and support national and regional IPC experts and centres of excellence to become agents of change.

3.5 Risk communications

Risk communications for public health emergencies encompass a broad range of communication capacities required during the preparedness, response and recovery phases of a serious public health event. Risk communication activities are particularly important in supporting the management of any acute public health event, especially at an early stage when decisive action has to be taken in the context of uncertainty. Effective risk communications also make a fundamental contribution to the management of emerging

diseases and other public health threats by informing decision-making, encouraging positive behaviour change and maintaining public trust.

3.5.1 Key components

The key components of risk communications are three interlinked functional areas that were identified during past outbreak responses, namely:

- health emergency communications
- operation communications
- behaviour change communications.

Health emergency communications refer to the rapid dissemination of information and health messages to target audiences during a health emergency. The objectives of health emergency communications are to build public trust, enable and empower populations to adopt protective measures, reduce confusion, and facilitate enhanced disease surveillance. This component includes the initial announcement and information dissemination through mass media.

Operation communications are the timely exchange of information among internal stakeholders including health authorities, clinicians, laboratories, decision-makers and other disciplines and sectors. Effective operation communications ensure coordinated response and keep decision-makers informed of the situation, enabling them to make informed choices on possible next steps and policy changes. In addition, operation communications should also take into consideration inter-country communications, especially when disease outbreaks or other public health emergencies affect cross-border areas.

Behaviour change communications refer to the establishment and implementation of health promotion programmes for prevention and control of emerging diseases and other threats to public health, including the promotion of protective behaviours and social mobilization during public health emergencies. Behaviour change communications adopt a long-term approach and work closely with communities.

Capacity-building efforts to date have largely focused on ad hoc outbreak communications and behaviour change initiatives during acute public health events. *APSED (2010)* will seek to strengthen risk communications capacity more systematically through the formulation and implementation of functional plans that establish a clear mandate for communications. It will also identify an organizational framework for the three communications components in order to strengthen overall risk communications capacity in a proactive rather than a reactive manner. This approach is illustrated in Figure 3.3.

Figure 3.3 Structure of risk communications and corresponding needs

Mandate for risk communications

Risk communications incorporated as a division under the Ministry of Health or equivalent ⟷ Public communications coordination with external stakeholders/departments

HEALTH EMERGENCY COMMUNICATIONS

Quick and accurate dissemination of information during a public health event or crisis.

Components
- Assessment for communication needs, including level of uncertainty
- Preparation for first announcement
- Standard operating procedures/ structure for media relations
- Command and control
- Information dissemination structure
- Identification of spokespersons
- Communications channel
- Media training

OPERATION COMMUNICATIONS

Timely exchange of information among public health authorities and with decision-makers to ensure a smooth chain of command and coordination.

Components
- Standard operating procedures for operation communications
- Chain of command within organization
- Identification of stakeholders and parties involved
- Decision-making process
- Clearance and approval structure and processes

BEHAVIOUR CHANGE COMMUNICATIONS

Delivery of health programmes through health promotion—i.e. encouraging the active prevention of disease and outbreaks through positive behaviour changes. It involves social mobilization.

Components
- Setting up of informal/community network and feedback channel
- Resource and logistical mobilization
- Stakeholder coordination
- Identification of cultural, social and economic factors that may affect behaviour change
- Listening through dialogue

3.5.2 Strategic actions

- Establish and promote risk communications concepts and a framework to ensure common understanding, interpretation and best practices of risk communications.

- Establish and enhance risk communications infrastructure (such as a risk communications unit) and coordination mechanisms to strengthen institutional

capacity. Consideration should also be given to development of ICT infrastructure to improve the speed of communications and to keep up to date with developments in social and online networking, which are increasingly becoming popular sources of news.

- Share risk communications best practices by building on real-world experiences, gained through responding to public health emergencies.

3.6   Public health emergency preparedness

Public health emergencies, particularly those events caused by outbreaks of emerging diseases, pose a serious threat to national and regional health security. Recent experience has demonstrated that effective preparedness can ensure a rapid public health emergency response and minimize negative health, economic and social impacts.

Building on lessons learnt from the pandemic preparedness and response planning under APSED over the past five years and experience gained through responding to pandemic influenza (H1N1) 2009, this focus area addresses the need for preparedness planning for public health emergencies caused by emerging diseases and other acute public health events. Since there are significant commonalities between pandemic preparedness and emergency planning for other acute public health events, *APSED (2010)* promotes a generic approach to public health emergency preparedness and response planning and threat-specific plans.

Figure 3.4 Two-tiered approach for public health emergency preparedness
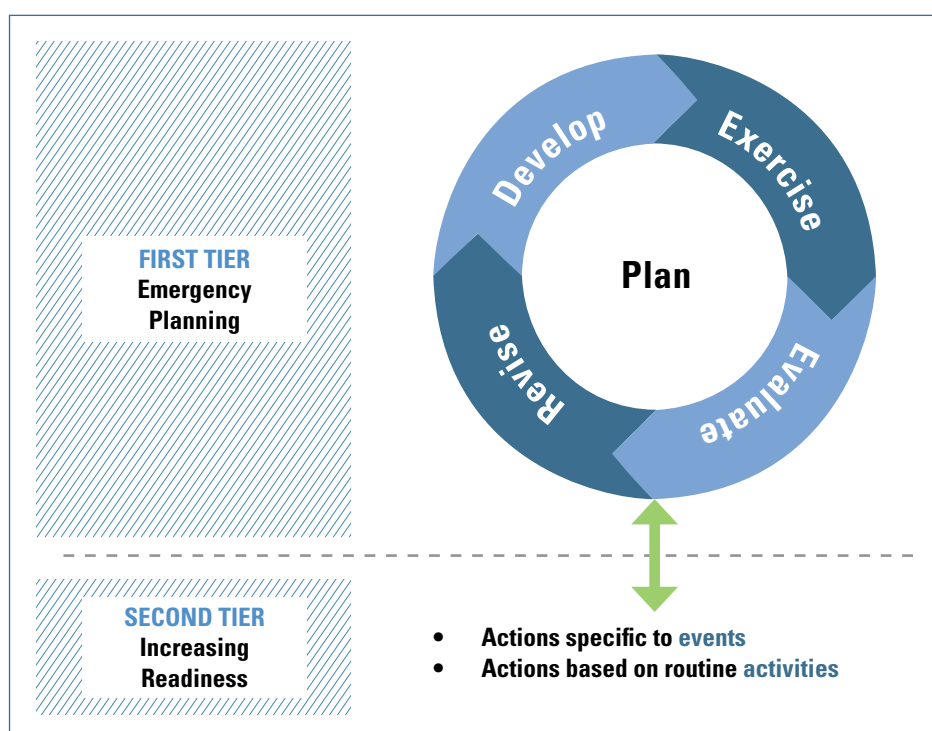
Through experience and lessons learnt from pandemic preparedness, public health emergency preparedness should involve a two-tiered approach, as described below.

- **Emergency planning**: The first tier is to formulate, exercise, evaluate and revise a public health emergency response plan. Experience with exercising and revising these plans explicitly highlights the need to ensure a continuous cycle of developing and maintaining up-to-date emergency response plans.

- **Increasing readiness**: The second tier is to increase readiness and capacity to activate the plan. This effort can involve strengthening event-specific activities (such as stockpiling essential medicines for treatment and personal protective equipment), and actions related to routine generic capacity-building.

Many routine activities intended to improve readiness (such as strengthening surveillance, risk assessment and response systems, and risk communications) have already been described in the document. This focus area describes public health emergency planning with an emphasis on the continuous planning cycle and some specific preparedness activities that are critical but not yet addressed as separate focus areas under this Strategy, such as the National IHR Focal Point functions, clinical case management and response logistics.

The key components (preparedness activities) requiring specific attention to ensure effective public health emergency preparedness and response under this focus area are:

- public health emergency planning;

- National IHR Focal Point functions;

- points-of-entry preparedness;

- response logistics;

- clinical case management; and

- health care facility preparedness and response.

3.6.1 Public health emergency planning

Experience in recent years indicates that high impact public health events occur in the Asia Pacific region on a regular basis. Advance planning helps to identify and engage important partners, builds capacity and infrastructure, and provides operational links to ensure that a structured and coordinated response will follow when a public health emergency occurs. Many countries reported that the process of formulating and testing national preparedness plans was critical in supporting their responses to pandemic influenza (H1N1) 2009. This experience provides clear proof of the usefulness and importance of continuous public health emergency planning.

Public health emergency planning involves the formulation, validation, evaluation and revision of public health emergency response plans. This implies that plans should be updated regularly and be flexible enough to adapt to changing needs during a public health emergency response.

Two options can be considered when formulating and maintaining such public health emergency response plans within the health sector.

- A step-by-step approach to formulate an overarching generic public health emergency preparedness and response plan. Building on the experience of developing a national pandemic preparedness and response plan, a generic preparedness and response plan for all emerging diseases can be developed. Such a plan can then link to or expand to cover other public health events, such as food safety events. Links may also be established with emergency response plans for other events, including natural disasters and humanitarian emergencies.

- Specific plans can be formulated for a disease or event (e.g. an influenza pandemic response plan, a food safety emergency response plan).

APSED recommends that its focus areas are addressed and that streamlined coordination mechanisms be fully used to identify synergies while maximizing use of limited resources and infrastructure.

The key actions are:

- integrate the national pandemic preparedness and response plan into a public health emergency plan for all emerging diseases;

- formulate a generic public health emergency preparedness and response plan to address emerging diseases and other acute public health events (e.g. food safety events) for which the health sector is primarily responsible, and where appropriate, link with other emergency response plans;

- test and update the plan through regular exercises (e.g. table-top and field simulations); and

- establish tools, mechanisms and processes for multidisciplinary risk assessment and decision-making for significant public health emergencies.

3.6.2 National IHR Focal Point functions

National IHR Focal Points (NFPs) play a vitally important role in facilitating IHR event communications and information-sharing related to public health events and emergencies. Strengthening NFP functions and capacities therefore contributes to improvement of overall public health emergency management. The experience of responding to pandemic influenza (H1N1) 2009 clearly demonstrated how critical the

role performed by the NFP is and that the NFP should be part of national structures for public health emergency preparedness and response. Mandatory functions of the NFP under IHR (2005) include:

- sending urgent communications concerning IHR (2005) implementation to the WHO IHR Contact Point, in particular those communications related to event notification, reporting, consultation, verification, providing information, and determining whether an event is a public health emergency of international concern (PHEIC); and

- disseminating to and consolidating information from relevant government departments and other sectors within the country, including those entities responsible for surveillance and response, points of entry (POE), public health services and hospitals.

Although the functions of the NFP are well defined, the departments or units designated by countries to undertake these functions vary considerable in terms of their location, roles and capacities. While the NFP role in many countries is based in a communicable disease unit or in an emergency response unit, the NFP task is also carried out by different offices in other countries. In terms of function, while some NFPs carry out both communication and coordination, others focus primarily on IHR event communications.

Three options are available regarding the roles and responsibilities of NFPs.

- Primarily serve to facilitate IHR event communications for all public health events.

- Facilitate IHR communications for all public health events and coordinate IHR-related activities only for infectious disease events.

- Facilitate both IHR communications and coordination for all public health events.

The key actions are:

- establish, update, test and implement standard operating procedures that address terms of reference, roles and responsibilities of the NFP, as well as implementing structures, communication and/or coordination links with national stakeholders and WHO; and

- strengthen the NFP role in information-sharing through the use of the secure IHR Event Information Site (EIS) and facilitating intercountry communications, when appropriate.

3.6.3 Points-of-entry preparedness

The adoption of IHR (2005) represents the following "paradigm shift" involving a number of major changes in managing public health events:

- from a fixed list of diseases to all public health events and emergencies;

- from control of borders to also containment at source; and

- from preset measures to adapted responses.

With this paradigm shift, and as part of the national and international collective defence system for health security, POE now have a different role to play in detecting and responding to acute public health events and emergencies of national, regional and international concern.

The POE role can better be appreciated if it is placed in the context of the overall national and international systems for managing emerging diseases and public health emergencies. Collective efforts in managing public health risks and events at POE, effective POE public health emergency planning, sharing information, coordination and establishment of consistent border health measures can all contribute to national and international health security.

Strategic approaches to strengthening the POE public health function include use of existing tools, guidelines, facilities and services to strengthen routine public health functions at POE; encouraging POE participation in national and local systems for surveillance and response; emphasis on the importance of pre-arrangements with relevant agencies and service providers to ensure effective emergency preparedness and response; and encouraging regional collaboration and networking of POE public health authorities to ensure coordinated and consistent public health measures at international borders, when appropriate.

The key actions are:
- facilitate high-level advocacy and sensitization regarding the role of POE under IHR (2005) for both routine measures and emergency response;

- prioritize POE designation and build IHR core capacity at designated POE, especially through POE public health emergency planning in the context of the overall national public health emergency response structure; and

- promote regional and international partnership and collaboration on managing public health events and emergencies at POE.

3.6.4 Response logistics

In response to significant outbreaks of emerging diseases in recent years, countries in the Asia Pacific region have expressed the need to build and strengthen capacity for response logistics as an essential component of the response to emerging diseases and other acute public health events.

Response logistics goes beyond routine supply-procurement processes and applies to situations in which there is an urgent need to provide rapid logistics support, including deploying human resources, setting up communications, ensuring security, and arranging for the collection and shipment of clinical specimens in a compressed time frame. Coordination is essential to ensure timely and effective response logistics support when undertaking these activities during a disease outbreak or public health emergency.

The key actions are:

- advocate and promote the importance of response logistics within the heath sector among national policy-makers, health officials and others;

- formulate a clear model for response logistics, including coordination mechanisms to be used during a public health emergency situation;

- ensure human resource development (e.g. trained outbreak response logisticians); and

- establish a more comprehensive response logistics system within existing health structures to support outbreak and public health emergency response.

3.6.5 Clinical case management

Delivery of high-quality clinical care is critical to minimize morbidity and mortality during any outbreak of an emerging disease. Although raising overall standards of clinical practice is beyond the scope of APSED, delivery of high-quality clinical case management for emerging diseases can be strengthened in some key areas.

The diversity of the Asia Pacific region results in significant variations in patterns of infectious diseases. Experience has also shown that these patterns change over time and that novel diseases emerge and spread, driven by factors including urbanization, climate change and international travel. It is critical that clinicians in all countries, including critical care specialists, are supported to rapidly identify and treat infectious disease cases in order to apply appropriate therapeutic and IPC measures. In addition, a vital need exists to ensure regional mechanisms are in place to facilitate sharing of information between clinicians on the features of emerging diseases, as well as diagnostic techniques and modalities of treatment.

It is also important to acknowledge the role that health care workers play in recognizing changes in known emerging diseases, and in the initial detection of new emerging diseases. Both of these are important events that require prompt reporting to public health authorities. Therefore, it is also important to establish strong links between health care and public health systems, both to facilitate rapid reporting of events by clinicians to surveillance departments and to ensure that public health authorities subsequently disseminate important information to relevant individuals throughout the health care system.

The key actions are:

- establish arrangements to allow mobilization of experts in clinical management to provide on-the-ground support if needed through the Global Outbreak Alert and Response Network (GOARN) or local networks;

- facilitate information exchanges on clinical management issues by connecting clinicians who have information needs to others with disease-specific expertise and specialist knowledge on clinical case management; and

- formulate relevant guidelines and training materials and distribute them in a timely manner during an outbreak.

3.6.6 Health care facility preparedness and response

During an outbreak of an emerging disease, most severely ill patients will be diagnosed and treated in a health care facility. However, during large outbreaks, demand for care can exceed normal delivery capacity, so plans need to be established to deal with this situation.

Health care facility preparedness and response plans should provide a comprehensive framework for responding to any emerging disease outbreak. They normally will include planning for providing surge capacity (for screening and triage, beds, staff, laboratory testing and communications), prioritization of treatment, supplies of consumables, and plans to strengthen clinical management and IPC. Individual facility plans should also be coordinated with the preparedness and response plans of other health care facilities in the same area in order to use resources in the most efficient way during a large-scale public health event.

Planning for delivery of health care during a large outbreak also needs to be coordinated at local and national levels. At the local level, plans for individual health care facilities should take into account existing "civil society" structures (e.g. health care volunteer organizations) and there must be coordination between health care facilities (e.g. a common understanding of protocols for transfer of patients). At the national level, information on hospital admissions, use of emergency services and use of consumables should be collected on a daily basis and analysed to ensure the most efficient and equitable delivery and coordination of health services.

The key actions are:

- formulate national guidance and training materials on health care facility preparedness and response planning and support planning process;

- establish arrangements for quality assessment of health care facility preparedness and response plans, including testing with table-top exercises and field simulations, and revision of the plans as indicated; and

- strengthen national coordination and oversight of health care delivery during a large outbreak to address surge capacity and ensure efficient and equitable delivery of health services.

3.7 Regional preparedness, alert and response

Threats to public health, such as emerging diseases, go beyond national borders. IHR (2005) places a requirement on WHO to strengthen regional and global systems and capacity for surveillance, risk assessment and response in order to support countries by ensuring that rapid and appropriate support can be provided for these activities in response to acute public health events.

3.7.1 Key components

The key components of regional preparedness, alert and response are:

- regional surveillance and risk assessment;
- regional information-sharing system; and
- regional preparedness and response

Effective surveillance and risk assessment at the regional level relies upon having established event-based and indicator-based surveillance systems, as it does at the country level. Regional event-based surveillance involves collecting and analysing information about events that may be a potential risk to regional public health. These data are collected by using informal and formal information sources, such as media reports and government statements and official IHR communications. Regional indicator-based surveillance involves the collation of routinely reported national disease data at the regional level, accompanied by timely analysis and joint risk assessment. Surveillance has the potential to provide an additional early warning system for all countries, particularly for diseases such as dengue that can spread rapidly across the region. Regional risk assessment is conducted to identify and characterize public health threats and to evaluate any associated risks. Risk assessments are conducted daily by WHO on event-based data and reports on priority diseases in order to ensure that WHO is operationally ready to support countries at any time, as required under IHR (2005).

Regional information-sharing is an essential part of an effective preparedness, alert and response system. Timely and accurate sharing of information at the regional level helps inform evidence-based public health actions. Information that may be useful in informing optimal public health action can include immediate information on acute public health events, real-time information on evolving public health events, surveillance data, guidelines, reports, examples of best practices in the control of emerging diseases, and publications on regionally relevant epidemiological and other findings.

Regional response is the capacity to provide or facilitate support to countries during a response to an acute public health event, such as a disease outbreak, a food safety

event, or a release of toxic agents. Ensuring this response capacity, which may include accessing existing networks and regional stockpiles, is an essential component of regional preparedness.

3.7.2 Strategic actions

- Strengthen regional surveillance and risk assessments by establishing a regional indicator-based surveillance system for priority diseases and rapid feedback mechanisms for surveillance information.

- Strengthen the regional surveillance system for public health emergencies.

- Strengthen the regional information-sharing system to help provide more relevant and reliable data to inform evidence-based public health action.

- Strengthen comparability of national data at the regional level through a number of initiatives, including drawing up a minimum data set for rapid assessment of novel (previously unknown) diseases.

- Strengthen technical response networks through expanding and using GOARN partners and other experts in the identification, preparation and response to acute public health events.

- Build networks of relevant experts and strengthen links between national and reference laboratories to enable access to specialized laboratory services for emerging diseases and other public health threats.

3.8 Monitoring and evaluation

Monitoring and evaluation (M&E) are integral components of *APSED (2010)* and its implementation. Robust M&E is fundamental to meet two critical management needs: accountability and learning. In the context of this Strategy, accountability can be defined as the ability to demonstrate that the Strategy is effective in achieving its objectives, that its priorities are appropriate, and that resources have been used optimally. Similarly, learning (within the context of M&E) can be defined as understanding what is working and what can be done better, which in turn helps to ensure that decisions are based on evidence, facilitating continuing improvement.

3.8.1 Key components

A combination of country- and regional-level components is proposed to strengthen the M&E system under the Strategy:

3.8.1.1 Country level

- Country workplans
- APSED/IHR indicators

Establishment of national workplans to achieve APSED (2010) objectives will support a structured approach to capacity-building. Clear timelines and progress indicators to monitor workplan implementation can then be used to monitor implementation of APSED, as well as the progress of national capacity-building towards IHR (2005) compliance, when appropriate. Country workplans enable countries to assess their own progress and identify needs and opportunities. This approach may be particularly useful to facilitate donor coordination for resource-limited countries.

A number of APSED indicators will be identified and monitored at the regional level. These indicators will be selected from the IHR Monitoring Framework for monitoring progress in the implementation of IHR core capacities in State Parties and supplemented, where necessary, by indicators set up for areas requiring specific consideration under APSED (2010). Countries also may wish to consider referring to these APSED indicators as the basis for a national tool to monitor capacity-building. Whenever possible, M&E indicators from relevant existing programmes can be utilized to reduce the burden of data collection.

3.8.1.2 Regional level

- TAG mechanism (or equivalent)

The annual Technical Advisory Group (TAG) meeting, or its equivalent, also performs a monitoring role by reviewing progress made in the past year and making recommendations to provide a focus for implementation in the forthcoming year. It is a unique forum for countries, technical experts and partners to meet and discuss APSED issues and share experiences with counterparts in the Asia Pacific region.

Figure 3.5 *APSED (2010)* **monitoring and evaluation structure**
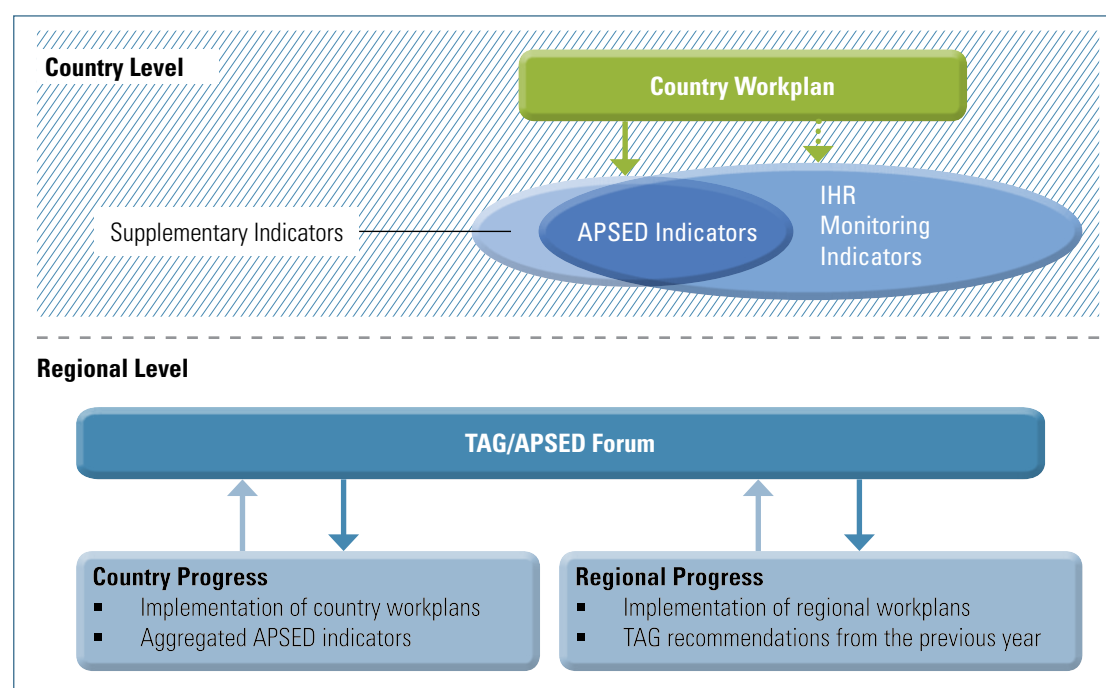
Strengthening M&E activities at this level will help identify national gaps in M&E and improve each country's capacity.

External evaluation will be conducted at the conclusion of the Strategy implementation period, when appropriate and agreed upon by concerned countries. However, a balance is needed to ensure that M&E helps build country capacity and improve country ownership.

3.8.2 Strategic actions

- Strengthen the capacity of countries to implement M&E tools and systems, including use of the IHR Monitoring Framework.

- Enhance the M&E function of the TAG to become a more robust annual monitoring mechanism e.g. through reviewing annual aggregated data from the IHR questionnaire and encouraging Member States to participate in the annual TAG meeting, or its equivalent.