Current and Future Direction of One Health Education in Korea

2023. 9. 13

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College of Veterinary Medicine,

Seoul National University, Korea

Contents

- ❖ Background
- ❖ One Health Education in Korea
- ❖ Future direction in Education
- ❖ Conclusions

Background

Continuous spillover during the last few decades

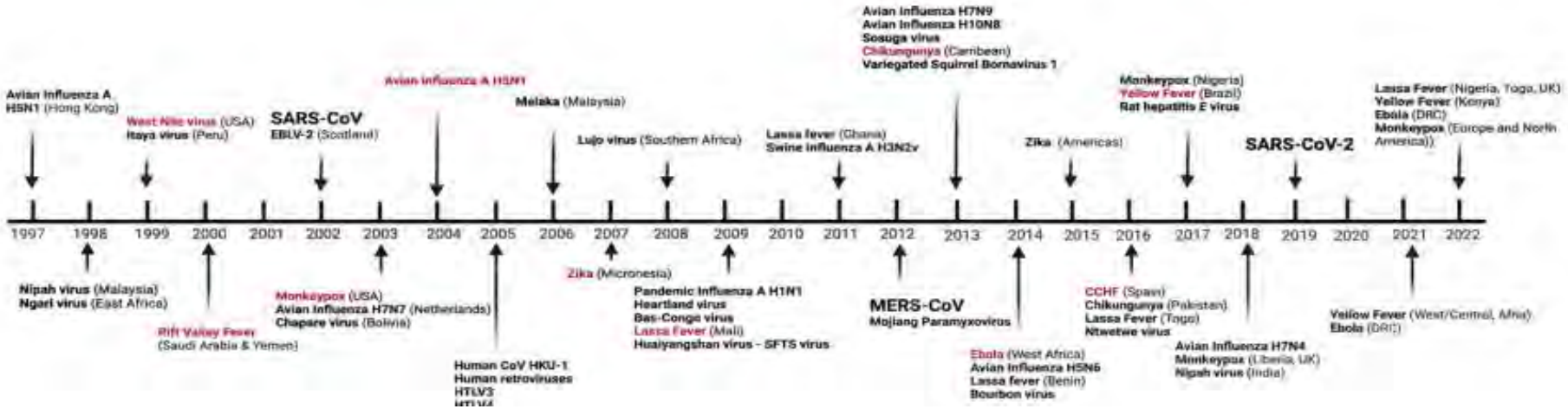


Fig. Time line of the emergence and repeat spillovers to humans for a sample of RNA viruses and Monkey pox virus from 1997 to present.

Keusch GT. et. al., PNAS, 119(42), e2202871119, 2022

Background

H3N2v
2011
Pigs

BSE
1986/1993
Cow

H7N9 AI
2003
Live bird Mkt

HPAI H5N1
1997/2003
Water bird

HPS
1993
Rodent

H10N8 AI
2013
Live bird Mkt

E. coli O157
1982
Cow/Food

SFTS virus
2009
Goats/cattle

H1N1pdm
2009
Swine/Bird

H9N2 AI
1999
Chikens

West Nile
1999
Bird/Mosquito

SARS-CoV
2003
Civet/Bats

VzHF
1991
Rodents

Hendra virus
1994
Horse/Bats

BzHF
1994
Rodents

Lassa
1969
Rodents

Ebola
1976/2014
Monkey/Bats

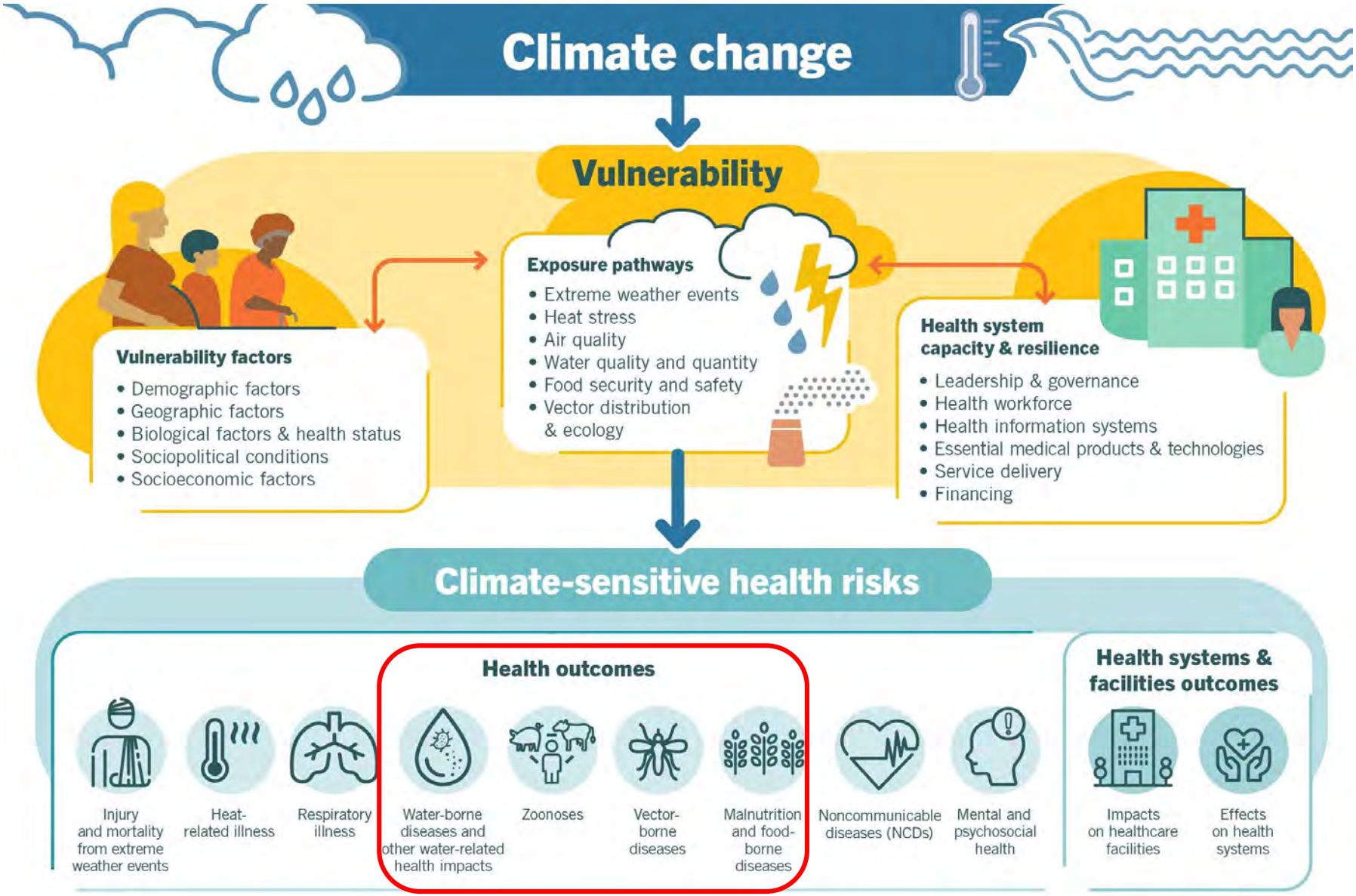
Chikungunya
1982
Mosquito

Zika
1982
Mosquito

Nipah virus
1998
Pigs/Bats

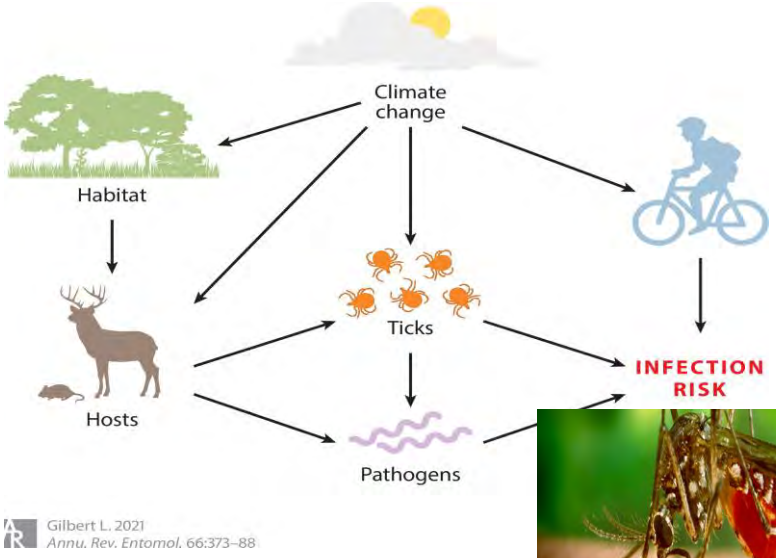
(Pathogen, Year, Natural reservoir)

Background

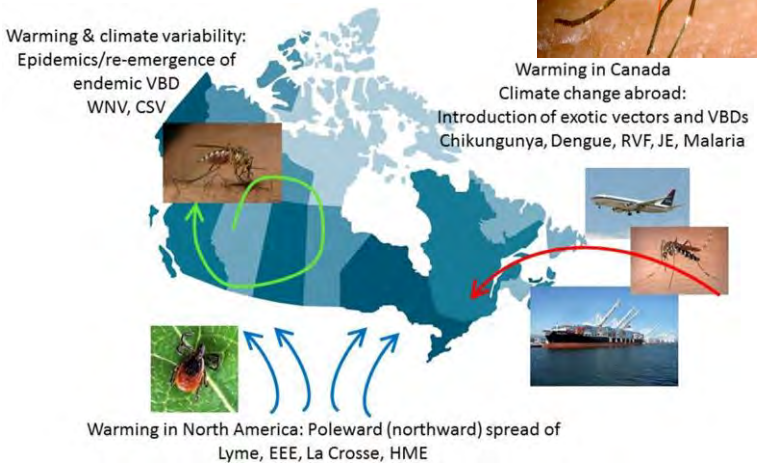

Climate change
Vulnerability
Vulnerability factors
• Demographic factors
• Geographic factors
• Biological factors & health status
• Sociopolitical conditions
• Socioeconomic factors
Exposure pathways
• Extreme weather events
• Heat stress
• Air quality
• Water quality and quantity
• Food security and safety
• Vector distribution & ecology
Health system capacity & resilience
• Leadership & governance
• Health workforce
• Health information systems
• Essential medical products & technologies
• Service delivery
• Financing
Climate-sensitive health risks
Health outcomes
Injury and mortality from extreme weather events
Heat-related illness
Respiratory illness
Water-borne diseases and other water-related health impacts
Zoonoses
Vector-borne diseases
Malnutrition and food-borne diseases
Noncommunicable diseases (NCDs)
Mental and psychosocial health
Health systems & facilities outcomes
Impacts on healthcare facilities
Effects on health systems

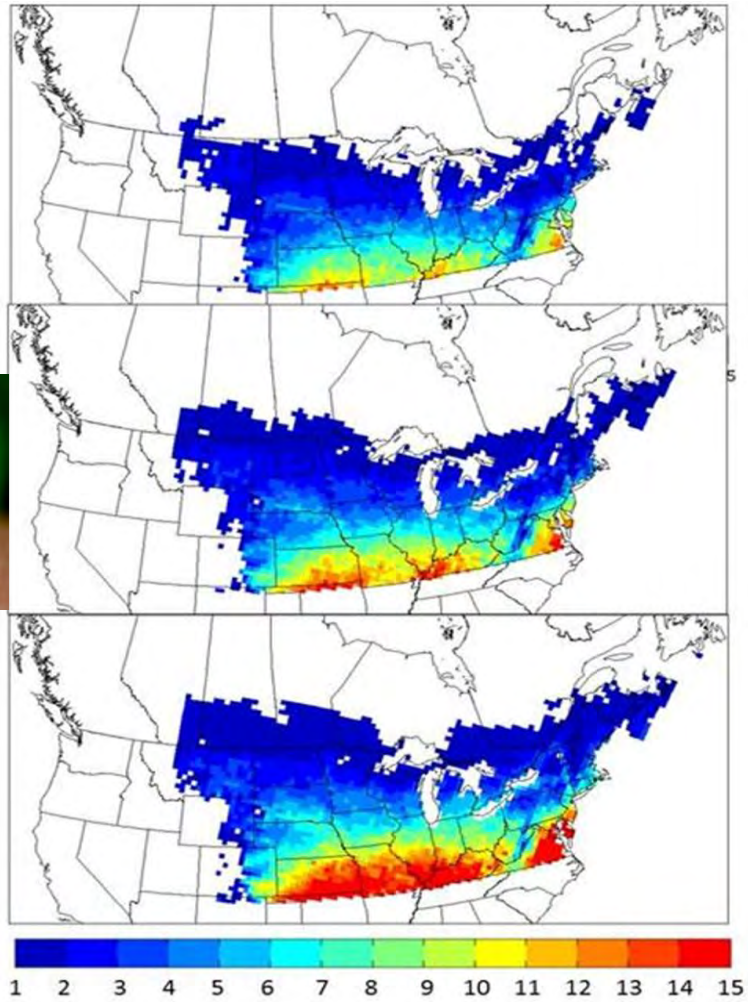
Background

Climate Changes and Vector-Borne Diseases



Gilbert L. 2021
Annu. Rev. Entomol. 66:373–88





Background

Table 3: Main vector-borne diseases

Agent	Vectors	Reservoir
Bacteria		
Rickettsia spp. (spotted fever group)	Tick: *Rhipicephalus sanguineus, Dermatocenter marginatus*	Rodents, dogs, tick
Borrelia burdgorferi (Lyme disease)	Tick: *Ixodes ricinus, I. persulcatus*	Small mammals, birds, reptiles
Anaplasma phagocytophilum	Tick: *Ixodes ricinus*	Goats, sheep, cattle, migratory birds
Viruses		
West Nile virus	Mosquitoes: *Culex spp.*	Wild rodents, migratory birds, horses
Rift valley virus	Mosquitoes: *Culex spp., Aedes spp.*	Cattle
Dengue virus	Mosquitoes: *Aedes albopictus, Aedes aegypti*	Monkeys, humans
Yellow fever virus	Mosquitoes: *Aedes aegypti*	Monkeys, humans
Chikungunya virus	Mosquitoes: *Aedes albopictus, Aedes aegypti*	Humans
Tick-borne encephalitis	Tick: *Ixodes*	Small mammals, birds, reptiles
Crimea-Congo hemorrhagic fever virus	Tick: *Ixodes spp.*	Ovines, cattle, tick
Zika virus	Mosquitoes: *Aedes spp.*	Humans, primates
Parasites		
Plasmodium spp. (Malaria)	Mosquitoes: *Anopheles spp.*	Humans
Leishmania spp.	Flebotomi: *Phlebotomus papatasi*	Dogs, foxes, rodents
Dirofilaria repens	Mosquitoes: *Culex spp., Aedes spp., Mansonia spp.*	Dogs

Background

Increase of Global Population

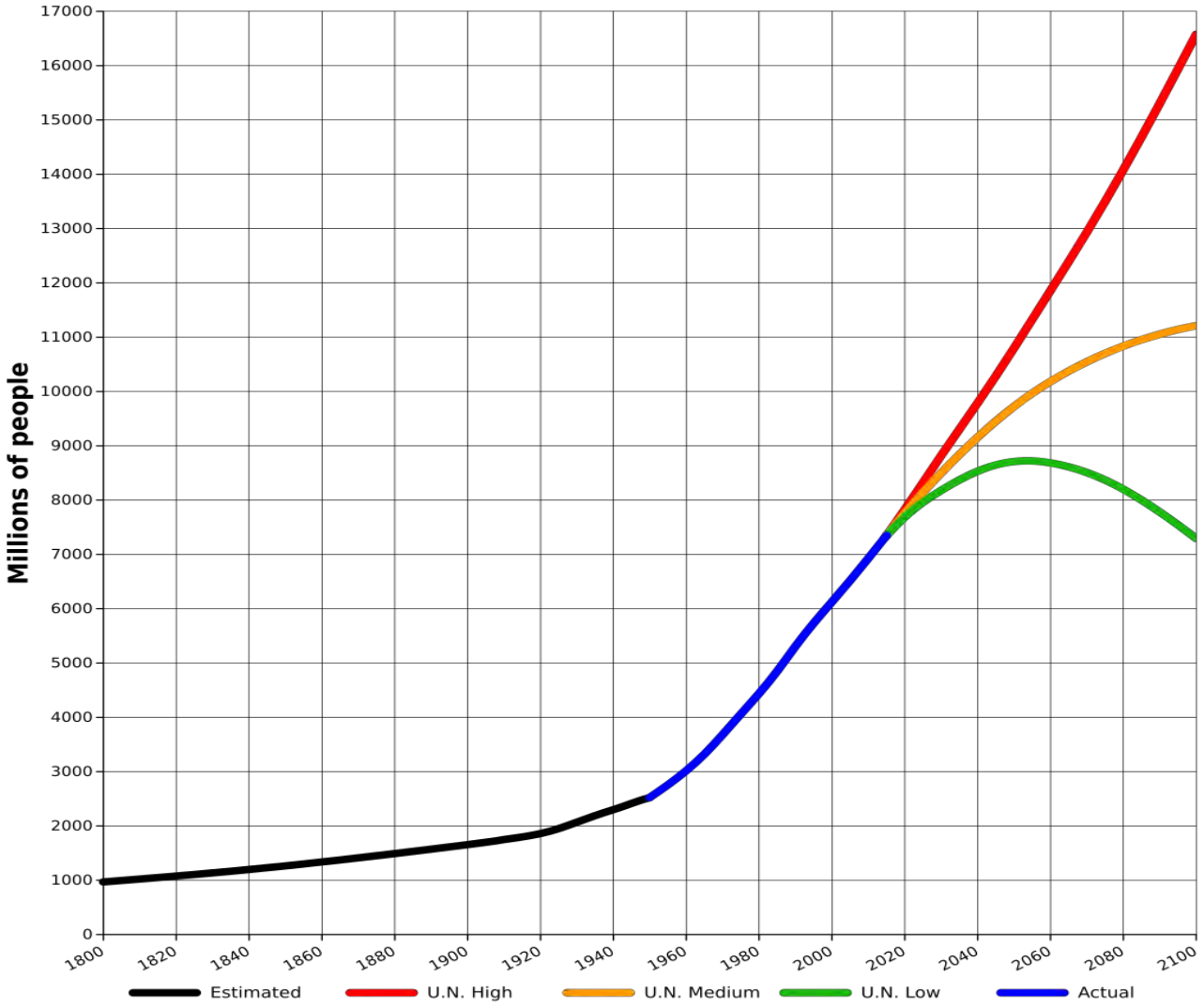


Fig. Changes and expectation of global population

Background

Increase of Q fever and SFTS outbreaks in Korea

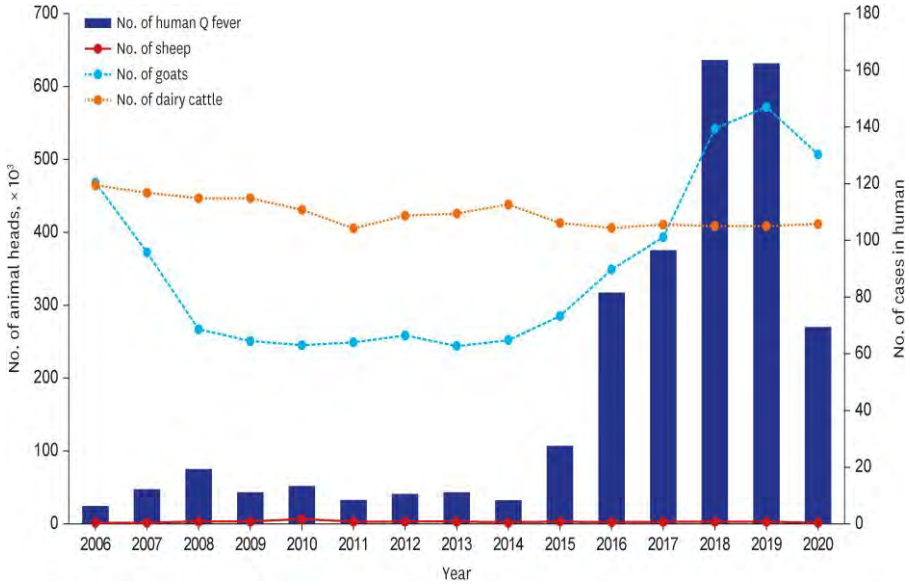
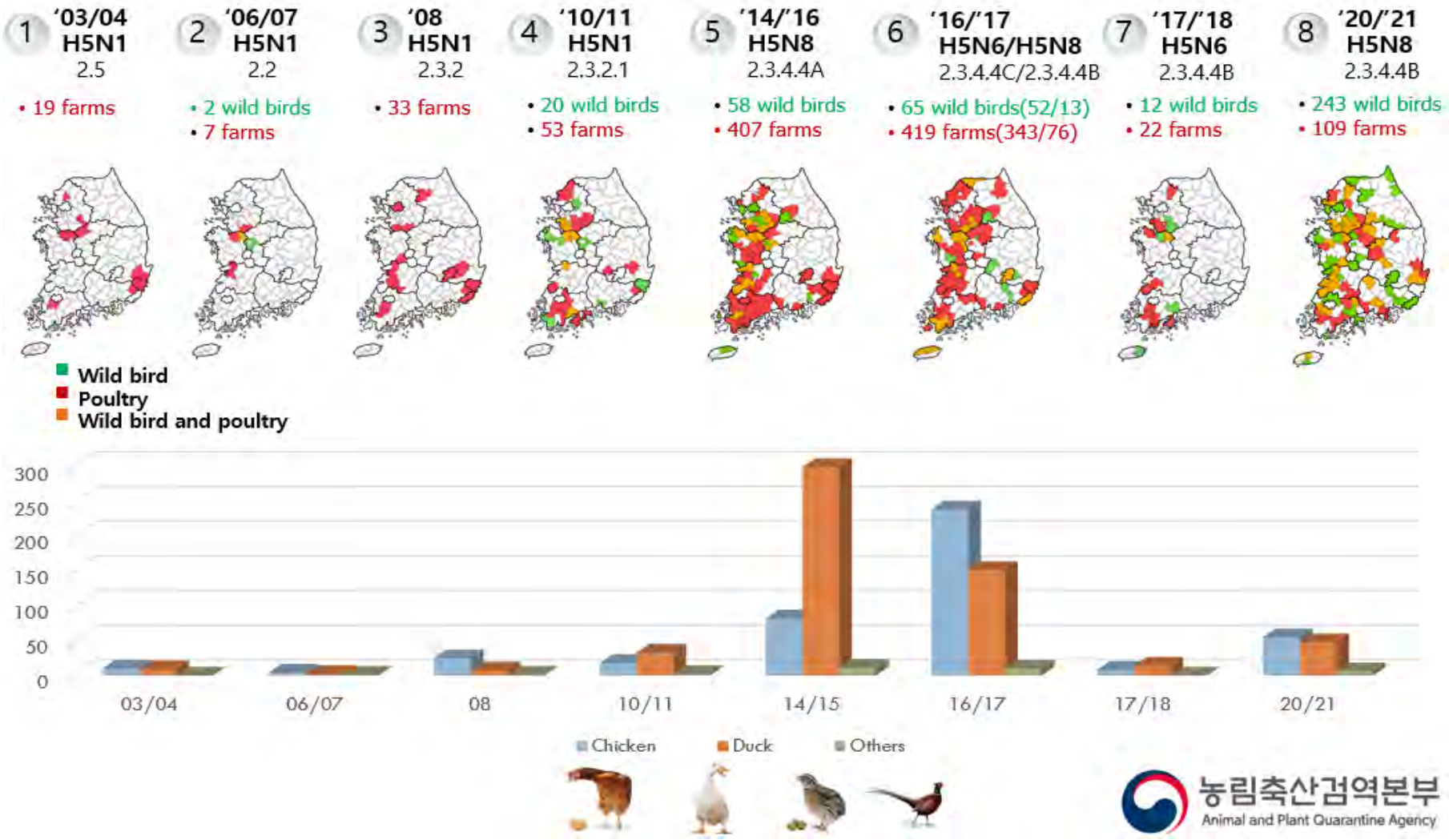


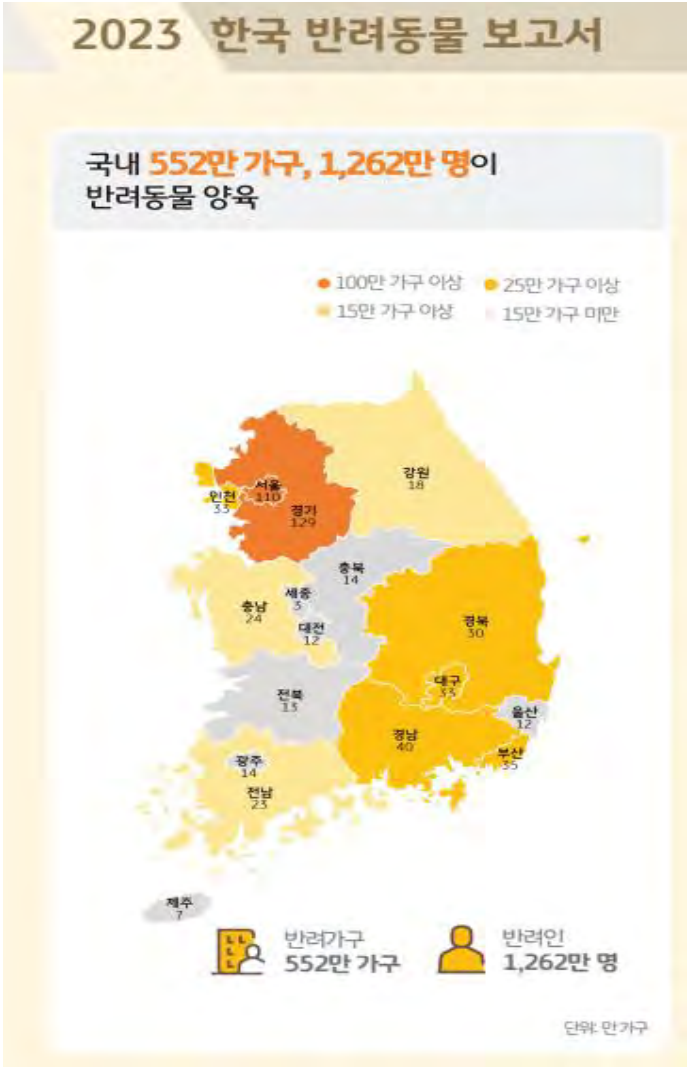
Fig. Annual number of human Q fever cases, and number of goats, dairy cattle and sheep head in Korea.

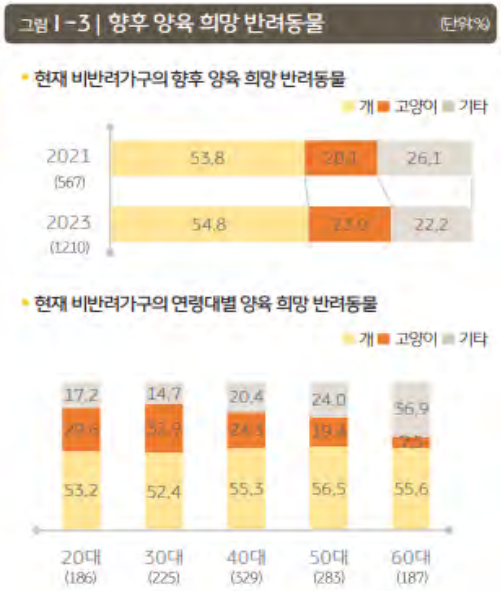
Fig. Annual number of cases and case fatality of severe fever with thrombocytopenia syndrome in Korea from 2013 to 2021.

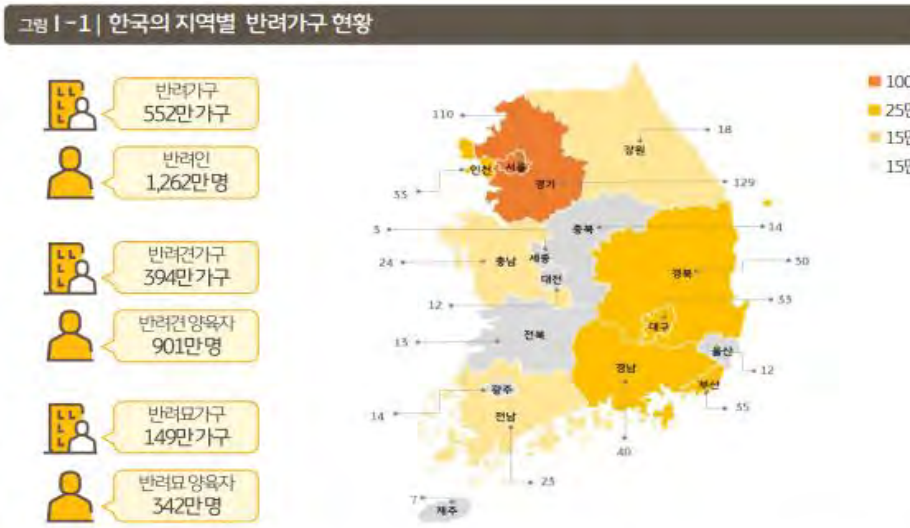
H5 HPAI Epidemics in Korea



Increases of companion animals in Korea







Do we have a plan to zoonosis in companion animals ?

Pet+Economy = Petconomy

- Companion animals: 5.52 million house and 12.62 million in people in Korea
- Pet Hotels : more than 3000 : '펫팸(Pet+Family)족
- Beaches, airplane, travel package with companion animals.

중앙일보 (6. 23)

Background

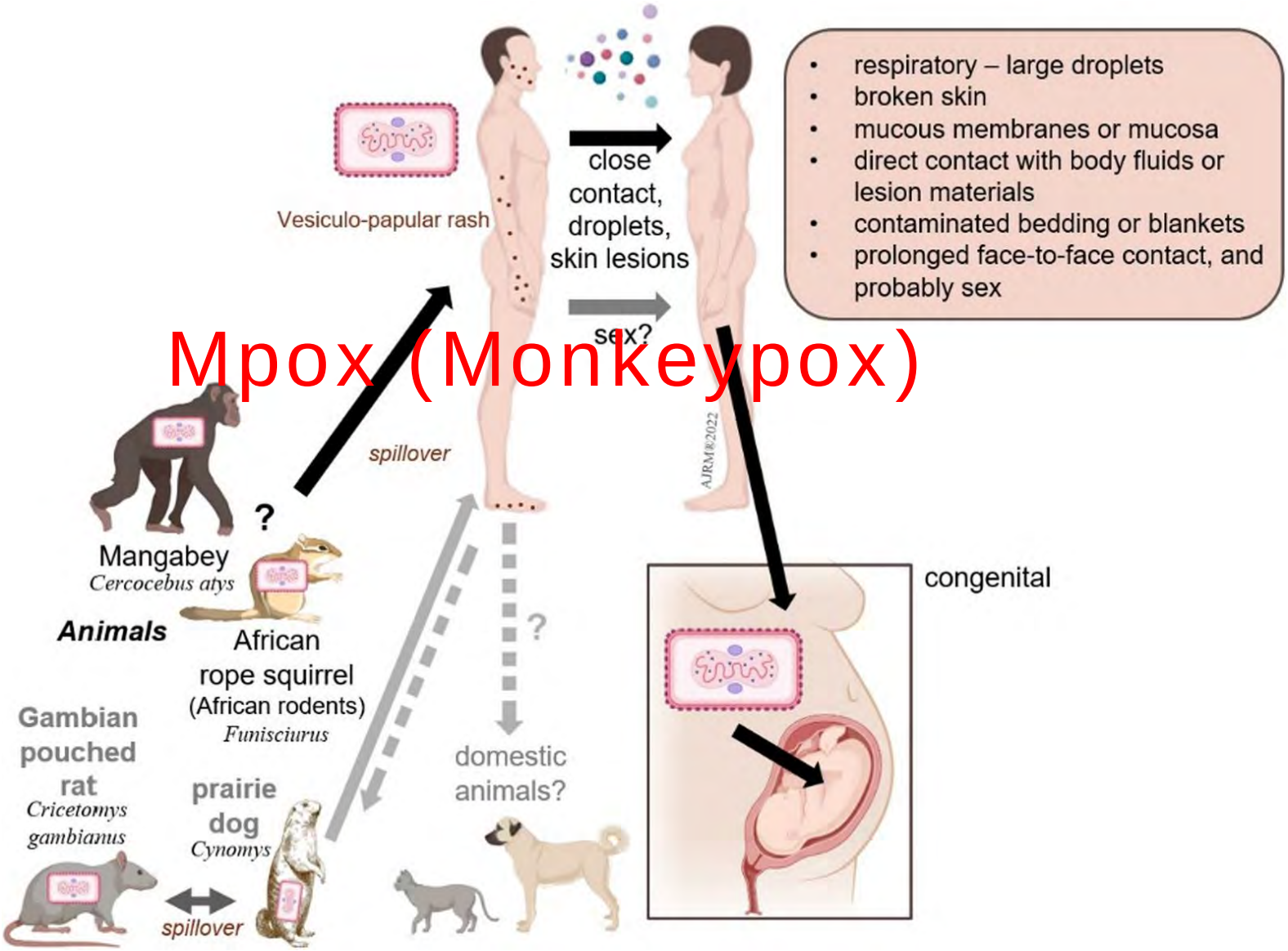


Fig. Transmission routes associated with monkeypox infection

Background

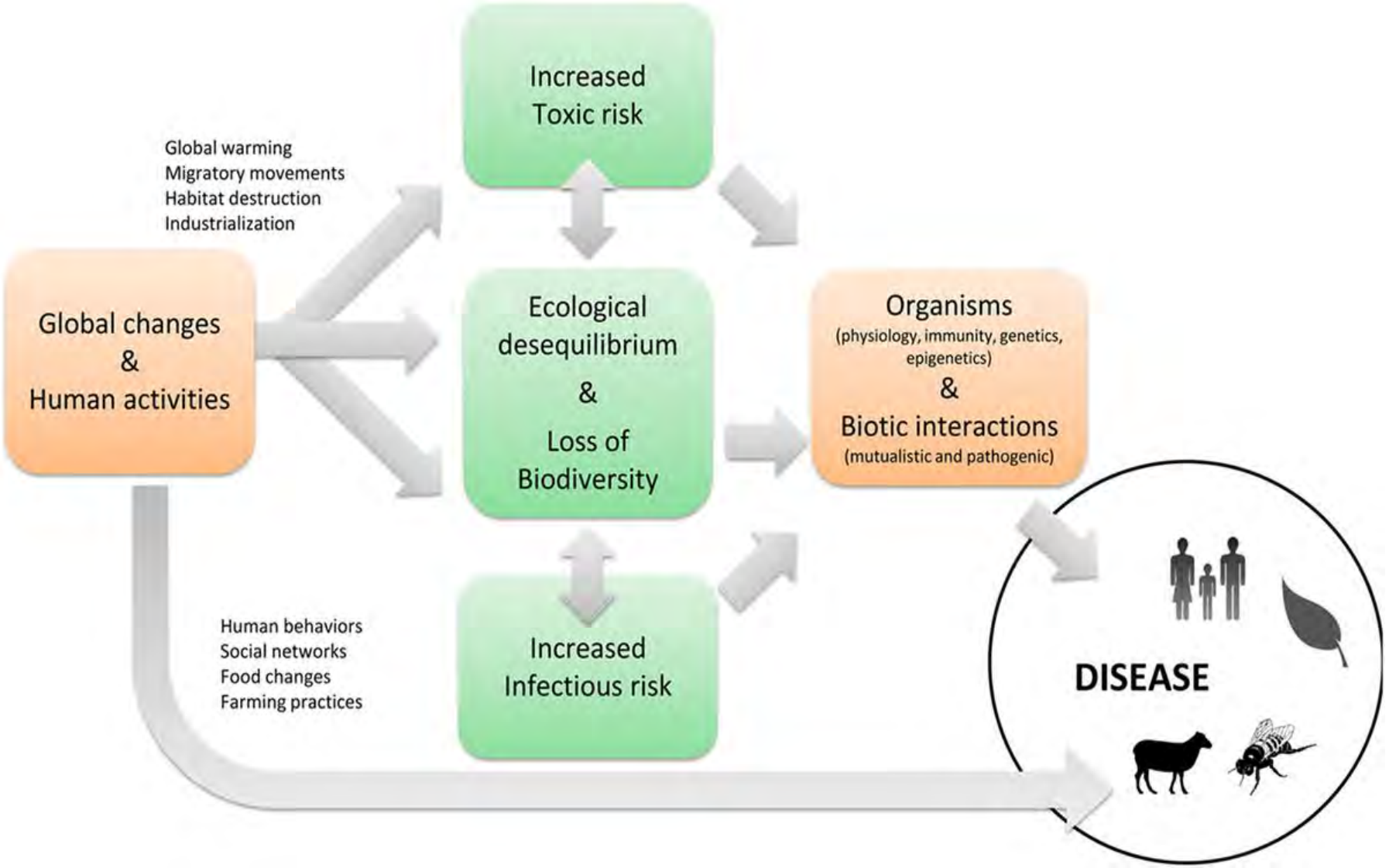


Fig. The infectious and toxic risks and their interactions.

Front. Vet. Sci., 12 February 2018

History of One Health in Korea

One Health Initiative and Educational Programs at Seoul National University

Myung-Sun Chun and Pan-Dong Ryu
College of Veterinary Medicine
Seoul National University
South Korea

2013-11-20

College of Veterinary Medicine Seoul National University

2. One Health in CVM Curriculum

Programs	Contents
Pre -Vet	Concept
DVM	Socio-cultural context of One Health: Human-Animal-Ecosystem Interaction
Post-graduate	Practice/ Research

2nd GRF
One Health Summit 2013

Potential Areas of OH

- Zoonotic Diseases
- Human-Animal Bond/Interaction
- Food Safety
- Environmental Safety
- Wild-life Conservation

Outcomes of OH Forum Korea 2012

- 1st Major Event for Awareness of OH in Korea
  - Columns in two major newspapers
  - Cited by 25 different media or institutions
- Revealed Resources of OH in Korea
  - Strong: Zoonotic disease control, Food safety
  - Weak: Environmental health, Human-animal interaction
- Established a Multi-institutional Network for Future Collaboration in OH

OH in CVM Curriculum

Programs	Contents
Continuing Education (CE Center, CVM)	Short term programs for health professionals and veterinary public officers
	Workshops for OH competency for practicing veterinarians
	OH programs for kids and families with animals
	OH public lecture

OH in Next 5 Years

Education

- ✓ Establish programs to educate veterinarian as the conductor of an orchestra in dealing key One Health issues

Research

- ✓ Identify important OH issues, and initiate research projects at the local and global levels

Implementation

- ✓ Establish collaborative networks with partners in academia and government
- ✓ Secure financial and administrative resources for One Health education and research

2nd GRF
One Health Summit 2013

Program of 13th AAVS and One Health Forum Korea 2014

July 9, 2014 (Wed) _ Hoam Faculty House, Seoul National University

Time	Min	Activity	Chair/Host
15:00-17:00	120	AAVS Executive Meeting (Hoam Faculty House, Oak Room)	AAVS
18:00-20:00	120	Welcome Reception (Hoam Faculty House, Marronier Hall)	Organizing Committee of 13th AAVS and One Health Forum Korea 2014

July 10, 2014 (Thu) _ Schofield Hall, College of Veterinary Medicine, Seoul National University

Time	Min	Activity and Title of Presentation	Speakers/Chairs
08:30-18:00		Registration	
09:00-09:30	30	Opening Remark: Dr. PD Ryu, SNU, Korea Welcoming Address: Dr. YC Oh, President, SNU, Korea Congratulatory Address : Dr. R Sidik, President, AAVS, Airlangga U, Indonesia Dr. WD Strampel, Dean, COM, Michigan State U, USA Dr. KH Rhim, President, KPHA, Korea	
Keynote Lecture I			Chair: Dr. Pan Dong Ryu,SNU, Korea
09:30-10:10	40	**One Health: From a Concept to a Global Movement**	Dr. Walter J. Ammann, President, GRF Davos, Switzerland
10:10-10:30	20	Coffee Break	
Plenary Session I. Understanding the Ecology of Health and Diseases			Chair: Dr. Srihadi Agungpriyono, IPB, Indonesia Dr. Hyuk Moo Kwon, KNU, Korea
10:30-10:50	20	Global Bioethical Response To the Global Health Crises Caused by the Collision of Biological and Cultural Evolution: Pre-Natal Influences on Acute and Chronic Diseases Later in Life	Dr. James E. Trosko, MSU, USA
10:50-11:10	20	The Transmission of Severe Fever with Thrombocytopenia Syndrome in South Korea	Dr. Keun Hwa Lee, JNU. Korea
11:10-11:30	20	Epinomic Strategy on Eradication Program of Brucellosis in Korea from One Health Perspective	Dr. Hachung Yoon, Animal and Plant Quarantine Agency, Korea
11:30-11:50	20	A Comparative Study of Brucellosis in Cattle, Goats, and Humans in Uganda: An Illustration of a One Health Approach	Dr. John Kaneene, MSU, USA
11:50-13:00	70	Lunch Poster Session: Educational Resources to Be Shared	
Keynote Lecture II			Chair:Dr. Pan Dong Ryu, SNU, Korea
13:00-13:30	30	**Global Strategic Investment in One Health: Blueprint for Action**	Dr. Reza Nassiri, Director, IIH, MSU, USA
Parallel Session II-1. One Health and Environmental Perspectives (Schofield Hall, 3F, College of Veterinary Medicine)			Chair: Dr. John Kaneene, MSU, USA Dr. Sung Shik Shin, CNU, Korea
13:30-13:50	20	A Systems Approach to the Study of Human Activities on Water Quality in a Karstic Aquifer and Implications to Human Health	Dr. David T. Long, MSU, USA
13:50-14:10	20	Assessing the Fate and Transport of Aristolochic Acids in Soil Environments to Evaluate Potential Exposure Pathways Associated with Balkan Endemic Nephropathy	Dr. Thomas C. Voice, MSU, USA
14:10-14:30	20	Prenatal Exposures to Plasticizing Agents Results in Reproductive Dysfunction and Possible Metabolic Alterations	Dr. Mohan Kumar, MSU, USA
14:30-14:45	15	Coffee Break	

Parallel Session II-2. Enhancing Collaboration and Education in One Health (Lecture room, 201, 2F, College of Veterinary Medicine)			Chair: Dr. Ishwari Prasad Dhakal, AFU,Nepal Dr. Apinan Suprasert, KU, Thailand
13:30-13:50	20	The One Health Development in Indonesia Higher Education	Dr. Srihadi Agungpriyono, Bogor Agricultural University, Indonesia
13:50-14:10	20	INTERRISK: An International One Health Master Program in Southeast Asia	Dr. Tanu Pinyopummintr, Kasetsart University, Thailand
14:10-14:30	20	Role of Veterinary School in Flooded Areas of Eastern Thailand in 2013	Dr. Suporn Thongyuan, Kasetsart University, Thailand
14:30-14:45	15	Coffee Break	
Parallel Session III-1. Current Issues in One Health **Recent Outbreak of AI in Korea** (Schofield Hall, 3F College of Veterinary Medicine)			Chair: Dr. Naotaka Ishiguro, GU, Japan Dr. Jae-Hong Kim, SNU, Korea
14:45-15:05	20	The Current Outbreak of Highly Pathogenic Avian Influenza and Characterization of the Causative H5N8 Viruses in Korea, 2014	Dr. Youn-Jeong Lee, Animal and Plant Quarantine Agency
15:05-15:25	20	Epidemiology of Highly Pathogenic Avian Influenza in Korea, 2014	Dr. WooSeog Jeong, Animal and Plant Quarantine Agency, Korea
15:25-15:45	20	Risk Assessment of Human Infection with Currently Circulating H5N8 Avian Influenza Virus in Korea, 2014	Dr. Kisoon Kim, Korea Centers for Disease Control and Prevention
15:45-16:05	20	Waterfowl Migration Routes Related with Highly Pathogenic Avian Influenza	Dr. Hansoo Lee, Korea Institute of Environmental Ecology, Korea
16:05-16:20	15	Coffee Break	
Parallel Session III-2. Current Issues in One Health **Technological Advance and One Health** (Lecture room, 201, 2F, College of Veterinary Medicine)			Chair: Dr. Mutsumi Inaba, HU, Japan Dr. Hwa Young Son, CNU, Korea
14:45-15:05	20	Prenatal Stress Modifies Protein Expression in the Liver to Affect Metabolic Status	Dr. Sheba Muhan Kumar, MSU, USA
15:05-15:25	20	Stem Cells in One Health and Human Diseases	Dr. Kyung-Sun Kang, SNU, Korea
15:25-15:45	20	Decentralized Genetic Testing and One Health	Dr. Syed Hashsham, MSU, USA
15:45-16:05	20	Transcriptional Interactomic Inhibition of Rorgt Suppresses Autoimmunity Associated with Th17 Cells	Dr. Sang-Kyou Lee, Yonsei University, Korea
16:05-16:20	15	Coffee Break	
Roundtable Discussion (Schofield Hall, 3F College of Veterinary Medicine)			Chair: Dr. Reza Nassiri, MSU
16:20-18:00	100	Dr. Walter J. Ammann (GRF Davos), Dr. Nedim Jaganjac (World Bank), Dr. Tomoko Ishibashi (OIE), Dr. Jorge Zavala Castro (UADY), Dr. Pham-Duc Phuc (School of Public Health, Hanoi), Mrs. Dao Thu Trang (PAHI), Dr. Pan Gyi Kim (KPHA)	
18:30-20:00	20	Conference Dinner (Hoam Faculty House, Marronnier Hall)	

July 11, 2014 (Fri) _ Schofield Hall, College of Veterinary Medicine, Seoul National University

Time	Min	Activity and Title of Presentation	Speakers/Chairs
Keynote lecture III			Chair: Dr. Pan Dong Ryu, SNU, Korea
08:30-09:10	40	**One Health in Veterinary Medical Education** **– The AAVMC View**	Dr. Andrew T. Maccabe, Executive Director of AAVMC, USA
Plenary Session IV. One Health in Veterinary Medical Education			Chair: Dr. Mohd Hair Bin Bejo, UPM, Malaysia Dr. Mar Mar Win, UVS, Myanmar
09:20-09:40	20	Developing an Institutional Basis for One Health in Southeast Asia through One Health University Networks	Dr. Jeein Chung, Universitiy of Minnesota, USA
09:40-10:00	20	Graduate Course Program for Fostering Human Resources for One Health	Dr. Motohiro Horiuchi, Hokkaido University, Japan
10:00-10:20	20	One Health in Veterinary Education Faculty of Veterinary Medicine, Khon Kaen University	Dr. Suneerat Aiumlamai, Khon Kaen University, Thailand
10:20-10:35	15	Coffee Break Poster Session: Educational Resources to Be Shared	
Plenary Session V. Curriculum Development and One Health in Asian Veterinary Education			Chair: Dr. Chin-Cheng Chou, NTU, Taiwan Dr. Yasuo Kiso,YU, Japan
10:35-10:50	15	A Brief Overview of the Innovation of Veterinary Education in Japan	Dr. Hiroyuki Nakayama The University of Tokyo, Japan
10:50-11:05	15	New Design Curricula of Faculty of Veterinary Medicine University of Gadjah Mada, Indonesia 2013	Dr. Soedarmanto Indarjulianto Universitas Gadjah Mada, Indonesia
11:05-11:20	15	The OIE Veterinary Educational Twinning Program: The First Year Experiences	Dr. Rutch Khattiya, Chiangmai University, Thailand
11:20-11:35	15	Conservation Medicine: An Opportunity to the College of Veterinary Medicine, National Pingtung University of Science and Technology, Taiwan and our Challenges	Dr. Kurtis Jai-Chyi Pei, National Pingtung University of Science and Technology, Taiwan
11:40-13:00	80	Lunch Poster Session: Educational Resources to Be Shared	
Keynote Lecture IV and V			Chair: Dr. Pan Dong Ryu, SNU, Korea
13:00-13:30	30	**Instruments and System Accreditation of Veterinary Schools in Asian Region**	Dr. Romziah Sidik President, AAVS, Indonesia
13:30-14:00	30	**AAVS and Accreditation of Veterinary Medical Education in Korea**	Dr. Heungshik Lee Director, Accreditation Board for Veterinary Education in Korea, Korea
14:00-14:15	15	Coffee Break Poster Session: Educational Resources to Be Shared	
Plenary Session VI. Animal Welfare in Veterinary Medical Education			Chair: Dr. Seung Yeol Nah, KU, Korea Dr. Trinh DinhThau, HUA, Vietnam
14:15-14:30	15	Animal Welfare Education in German Veterinary Schools	Dr. Hye-Won Lee, KARA, Korea
14:30-14:45	15	Assessing Attitudes of Veterinary Undergraduate Students towards Animal Welfare: A Study at the Faculty of Veterinary Medicine, Bogor Agricultural University, Indonesia	Dr. Fadjar Satrija Bogor Agricultural University, Indonesia
14:45-15:00	15	Animal Welfare Standards in Veterinary Education	Dr. Natasha Lee, WSPA Asia Pacific
15:00-15:15	15	Coffee Break Poster Session: Educational Resources to Be Shared	
AAVS General Assembly and Closing			
15:15-16:15	60	AAVS General Assembly	
16:15-16:30	15	Closing Ceremony	

Class History of One Health

- Before 2015, classes were offered as Zoonosis, Emerging and Reemerging infectious diseases in animals to Graduate students of CVM, SNU.
- 2015, 1st Semester : Offer One Health class to Graduate students of CVM, SNU.
- 2021. 1st Semester : Offer One Health class to Graduate students of SNU.
  - o Joint lecture with faculties from Veterinary, Public Health and Medical School.

Purposes of One Health Class

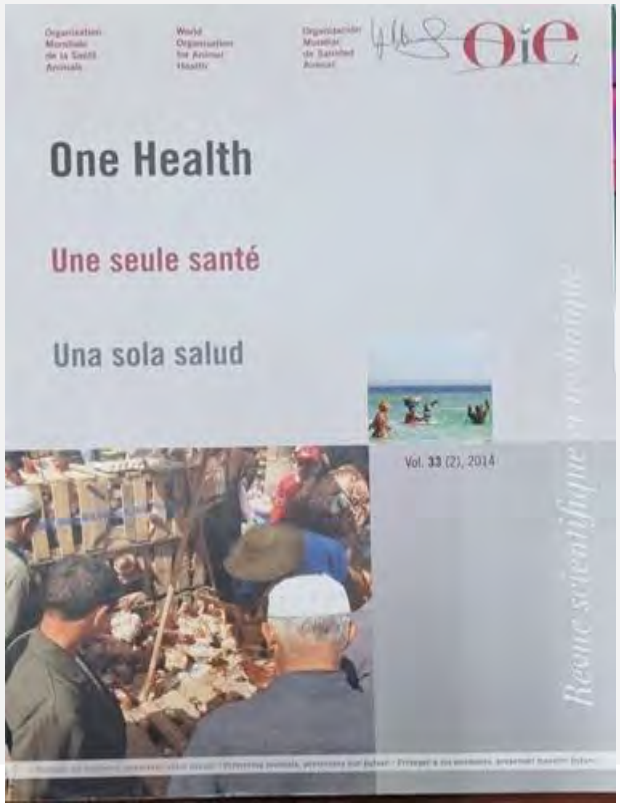
o Learning the main concepts, principles and research methodology of One Health

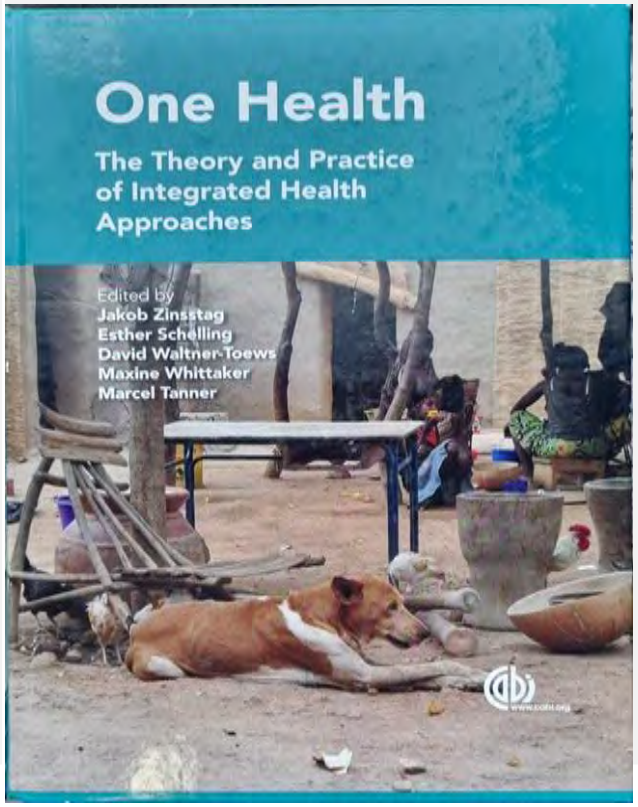
o Identify One Health issues by utilizing key principles and methodologies from related academic fields

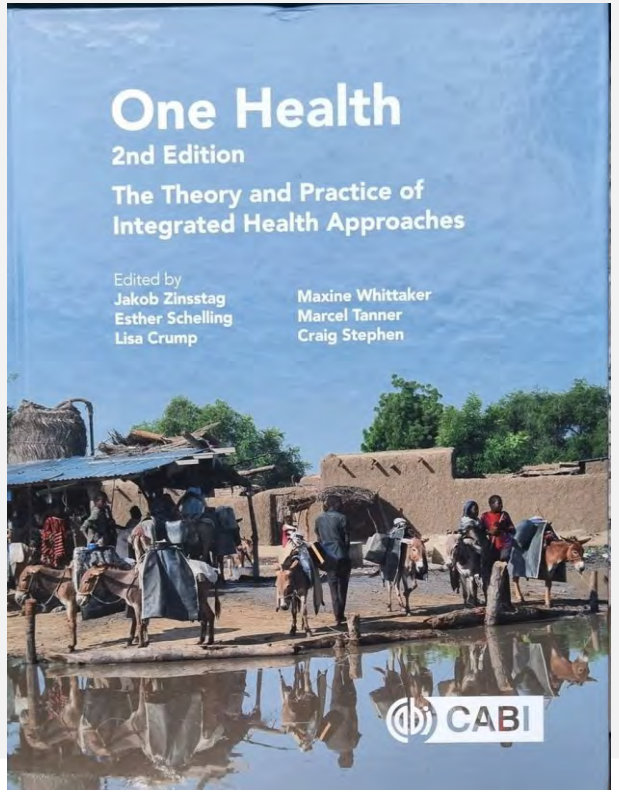
o Cultivating the ability to solve and prevent problems through collaboration with related academic fields

Lecture Schedules of One Health (2015-2020)

Week	Content	Others
1	Overview of One Health : A History of One Health	
2	Overview of One Health : Theoretical issues of One Health	
3	Overview of One Health : An Ecological and conservation perspective	
4	Overview of One Health : the Role of Social Science in One Health	
5	Linking One Health to global Challenges : A review of the metrics for One Health	
6	Linking One Health to global Challenges : One Health in a world with climate change	
7	Linking One Health to global Challenges : The potential contribution of livestock to food and nutrition security	
8	Linking One Health to global Challenges : The integration of biodiversity into One Health	
9	Improving specific disease outcomes through One Health approach : Eradicating rabies at source	
10	Improving specific disease outcomes through One Health approach : Animal and human influenza	
11	Improving specific disease outcomes through One Health approach : A transsectoral coordination framework for preventing and responding to Rift Valley fever outbreaks	
12	Improving specific disease outcomes through One Health approach : Emerging zoonotic viral diseases	
13	Improving specific disease outcomes through One Health approach :Tuberculosis and anthrax as examples of the One Health concept	
14	Emerging new partners in One Health : private individuals, organization, social networks and social media	
15	Tools, frameworks and policies for advancing One Health : World Organization for Animal Health, medical and veterinary education, The United Nations	


Organisation Mondiale de la Santé Animale
World Organisation for Animal Health
Organización Mundial de Sanidad Animal
OIE
One Health
Une seule santé
Una sola salud
Vol. 33 (2), 2014
Revue scientifique et technique


One Health
The Theory and Practice of Integrated Health Approaches
Edited by
Jakob Zinsstag
Esther Schelling
David Waltner-Toews
Maxine Whittaker
Marcel Tanner


One Health
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The Theory and Practice of Integrated Health Approaches
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Jakob Zinsstag
Esther Schelling
Lisa Crump
Maxine Whittaker
Marcel Tanner
Craig Stephen
CABI


보건복지부
질병관리본부
한국건강증진개발원
2019년
제 1차 원헬스(One Health+)포럼
국민건강 확보를 위한 원헬스 추진방향

One Health Forum – Policy making

o Period : 2019. 5 – 2022. 11 (3 years project)

o Subcommittees :

- General management, Q fever, Animal Influenza, SFTS and Companion animals
- Member : Veterinarian, Medical doctors, Officers, Researchers, Soldier, etc

o 2 One Health Forum per year

- 3 on-site physically meetings
- 3 Webinars due to COVID-19
- 1 Workshop : Prioritizing zoonosis

o Steering committee meetings : 2 times per year

o Funded by Korean Center for Disease Control

o PI : Han Sang Yoo (Professor in Seoul National University)

2019년도 제1회
인수공통감염병 One Health 정책 포럼

세부일정

시간	발표내용	연자
13:30~14:00	접수 및 등록	
14:00~14:05	국민의례 및 내빈 소개	
14:05~14:15	개 회 사	공동위원장 유한상, 신형식
14:15~14:30	축 사	질병관리본부장 정은경
	기념 촬영	
	[1부] 인수공통감염병과 원헬스 접근전략 〈좌장: 신형식 회장〉	
14:30~14:40 (10')	국가 인수공통감염병 관리계획(2019~2022)	조은희 과장 질병관리본부
14:40~15:10 (30')	〈기조강연1〉 인수공통감염병 관리를 위한 다부처 협력방안	박지혜 교수 동국대학교 의과대학
15:10~15:40 (30')	〈기조강연2〉 One health, One umbrella, and Harmonization	윤징원 교수 강원대학교 수의과대학
15:40~16:20 (40')	패널토의 정희진 교수 (고려대학교 의과대학) 정석찬 본부장 (가축위생방역지원본부) 이영원 과장 (농림축산검역본부) 정원화 팀장 (국립환경과학원)	
16:20~16:30 (10')	Coffee Break	
	[2부] 인수공통감염병 정책포럼 분과위원회	
16:30~18:00 (90')	동물인플루엔자 분과 / SFTS 분과 / 큐열 분과 / 반려동물 분과 분과위원회 소개, 2019년 분과 운영계획, 토의 및 정리	

질병관리본부 대한인수공통전염병학회

인수공통감염병 우선순위 선정 Workshop

일시 2019년 **10월 18일** (금) 13:00 - 18:00 **장소** 경주 더 케이 호텔 (해금홀)

13:00~13:40	등 록
13:40~13:50	개회사 (연구책임자) 축 사 (대한인수공통전염병학회장)
13:50~15:10	주제 발표 (관련 부처별) **좌장** 신형식 센터장 (국립중앙의료원)
13:50~14:10	"One Health Perspective in the Zoonoses Control" **천명선 교수** (서울대학교 수의과대학)
14:10~14:30	"Prioritizing zoonoses to prepare for and respond to future infectious diseases" **이관 교수** (동국대학교 의과대학)
14:30~14:50	"Prioritizing zoonoses in Korea by Delphi analysis" **유한상 교수** (서울대학교 수의과대학)
14:50~15:00	휴식 (Coffee break)
15:00~16:00	Panel discussion **좌장** 신형식 센터장 (국립중앙의료원) • **안경숙** (경산시 보건소장) • **김대중** (경북동물위생시험소 방역과장) • SFTS 분과위원장 • Q 열 분과위원장 • 반려동물 분과위원장 • 주제발표 연자 (**천명선 교수, 이관 교수, 유한상 교수**)
16:00~16:10	휴식 (Coffee break)
16:10~18:00	분과회의 (SFTS, 큐열, 반려동물, 동물인플루엔자)
18:00~	폐 회

2019년도 제2회
인수공통감염병 One Health 정책 포럼

시 간	내 용	연 자
13:00 ~ 13:30	등 록	
13:30 ~ 13:40	개 회 식	
	• 인 사 말	연구책임자
	• 축 사	질병관리본부장, 대한인수공통전염병학회장
	제 1 부 : 특 강	좌 장 : 유한상 교수
13:40 ~ 14:10	• One Health적 접근을 통한 인수공통감염병 예방	이성모 박사 (인천보건환경연구원)
	제 2 부 : 각 분과별 주제 발표	좌 장 : 신형식 회장
14:10 ~ 14:30	• 동물인플루엔자 분과	김성순 연구관
14:30 ~ 14:50	• SFTS 분과	김성한 교수
14:50 ~ 15:10	• 반려동물분과	송대섭 교수
15:10 ~ 15:30	• Q fever 분과	허중연 교수
15:30 ~ 15:50	• 델파이 분석을 통한 인수공통감염병 우선순위 결정	유한상 교수
15:50 ~ 16:00	Coffee Break	
	제 3 부 : 종합 토론	좌 장 : 정석찬 본부장
16:00 ~ 17:00	• 종합 토론	연 자 (주제발표자, 각 분과위원회 위원장) 정병곤 (한국동물약품협회 부회장) 김원명 (국립환경과학원 연구관) 박규은 (국군의학연구소장)
17:00 ~ 19:00	• 분과위원회	

질병관리본부 대한인수공통전염병학회

2020년 제1회 인수공통감염병

One Health 정책 포럼

2020.11.3(화) 14:00~17:30 LIVE

온라인 라이브 영상회의 접속방법
www.zoonosis.or.kr 사전등록 및 당일 게스트 로그인

Program

	개 회 식	
14:00 ~ 14:15	개회사	유한상 (연구책임자)
	환영사	신형식 (대한인수공통감염병학회장)
	축사	정은경 (질병관리청장)
	제 1 부 : 주제 발표	
14:15 ~ 14:45	코로나 판데믹을 통해 바라본 인수공통감염병의 미래	신형식 회장 (대한인수공통감염병학회)
14:45 ~ 15:15	원헬스 측면의 COVID19 대응방안	최강석 교수 (서울대수의대)
	제 2 부 : 분과 발표	
15:20 ~ 15:40	큐열 관리를 위한 주요과제	허중연 교수 (큐열 분과위원장, 아주대의대)
15:40 ~ 16:00	SFTS 2차감염 발생 및 관리방안	채준석 교수 (SFTS 분과위원장, 서울대수의대)
16:00 ~ 16:20	코로나19와 반려동물	송대섭 교수 (반려동물 분과위원장, 고려대약대)
16:20 ~ 16:40	인플루엔자 바이러스의 진화	박만성 교수 (AI 분과위원장, 고려대의대)
	제 3 부 : 종합 토론	좌장: 유한상 교수 (서울대수의대)
16:40 ~ 17:30	종합 토론	박혜경 국장 (질병관리청), 이명헌 과장 (농림축산검역본부) 정원화 과장 (국립야생동물질병관리원), 이 관 교수 (동국대의대), 천명선 교수 (서울대수의대), 주제 발표자, 분과 위원장
17:30 ~	**폐 회 식**	유한상 (연구책임자)

주최/주관 질병관리청 Korea Disease Control and Prevention Agency 대한인수공통감염병학회 KOREAN SOCIETY FOR ZOONOSES

2020년 제2차 ONE Health 정책 포럼

2021.04.27. 화 14:00~18:00

www.zoonosis.or.kr Live 온라인 라이브 영상회의

개회식

14:00-14:15	개회사	유한상 연구책임자
	환영사	신형식 대한인수공통감염병학회장
	축사	정은경 질병관리청장

제1부. 주제 발표

14:15-14:45	COVID-19 이후에 One Health 추진방향	오주환 교수 서울대 의대
14:45-15:15	SARS-CoV2 의 증식 및 변이 특성	김성준 팀장 한국화학연구원, 신종바이러스연구단

제2부. 분과 발표

15:20-15:40	국내 큐열 관리 지침 개정 방향	허중연 교수 큐열 분과위원장, (아주대 의대)
15:40-16:00	SFTS 2차 감염 관리 방안	채준석 교수 SFTS 분과위원장, (서울대 수의대)
16:00-16:20	조류인플루엔자, 어떻게 대비할것인가?	박만성 교수 AI 분과위원장, (고려대 의대)
16:20-16:40	신종인수공통감염병과 반려동물의 상관관계 및 예방대책	송대섭 교수 반려동물 분과위원장, (고려대 약대)

제3부. 종합 토의 및 질의 응답 좌장 : 유한상 교수 연구책임자

16:40-18:00	박숙경 과장 질병관리청	염준섭 교수 연세대 의대
	강해은 과장 농림축산검역본부	최인수 교수 건국대 수의대
	정원화 과장 국립야생동물질병관리원	우연철 사무총장 대한수의사회
	최보율 교수 한양대 의대	주제 발표자, 분과 위원장

폐회식

18:00 유한상 연구책임자

접속방법 www.zoonosis.or.kr (대한인수공통감염병학회) 사전등록 및 게스트로그인

주최/주관 질병관리청 대한인수공통감염병학회 KOREAN SOCIETY FOR ZOONOSES

2022년도 제 1차

인수공통감염병 One Health 정책 포럼

2022년 3월 8일 (화) 14:00~18:00 LIVE

온라인 라이브 영상회의
www.zoonosis.or.kr

접속방법
사전등록 및 당일 게스트 로그인

program

	개 회 식	
14:00 - 14:15	개회사	유한상 교수 (연구책임자)
	환영사	송창선 회장 (대한인수공통감염병학회)
	축 사	정은경 청장 (질병관리청)
		박봉균 본부장 (농림축산검역본부)
	제 1 부 : 주제 발표	
14:15 - 14:45	One Health 감시체계의 필요성 및 실현 가능성	민경덕 박사 (서울대 보건대학원)
14:45 - 15:15	One Health 교육 과정 운영	유희재 부대표 (ORP 연구소)
	제 2부 : 분과별 주제발표	
15:20 – 15:45	큐열의 발생동향 및 임상 양상	정혜원 교수 (충북대 의대)
15:45 – 16:10	SFTS 바이러스 감염 동물모델 및 전파연구	김범석 교수 (전북대 수의대)
16:10 – 16:35	A one health perspective on companion animal-associated zoonoses	오예인 교수 (서울대 수의대)
	제 3부 : 종합 토의 및 질의 응답	**좌장 : 유한상 교수 (서울대 수의대)**
16:35 – 18:00	종합토론 및 질의응답	주제발표자 황경원 과장 (질병관리청) 강해은 과장 (농림축산검역본부) 정원화 팀장 (국립야생동물질병관리원) 이 관 교수 (동국대 의대) 박규은 소장 (국군의학연구소) 박희명 교수 (건국대 수의대)
18:00	폐회식	유한상 교수 (연구책임자)

주최/주관 질병관리청 서울대학교 산학협력단 대한인수공통감염병학회 Korean Society for Zoonoses

2022년 제2차

원헬스 정책포럼

일시 2022년 10월 13일(목) 09:00 ~ 17:00

장소 서울대학교 호암교수회관 컨벤션센터 무궁화홀

09:00~10:00	등록	
개회식		
10:00~10:20	개회사	유한상 연구책임자
	환영사	송창선 대한인수공통감염병학회장
	축사	백경란 질병관리청장
		박봉균 농림축산검역본부장
		이주실 방역연계범부처감염병연구개발사업단장
GFID 연구발표	좌장: 김우주 교수 (고려대학교 의과대학), 정해관 교수 (성균관대학교 의과대학)	
10:30~12:10	SFTS 해결을 위한 One Health 접근	채준석 서울대학교 교수
	정량적 염기서열 분석 진단법을 이용한 매개체의 살충제 감수성/저항성 조사	최광식 경북대학교 교수
	감염병 매개체 감시 표준화 방안	박기범 ㈜인바이러스테크 대표
	새로운 살충기작을 이용한 모기 선택적 방제제 개발연구	제연호 서울대학교 교수
	매개체 전파 감염병 예측 모델	정해관 성균관대학교 교수
	원헬스 관련 2기 사업소개	이민정 방역연계범부처감염병연구개발사업단
12:10~13:10	중식 및 Coffee break	
주제 및 분야 발표	좌장: 류판동 명예교수 (서울대학교 수의과대학), 최보율 교수 (한양대학교 의과대학)	
13:10~14:50	원헬스 정책의 과정 및 향후방향	유한상 서울대학교 교수
	큐열의 발생동향 및 한국형 큐열 진료 가이드	허중연 아주대학교 교수
	SFTS 에 대한 고위험군 발굴 및 관리방안	채준석 서울대학교 교수
	반려동물 유래 인수공통감염병에 관한 한국형 CALLISTO 보고서 준비 현황	송대섭 서울대학교 교수
	원헬스 교육 이론과 실제	유희재 ORP 연구소 부대표
	[특별주제] 국방부의 원헬스 현황 및 협력방안	김병수 국방대 안보대학원
14:50~15:10	Coffee break	
종합토론	좌장: 이관 교수 (동국대학교 의과대학)	
15:10~16:30	종합토론 및 질의응답	주제발표자 및 관련 전문가 7인
	황경원 과장, 이희일 과장(질병관리청), 정승교 과장 (농림축산검역본부), 정원화 팀장 (국립야생동물질병관리원), 이정표 교수 (서울대학교 의과대학), 최강석 교수 (서울대학교 수의과대학), 박규은 소장 (국군의학연구소)	
폐회식		
16:30	폐회사	유한상 연구책임자

질병관리청 Korea Disease Control and Prevention Agency | 서울대학교 산학협력단 | GFID 감염병계 원부처 감염병 연구개발 사업단 | 대한인수공통감염병학회 KOREAN SOCIETY FOR ZOONOSES

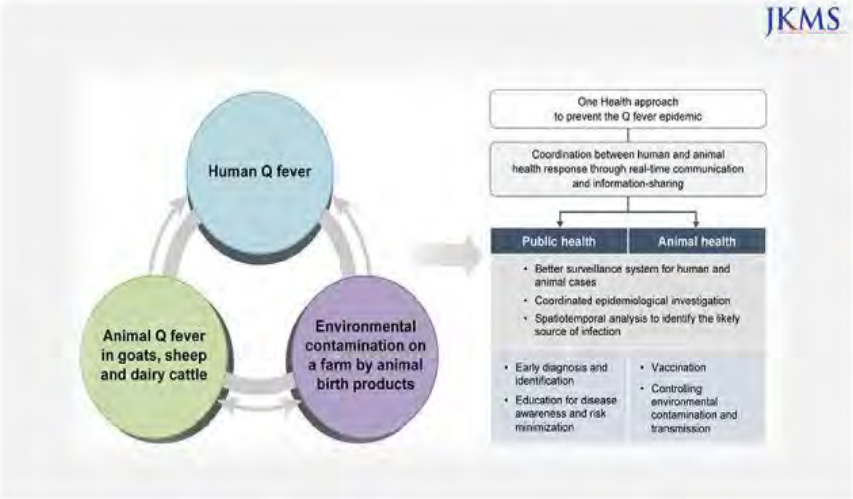
Results from One Health Forum

o Development of guideline for the Q fever : diagnosis & treatment

o Development of guideline for HPAI; One Health based multi-ministerial collaboration

o Development of algorithm for the evaluation of SFTS virus infection

o Development of Korean CALLISTO Report (In Preparation)



Lecture Schedules of One Health (2021~)

Week	Contents	Professor
1	Introduction of One Health : History, definition, zoonosis and the human-animal relationship	Vet
2	Introduction of One Health : Benefits and added value, Social, economical and ethical approaches and study design	Vet
3	Introduction of One Health : Risk Assessment and risk management through One Health	Vet
4	Introduction of One Health : administration, Law and International cooperation	Vet
5	Infectious diseases : climate changes and zoonosis, emerging infectious diseases, One Health strategy to ecodemic	Vet
6	Zoonotic Infectious diseases in Animals : Avian and swine influenza, food security and One Health strategy	-Vet
7	Zoonotic Infectious diseases in human : viral, bacterial and parasitic diseases	Med
8	Infectious diseases : antibiotics resistance and One Health	Vet
9	Environment – Environmental Health ; climate change and climate crisis, human-animal-environment (triad) interaction	PH
10	Environment – pollutant cycle in triad ; Metal, PoPs, drugs, etc. endocrine disruptor	PH
11	Environment – Risk assessment of chemicals, Interdisclinary research methodology	PH
12	Environment – Real problems and efforts to solve them	PH
13	One Health in Non-infectious, Chronic Disease: Effects of environment on kidney health	Med
14	One Health in Non-infectious, Chronic Disease: Environment and endocrine disease	Med
15	Comprehensive summary and Future direction of One Health	All

One Health 教養講座 (OO醫科大學)

週	主 題	細部內容
1	**One Health 基本原理 (理論と実践)**	歴史、必要性、人間と One Health、比較医学 等
2	**One Health 國際動向**	各国際機関の国際健康関連活動, 公衆衛生緊急事態の活動, One Health 教育活動
3	**主要人獸共通感染病紹介**	國內外 主要人獸共通感染病, 新.變種人獸共通感染病
4	**環境 生態學的 接近**	海洋、土壌科学、環境微生物学、気候変動、生物多様性等, 蜂が消えた理由, Ecohealth 紹介
5	**環境保健と持続可能な開発**	環境を損なうことなく開発を継続する方法, 水生態系と環境衛生
6	**One Healthと野生動物の保存**	野生動物を保存する理由, 野生動物の感染病管理
7	**動物福祉と生命倫理**	産業動物から人に感染病が伝播する理由、動物福祉を通じた感染病の伝播予防, 実験動物モデルの代替
8	**低所得、発展途上国の人獸共通感染病**	アフリカ、アジア諸国の例、発展途上国の買収共通感染症リスク、問題、管理、解決策
9	**人間と伴侶動物**	人間と伴侶動物関連性、伴侶動物由来の人獸共通感染
10	**One Healthと人文社会経済的影響**	感染病が社会経済文化に与える影響 (人類学、経済学、地理学、人文社会学 等)
11	**意思疏通, 協業等**	真のコラボレーションのためのコミュニケーション方法、意思決定方法, 公衆衛生危機で偽のニュースを識別する
12	**疫 學**	疫学の基本原理、発症調査、人間と動物の疾病監視追跡、Biosecurity
13	**國家政策紹介**	感染病、人獸共通感染病、One Health 関連国家政策紹介、環境法、疾病管理アルゴリズム、感染病 根節基準

460 BC Hippocrates:

19th Century Virchow:

1964 Calvin Schwabe:

1975 Veterinary Public Health:

2004 Wildlife Conservation Society:

2004 Wildlife Conservation Society:

2004 Wildlife Conservation Society:

2016+ One Health Legislation:

What it will be in One Health

Definitions of One Health

'One Health is the collaborative effort of multiple health science professions, together with their related disciplines and institutions – working locally, nationally, and globally – to attain optimal health for people, domestic animals, wildlife, plants, and our environment.'
One Health Commission

'A collaborative, international, cross-sectoral, multidisciplinary mechanism to address threats and reduce risks of detrimental infectious diseases at the animal-human-ecosystem interface.'
Food and Agriculture Organization

The **World Organisation for Animal Health**, while not specifically defining One Health, endorses the approach as 'a collaborative and all-encompassing way to address, when relevant, animal and public health globally. This collaboration should not be limited to only the international level, but must be translated as a new and fundamental paradigm at national levels'.

The **One Health Global Network** considers that the aim of One Health is to 'improve health and wellbeing through the prevention of risks and the mitigation of effects of crises that originate at the interface between humans, animals and their various environments'.

The **One Health Committee of the World Small Animal Veterinary Association** comments that 'One Health or One Medicine proposes the unification of the medical and veterinary professions with the establishment of collaborative ventures in clinical care, surveillance and control of cross-species disease, education, and research into disease pathogenesis, diagnosis, therapy and vaccination. The concept encompasses the human population, domestic animals and wildlife and the impact that environmental changes ('environmental health') such as global warming will have on these populations.'

The **One Health Initiative** considers One Health to be 'a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals, and the environment'.

Global Changes after COVID-19er

Politics

- o Strengthening nationalism
- o Expanding the role of the government
- o Alliance block between countries

Economics

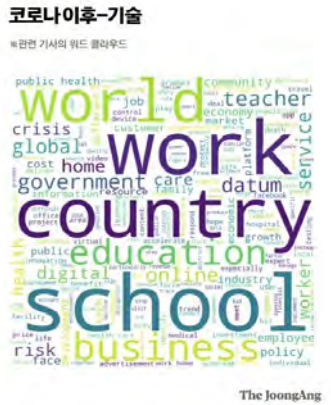
- o Continue long-term low growth
- o Widening employment quality and gaps
- o Polarization and inequality of income

Society

- o Housing and community-oriented life
- o Segmentation and personalized living
- o Social issue of loneliness

Technology

- o Strengthen the digitalization
- o Strengthen the cyber security technology
- o Health and Eco-friendly technology



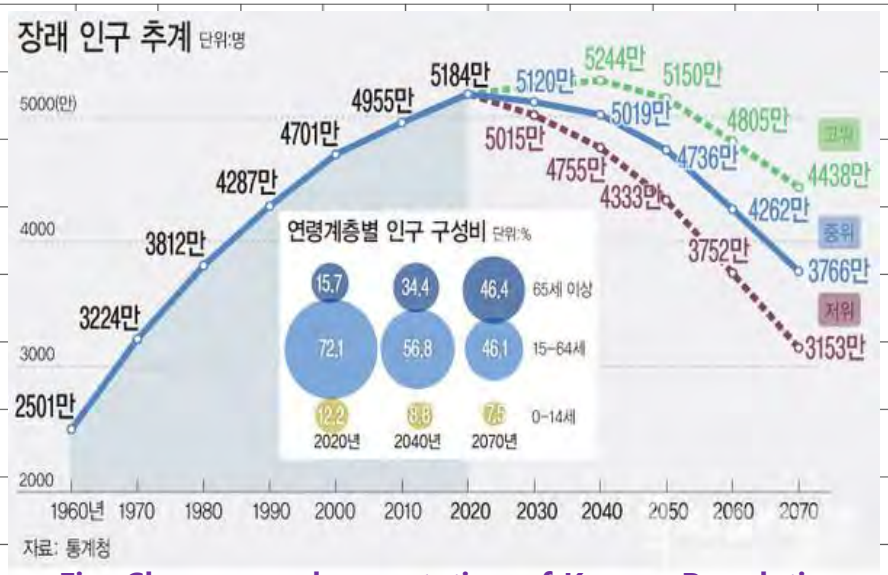
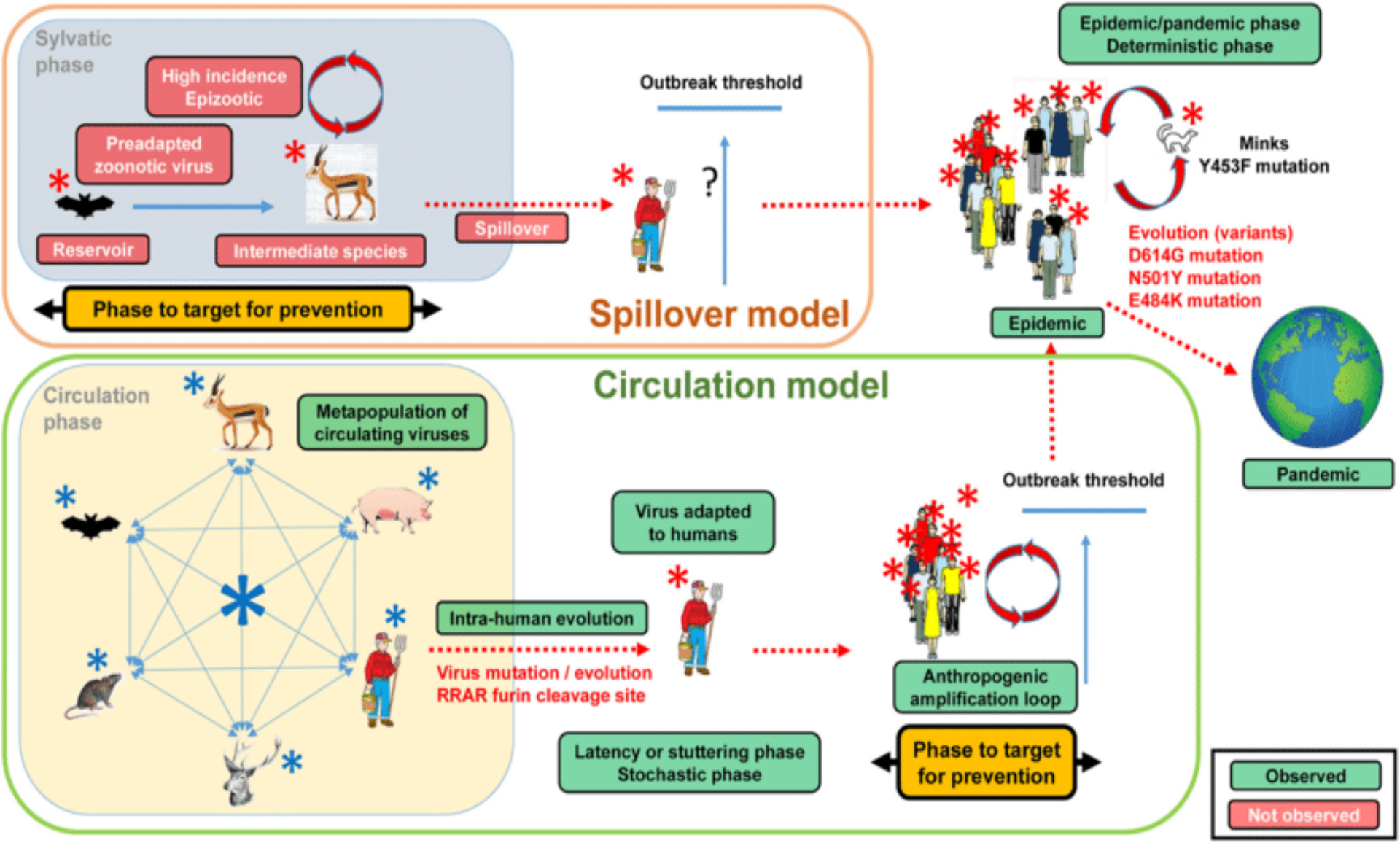


Fig. Changes and expectation of Korean Population

Fig. Changes and expectation of global population


Sylvatic phase
High incidence Epizootic
Preadapted zoonotic virus
Reservoir
Intermediate species
Spillover
Outbreak threshold
?
Spillover model
Phase to target for prevention
Epidemic/pandemic phase
Deterministic phase
Minks
Y453F mutation
Evolution (variants)
D614G mutation
N501Y mutation
E484K mutation
Epidemic
Pandemic
Circulation model
Circulation phase
Metapopulation of circulating viruses
Virus adapted to humans
Intra-human evolution
Virus mutation / evolution
RRAR furin cleavage site
Outbreak threshold
Anthropogenic amplification loop
Latency or stuttering phase
Stochastic phase
Phase to target for prevention
Observed
Not observed

Background

H3N2v
2011
Pigs

BSE
1986/1993
Cow

H7N9 AI
2003
Live bird Mkt

HPAI H5N1
1997/2003
Water bird

HPS
1993
Rodent

H10N8 AI
2013
Live bird Mkt

E. coli O157
1982
Cow/Food

SFTS virus
2009
Goats/cattle

H1N1pdm
2009
Swine/Bird

H9N2 AI
1999
Chikens

West Nile
1999
Bird/Mosquito

SARS-CoV
2003
Civet/Bats

VzHF
1991
Rodents

Hendra virus
1994
Horse/Bats

BzHF
1994
Rodents

Lassa
1969
Rodents

Ebola
1976/2014
Monkey/Bats

Chikungunya
1982
Mosquito

Zika
1982
Mosquito

Nipah virus
1998
Pigs/Bats

(Pathogen, Year, Natural reservoir)

One Health
Roadmap

1 **What is One Health?**
Definition | History

2 **Why One Health?**
A Changing World

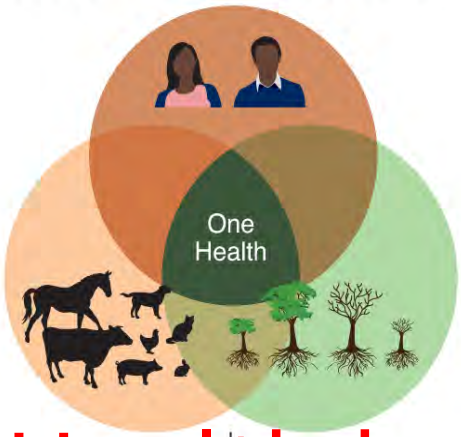
3 **Where One Health Applies**
Disease Transmission | Antimicrobial Resistance
Environmental Connections
Human-Animal Bond

4 **One Health – Global to Local**
International | United States
Regional | Wisconsin

5 **One Health in Public Health**
Key Players & Challenges

6 **Action Steps & Resources**
What you can do

One Health in Africa



Integrate One Health linkages into legislative frameworks to strengthen socio-ecological governance

Promote interdisciplinary surveillance preparedness and response

Animal health
- Promote improved farming practices
- Regulate use of wildlife
- Regulate antimicrobial use and prescription
- Regulate food supply chains and processing
- Expand research into emerging diseases

Human health
- Manage urbanization
- Reduce human conflict
- Regulate antimicrobial use and prescription
- Address socioeconomic inequities
- Expand research into emerging diseases

Environmental health
- Reduce deforestation and promote conservation
- Limit environmental pollution
- Improve housing
- Improve waste management
- Expand research into climate change

- Greater biodiversity in the ecosystem and sustainability of natural resources
- Reduced disease outbreaks in humans and animals
- Reduced socioeconomic inequalities
- Improved food security
- Improved global health security

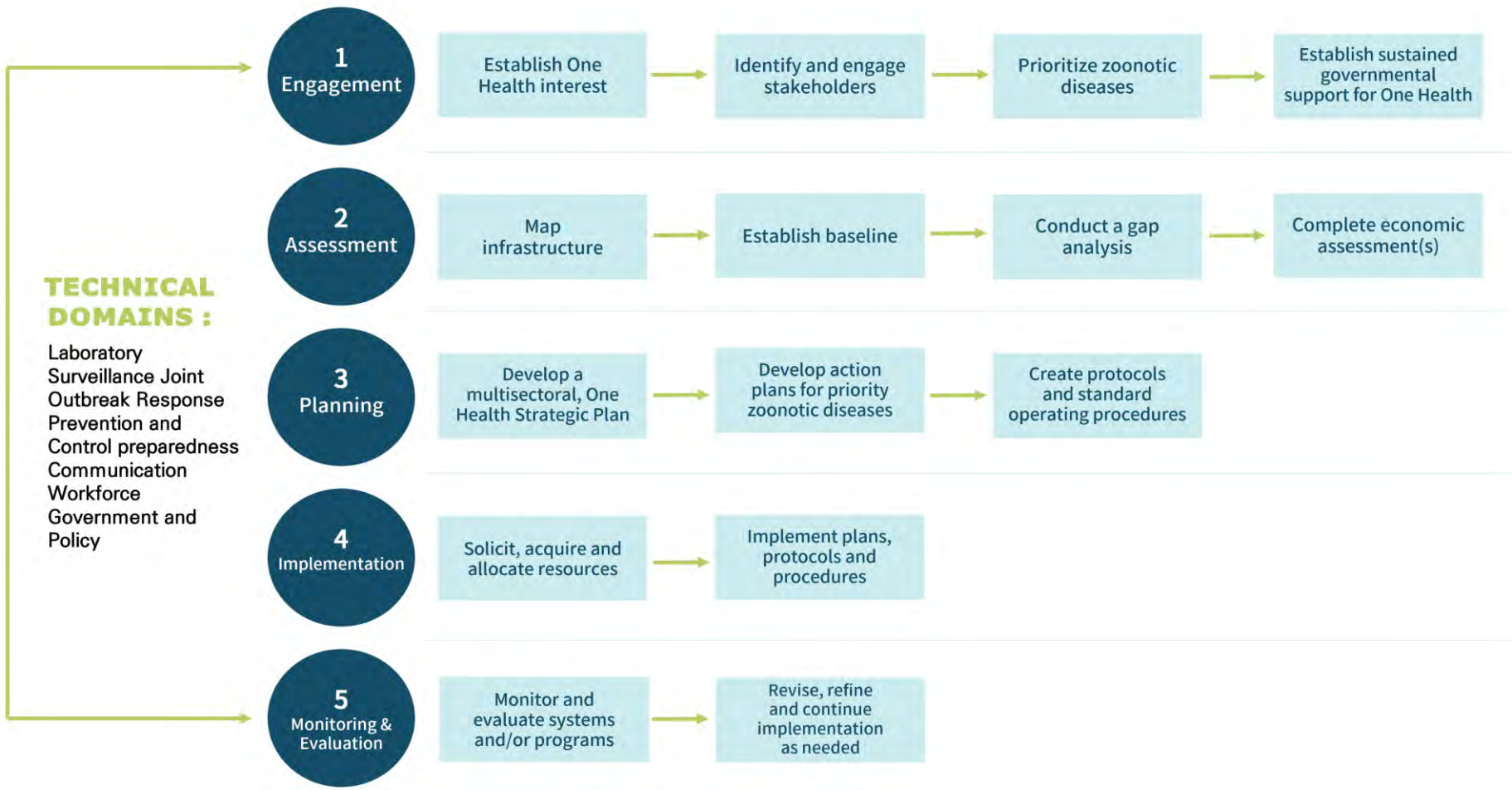


Fig. Generalized One Health framework visualization.

Ghai et. al., Sci Rep 12:8588, 2022

One Health in the coming era

PAST. CURRENT	Future
Concept	Action
Focus to health	Expand to several fields
Treatment after outbreak	Prediction before outbreak -> Prevention
Local, National level	International, Global, Diversity
Human-Animal-Environment	Environmental-Social-Governance (ESG)

IV. Future direction in One Health Education

O Establishment of an international Network for One Health education

- Mutual information exchange with various countries, especially neighboring countries, through the network
- Develop common syllabus for One Health education and research network

O Establishment of cooperation and communication system with related fields

- Establishment of a system that can cooperate with various directly and/or indirectly related fields such as BT, IT, ET, IoT, humanities and sociology and expansion of the fields through communication

O Develop countermeasures to prepare for the decline in the next generation

- **Substantial reduction of next generation due to low birth rate in our country** : Building a sustainable and viable system
- **In animal infectious diseases :** Establishment of an efficient and sustainable institutional response system in preparation for a decrease in the next generation, **especially in farm animals.**