PIDSP Annual Convention
PIDSP@25: Forging Ahead in Pediatric Infectious Diseases
Feb 21-23, 2018 Crowne Plaza Manila Galeria
Pasig City, Philippines

Imminent Infectious Diseases Threatening Asian Children

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Infectious Diseases

- Infectious diseases one of leading causes of death worldwide
- Caused by microorganisms such as viruses, bacteria, fungi or parasites
  - Normally harmless or helpful
  - Certain conditions, some may cause disease
- Can spread between individuals
- Some transmitted by bites from insects or animals
- Others acquired by ingestion of contaminated food or water or being exposed to organisms in environment
- Many infectious diseases can be prevented by vaccination

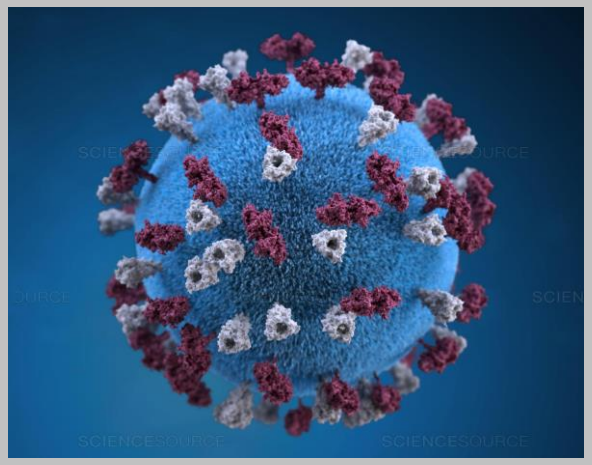
Imminent vs. Emerging

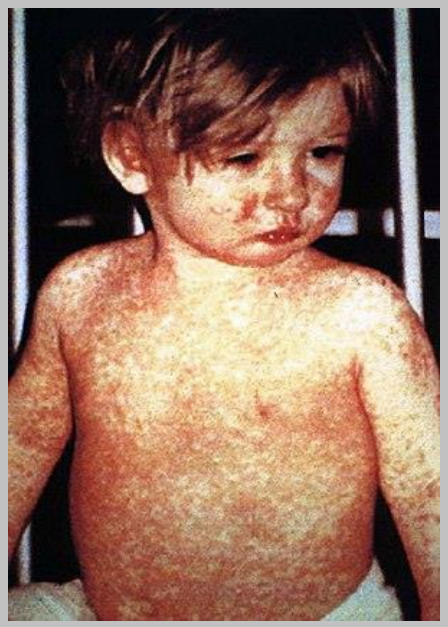
Imminent Infections	Emerging Infections
Likely to occur at any moment	Incidence in humans has increased in the past 2 decades or threatens to increase in the near future
Giving signs of immediate occurrence	
▪ Impending, looming	
▪ Certain to happen	

Imminent Infections

- Measles
- Pertussis
- Diphtheria
- Avian Influenza
- HIV

MEASLES





- One of the leading causes of death among young children
- 2000-2016 – vaccination prevented 20.4M deaths

COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

2008

Disease: **Measles**
Year: **2008**
Location: **China**
No. of Cases: **131,441**
Impact Scale: **Epidemic**
Source:

UNICEF. "Eighty-six percent decline in measles cases brings Western Pacific Region closer than ever to measles elimination." September 12, 2012.

Disease: **Measles**
Year: **2008**
Location: **Philippines**
No. of Cases: **874**
Impact Scale: **Epidemic**
Source:

UNICEF. "Eighty-six percent decline in measles cases brings Western Pacific Region closer than ever to measles elimination." September 12, 2012.

Disease: **Whooping Cough**
Year: **2008**
Location: **U.S. (South Dakota)**
No. of Cases: **67**
Impact Scale: **Epidemic**
Source:

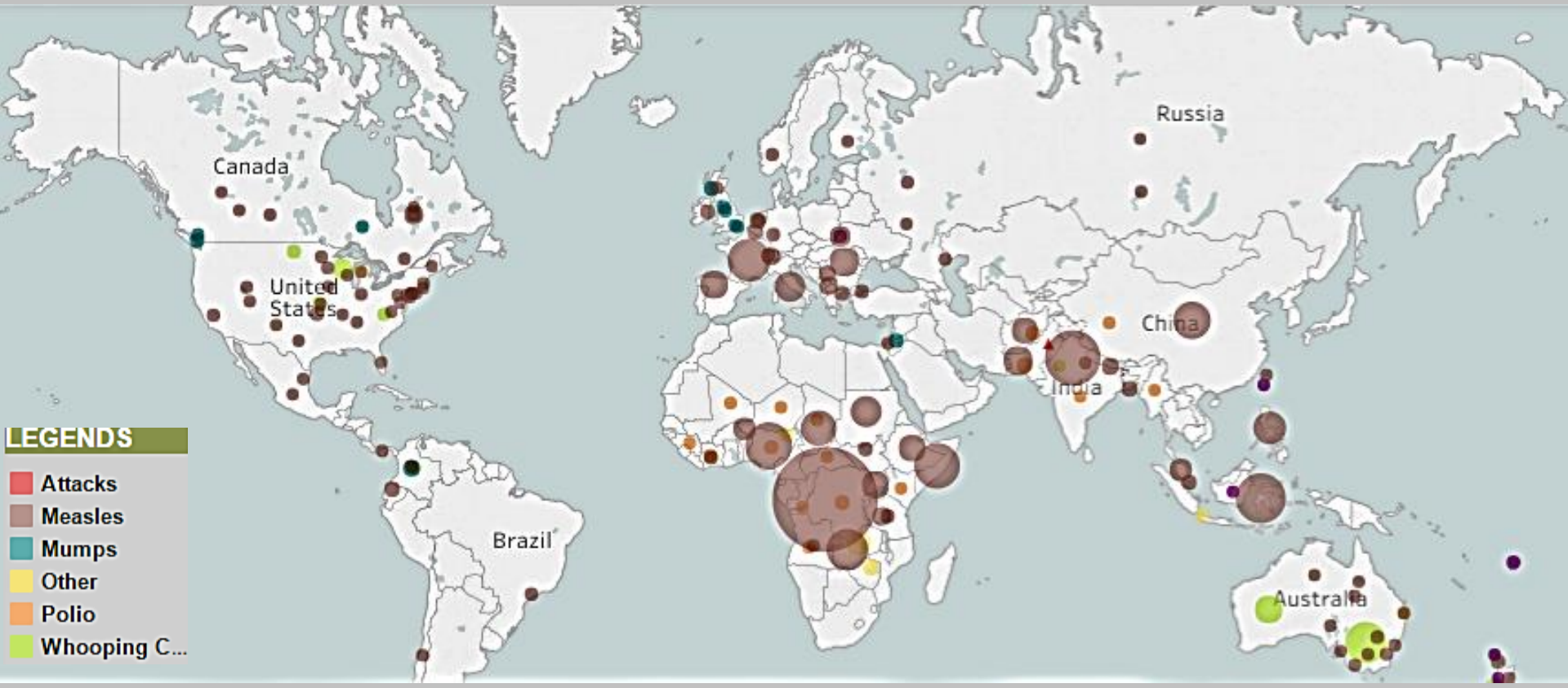
South Dakota Department of Health. "INFECTIOUS DISEASES IN SOUTH DAKOTA 2008."

http://www.cfr.org/interactives/GH_Vaccine_Map/#map accessed 31 Jan 2017

COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

2011



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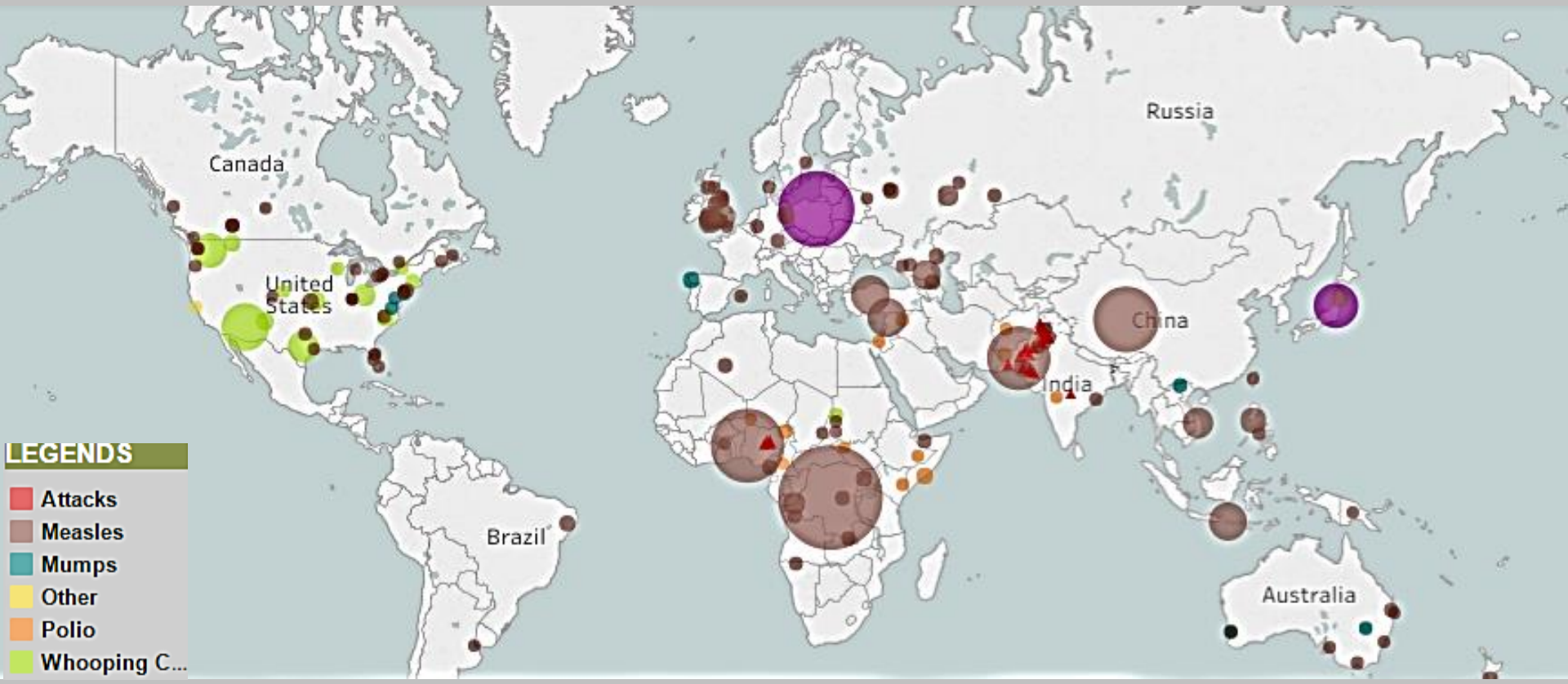
COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

2013



http://www.cfr.org/interactives/GH_Vaccine_Map/#map accessed 31 Jan 2017

COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

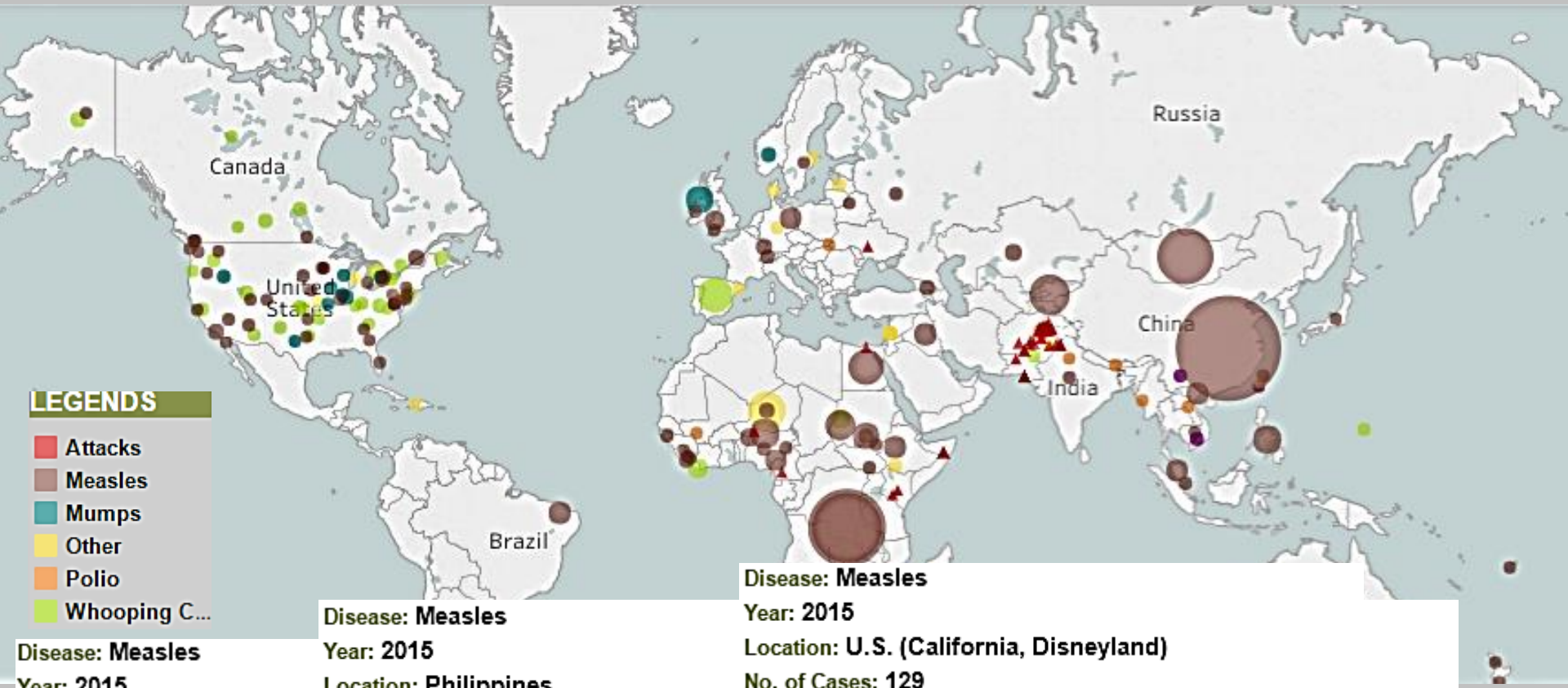
2014

http://www.cfr.org/interactives/GH_Vaccine_Map/#map accessed 31 Jan 2017

COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

2015



Disease: **Measles**
Year: **2015**
Location: **China**
No. of Cases: **79,499**
Impact Scale: **Epidemic**
Source:

Herriman, Robert. "Measles in Asia: Mongolia cases way up; Philippines and Vietnam, down significantly." Outbreak News Today, August 24, 2015.

Disease: **Measles**
Year: **2015**
Location: **Philippines**
No. of Cases: **2,231**
Impact Scale: **Epidemic**
Source:

Herriman, Robert. "Measles in Asia: Mongolia cases way up; Philippines and Vietnam down significantly." August 24, 2015.

Disease: **Measles**
Year: **2015**
Location: **U.S. (California, Disneyland)**
No. of Cases: **129**
Impact Scale: **Epidemic**
Source:

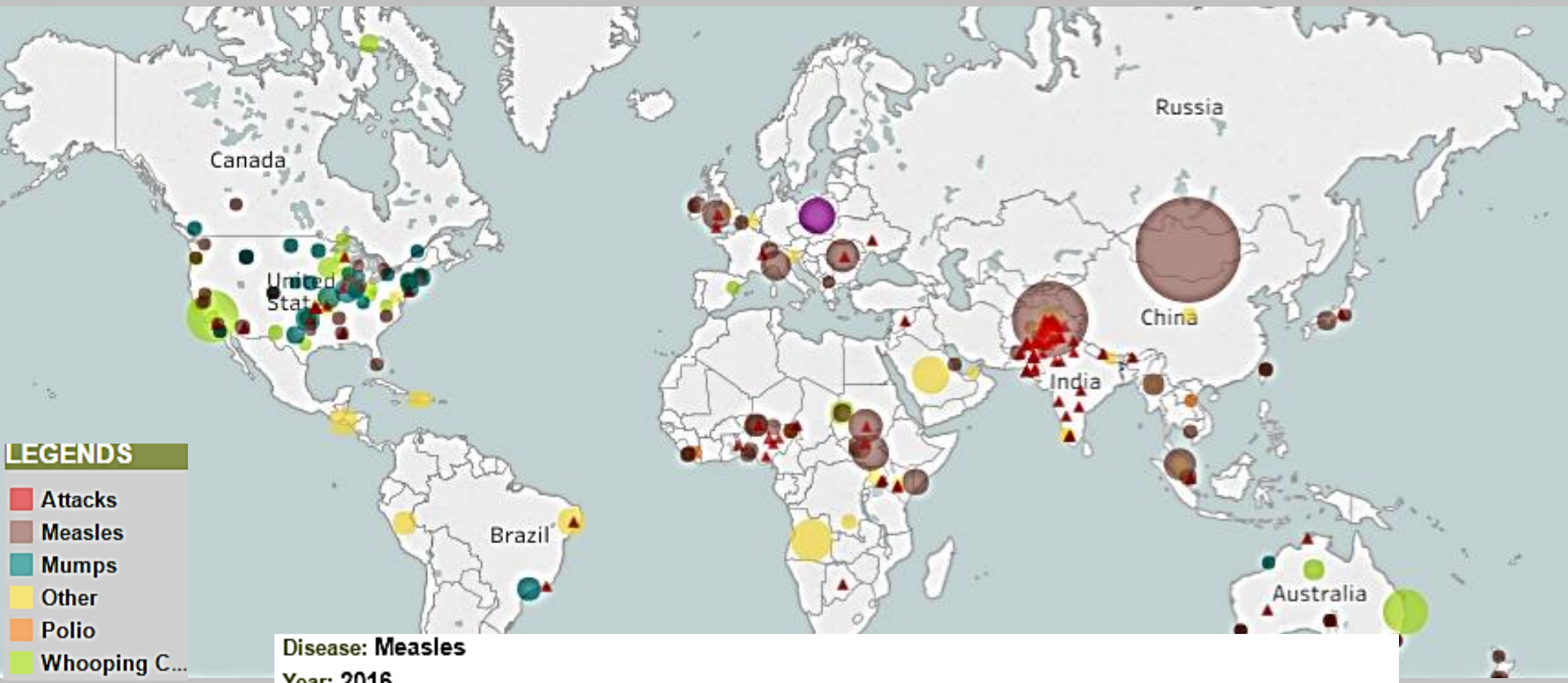
California Department of Public Health. "Measles."March 6, 2015.

http://www.cfr.org/interactives/GH_Vaccine_Map/#map accessed 31 Jan 2017

COUNCIL on FOREIGN RELATIONS

Vaccine-Preventable Outbreaks

2016



Disease: **Measles**
Year: **2016**
Location: **Mongolia**
No. of Cases: **19,194**
Impact Scale: **Epidemic**
Source:

Herriman, Robert. "Measles back in Mongolia, CDC issues travel notice." Outbreak News Today. June 24, 2016.

Disease: **Measles**
Year: **2016**
Location: **Pakistan (Khyber Pakhtunkhwa)**
No. of Cases: **9,000**
Impact Scale: **Epidemic**
Source:

Mishal, Wisal. "Around 398 cases of diphtheria, 9,000 cases of measles reported in KP, FATA." Daily Times. November 27

http://www.cfr.org/interactives/GH_Vaccine_Map/#map accessed 31 Jan 2017

Diphtheria & Pertussis Epidemiology in Malaysia

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Incidence time series for Malaysia (MYS)

Last updated 06-Sep-2017 (data as of 05-Sep-2017)
Next overall update 2018

Diseases	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981
Diphtheria	31	4	2	4	0	0	3	0	4	2	0	3	3	11	2	4	1	6	5	1	0	1	0	4	4	12	9	35	20	26	28	39	17	24	10	15
Japanese encephalitis	59	36	47	12	22	12	0	9	17	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Measles	1'569	1'318	221	195	1'868	1'569	73	153	334	394	564	1'407	5'729	632	408	2'198	6'187	2'576	483	627	460	654	346	542	363	275	563	1'027	2'304	5'429	4'699	5'163	8'147	9'313	9'268	5'690
Mumps	103	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Pertussis	298	939	500	222	217	248	41	5	11	15	6	8	40	28	6	26	42	17	6	3	7	8	12	15	25	20	24	25	27	121	68	150	57	86	126	106
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	4	4	2	5	1
Rubella	68	34	230	1'138	789	374	104	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Rubella (CRS)	_	_	_	4	1	_	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Tetanus (neonatal)	6	16	8	6	9	3	10	5	13	14	11	6	14	8	4	8	20	10	13	11	9	12	9	20	28	13	11	21	15	40	51	49	64	36	47	38
Tetanus (total)	23	20	22	32	34	11	28	19	29	36	28	_	33	18	6	27	40	26	19	11	_	12	17	45	42	31	30	59	52	86	51	49	64	36	47	38
Yellow fever	0	0	0	0	_	_	0	0	0	0	0	0	0	0	0	0	0	0	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

http://apps.who.int/immunization_monitoring/globalsummary/incidences?c=MYS

Epidemiology Bureau
Public Health Surveillance Division

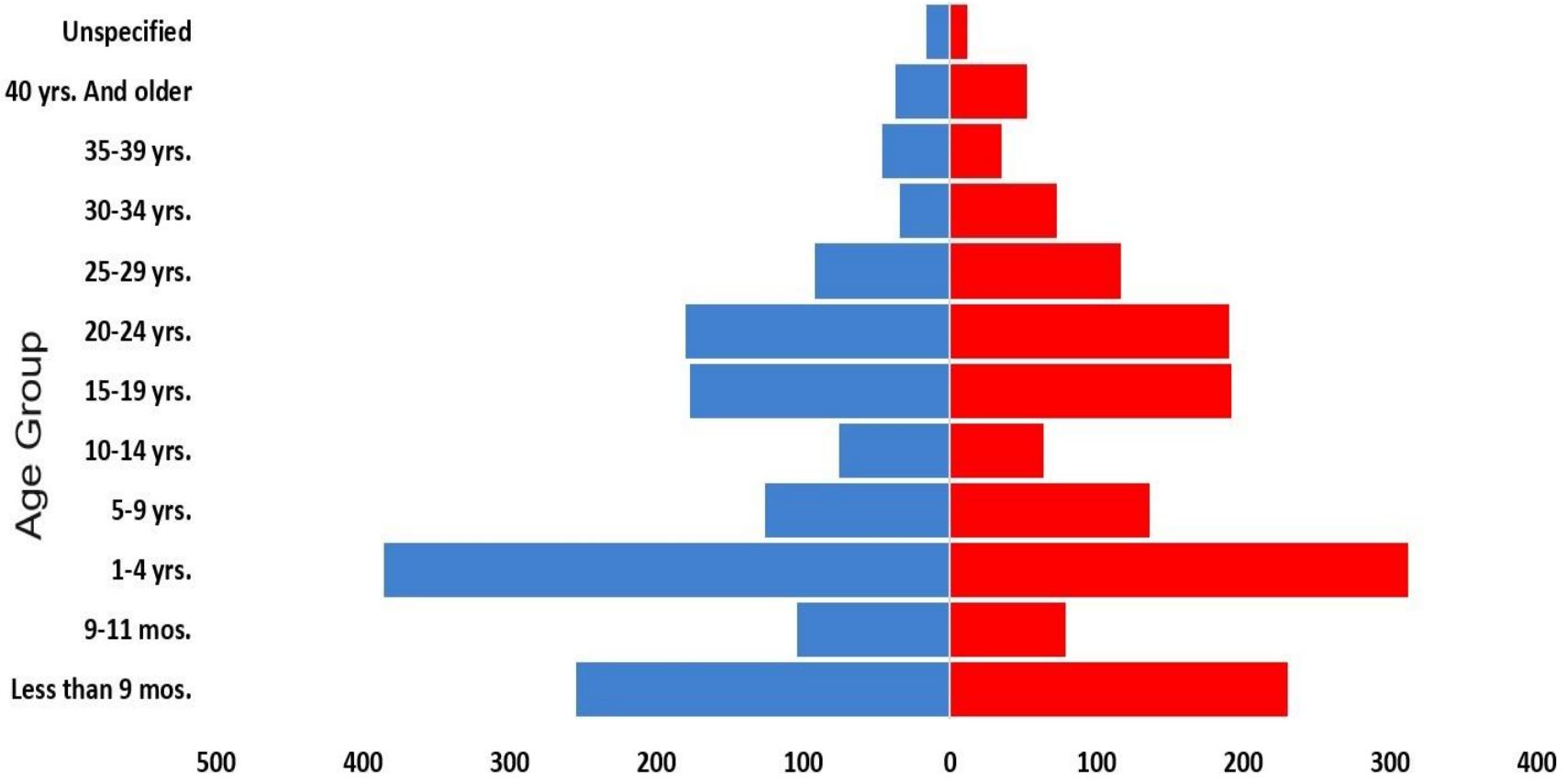
January 1-December 2, 2017

TABLE 2. CONFIRMED MEASLES AND RUBELLA CASES AND DEATHS* BY REGION, PHILIPPINES, 2017 vs. 2016

REGION	CONFIRMED MEASLES CASES					CONFIRMED RUBELLA CASES		
	2017	2016	% CHANGE	DEATHS	CFR (%)	2017	2016	% CHANGE
I	3	7	-57.14	0	0.00	32	6	433.33
II	0	2	-200.00	0	-	6	0	600.00
III	26	2	1,200.00	2	7.69	43	7	514.29
IVA	10	12	-16.67	0	0.00	98	21	366.67
MIMAROPA	0	0	0.00	0	-	2	2	0.00
V	0	4	-400.00	0	-	3	6	-50.00
VI	1	4	-75.00	0	0.00	102	55	85.45
VII	3	10	-70.00	0	0.00	6	5	20.00
VIII	0	2	-200.00	0	-	40	5	700.00
IX	135	11	1,127.27	1	0.74	7	0	700.00
X	4	2	100.00	0	0.00	6	7	-14.29
XI	3	1	200.00	0	0.00	5	5	0.00
XII	3	1	200.00	0	0.00	3	2	50.00
ARMM	54	2	2,600.00	1	1.85	1	0	100.00
CAR	0	3	-300.00	0	-	58	8	625.00
CRG	1	2	-50.00	0	0.00	1	0	100.00
NCR	8	6	33.33	1	12.50	35	30	16.67
PHL	**251**	**71**	**253.52**	**5**	**1.99**	**448**	**159**	**181.76**

*no confirmed rubella deaths

Distribution of Confirmed cases tested for Measles in RITM by Age and Gender, 2017 (n=1320)



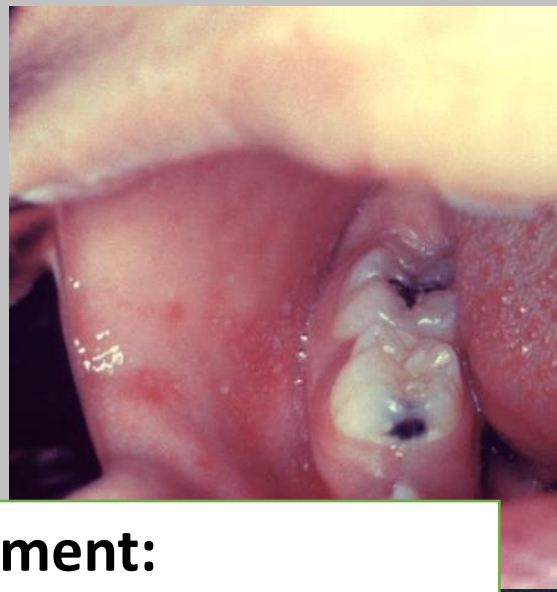
	Less than 9 mos.	9-11 mos.	1-4 yrs.	5-9 yrs.	10-14 yrs.	15-19 yrs.	20-24 yrs.	25-29 yrs.	30-34 yrs.	35-39 yrs.	40 yrs. And older	Unspecified
Male	255	104	386	126	76	177	180	92	34	46	37	16
Female	230	79	312	136	64	192	190	116	73	35	52	12

Measles Outbreak

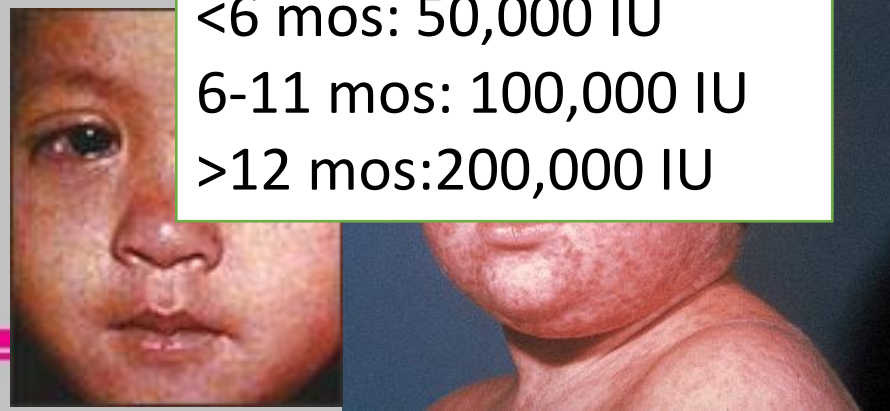
	Davao Region	Zamboanga City
No. of cases	433	284
Age range	28 days – 40 years old	1 – 15 years old
Most affected age	-	1 – 5 years old
No. of deaths	18 (1 – 2 mos. old)	0
Lab confirmation	Measles IgM – 17 Virus isolate – 2 PCR - 24	Measles IgM – 57
Immunization status of deaths	17 (94%) no measles immunization	-

Recognize and Treat: Measles

- Incubation period 10-12 days
- Prodrome 2-4 days
  - stepwise increase in fever to 103°F–105°F
  - cough, coryza, conjunctivitis
  - Koplik spots (rash on mucous membranes)
- Rash
  - 2-4 days after prodrome, 14 days after exposure
  - persists 5-6 days
  - begins on face and upper neck
  - maculopapular, discrete then becomes confluent
  - fades in order of appearance
- (+/- anorexia, diarrhea, lympadenopathy)



Treatment:
Supportive
Vitamin A once daily x 2 days:
<6 mos: 50,000 IU
6-11 mos: 100,000 IU
>12 mos:200,000 IU

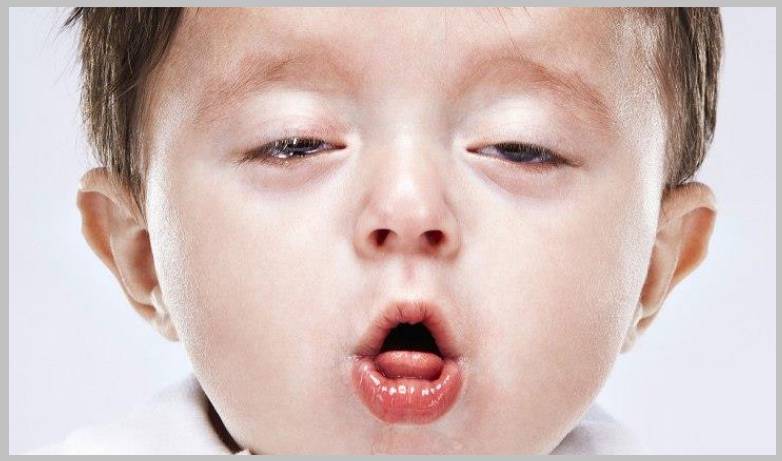


Centers for Disease Control and Prevention Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th Edition *Photos courtesy of the Centers for Disease Control and Prevention (CDC)*

MEASLES: SUMMARY

- Continues to occur
- An imminent threat to children
- Based on current trends of measles vaccination coverage and incidence and mid-term WHO review-
  - SAGE concluded that 2015 global milestones and measles elimination goals not achieved
- Improve vaccination coverage

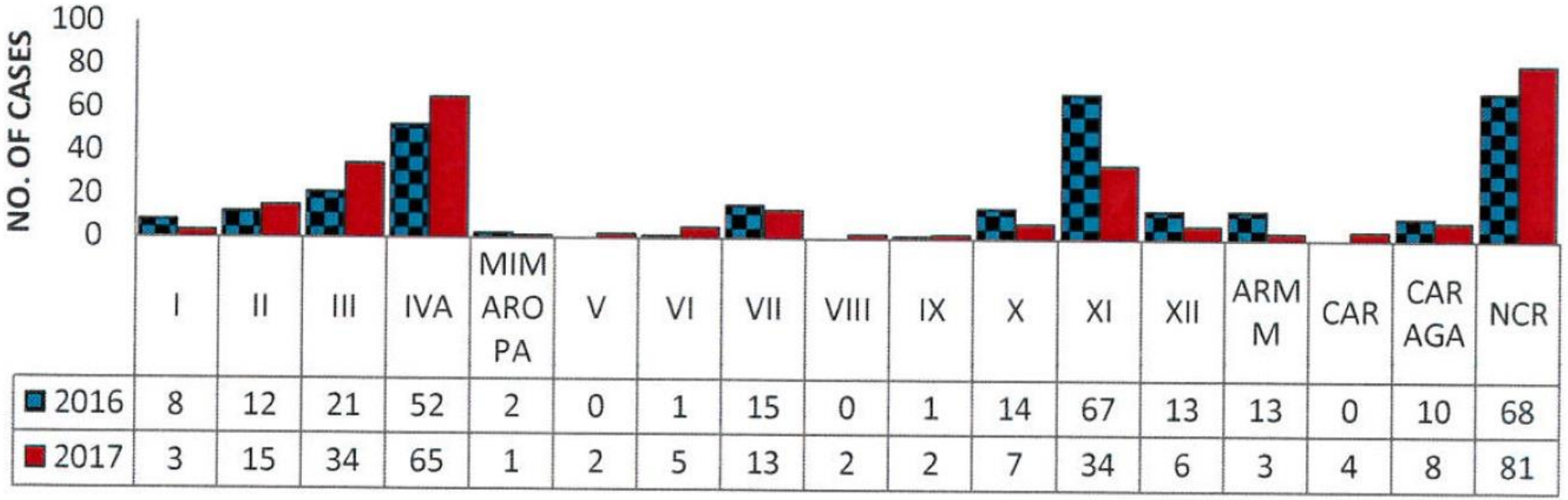
PERTUSSIS



20-40 million cases/year

-90% in developing countries

Fig. 2 Reported Pertussis Cases by Region, Philippines, as of December 2, 2017 (N=285)



	I	II	III	IVA	MIMAROPA	V	VI	VII	VIII	IX	X	XI	XII	ARMM	CAR	CARAGA	NCR
2016	8	12	21	52	2	0	1	15	0	1	14	67	13	13	0	10	68
2017	3	15	34	65	1	2	5	13	2	2	7	34	6	3	4	8	81

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Japanese encephalitis	59	36	47	12	22	12	0	9	17	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Measles	1'569	1'318	221	195	1'868	1'569	73	153	334	394	564	1'407	5'729	632	408	2'198	6'187	2'576	483	627	460	654	346	542	383	275	563	1'027	2'304	5'429	4'699	5'163	8'147	9'313	9'268	5'690
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Pertussis	298	939	500	222	217	248	41	5	11	15	6	8	40	28	6	26	42	17	6	3	7	8	12	15	25	20	24	25	27	121	68	150	57	86	126	106
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	4	4	2	5	1
Rubella	68	34	230	1'138	789	374	104	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Rubella (CRS)	_	_	_	4	1	_	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Tetanus (neonatal)	6	16	8	6	9	3	10	5	13	14	11	6	14	8	4	8	20	10	13	11	9	12	9	20	28	13	11	21	15	40	51	49	64	36	47	38
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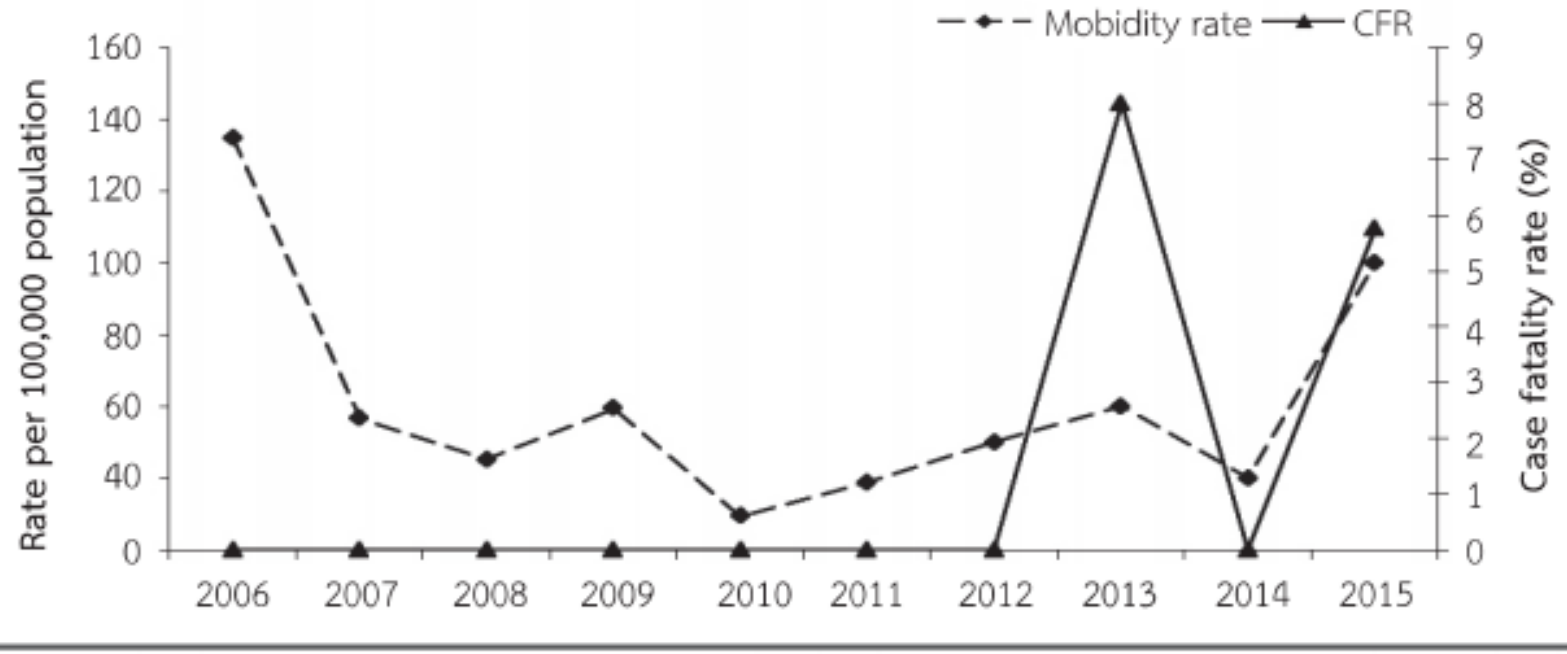
Yellow fever	0	0	0	0	_	_	0	0	0	0	0	0	0	0	0	0	0	0	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

http://apps.who.int/immunization_monitoring/globalsummary/incidences?c=MYS

Burden of Pertussis in Thailand
Reported case pertussis in Thailand 2006-2015

Fig.1 Reported cases of pertussis per 100,000 population and case fatality rate by year, Thailand, 2006 - 2015



World Health Organization

WHO vaccine-preventable diseases: monitoring system. 2017 global summary

Incidence time series for Viet Nam (VNM)

Last updated 06-Sep-2017 (data as of 05-Sep-2017)
Next overall update 2018

Diseases	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981
Diphtheria	13	15	16	11	12	13	6	8	17	32	25	36	49	105	105	133	113	81	130	152	143	167	166	167	497	511	509	639	983	1'827	1'974	2'361	2'389	3'487	2'921	2'688
Japanese encephalitis	357	368	421	224	183	126	140	68	17	38	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Measles	46	256	15'033	1'123	578	750	2'809	6'582	352	17	1'978	410	217	2'297	6'755	12'058	16'512	14'134	11'690	6'507	5'156	6'171	11'853	12'015	11'830	9'874	8'175	22'332	23'308	30'460	68'463	82'231	87'796	125'176	72'466	62'400
Mumps	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	18'008	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pertussis	267	309	90	54	98	105	81	122	280	183	144	194	328	716	662	1'242	1'426	903	1'182	1'565	1'537	2'444	3'477	2'507	4'428	4'669	4'095	11'281	21'672	30'498	43'981	44'011	49'575	85'023	59'840	75'187

Data in Vietnam for 2017

- Slight increase of pertussis cases versus previous years: 571
- Number of deaths: 3
- Age distribution: < 2 months of age (37, 7%) [too young to be vaccinated]
- History of immunization: None (31, 4%)

  Unclear (23, 8%)

  Vaccinated cases (23, 8%)

Hội nghị trực tuyến tăng cường công tác phòng, chống dịch bệnh mùa Đông Xuân năm 2018, https://baomoi.com/benh-bach-hau-dang-quay-tro-lai/c/23567421.epi

Duration of Immunity against Pertussis

- Waning immunity cited as one reason for observed epidemiological trend
- Review of published data on duration of immunity
  - Infection-acquired immunity wanes after 7 – 20 years
  - Protective immunity after vaccination with wP or aP does not differ
    - last 4 – 6 years
- Seroprevalence studies in unvaccinated population
  - 95% infected by age 19years.

Wendelboe et al, PIDJ vol. 24(5), Suppl., May 2005, pp S58-S61

Pertussis Resurgence – Interplay of several factors:

Resurgence of pertussis

- Major public health challenge
- First appeared in developed countries using aP vaccines
  - Australia, US, UK
- But also in countries using wP vaccines
  - Algeria, Iran, Poland, Russia
  - Latin America (Brazil, Colombia, Costa Rica, Argentina, Chile, Uruguay)

- Better diagnosis
  - Enhanced awareness of disease
  - Increased case reporting
  - Use of more sensitive diagnostic tools
- Vaccines characteristics
  - Waning immunity
- Epidemiology and vaccines-strategy characteristics
  - Evolution of circulating strains
  - Differences in vaccination schedules
  - Differences in vaccination coverages

Algeria: Radoui A et al. Resurgence des cas de coqueluche à Oran. 17th Congrès de Pneumologie de Langue Française. 1-3 February 2013, Lille, France.
Iran: Saffar MJ et al. *Bordetella pertussis* IgG and IgA Ab seroprevalence among 1–35 y-old Population. *indian J Pediatr* 2012;79(3):353-7.
Ghanaie RM et al. Sensitivity and specificity of the WHO pertussis clinical case definition. *Int J Infect Dis* 2010;14:e1072-5.
Poland: Stefanoff P et al. Incidence of pertussis in patients of general practitioners in Poland. *Epidemiol Infect* 2014;142:714-23.
Russia: Iozefovich OV et al. The prevalence of pertussis in long coughing children 6–17 years old, vaccinated at an early age with DTP vaccine. Вакцинопрофилактика 2012;66(5):56-59.
Latin America: Arlant LHF et al. Pertussis in Latin America: Epidemiology and control strategies. Manuscript submitted for peer-reviewed publication.
Argentina: Hazbor D et al. Pertussis epidemiology in Argentina: trends over 2004–2007. *J Infection* 2009;59:225-31.
Uruguay: Uruguay Ministerio de Salud Pública, División de Epidemiología. Informe de actualizacion situación tos convulsa. 18 de setiembre de 2012.

http://www.who.int/wer/2015/wer9035/en/

Recognize and Treat: Pertussis

- Incubation period 7-10 days
  - (range 4-21 days)
- Insidious onset, similar to the common cold with nonspecific cough
- Fever usually minimal throughout course of illness
- Catarrhal stage
  - 1-2 weeks
- Paroxysmal cough stage
  - 1-6 weeks
- Convalescence
  - weeks to months
- Disease often milder in older children than in infants and young children
- Medical management: primarily supportive, although antibiotics are of some value to limit spread (Azithromycin x 5 days)

Centers for Disease Control and Prevention Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th Edition ; AAP Red Book 2015 30th ed.; *Photos courtesy of the Centers for Disease Control and Prevention (CDC): and Thomas Schlenker, MD, MPH, Chief Medical Officer, Children's Hospital of Wisconsin*

What Can We Do

- Maternal immunization with aP-containing vaccines during 3rd trimester
  - Safe
  - Effective
  - High impact on morbidity and mortality in infants too young to have been vaccinated
- Several countries introduced maternal Tdap during pregnancy
  - Argentina, Israel, New Zealand, UK, USA
  - Prevent mortality in infants too young to be vaccinated

Clinical Infectious Diseases

SUPPLEMENT ARTICLE

Sustained Effectiveness of the Maternal Pertussis Immunization Program in England 3 Years Following Introduction

Gayatri Amirthalingam,[1] Helen Campbell,[1] Sonia Ribeiro,[1] Norman K. Fry,[2] Mary Ramsay,[1] Elizabeth Miller,[1] and Nick Andrews[3]

[1]Immunisation, Hepatitis and Blood Safety Department, [2]Respiratory and Vaccine Preventable Bacterial Reference Unit, and [3]Statistics, Modelling and Economics Department, Public Health England, London, United Kingdom

- **Effectiveness of maternal immunization was first demonstrated in England 1 year after introduction of program of giving dT5aP-IPV in 2012**
- **Vaccine effectiveness vs. lab-confirmed has been sustained >90% in 3 following introduction**
- **Disease in infants <3mos remained low**
- **Vaccine effective vs. infants deaths was 95%**
- **No evidence of ↑ risk of disease after primary immunization in infants whose mothers received maternal vaccination**

DIPHTHERIA

- One of the most feared infectious diseases globally
- After EPI in 1974, incidence decreased dramatically
  - Cases ↓ by >90% in 1980 – 2000
- Remains a significant health problem in countries with poor routine vaccination coverage

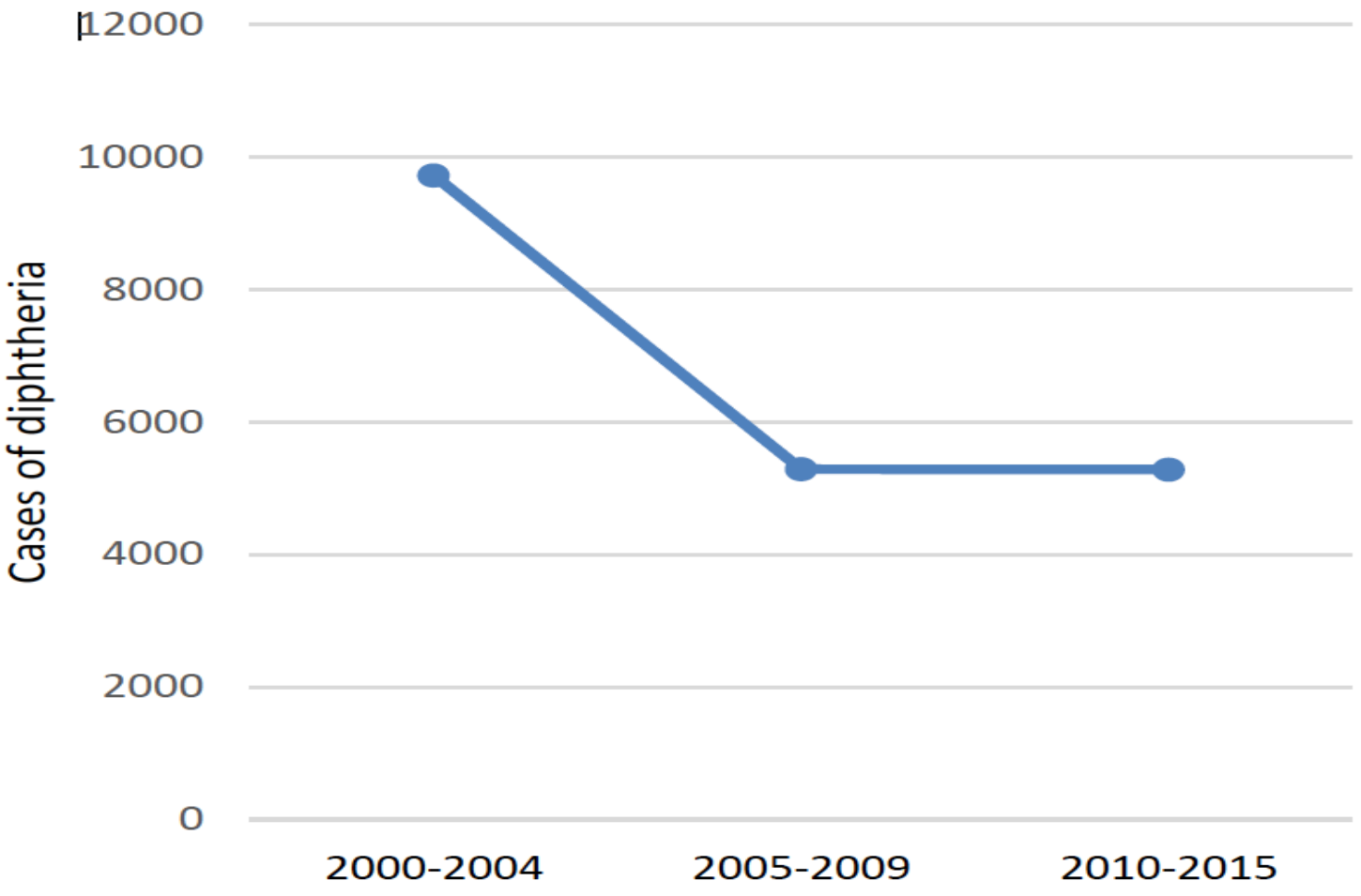
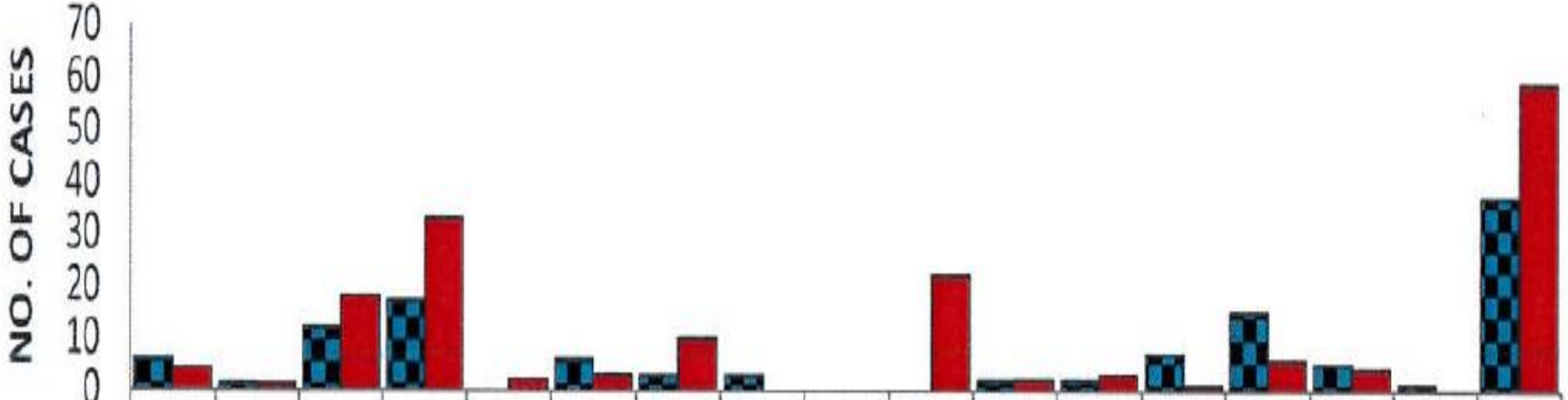


Figure 2: Reported cases of diphtheria per year worldwide by 5 year average

Fig. 2 Reported Diphtheria Cases by Region and 2016 vs 2017, Philippines, as of December 2, 2017 (N=168)



	I	II	III	IVA	MIMAROPA	V	VI	VII	VIII	IX	X	XI	XII	ARMM	CAR	CARAGA	NCR
2016	6	1	12	17	0	6	3	3	0	0	2	2	7	15	5	1	37
2017	4	1	18	33	2	3	10	0	0	22	2	3	1	6	4	0	59

Case counts reported do NOT represent the final number and are subject to change after inclusion of delayed reports and review of cases.

Diphtheria & Pertussis Epidemiology in Malaysia

WHO vaccine-preventable diseases: monitoring system. 2017 global summary

Incidence time series for Malaysia (MYS)

Last updated 06-Sep-2017 (data as of 05-Sep-2017)
Next overall update 2018

Diseases	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981
Diphtheria	31	4	2	4	0	0	3	0	4	2	0	3	3	11	2	4	1	6	5	1	0	1	0	4	4	12	9	35	20	26	28	39	17	24	10	15
Japanese encephalitis	59	36	47	12	22	12	0	9	17	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Measles	1'569	1'318	221	195	1'868	1'569	73	153	334	394	564	1'407	5'729	632	408	2'198	6'187	2'576	483	627	460	654	346	542	383	275	563	1'027	2'304	5'429	4'699	5'163	8'147	9'313	9'268	5'690
Mumps	103	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Pertussis	298	939	500	222	217	248	41	5	11	15	6	8	40	28	6	26	42	17	6	3	7	8	12	15	25	20	24	25	27	121	68	150	57	86	126	106
Polio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	4	4	2	5	1
Rubella	68	34	230	1'138	789	374	104	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Rubella (CRS)	_	_	_	4	1	_	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
Tetanus (neonatal)	6	16	8	6	9	3	10	5	13	14	11	6	14	8	4	8	20	10	13	11	9	12	9	20	28	13	11	21	15	40	51	49	64	36	47	38
Tetanus (total)	23	20	22	32	34	11	28	19	29	36	28	_	33	18	6	27	40	26	19	11	_	12	17	45	42	31	30	59	52	86	51	49	64	36	47	38
Yellow fever	0	0	0	0	_	_	0	0	0	0	0	0	0	0	0	0	0	0	0	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

http://apps.who.int/immunization_monitoring/globalsummary/incidences?c=MYS

Duration of Protection

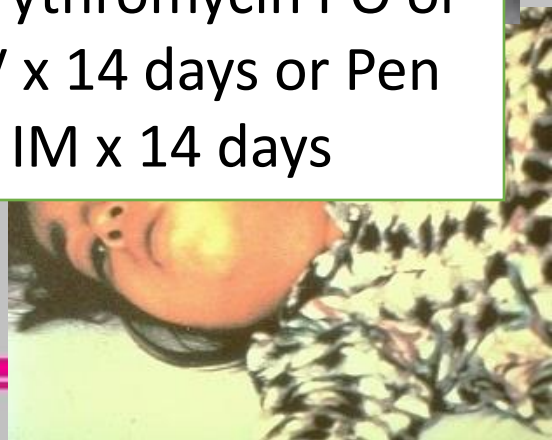
- Absence of natural boosting
  - Immunity following 3-dose primary vaccination schedule wanes overtime
  - Booster doses needed to ensure continuing protection
    - Optimal number required and interval between doses uncertain
- Systematic review:
  - Only limited data available on duration of protective effectiveness &/or immunogenicity of 3-dose primary plus 3-dose booster schedule until adulthood
  - In Netherlands, 3-dose primary + 3-dose booster indicate high seroprevalence
    - Administration of decennial booster doses may not be necessary through middle age

Recognize and Treat: Diphtheria

- Incubation period 2-5 days (range, 1-10 days)
- May involve any mucous membrane
- Classified based on site of disease
  - anterior nasal
  - pharyngeal and tonsillar
  - laryngeal
  - cutaneous
  - ocular / genital
- Pharyngeal and Tonsillar Diphtheria
  - Insidious onset of pharyngitis
  - Within 2-3 days membrane forms
  - Membrane may cause respiratory obstruction
  - Fever usually not high but patient appe toxic

Treatment:

- 1 dose IV Diphtheria antitoxin – neutralize circulating toxin and prevent disease progression (dose depends on severity)
- Erythromycin PO or IV x 14 days or Pen G IM x 14 days

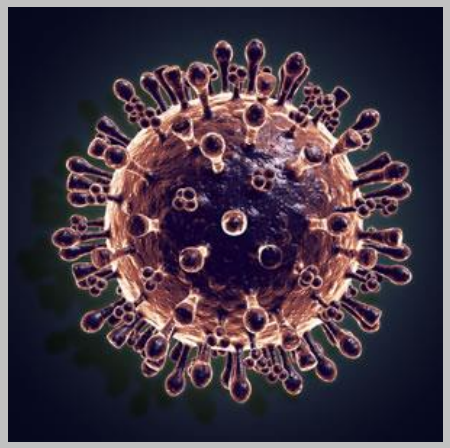


Centers for Disease Control and Prevention Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th Edition ; AAP Red Book 2015 30th ed.; *Photos courtesy of the Centers for Disease Control and Prevention (CDC)*

What to Do

- Early recognition and management
- All children should be immunized against diphtheria
- Recent outbreaks reflect inadequate vaccination coverage
  - Demonstrate importance of sustaining high levels of coverage in childhood immunization programs
- Need for timely vaccination with complete primary series + booster doses
- Unimmunized at risk regardless of setting

AVIAN INFLUENZA



Avian Influenza

- Animal influenza viruses are distinct from seasonal influenza viruses and do not easily transmit between humans
- Avian influenza A viruses do not infect people
  - Rare cases of human infection have been reported
- Human infections primarily acquired through direct contact with infected animals or contaminated environments
  - Viruses have not acquired the ability of sustained transmission among humans
- Birds are natural hosts for avian influenza viruses

Avian Influenza

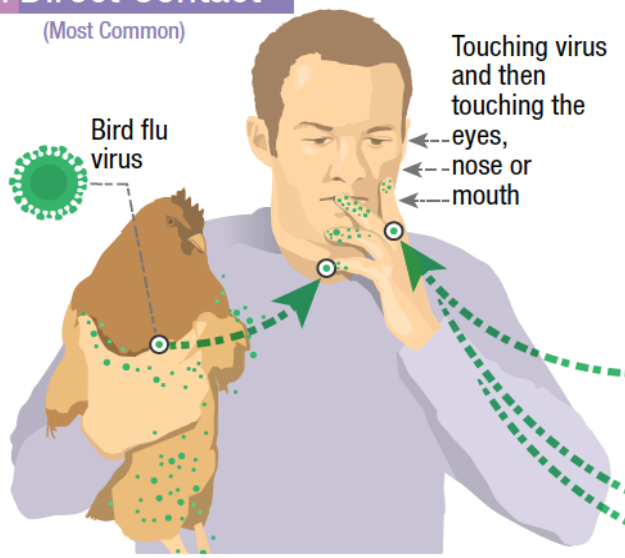
- After outbreak of A(H5N1) in 1997 in poultry in Hongkong SAR, China, outbreaks have occurred
- Since 2003, avian and other influenza viruses have spread from Asia to Europe and Africa
  - 2013, human infections with influenza A(H7N9) reported in China

How Infected Backyard Poultry Could Spread Bird Flu to People

Human Infections with Bird Flu Viruses Rare But Possible

1 Direct Contact

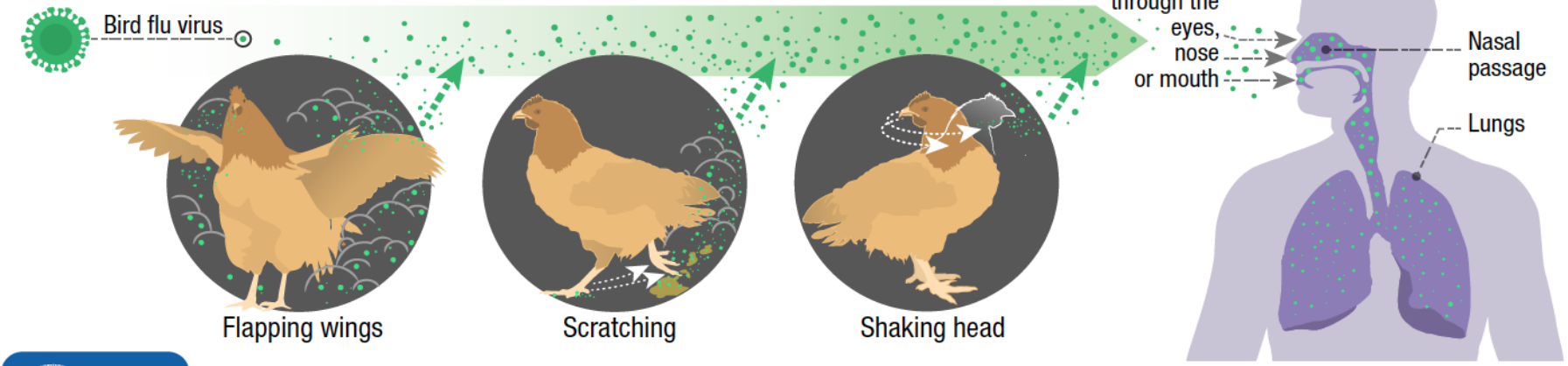
(Most Common)



Infection can occur without touching poultry.

2 Contaminated Surfaces

3 Bird Flu Virus in the Air (in Droplets or Dust)



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/flu/avianflu/avian-in-humans.htm

CS261152

Signs and Symptoms

- The symptoms of avian influenza include the following:
  - Fever (often high fever, > 38°C)
  - Weakness
  - Cough
  - Sore throat
  - Muscle aches
- Other symptoms: abdominal pain, chest pain and diarrhea and in severe cases, difficulty of breathing and shortness of breath

Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2018

Country	2003-2009*		2010-2014**		2015		2016		2017		2018		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	6	1	1	0	0	0	0	0	0	0	8	1
Cambodia	9	7	47	30	0	0	0	0	0	0	0	0	56	37
Canada	0	0	1	1	0	0	0	0	0	0	0	0	1	1
China	38	25	9	5	6	1	0	0	0	0	0	0	53	31
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	90	27	120	50	136	39	10	3	3	1	0	0	359	120
Indonesia	162	134	35	31	2	2	0	0	1	1	0	0	200	168
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	2	2	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	12	4
Viet Nam	112	57	15	7	0	0	0	0	0	0	0	0	127	64
Total	**468**	**282**	**233**	**125**	**145**	**42**	**10**	**3**	**4**	**2**	0	0	**860**	**454**

* 2003-2009 total figures. Breakdowns by year available on subsequent tables.
** 2010-2014 total figures. Breakdowns by year available on subsequent tables.

Total number of cases includes number of deaths.
WHO reports only laboratory cases.
All dates refer to onset of illness.

Source: WHO/GIP, data in HQ as of 25 January 2018

World Health Organization

Avian Influenza among Poultry
Philippines, 2005

- Low pathogenic avian influenza detected among three healthy ducks in Calumpit, Bulacan
- Ducks in affected farm culled
- DA banned sale and transport of poultry products within 3 km. of affected farm

Source: Center for Infectious Disease Research and Policy, University of Minnesota

Fig 1. Timeline of Events for Avian Influenza Outbreak

Pampanga and Nueva Ecija, 2017

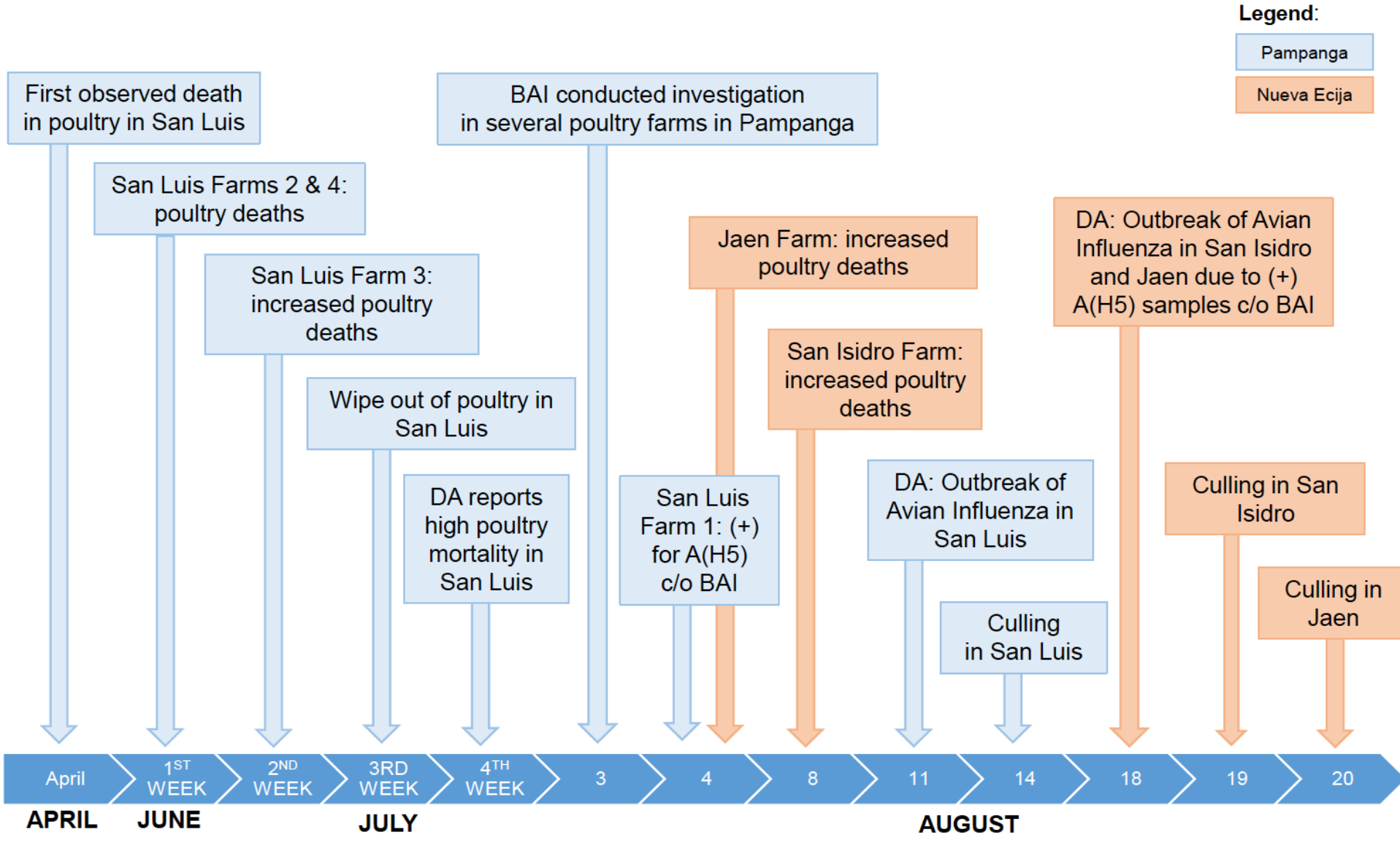
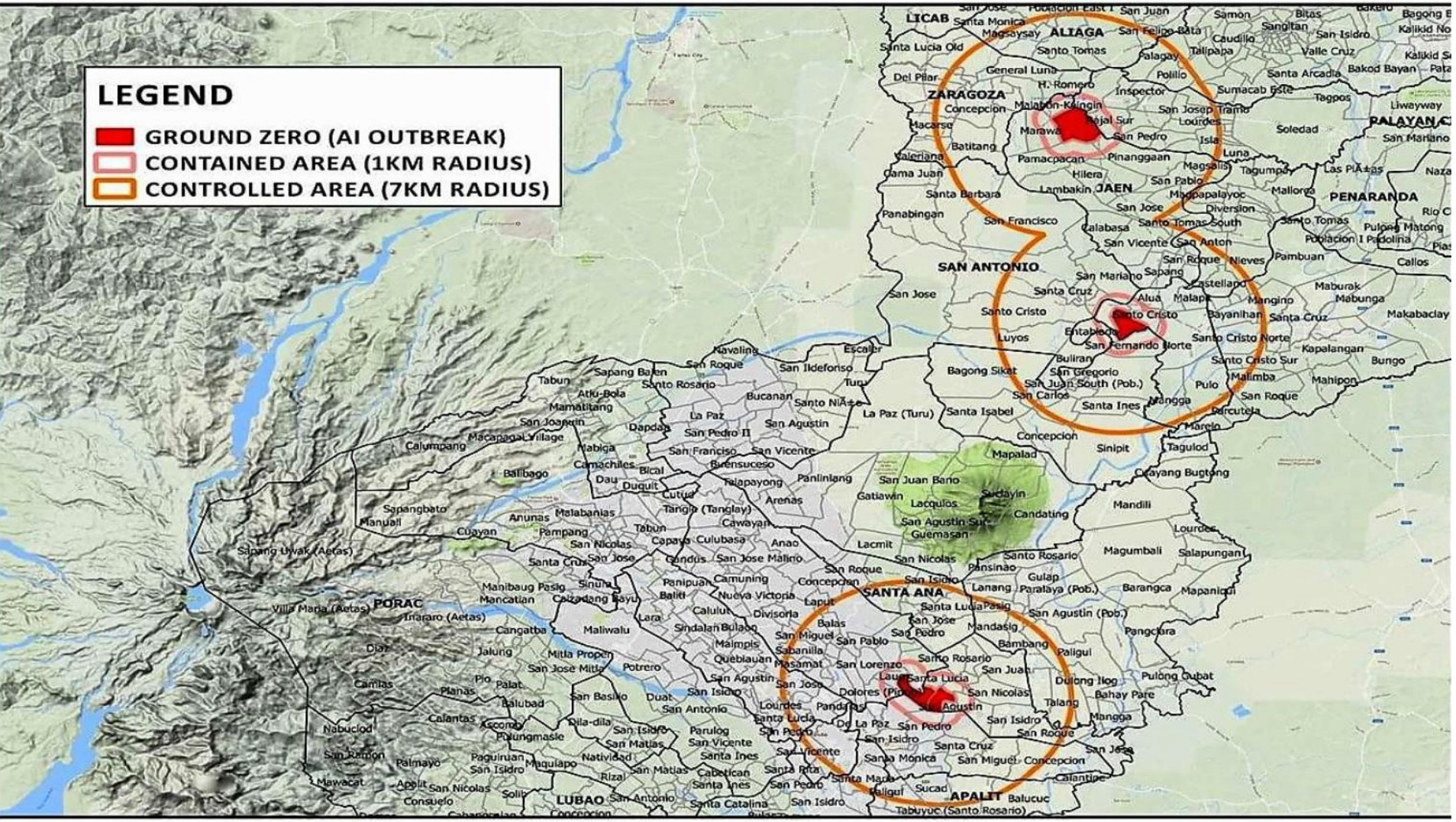


Fig 2. Spot Map of Avian Influenza Affected Areas

Pampanga and Nueva Ecija, August 23, 2017



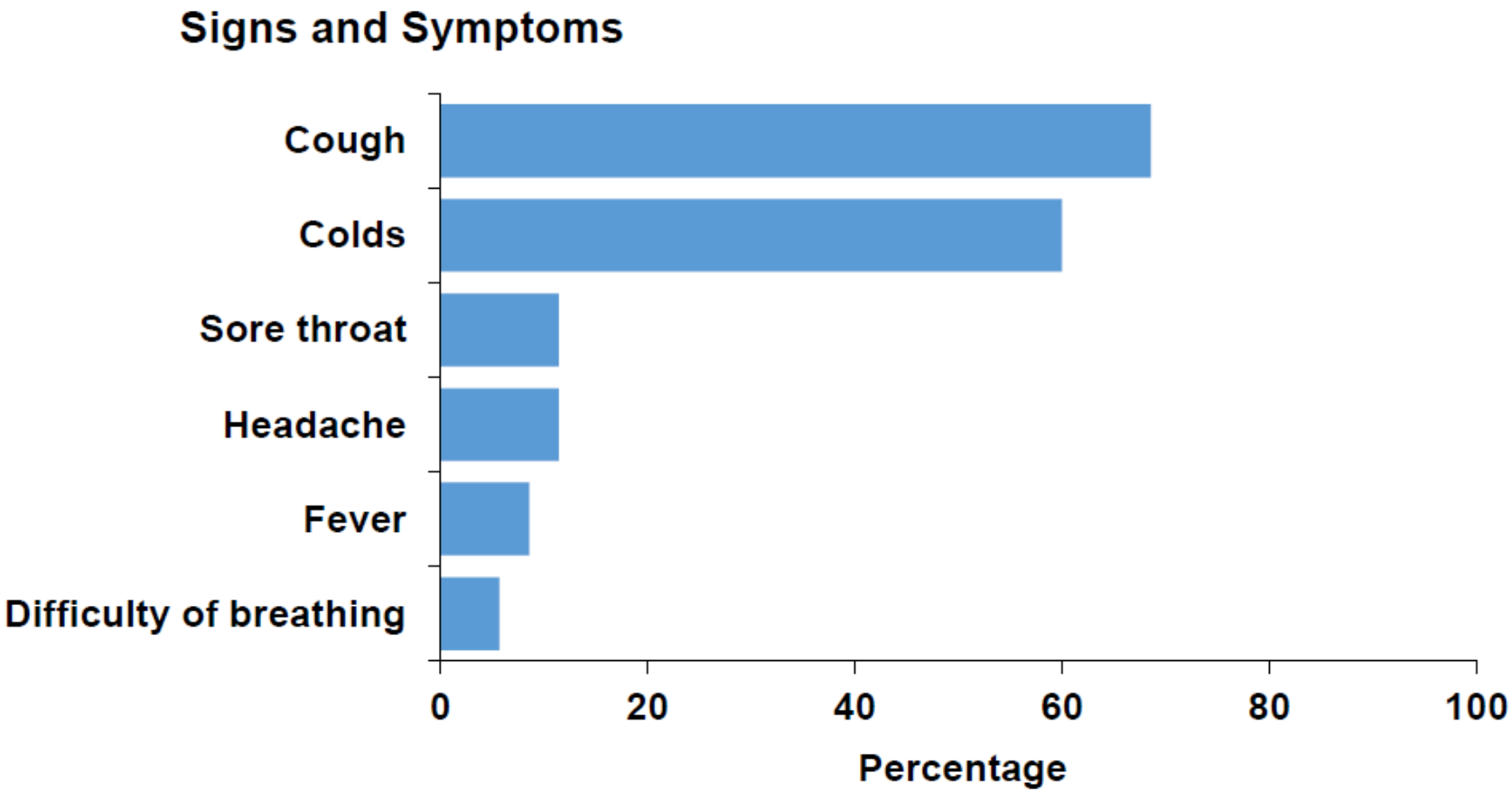
Source: Bureau of Animal Industry

Sex and Age Group of Suspect Human AI Cases (N = 37)
Pampanga and Nueva Ecija, September 3, 2017

- All were males
- Age range: 19 – 57 years old (Median: 24 years)
- Majority (32, 86%) were aged 20 – 29 years

Fig 8. Signs and Symptoms of Suspect Human AI Cases (n=37)*

Pampanga and Nueva Ecija, September 3, 2017



*Multiple responses

Table 3. Nature of Exposure of Suspect Human AI Cases (n=37)*

Pampanga and Nueva Ecija as of September 3, 2017

Exposure	No. (%)
Handled poultry	35 (95%)
Slaughtered	34 (92%)
Handled feeds	6 (16%)

What to Do

- Chemoprophylaxis
  - Oseltamivir for 7 – 10 days
    - Pre-exposure prophylaxis – handling or in close contact with live, sick, dying or dead birds; or potentially infected, or their bedding
    - Post-exposure prophylaxis – given as soon as possible
      - Not required if last exposure > 7days
      - Given to:
        - Household members of documented or suspected case
        - Individuals who handled or have been in close contact with live, sick, dying or dead birds infected or potentially infected or their bedding
        - HCW with close exposure to confirmed or suspected case w/o appropriate protection
        - Lab workers

What to Do

- Other Preventive Measures
  - Wash hands
  - Avoid touching eyes, nose and mouth with dirty hand
  - Cover mouth and nose while coughing or sneezing
  - Avoid close contact with sick people
  - If with flu-like illness, stay home for 24hrs, if symptoms worsen consult doctor
  - Do not self-medicate with antibiotics or antivirals
  - For residents in areas with ongoing avian influenza outbreak, stay away from chicken and other birds
  - Poultry meat or any product related with poultry farm ex egg should be properly prepared and cook thoroughly
  - Get seasonal influenza vaccination

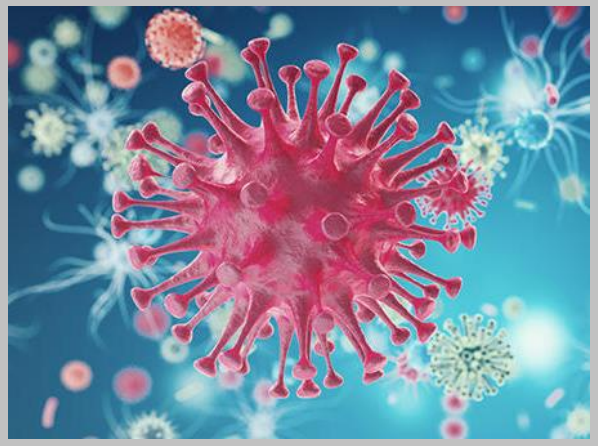
Latest Reports

- China reports 1st H7N4 Avian Influenza
  - 68 year old female from Liyang in Changzhou of Jiangsu Province
- Philippines reports 4th H5N6 Avian Influenza outbreak
  - Started in Nov 11, 2017 in Nueva Ecija province
  - 42,000 susceptible birds
    - Virus killed 27,675
    - 14,325 killed and disposed
- Taiwan also reported H5 Avian Influenza in February

Is General Population at Risk of Infection?

- People at risk of infection whenever AI viruses are circulating among birds and people are exposed to infected birds or infected environments
- AI virus does not appear to transmit easily from person to person
- Sustained human-to-human transmission not reported

HIV



- Major global public health issue
- African region most affected
- No cure for HIV infection
- 2000 – 2016 new HIV infection fell by 39%

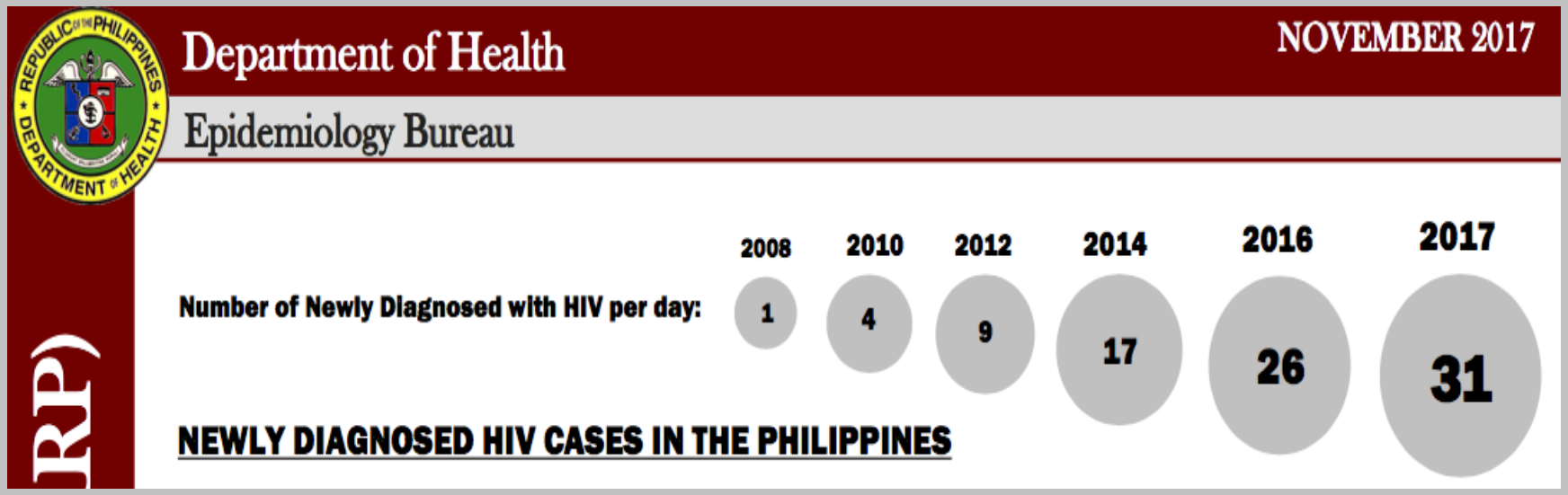

Department of Health
NOVEMBER 2017
Epidemiology Bureau
RP)
2008
2010
2012
2014
2016
2017
Number of Newly Diagnosed with HIV per day:
1
4
9
17
26
31
NEWLY DIAGNOSED HIV CASES IN THE PHILIPPINES

Figure 2. Percentage of Newly Diagnosed Cases per Region (November 2017)

Region	%
NCR	34%
4A	18%
3	11%
7	7%
11	6%
6	5%
10	3%
5	3%
9	2%
1	2%
12	2%
4B	2%
2	2%
8	1%
ARMM	1%
CARAGA	1%
CAR	<1%

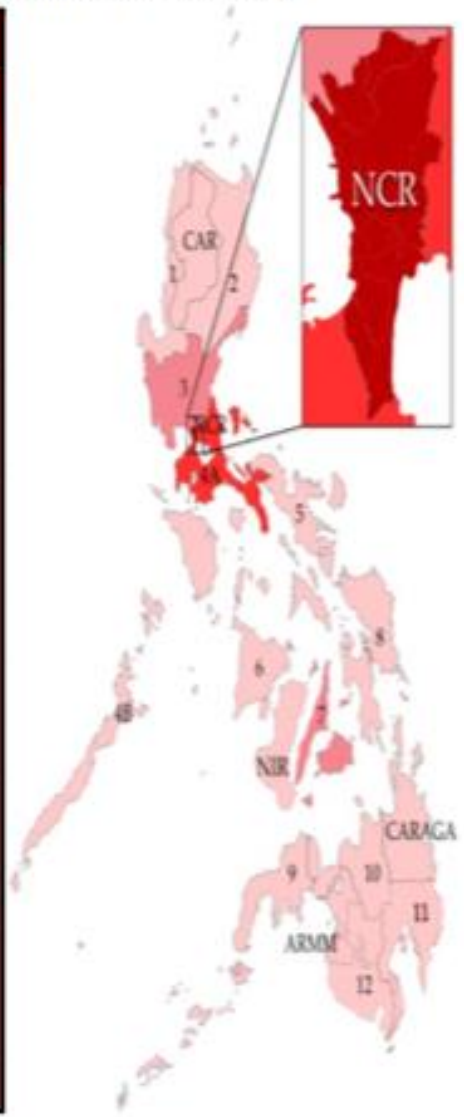
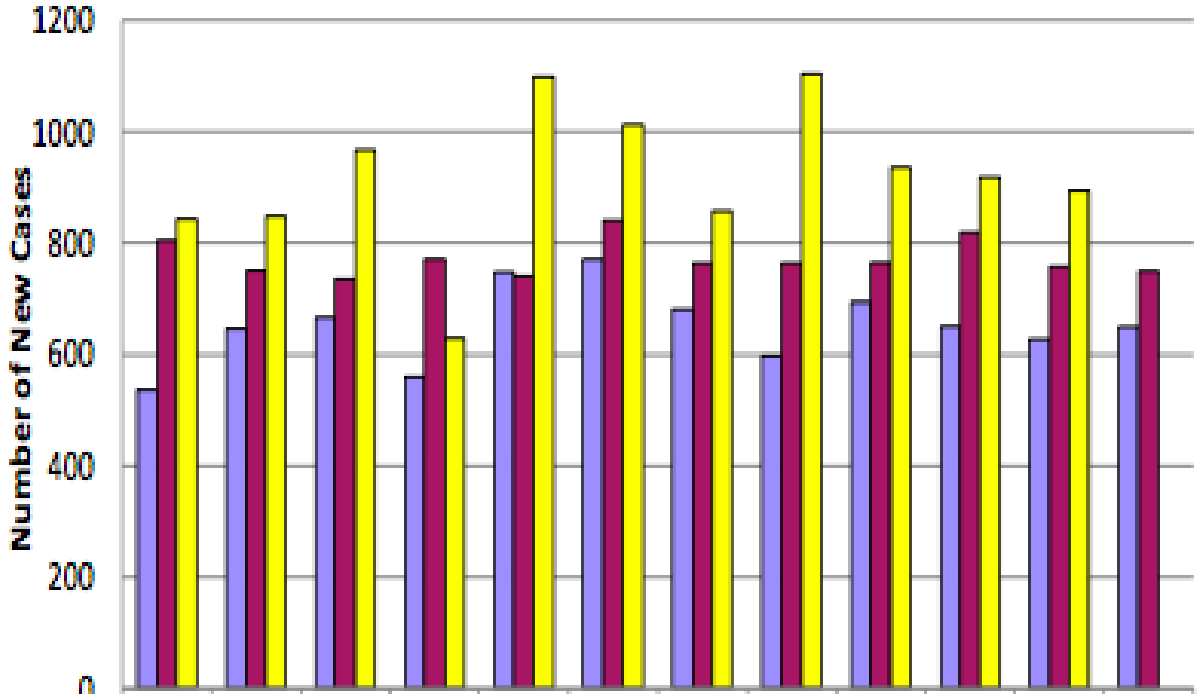


Figure 1. Number of New HIV Cases by Month (2015-2017)*



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	536	646	667	560	748	772	682	598	694	651	627	650
2016	804	751	735	772	741	841	764	764	765	819	758	750
2017	844	849	968	629	1,098	1,013	858	1,104	936	918	894	

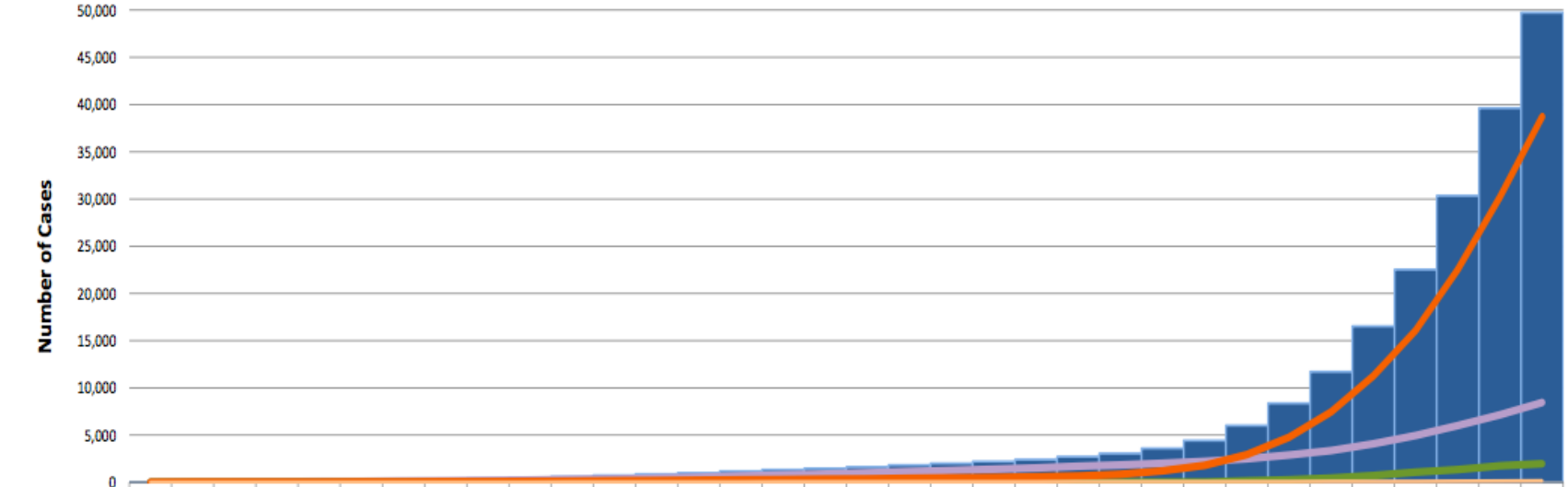
**Due to the system enhancement done in 2016, the number of cases for September 2015, March 2016, Jun 2016, and July 2016 were changed upon updating the database.*

Table 3. Reported Modes of HIV Transmission

Mode of Transmission	Nov 2017 (N=894)		Jan-Nov 2017 (N=10,111)		Jan 2012-Nov 2017 (N=41,369)		Cumulative Jan 1984-Nov 2017 (N=49,733[a])	
	M	F	M	F	M	F	M	F
Sexual Contact	**836**	**27**	**9,325**	**453**	**37,814**	**1,703**	**44,140**	**3,023**
Male-Female Sex	*63*	*27*	*840*	*453*	*3,861*	*1,703*	*5,417*	*3,023*
Male-Male Sex	*534*	*0*	*5,682*	*0*	*21,251*	*0*	*24,139*	*0*
Sex with Males & Females	*239*	*0*	*2,803*	*0*	*12,702*	*0*	*14,584*	*0*
Blood/Blood Products	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**15**
Sharing of Infected Needles	**12**	**4**	**224**	**12**	**1,617**	**86**	**1,858**	**110**
Needle Prick Injury	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**
Mother-to-Child	**1**	**3**	**19**	**15**	**48**	**38**	**77**	**64**
No Data Available	**10**	**1**	**57**	**6**	**57**	**6**	**344**	**83**

[a] *From January 1984—November 2017, 11 did not report sex*

Figure 7. Cumulative Number of HIV Transmission by Year, January 1984 - November 2017 (N=49,733)[a]



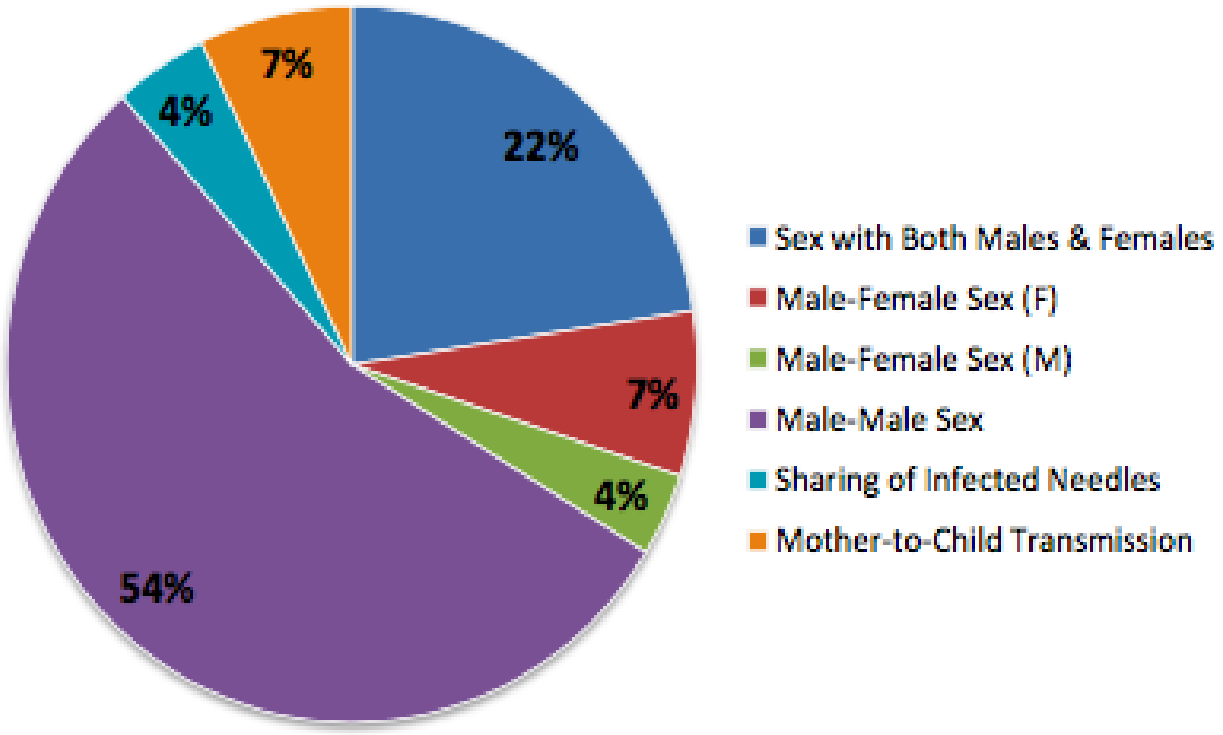
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of PLHIV	2	12	41	79	111	150	216	301	373	475	593	709	863	980	1,169	1,327	1,450	1,624	1,808	2,001	2,200	2,410	2,719	3,061	3,589	4,424	6,015	8,364	11,702	16,516	22,527	30,358	39,622	49,733
Male-Female Sex	1	8	32	56	72	91	126	156	197	244	302	358	439	521	659	773	866	994	1,123	1,252	1,375	1,506	1,699	1,838	1,998	2,214	2,488	2,876	3,356	4,074	4,934	6,009	7,147	8,440
IVDU	0	0	0	0	0	1	2	2	2	2	2	3	6	6	6	6	6	6	6	6	6	7	7	7	8	8	155	265	440	711	1,068	1,340	1,732	1,968
MSM	0	3	7	14	20	28	40	59	69	87	110	139	176	208	253	293	318	355	409	463	502	563	670	851	1,193	1,781	2,928	4,770	7,449	11,271	16,060	22,527	30,238	38,723
Others[b]	0	0	0	2	3	3	7	8	9	12	16	17	23	26	32	36	36	42	43	46	53	55	59	67	69	71	74	78	82	85	90	107	130	164

[a] *No reported Mode of Transmission for (438) cases*

[b] *Others include the following MOT: needle prick injury, blood/blood products, and mother-to-child transmission*

Note: Due to the system enhancement done in 2016 & 2017, the number of cases for September 2015, March 2016, June 2016, July 2016 and June 2017 were changed upon updating the database.

Figure 8. Modes of Transmission Among Children and Adolescents, January 1984 - November 2017 (N=1,965*)



*Note: No mode of transmission reported for 13 (2%) cases

Figure 11. Number of Diagnosed Pregnant Cases Jan 2011 - Nov 2017 (N=216)

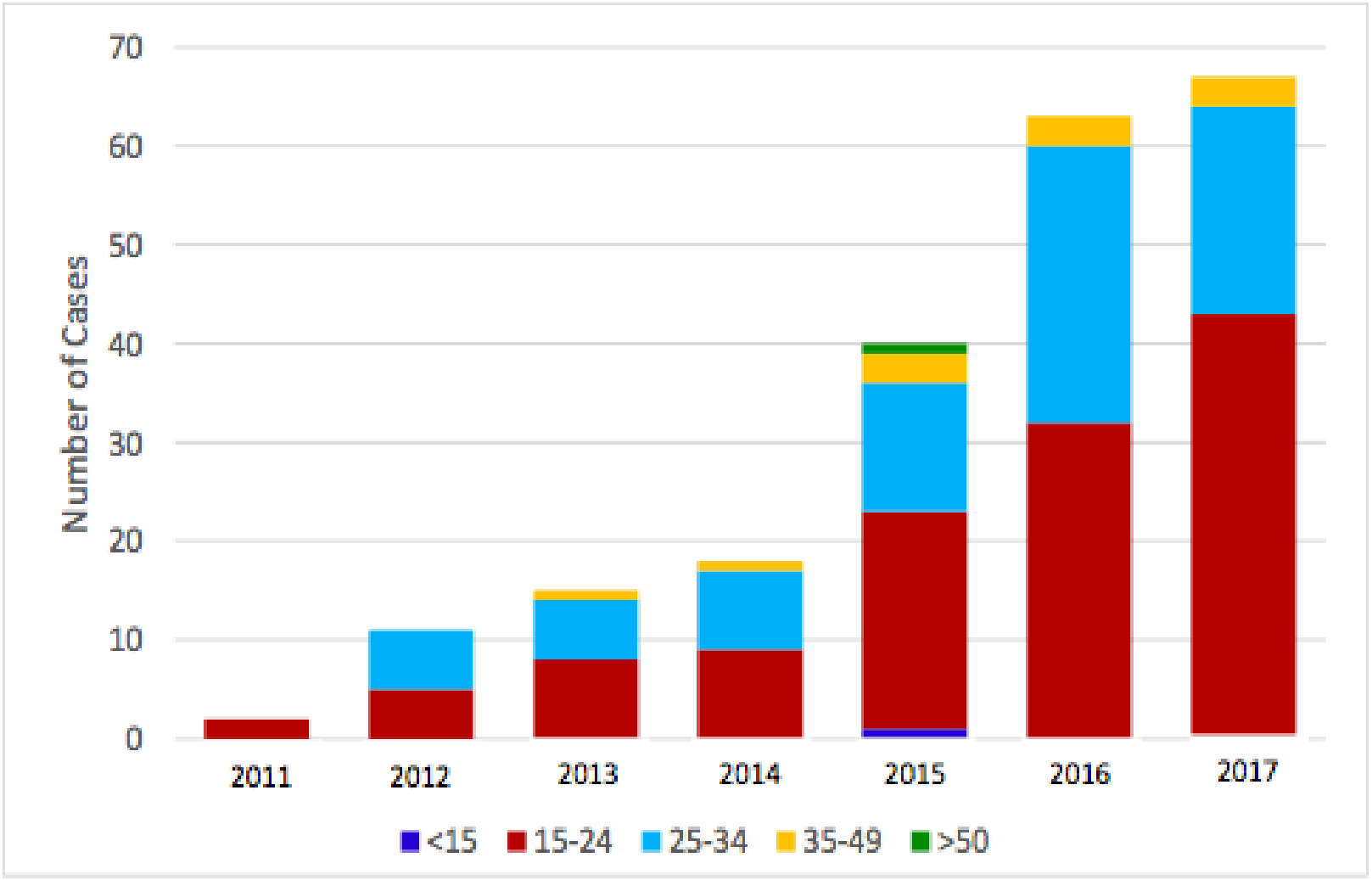
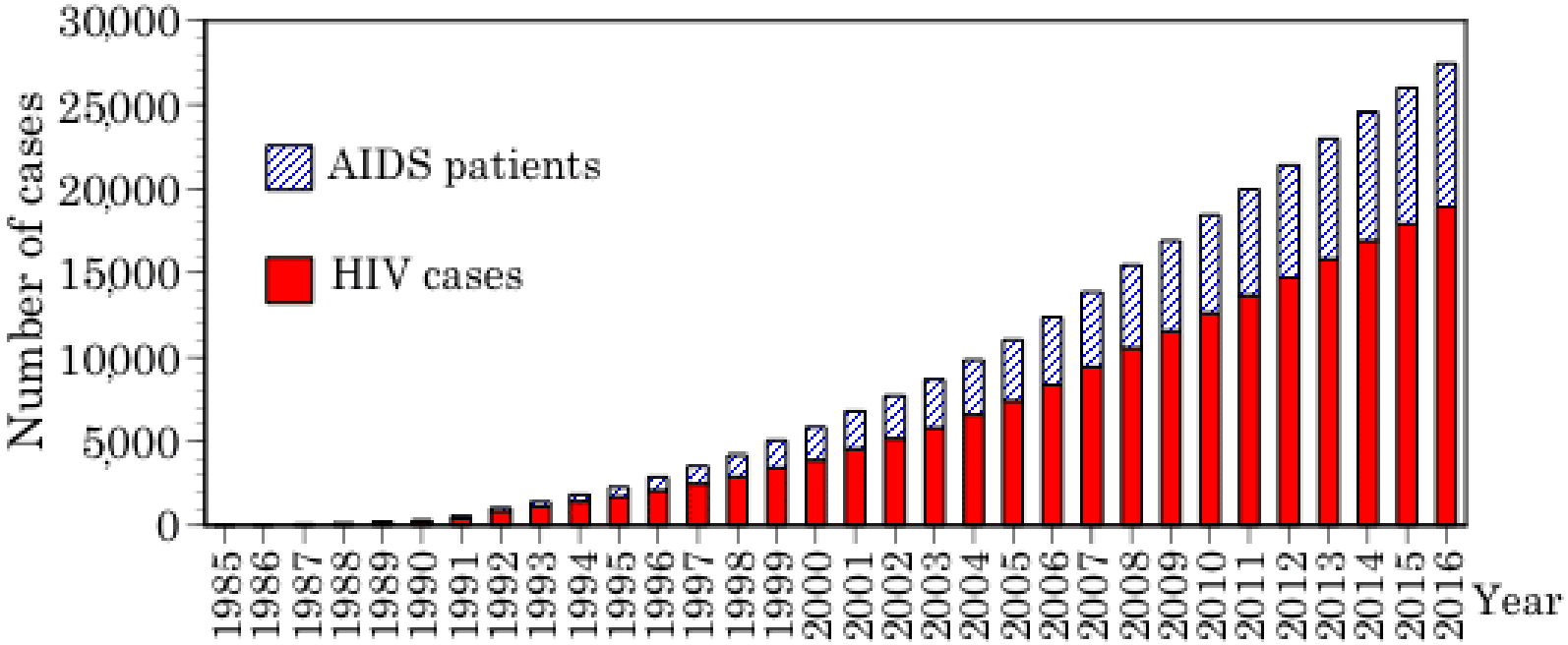


Table 5. Demographic data of reported deaths among People with HIV

Demographic Data	November 2017	Jan-Nov 2017	Cumulative Jan 1984–Nov 2017
Total Reported Deaths	13*	428	2,397**
Male	12	405	2,137
Female	1	23	260
Less than 15 y/o	0	3	19
15-24 y/o	0	69	355
25-34 y/o	8	222	1,166
35-49 y/o	5	116	680
50 y/o & above	0	18	174

**Note: These are reported deaths for November 2017. Date of death does not necessarily fall in the aforementioned reporting months.*
***No data available on age for (3) cases*

Figure 1. Cumulative reported number of HIV cases and AIDS patients, 1985-2016, Japan



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