

Emerging zoonoses in Oman

Dr Nenad Pandak, PhD

ID consultant

Royal Hospital, Muscat, Oman

Zagreb, Croatia, 18-19 October 2018



Population distribution by governorates: 2015 estimates

Source: MoH, Annual Health Report

Governorates	Wilayat	Total	%	Non-Omani %
Muscat	6	1,348,225	32.4	63.8
Dhofar	10	397,181	9.5	50.5
North Batinah	6	693,804	16.7	33.3
South Batinah	6	381,448	9.2	26.4
Dakhliyah	8	422,124	10.1	23.6
North Sharqiyah	6	252,980	6.1	35.5
South Sharqiyah	5	279,333	6.7	32.5
Dhahira	3	194,318	4.7	26.7
Buraimi	3	106,550	2.6	51.6
Musandam	4	41,514	1	36.8
Al Wustah	4	41,625	1	45.2
Oman	61	4,159,102	100	43.6

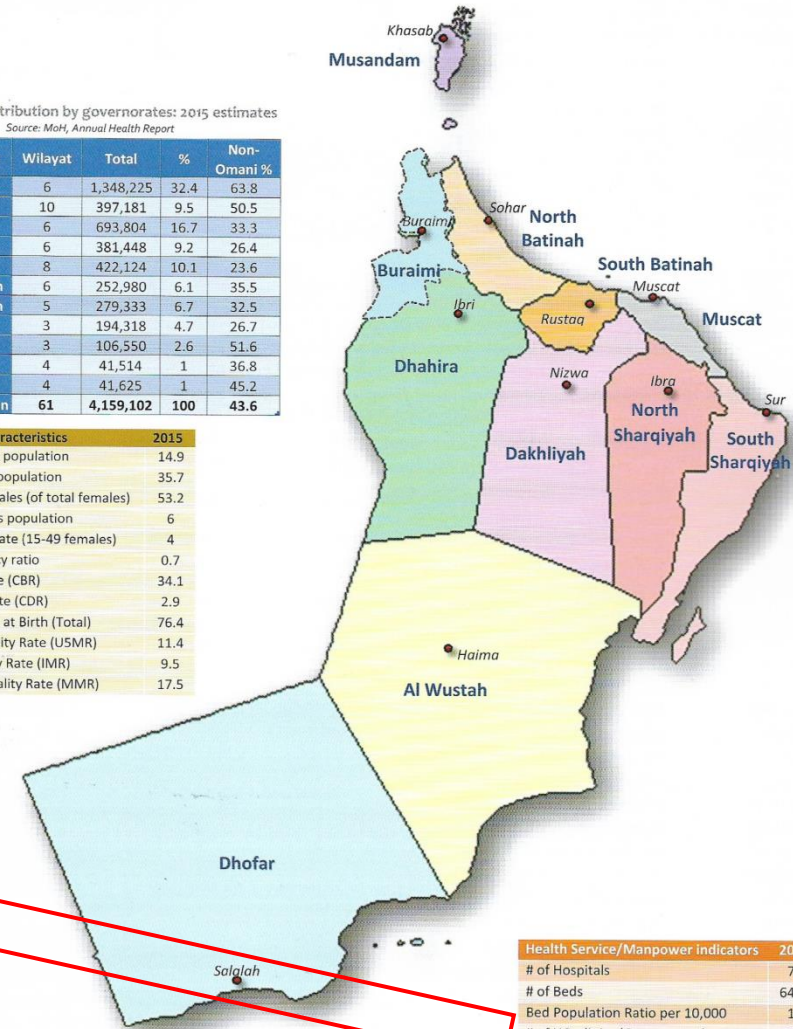
1. Health Administrative Divisions of the Sultanate of Oman

11 governorates (provinces) and 61 wilayat

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Population characteristics	2015
% of under-five population	14.9
% of under-15 population	35.7
% of 15-49 females (of total females)	53.2
% of over 60 yrs population	6
Total Fertility Rate (15-49 females)	4
Age dependency ratio	0.7
Crude Birth rate (CBR)	34.1
Crude Death rate (CDR)	2.9
Life Expectancy at Birth (Total)	76.4
Under-5 mortality Rate (USMR)	11.4
Infant Mortality Rate (IMR)	9.5
Maternal Mortality Rate (MMR)	17.5



Health Service/Manpower indicators	2015
# of Hospitals	70
# of Beds	6468
Bed Population Ratio per 10,000	16
# of HC, clinics (Government)	254
# of Private Clinics	1045
Doctor Population Ratio per 10,000	21.4
Nurse Population Ratio per 10,000	46.3
Dentist Population Ratio per 10,000	2.8
Nurse Doctor Population	2.2

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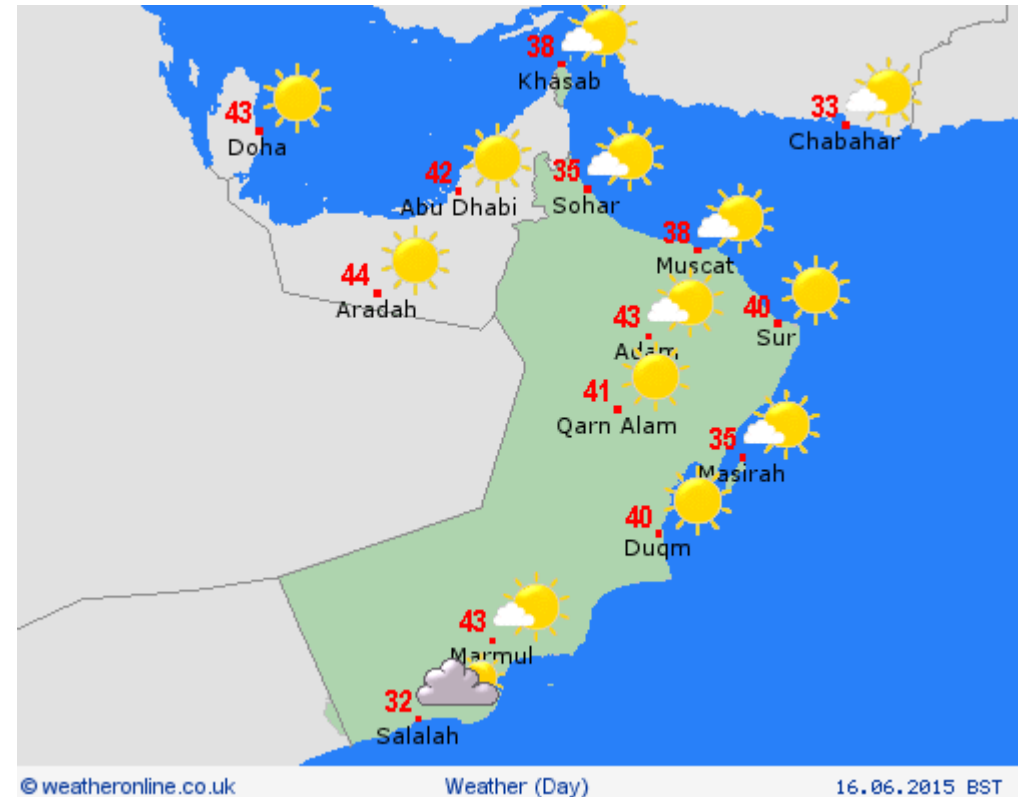
Public health manpower for communicable disease surveillance and control
(Medical graduates with postgraduate/master's degree in Community Medicine MD/PhD/DPH/MPH/FETP)

HQ	MC	DF	NB	SB	DK	NS	SS	DH	BU	MD	AW	Total
7	3	1	2	3	3	1	2	1	1	1	2	27

Rate per 10,000 population 0.067

Sultanate of Oman

- One of the hottest climates in the World
 - Muscat summer average 30 – 40°C
 - Interior record high 50,8°C
- Little rainfall
 - Muscat average annual rainfall 100 mm
- Climate
 - Interior: hot and dry
 - Coast: warm and humid



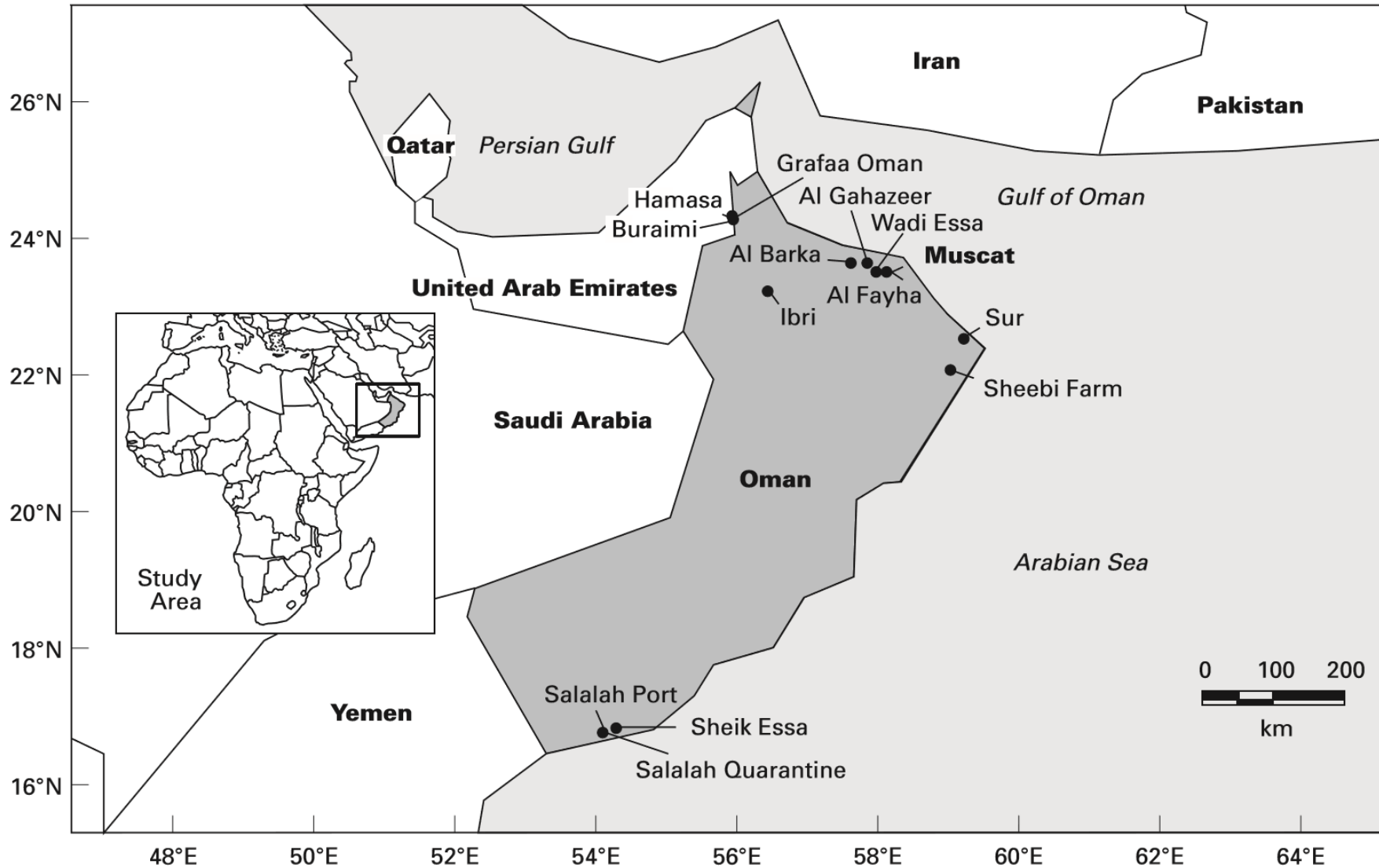


Ticks in Dhofar

- 707 ticks
 - *Amblyomma variegatum*
 - *Hyalomma a. anatolicum*
 - *H. dromedarii*
 - *H. rufipes*
 - *Rhipicephalus spp.*



Ticks in Oman



Ticks in Oman

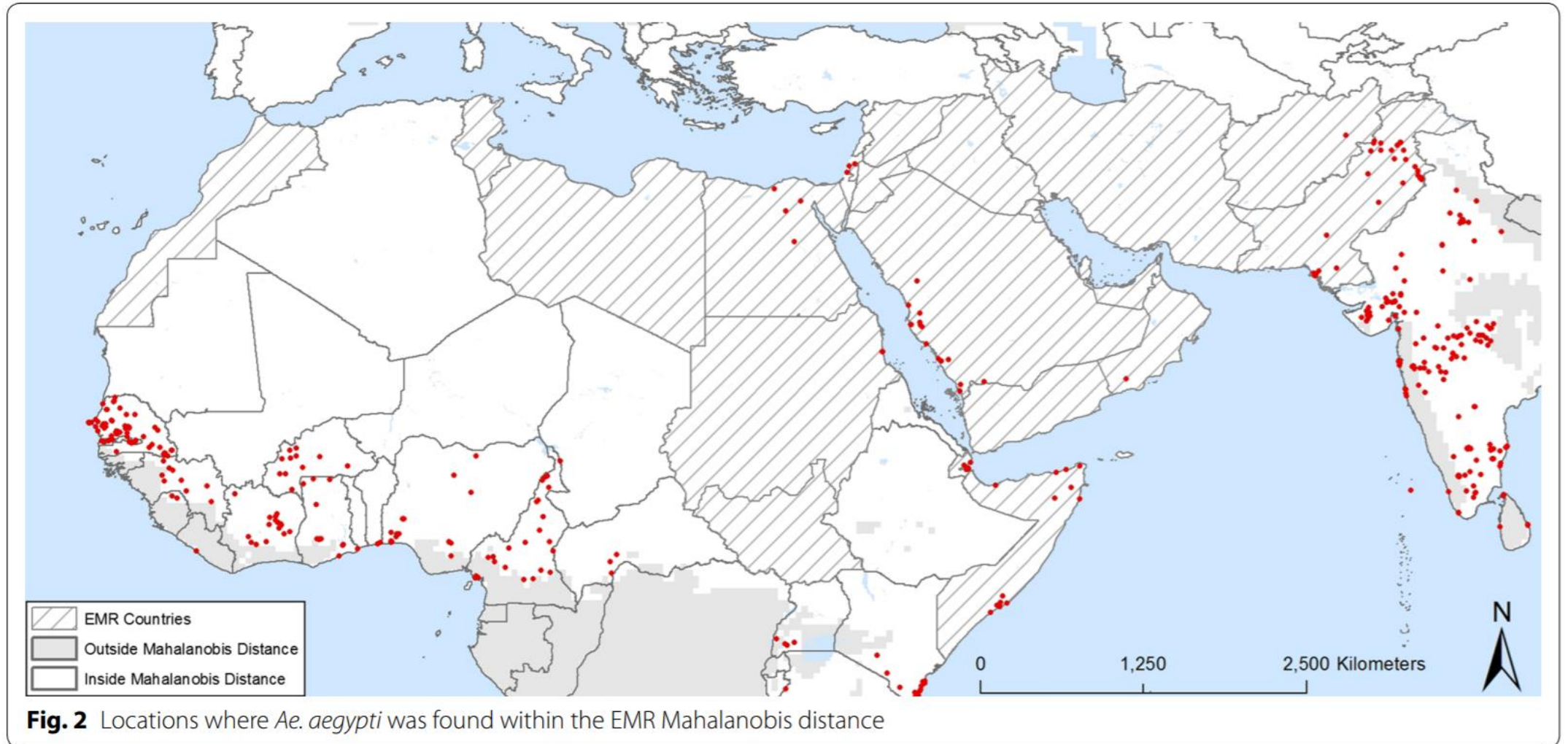
Table 3 Species of ticks, number of ticks tested, number of tick pools tested for CCHF virus antigen, and domestic livestock hosts from which ticks were collected – Oman, March 1996

Genus and species	Number collected and tested (% of total)	Number pools positive/ total pools tested	Hosts
<i>Amblyomma</i> sp.	3 (0.33)	0/2	Omani goats and cattle
<i>A. variegatum</i>	6 (0.66)	0/4	Omani cattle
<i>Hyalomma marginatum</i>	6 (0.66)	0/5	Somali goats
<i>H. anatolicum excavatum</i>	34 (3.73)	1/14	Imported sheep – unknown origin Australian sheep*
<i>Hyalomma</i> sp.	43 (4.71)	1/14	Syrian goats Australian sheep*
<i>H. dromedarii</i>	71 (7.79)	0/32	Syrian goats Omani cattle, sheep, and goats
<i>H. anatolicum anatolicum</i>	618 (67.76)	16/122	Omani camel and cattle Australian sheep*
<i>Rhipicephalus pulchellus</i>	8 (0.88)	0/5	Omani cattle, sheep, and goats Syrian goats
<i>R. appendiculatus</i>	20 (2.19)	0/6	Somali sheep and goats
<i>Rhipicephalus</i> sp.	46 (5.04)	0/18	Somali sheep and goats Australian sheep
<i>R. evertsi evertsi</i>	57 (6.25)	1/21	Syrian goats Somali sheep and goats Omani cattle and goats Somali sheep* and goats Syrian goats

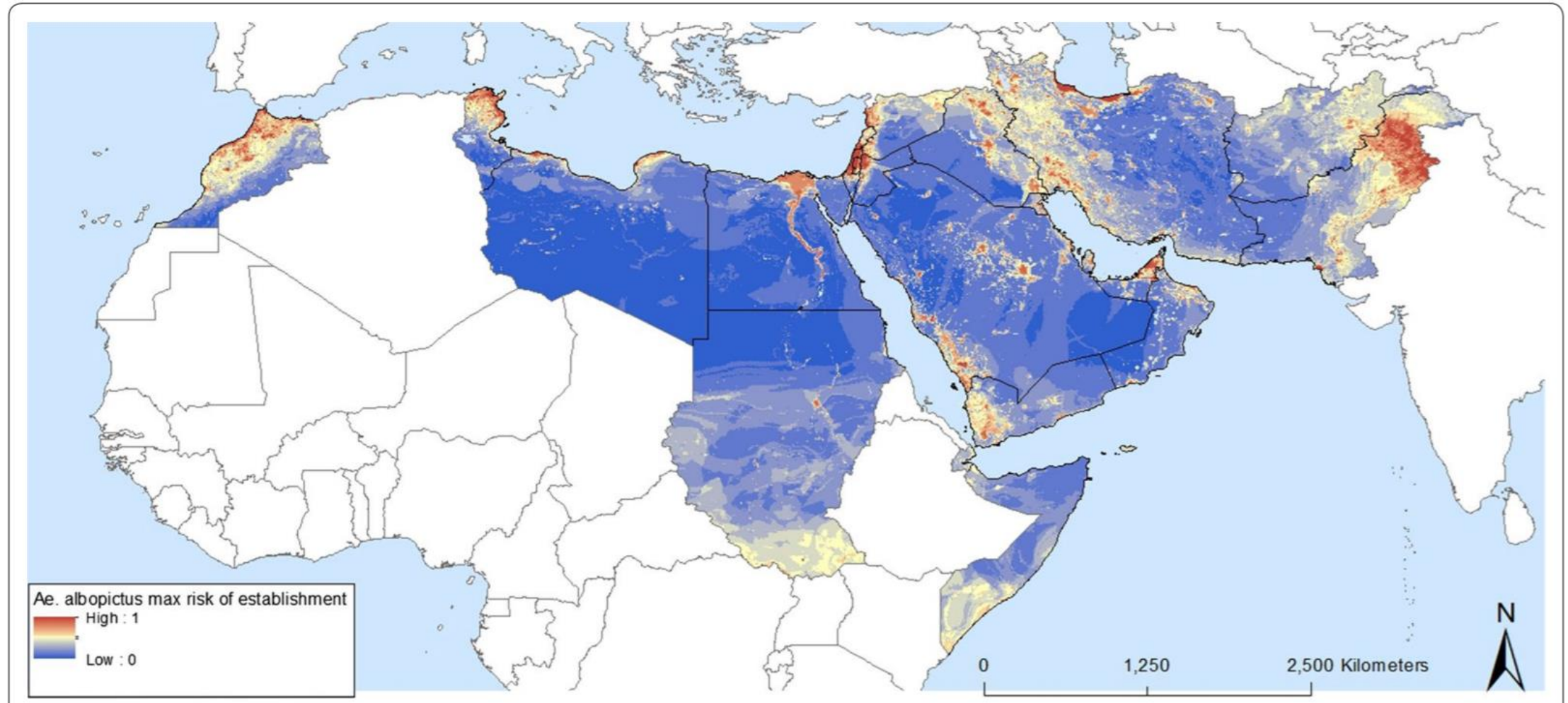
Mosquitos in Oman

Species	Total catch	Fresh water (salinity = <0-1%) Mean ± S.D.	Brackish water (salinity = 7-34%) Mean ± S.D.	Salt water (salinity = 88-115%) Mean ± S.D.
<i>Ae. aegypti</i>	350	4-4 ± 8-4	0	0
<i>Ae. albopictus</i>	130	1-6 ± 4-5	0	0
<i>Ae. vittatus</i>	124	1-6 ± 3-9	0	0
<i>An. azaniae</i>	15	0-2 ± 0-4	<0-1	0
<i>An. coustani</i>	128	1-2 ± 3-0	0-3 ± 0-9	0
<i>An. d'thali</i>	110	1-0 ± 1-6	0-3 ± 0-5	0
<i>An. rhodesiensis</i>	18	0-2 ± 0-8	<0-1	0
<i>An. sergentii</i>	88	1-1 ± 1-2	0	0
<i>An. stephensi</i>	3	0	<0-1	0
<i>Ao. furfurea</i>	402	5-0 ± 13-5	0	0
<i>Cx. bitaeniorhynchus</i>	62	0-6 ± 1-0	0-1 ± 0-3	0
<i>Cx. laticinctus</i>	237	2-4 ± 6-8	0-4 ± 0-9	0
<i>Cx. quinquefasciatus</i>	52	0-5 ± 1-1	0-2 ± 0-5	0
<i>Cx. sinaiticus</i>	912	10-8 ± 12-9	0-5 ± 0-8	0
<i>Cx. sitiens</i>	2848	0	23-8 ± 49-1	11-618-5
<i>Cx. tritaeniorhynchus</i>	2557	2-6 ± 4-3	23-5 ± 26-9	0
Total	8036	33-3 ± 16-6	49-1 ± 13-9	11-618-5

Ae. aegypti in Oman



Ae. albopictus risk of establishment



Diseases/syndromes	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Group A (diseases and syndromes)											
Cholera	1 (i)				1 (i)				3+(2)	1	1
Plague	Never reported										
YF	Never reported										
Meningococcal infection	4	7	3		1	1		3	3	3	1
Hib meningitis		1				1	1	2		1	1
Rabies	No cases reported since 2003										
Malaria	822	1001	1451	2051	1532	1193	898	965	705	443	545
TB sputum positive	55	70	78	105	106	84	97	92	114	118	96
AFP	39	34	20	31	39	33	19	19	32	16	23
Fever and rash illness	1,621	1229	862	696	793	459	596	852	746	700	667
Measles		14		3	3	3	3	6	8	11(2)	19
Rubella				2	1	2	3	4		9(2)	16(1)
CRS								1		1	1
SARS	Never reported										
Crimean-Congo HF	20	18	10	2	2						
Food poisoning	435	329	286	323	295	764	257	465	521	673	447
Group B (diseases and syndromes)											
Bacterial meningitis (other)		10	19	15	21	19	12	33	26	16	19
Viral meningitis		2	3	14	4	2	2		8	6	4
Meningitis unspecified	95	61	51	39	38	40	23	44	36	36	51
Acute viral hepatitis – Total	331	281	437	659	667	411	618	772	631	1353	886
Acute viral hepatitis A	79	119	129	448	464	248	425	568	429	1060	651
Acute viral hepatitis B	15	9	11	17	26	16	17	16	33	45	54
Acute viral hepatitis C	4	6	3	8	8	8	15	11	21	18	18
Acute viral hepatitis D	Never reported										
Acute viral hepatitis E	8	2	3	10	3	24	11	13	11	14	14
Hepatitis unspecified	225	145	291	176	166	115	150	164	137	216	171
Typhoid/paratyphoid fevers	38	14	47	75	40	51	66	70	54	54	67
Pertussis [IgM+]	126	145 [20]	309	130	56	33 [1]	38	51 [7]	75 [2]	39	36
Trachoma active (TF and TI)			6			10	32	72	64	34	16
Brucellosis	379	235	192	148	126	95	79	94	88	74	113
Cutaneous Leishmaniasis (CL)			2	2	2	3	4	7	6	4	8
Visceral Leishmaniasis (VL)	1		1	1		1	1		1		2
Schistosomiasis (intestinal)	1			1		2	1		1	2	2
TB sputum negative	31	24	22	25	22	19	23	32	28	29	33
Extra-pulmonary TB	86	87	82	104	108	110	110	109	96	104	83
HIV/AIDS	142	112	103	127	148	143	117	116	97	87	105
Group C diseases											
Varicella	21,028	18,376	17,903	36,455	53,382	18,264	25,319	55,278	54,417	27,173	17,620
Mumps [IgM+]	588	630 [13]	640	679	706	565 [10]	635 [12]	934 [61]	493 [73]	1127	856

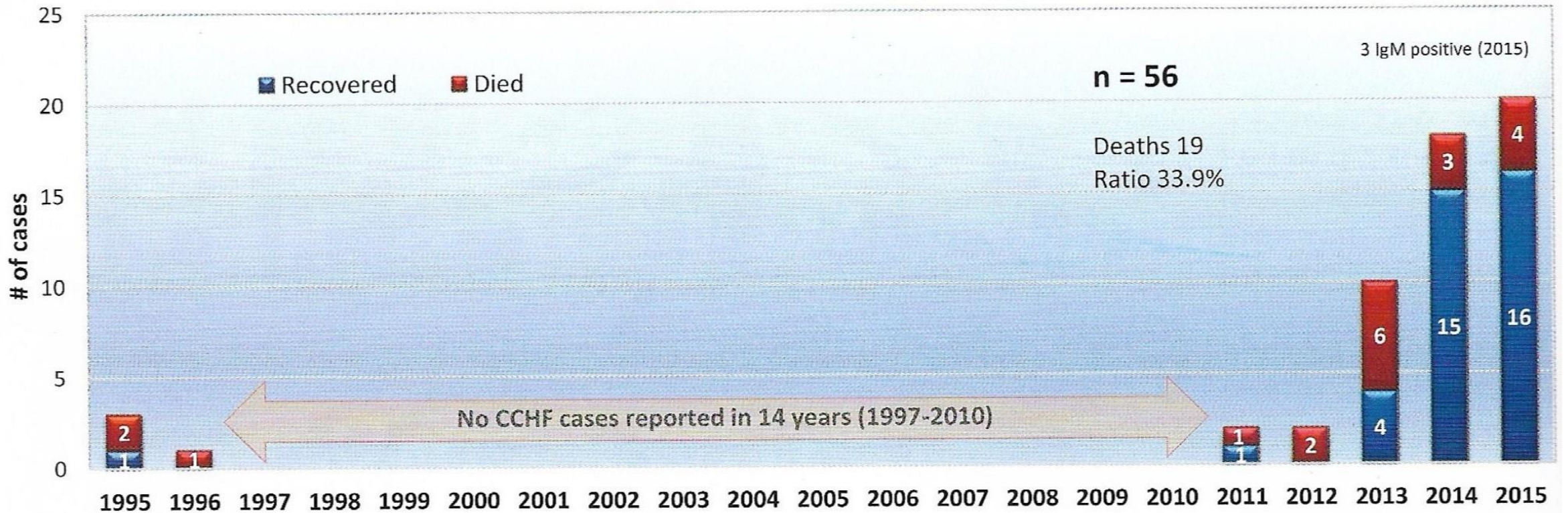
Crimean – Congo Haemorrhagic Fever

- 1995 – first report
- Sporadic cases
 - Clusters during Eid holidays
- Vector – *Hyalomma a. anatolicum*
- Reservoir – goats, cattle, camels
- CCHF – endemic in Oman



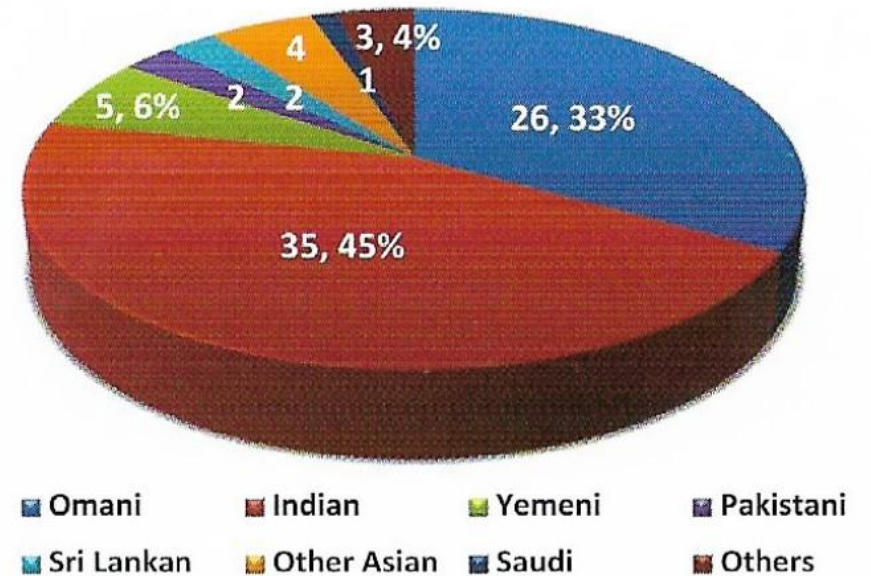
CCHF in Oman

Fig. 16: Incidence of CCHF in Oman: 1995-2015

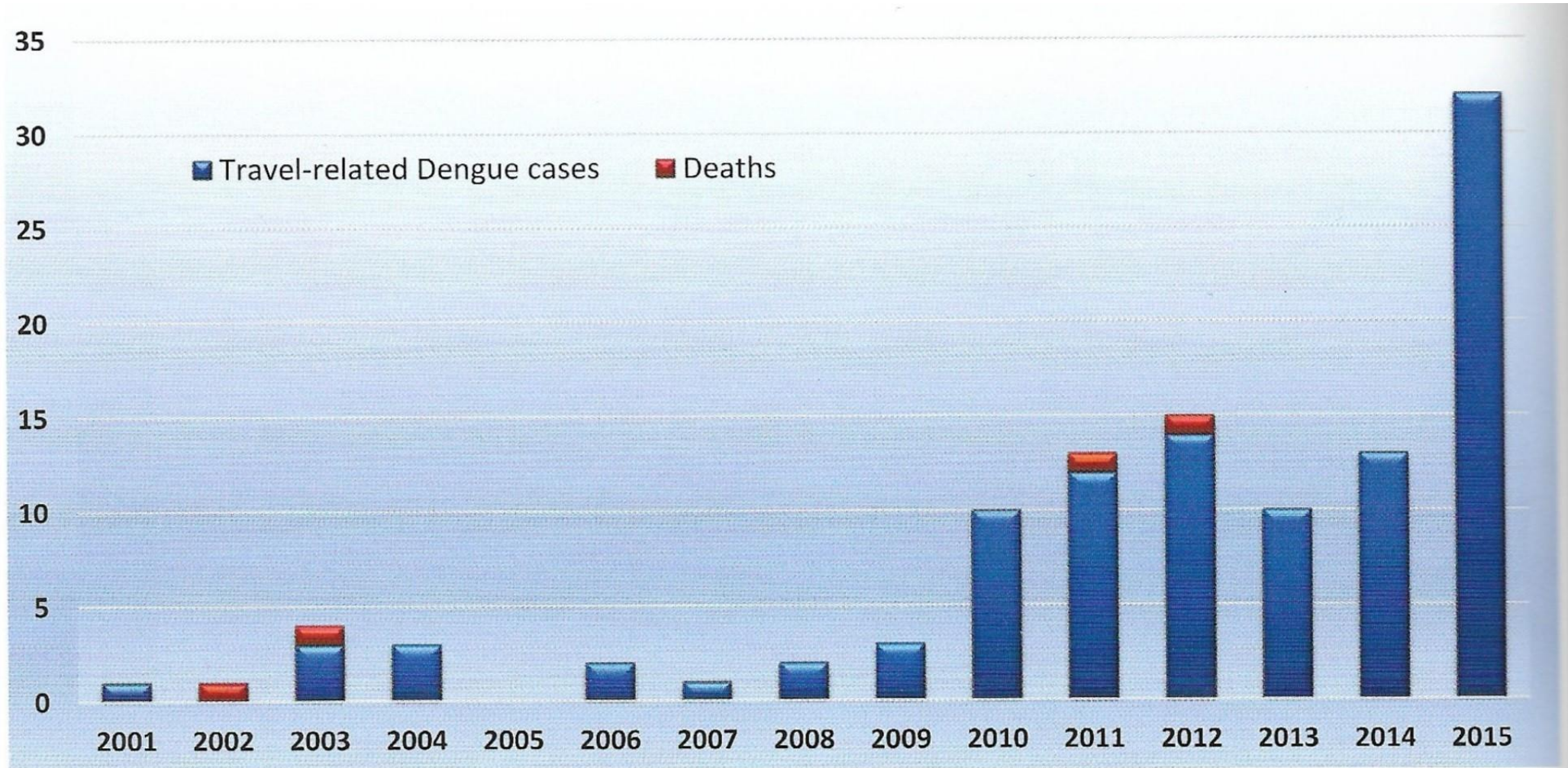


Dengue fever in Oman

- Travel – related disease
- Vectors observed
- Possibility of local vectors infection!
- As of 2014 no indigenous cases of DF



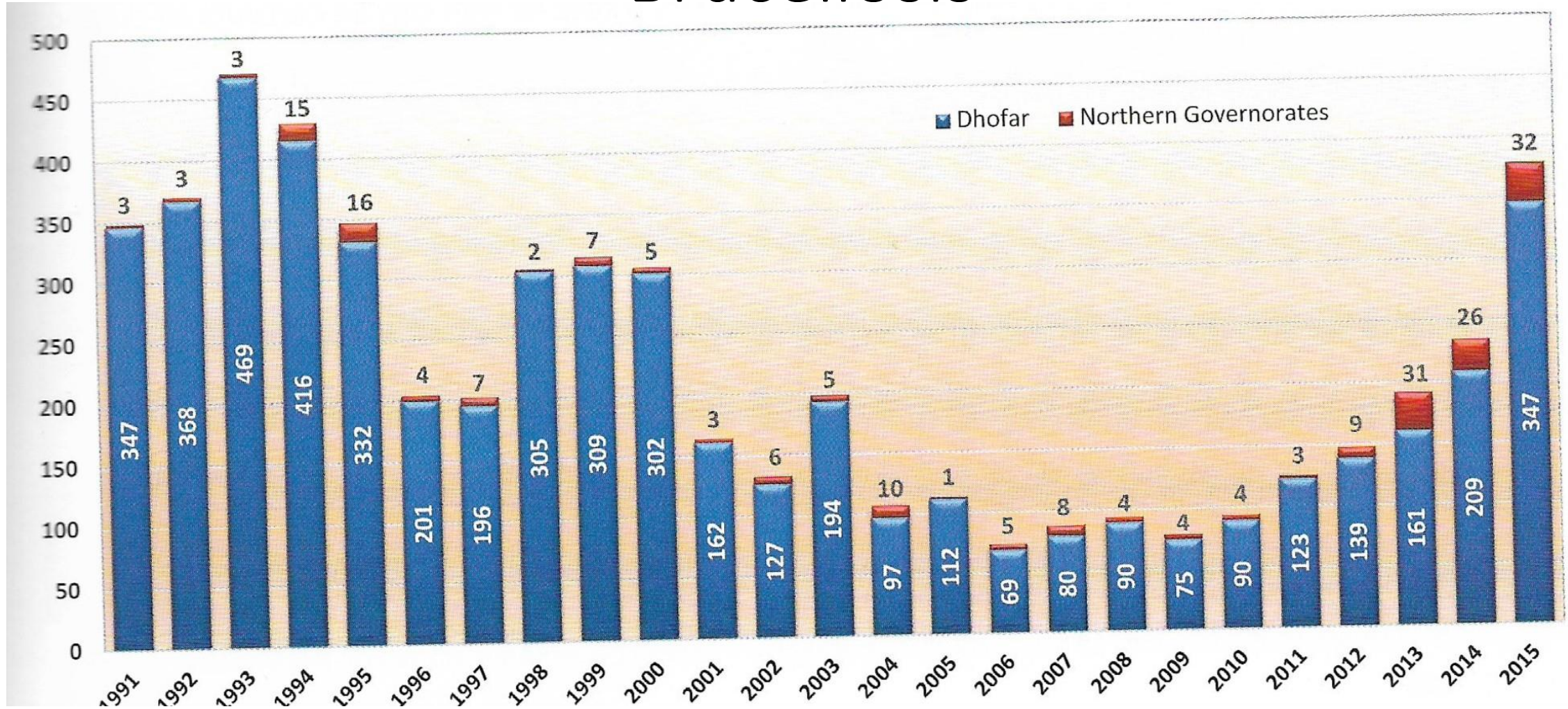
DF in Oman



Brucellosis

- Major zoonotic disease in Oman
 - 95% in southern part (Dhofar)
- Animal seroprevalence (1985-1986)
 - Camels 8%, goats and sheep 6,4%, cattle 3,3%
- Contact infection – most common
 - Abraded skin, mucosa or conjunctiva – direct contact with blood, urine, vaginal discharge, aborted fetuses, placenta
- Foodborne infection
 - Raw camel milk consumption
- Airborne infection
 - Inhaled dust or aerosols – cowsheds, slaughter houses

Brucellosis

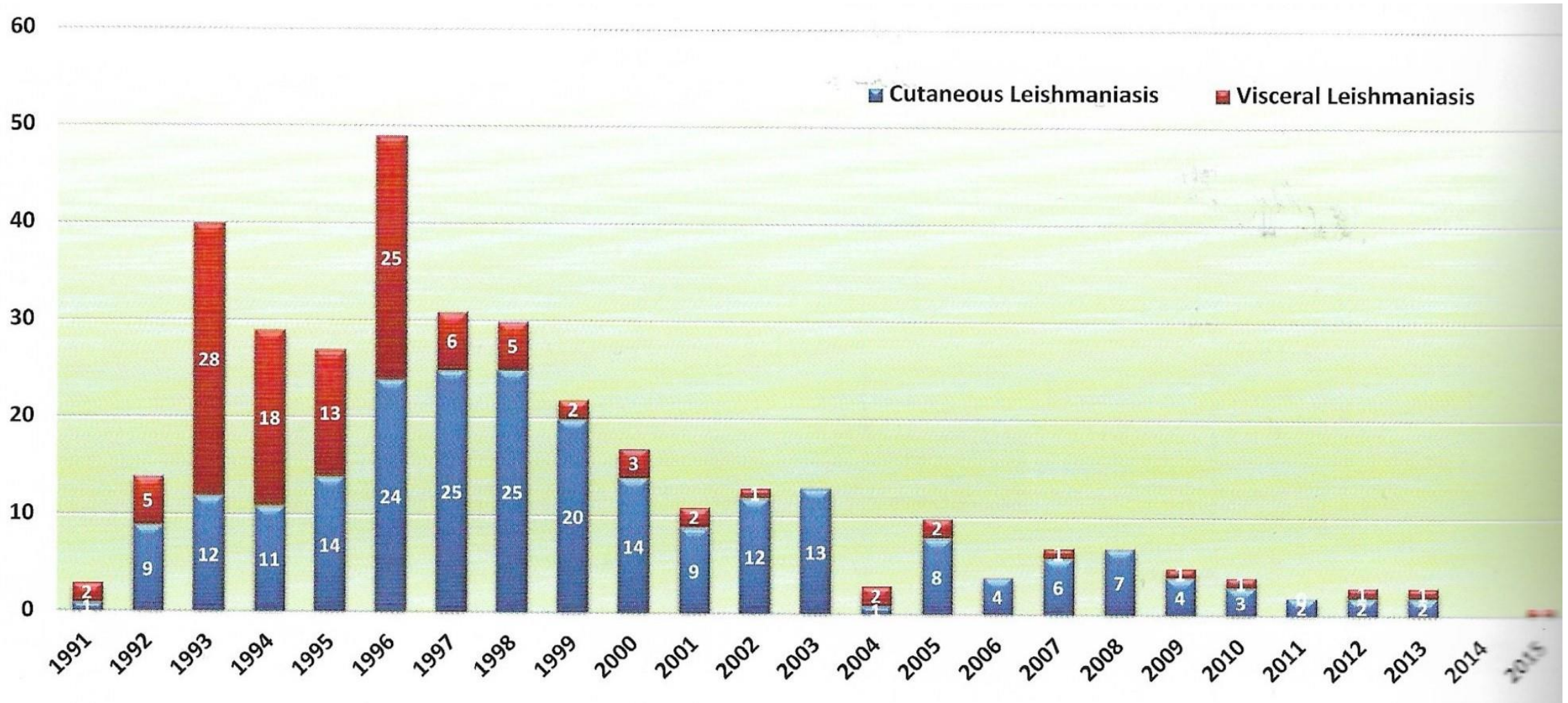


Leishmainiasis

- Cutaneous form – *L. major*, *L. tropica*, *L. infantum*
- Visceral form – *L. donovani*
- Mucocutaneous form not reported
- Vectors
 - *Phlebotomus bergeroti*, *papatasi*, *alexandri* and *sergenti*
- 1994 spraying operation conducted
 - Incidence decrease



Leishmaniasis in Oman

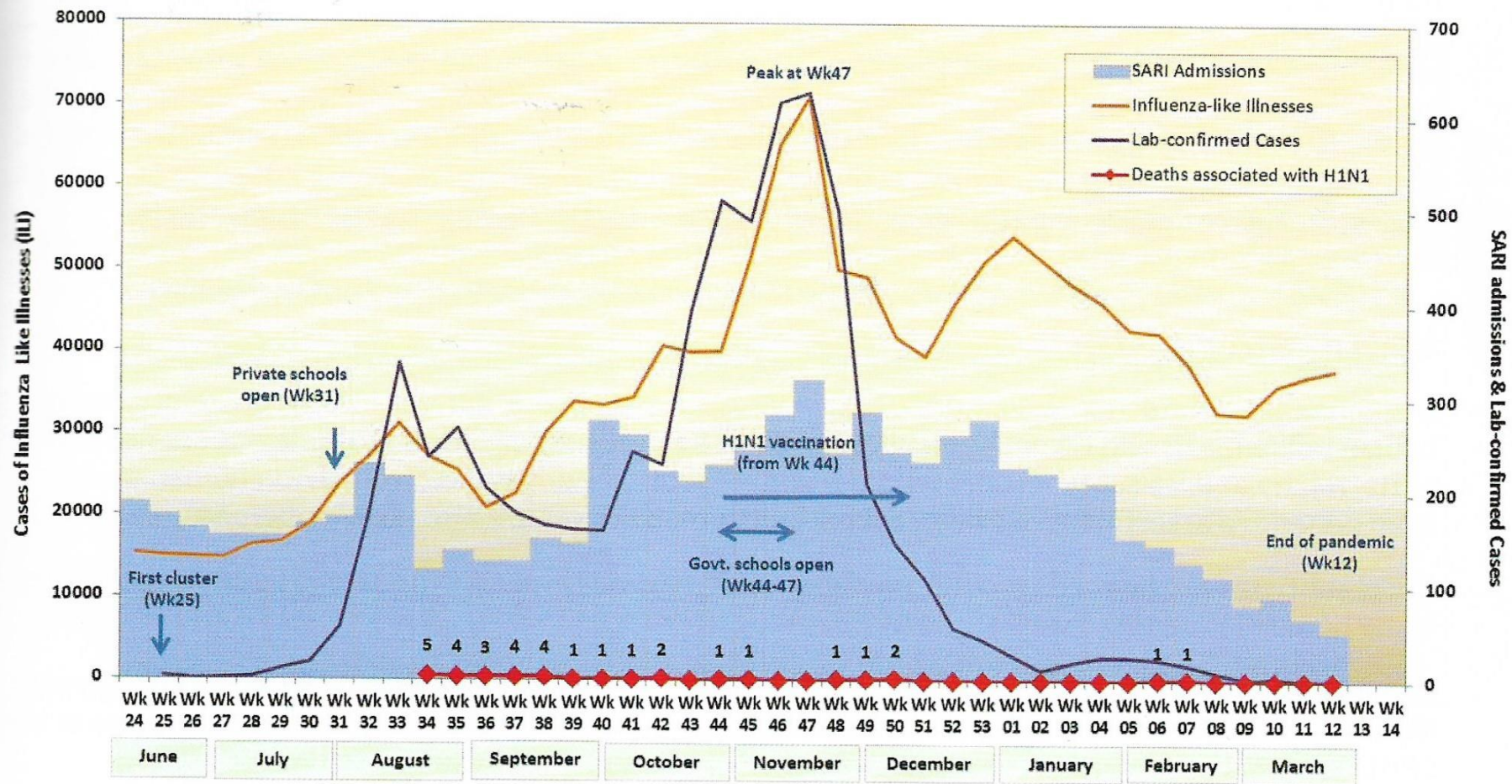


Pandemic (H1N1) influenza

- 2009 – first case confirmed
- 2009 – 2010: 2 successive waves
- Peaks coincided with school openings
- 6347 confirmed cases; 33 died
- H1N1 seasonal influenza virus
- Warm climate – virus present the whole year

H1N1 2009 – 2010 outbreak

Fig. 13: Weekly reported cases of influenza-like-illnesses, severe acute respiratory infection inpatients, laboratory-confirmed H1N1 cases and ARI-associated deaths in Oman: 2009-2010





Thats All



THANK YOU
FOR
YOUR ATTENTION

