

Supplementary webappendix

This webappendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Müller M, Meyer B, Corman VM, et al. Presence of Middle East respiratory syndrome coronavirus antibodies in Saudi Arabia: a nationwide, cross-sectional, serological study. *Lancet Infect Dis* 2015; published online April 9. [http://dx.doi.org/10.1016/S1473-3099\(15\)70090-3](http://dx.doi.org/10.1016/S1473-3099(15)70090-3).

Supplementary Data

Supplementary Table S1. Socio-demographic characteristics of the normal population sample

Normal population KSA			
Characteristic	Categories	Total samples N*	Percentage
Gender	Male	4,341	49.79
	Female	4,378	50.21
Age	15 – 24	1,711	19.6
	25 – 34	2,594	29.8
	35 – 44	2,115	24.3
	45 – 54	1,225	14.0
	55 – 64	518	5.9
	65+	556	6.4
Total		8,719*	

*For 1,290 of 10,009 (12.89%) serum samples reliable information on gender and age could not be retrieved

Supplementary Table S2. Detailed information on 22 stage 2 MERS-CoV antibody positive human serum samples

Subject	Study	Province	Occupation	Gender	Age	Sampling time point	rELISA	rIFA (IgG)	rIFA (IgM)	PRNT50	PRNT90
1	Health centre	Najran	NK*	Male	18	May 2013	pos.	pos.	neg.	40	<20
2	Health centre	Hail	NK	Male	23	June 2013	pos.	pos.	neg.	160	40
3	Health centre	Qasim	NK	Male	30	May 2013	pos.	pos.	neg.	160	40
4	Health centre	Riyadh	NK	Male	37	May 2013	pos.	pos.	neg.	160	40
5	Health centre	Riyadh	NK	Female	44	May 2013	pos.	pos.	neg.	40	20
6	Health centre	Madinah	NK	Male	47	April 2013	pos.	pos.	neg.	80	<20
7	Health centre	Riyadh	NK	Male	NK	NK	pos.	pos.	neg.	320	160
8	National Survey	Riyadh	NK	Male	50	April-June 2013	pos.	pos.	neg.	40	20
9	National Survey	Riyadh	NK	Male	70	April-June 2013	pos.	pos.	neg.	160	80
10	National Survey	Riyadh	NK	NK	NK	April-June 2013	pos.	pos.	neg.	80	<20
11	National Survey	Riyadh	NK	Female	70	April-June 2013	pos.	pos.	neg.	80	20
12	National Survey	Najran	NK	Male	39	April-June 2013	pos.	pos.	neg.	80	20
13	National Survey	Najran	NK	Male	50	April-June 2013	pos.	pos.	neg.	320	80
14	National Survey	Najran	NK	NK	NK	April-June 2013	pos.	pos.	neg.	1,280	320
15	National Survey	Northern	NK	Male	38	April-June 2013	pos.	pos.	pos.	1,280	640
16	Slaughterhouse	Makkah	Butcher	Male	31	August 2013	pos.	pos.	neg.	80	20
17	Slaughterhouse	Makkah	Housekeeper	Male	45	August 2013	pos.	pos.	neg.	80	40
18	Slaughterhouse	Makkah	Butcher	Male	43	August 2013	pos.	pos.	neg.	40	<20
19	Slaughterhouse	Makkah	Butcher	Male	41	August 2013	pos.	pos.	neg.	20	<20
20	Slaughterhouse	Makkah	Butcher	Male	23	August 2013	pos.	indecisive**	neg.	40	<20
21	Shepherd	Asir	Shepherd	Male	84	August 2013	pos.	pos.	neg.	20	<20
22	Shepherd	Eastern	Shepherd	Male	NK	March 2014	pos.	pos.	neg.	160	40

*NK= not known

**Serum no. 20 was positive by rELISA and had an indecisive outcome in rIFA. As the serum was rated positive by PRNT₅₀ the final rating was stage 1 and stage 2 positive.

Supplementary Table S3. Serosurvey for MERS-CoV antibodies in the general Saudi population with separated cohorts

Name	Months and Year of sampling	Total N	Stage 1 seropositive N (%) (95% CI)	Stage 2 seropositive N (%) (95% CI)
Burden of disease study	April-June 2013	5,765	10 (0.17%) (0.09-0.31%)	8 (0.14%) (0.06-0.26%)
Primary health care study	December 2012- December2013	4,244	7 (0.16%) (0.07-0.33%) p=0.89*	7 (0.16%) (0.07-0.33%) p=0.94*

*Chi² test with Yates correction two-tail (OpenEpi) in order to compare the results of both subcohorts.

Supplementary Table S4. Correlation of serological status with age

Group	Age categories	Total samples N*	Confirmed MERS-CoV infections	Chi² test**
General population	15 – 24	1,711	2	p=0.86
	25 – 34	2,594	1	p=0.92
	35 – 44	2,115	4	p=0.81
	45 – 54	1,225	3	p=0.61
	55 – 64	518	0	p=0.77
	65+	556	2	p=0.46
	All	8,719	12	
Occupationally exposed subjects	15 – 24	21	1	p=0.89
	25 – 34	73	1	p=0.84
	35 – 44	81	2	p=0.76
	45 – 54	35	1	p=0.62
	55 – 64	10	0	p=0.62
	65+	4	1	p=0.27
	All	224	6	

*Only individuals with recorded age information

**Proportion of cases in age category vs. proportion of cases in whole group

Supplementary Table S5. Geographic distribution of MERS-CoV antibody-positive individuals

Province	Population*	No. MERS-CoV positive/tested (%)		
		rELISA	Stage 1	Stage 2
Al-Jouf	483,100	5/382 (1.31)	0/382 (0.0)	0/382 (0.0)
Asir	2,095,900	19/1,022 (1.66)	0/1,022 (0.0)	0/1,022 (0.0)
Baha	450,700	6/375 (1.60)	0/375 (0.0)	0/375 (0.0)
Eastern	4,533,800	14/931(1.50)	0/931 (0.0)	0/931 (0.0)
Hail	654,700	7/343(1.75)	1/343 (0.29)	1/343 (0.29)
Jizan	1,497,400	10/774 (1.29)	0/774 (0.0)	0/774 (0.0)
Madinah	1,962,600	7/545 (1.28)	1/545 (0.18)	1/545 (0.18)
Makkah	7,688,600	19/1,513 (1.26)	1/1,513 (0.07)	0/1,514 (0.0)
Najran	555,100	9/539 (1.67)	5/539 (0.93)	4/539 (0.74)
Northern	351,000	8/321 (2.49)	1/321 (0.31)	1/321 (0.31)
Qasim	1,337,600	10/529 (1.89)	1/529 (0.19)	1/529 (0.19)
Riyadh	7,517,000	34/2,343 (1.45)	7/2,343 (0.30)	7/2,343 (0.30)
Tabouk	866,800	7/392 (1.79)	0/392 (0.0)	0/392 (0.0)
Total N	29,994,300	152/10,009 (1.52)	17/10,009 (0.17)	15/10,009 (0.15)

*KSA population census (year 2013) was retrieved from the Saudi Arabia Central Department of Statistics & Information.