Supplementary Materials

Accuracy of the UK-Rapid-Test Consortium (UK-RTC) "AbC-19™ Rapid Test" for the detection of previous SARS-CoV-2 infection in key workers

Contents

Methodology

Adaptation of WHO criteria for UK context

Participants from the EDSAB-HOME study were characterised and reported by an adapted version of the World Health Organization (WHO) criteria for confirmed, suspected and probable cases[18]. This adaptation reflects UK screening and swabbing practices. On 5 March, the UK government confirmed there was evidence of ongoing community transmission; as such, the policy moved from one of "containment" to one of "delay" where testing was initially largely confined to hospitalised cases. This date cut-off was used to characterise cases.

The reference standard for test accuracy estimates was WHO confirmed cases using previous PCR. However, in the three months prior to recruitment many symptomatic patients did not receive PCR testing at the time of symptoms. Therefore, we also report index test results in relation to WHO suspected, probable and uncertain categories, adapted to the setting as described in Table S1.

Laboratory process for lateral flow device evaluation

All LFIAs were sent to PHE Colindale for undertaking this evaluation. All LFIAs were stored in a room temperature controlled room (thresholds 16-30^{O}C, actuals 19-29 ^{O}C). The index test was the AbC-19^{TM} Rapid Test performed in an accredited WHO Pre-Qualification Evaluating Laboratory (PEL) based in PHE Colindale, London. The laboratory work was performed by experienced laboratory staff and supervised by State Registered Biomedical and Clinical Scientists. Prior to commencing the evaluation, the manufacturer visited the laboratory to train the readers.

A short-written description was provided by the manufacturer which was followed exactly.

A total of 12 readers conducted this work, with three readers independently reading each device.

See the main manuscript for details of the retesting procedure. Each retest was performed on two additional AbC-19^{TM} devices on a different day from the original test. Each retest was independently read by three readers with the majority of the three readings taken as the final result.

Our primary results are those based on the initial set of readings for each sample, with the exception of the few samples classed as invalid (n = 5) on initial testing. The re-test results for these 5 samples are reported as primary. Results following retesting are reported as secondary, as the retested results do not reflect the real-world performance of the test.

The detailed protocol for laboratory evaluation is available at http://www.isrctn.com/ISRCTN56609224.

Sample Size considerations

Sample size calculations for this study are challenging because of the lack of a gold standard test, and the fact that prevalence in the study population is both unknown and increasing over time. The following text relating to sample size is reproduced from our research protocol.

The following calculations assume that the laboratory-based test is 100% sensitive and 100% specific, which is known not to be the case. The calculations are therefore no more than illustrative.

We assumed that the true sensitivity and specificity of the lateral flow immunoassay are both 98%. These are the minimum values currently considered acceptable by the MHRA (18/04/2020). The performance metric of the most interest is the PPV, defined as the probability that a person who tests positive does in fact have antibodies. Table S10 shows the expected 95% confidence intervals for sensitivity, specificity and PPV which would be obtained for a sample size of 1000 or 2500 participants, under various assumed values of prevalence in the study population. If we were to consider 90% PPV acceptable, and prevalence in the study sample was 20%, we would require 2,500 participants to obtain a 95% CI which was wholly above 90% PPV.

Test performance may vary across populations, e.g. due to variation in underlying severity of disease. To allow exploration of this, initially we proposed a cohort of 1500 healthcare workers and 1000 police officers, with later possible extension to the general public.

Statistical analyses relevant to association between age, gender and ethnicity on specificity
In analysis of known negative samples, we fitted additive multivariable logistic regression models with gender, age (in deciles), and ethnicity (white/non white/unknown or missing) as explanatory variables.

Statistical analyses accounting for multiple readers
In the presence of discordant results across readers, we anticipated that estimating test sensitivity and specificity based on the "majority of three" reading would lead to a slight upward bias. To explore the potential extent of this, as part of Approach 1 we performed an exploratory sensitivity analysis in which each reading was treated as a separate test.

Table S9 shows cross-classified readings of test kit results among "known positive" and among "known negative" samples. Note that reader numbers are arbitrary and there were 12 readers in total. Therefore e.g. Reader 1 does not always represent the same individual. These numbers were, however, assigned in the laboratory prior to reading of devices.

We assumed a multinomial likelihood for each of these 8-dimensional cross-tabulations. A log-linear model was fitted to each vector of probabilities, incorporating main effects of reader and two-way interaction terms. These interaction terms allow for correlation between the reading of any two assessors. Main effects and interaction terms were assumed to be shared across readers. This is a simplification of reality, whereby we would expect reader accuracy to lie along a Receiver Operating Characteristic (ROC) curve.

The model was fitted in WinBUGS. Vague Normal prior distributions, with mean of 0, were assumed for the 2 main effects (with variance 1000) and the 2 interaction terms (with variance 10).

We also assessed sensitivity of results to incorporation of 3-way interaction terms, but found that results (estimates of test sensitivity and specificity) were robust to this.

Supplementary Results

PCR testing and symptoms

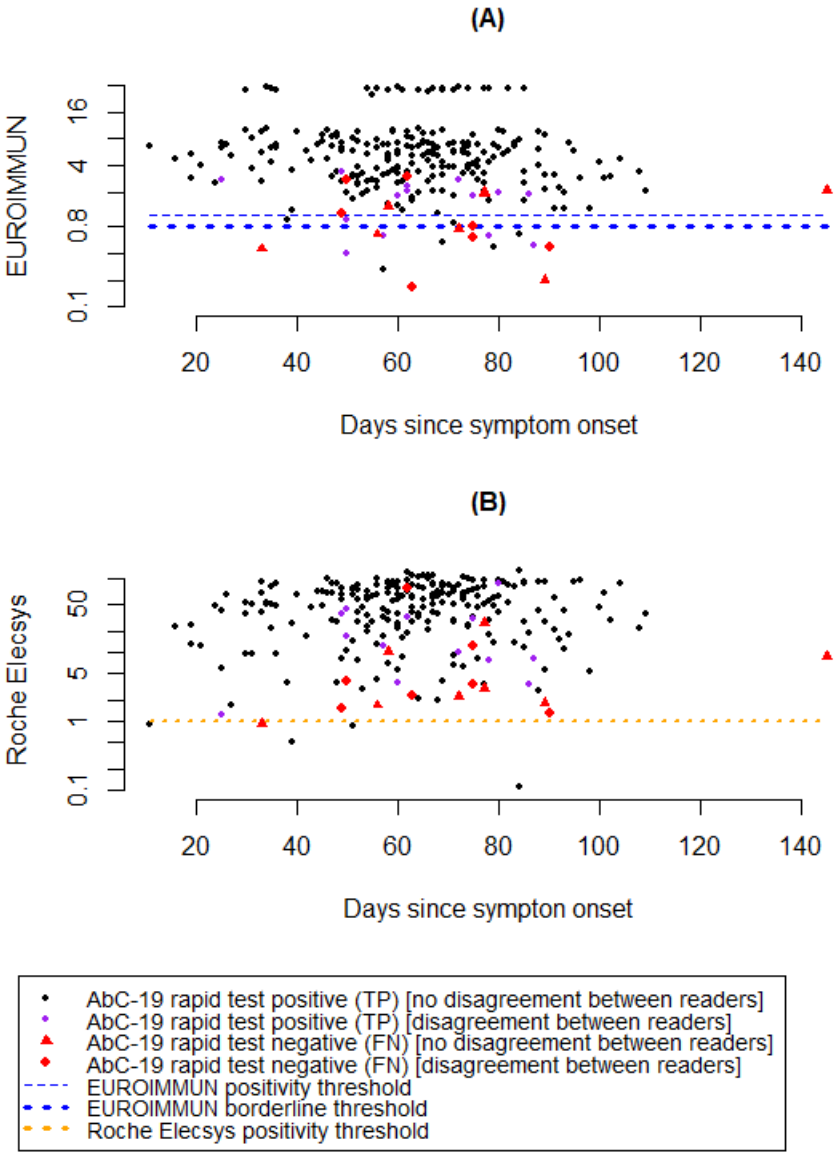
EDSAB-HOME study participants were recruited via three streams: Stream A & B recruited frontline workers irrespective of any prior PCR testing. In this group, there were 114 individuals who had had a prior positive PCR result. From Stream C, individuals were recruited based on having had a prior positive PCR positive result; this totalled 154 individuals. Together, this is our 268 “known positive” group.

An additional 153 study participants reported having had at least one PCR test due to symptoms but that any tests taken were negative. In the questionnaire, if an individual had a positive test at any time, we did not capture if they had had a negative test before or after this positive test. As such, we only captured negative tests from individuals who had not also had a positive test. Of those who reported having had a negative test (n=153), 138 (90%) had one negative test while 15 (10%) reported having had two negatives tests. Additionally, there were 8 people who reported having had a PCR test, but that it failed.

Please see also Table S2.

Supplementary Figures

Figure S1: AbC-19 Rapid Test responses by days since symptom onset and (A) EUROIMMUN index or (B) Roche Elecsys index, plotted among n = 256 symptomatic "known positives" (samples from individuals who self-reported a previous positive PCR test). Colour/symbol combinations also indicate whether three independent reviewers agreed on AbC-19 test reactivity.



Supplementary Tables

Table S1: *Modifications to WHO definition of SARS-CoV-2 infection*

Confirmed	an individual with a SARS-CoV-2 PCR performed on nasal and/or throat swab which was positive, irrespective of symptoms
Suspected	an individual who had COVID-19 compatible symptoms after 05 March, who did not have a test OR an individual who had COVID-19 compatible symptoms after 05 March and had a test but it failed, OR an individual who had COVID-19 compatible symptoms who was not tested but had contact with a confirmed or suspected COVID-19 case in the 14-day prior to symptom onset at any time OR an individual who was hospitalised for suspected COVID-19 at any time
Early-Probable	an individual who had COVID-19 compatible symptoms before 05 March and was not tested OR an individual who had COVID-19 compatible symptoms before 05 March and had a test but it failed
Uncertain	an individual who had compatible symptoms and had a test but it was negative
No	none of the above criteria was met and those who reported not having had previous COVID-19.

Table S2: *Selected baseline characteristics of EDSAB-HOME study participants*

Selected baseline characteristics of EDSAB-HOME study participants with previous PCR positive "known positives" (n=268), and "unknown previous infection status" (n=2579). "Unknown previous infection status" refers to individuals who did not have a positive PCR test.

	"Unknown previous infection status" (All =2579; * symptomatic 687)	**"Known positives" (All=268; * symptomatic = 256)**	**Total (n=2847)**
Age			
18 – 25	120 (4.7%)	19 (7.1%)	139 (4.9%)
25 – 40	962 (37.3%)	106 (39.6%)	1068 (37.5%)
40 – 60	1352 (52.4%)	126 (47.0%)	1478 (51.9%)
60+	145 (5.6%)	17 (6.3%)	162 (5.7%)
Sex			
Female	1640 (63.6%)	188 (70.1%)	1828 (64.2%)
Male	939 (36.4%)	80 (29.9%)	1019 (35.8%)
Ethnicity			
White	2138 (82.9%)	212 (79.1%)	2350 (82.5%)
Asian or British Asian	238 (9.2%)	43 (16.0%)	281 (9.9%)
Black or Black British	94 (3.6%)	5 (1.9%)	99 (3.5%)
Mixed	62 (2.4%)	4 (1.5%)	66 (2.3%)
Other	47 (1.8%)	4 (1.5%)	51 (1.8%)
Length of symptoms (for symptomatic individuals only *)			
Less than 7 days	273 (39.9%)	50 (19.6%)	323 (34.4%)
7 -14 days	259 (37.9%)	110 (43.1%)	369 (39.3%)
15 – 21 days	72 (10.5%)	48 (18.8%)	120 (12.8%)
More than 21 days	72 (10.5%)	44 (17.3%)	116 (12.4%)
Do not know	8 (1.2%)	3 (1.2%)	11 (1.2%)
Went to hospital due to suspected/ confirmed COVID-19 (for symptomatic individuals only *)			
Yes	8 (1.2%)	30 (11.8%)	38 (4.0%)
No	676 (98.8%)	225 (88.2%)	901 (96.0%)
WHO criteria			
Confirmed (positive nasal or throat swab)	0 (0%)	268 (100.0%)	268 (9.4%)
Suspected	396 (15.4%)	0 (0%)	396 (13.9%)
Early-probable	145 (5.6%)	0 (0%)	145 (5.1%)
Uncertain	145 (5.6%)	0 (0%)	145 (5.1%)

No	1893 (73*.4%)	0 (0%)	1893 (66.5%)

Table S3: *Selected baseline characteristics of COMPARE study participants ("known negatives").*

	Total (n=1995)
Age	
< 25	151 (7.6%)
25 – 40	536 (26.9%)
40 – 60	745 (37.3%)
60+	563 (28.2%)
Sex	
Female	995 (49.9%)
Male	1000 (50.1%)
Ethnicity	
White	1316 (66.0%)
Non-White	12 (0.6%)
Missing/Don't know	667 (33.4%)

Note added in proof: More detail on the COMPARE study is available at https://www.medrxiv.org/content/10.1101/2020.11.06.20226779v1.

Table S4: *Approach 1: Specificity and its relationship to the age, gender and ethnicity of the subject*

Specificity of the AbC-19™ Rapid Test based on 1,995 "known negative" (pre-pandemic) samples.
aOR = adjusted odds ratio from multivariable logistic regression with age, gender and ethnicity as explanatory variables

Primary result (result of the first test)						
		Negative	False pos.	Total	Specificity %	aOR (95% CI) from multivariable logistic model
Age	*<20*	*27*	*0*	*27*	100	1
	20-29	*288*	*7*	*295*	97.6	Ref
	30-39	*357*	*8*	*365*	97.8	0.93 (0.33,2.6)
	40-49	*375*	*8*	*383*	97.9	0.87 (0.31,2.4)
	50-59	*358*	*4*	*362*	98.9	0.46 (0.13,1.6)
	60-69	*402*	*10*	*412*	97.5	1.0 (0.38, 2.7)
	70+	*146*	*5*	*151*	96.6	1.5 (0.46,4.8)
Gender	Male	989	11	1000	98.9	Ref
	Female	964	31	995	96.9	2.9 (1.5, 5.9)
Ethnicity	White	1287	29	1316	97.7	Ref
	Not white	12	0	0	100	1
	Missing or unknown	654	3	667	97.7	.96 (0.49, 1.9)
	All	*1953*	*42*	*1995*	97.8	-
Secondary result (after retesting)						
		Negative	False pos.	Total	Specificity %	aOR (95% CI) from multivariable logistic model
Age	*<20*	27	0	27	100	1
	20-29	293	2	295	99.3	Ref
	30-39	364	1	365	99.7	0.41 (.037,4.6)
	40-49	382	1	383	99.7	0.39 (0.34, 4.3)
	50-59	361	1	362	99.7	0.42 (0.37, 4.7)
	60-69	405	7	412	98.3	2.7 (0.54, 13)
	70+	147	4	151	97.3	4.4 (0.79,25)
Gender	Male	997	3	1000	99.7	Ref
	Female	982	13	995	98.7	4.73 (1.4,17)
Ethnicity	White	1306	10	1316	99.2	Ref
	Not white	12	0	12	100	1
	Missing or unknown	661	6	667	99.1	1.4 (0.51, 4.0)
	All	1979	16	1995	99.2	-

Table S5: *Approach 2. AbC-19 Rapid Test results on all EDSAB-HOME samples, compared with immunoassay reference standards, following retesting of results that were discordant with the composite immunoassay reference standard. This secondary analysis shows results based on a consensus of three retested samples if initial results were discordant with the composite reference standard, and on the first result if not.*

		AbC-19™ positive	**AbC-19™ negative**	**Total**	**Proportion (95% CI)**
"Known positive" samples (n = 268), following re-testing:					
Roche Elecsys ®	Positive	247	12	259	**Sensitivity of AbC-19™ = 95.4% (92.1, 97.3%)**
	Negative	4	5	9	**Agreement = 55.6% (26.7, 81.1%)**
EUROIMMUN	Positive	243	7	250	**Sensitivity of AbC-19™ = 97.2% (94.3, 98.6%)**
	Negative	8	10	18	**Agreement = 55.6% (33.7, 75.4%)**
Composite reference standard	Positive	250	13	263	**Sensitivity of AbC-19™ = 95.1% (91.7, 97.1%)**
	Negative	1	4	5	**Agreement = 80.0% (37.6, 99.0%)**
Total	Positive	251	17	268	**Proportion positive on AbC-19™ = 93.7% (90.1, 96.0%)**
All "unknown previous infection status" samples (n = 2,579), following re-testing:					
Adapted WHO classification	Suspected	171	225	396	43.2% (38.4, 48.1%)
	Early Probable	12	133	145	8.3% (4.8, 13.9%)
	Uncertain	21	124	145	14.5% (9.7, 21.1%)
	No	118	1,775	1,893	6.2% (5.2, 7.4%)
Roche Elecsys ®	Positive	310	44	354	**Sensitivity of AbC-19™ =** 87.6% (83.7, 90.6%)
	Negative	12	2,213	2,225	**Specificity of AbC-19™ =** 99.5% (99.1, 99.7%)
EUROIMMUN	Positive	306	40	346	**Sensitivity of AbC-19™ =** 88.4% (84.6, 91.4%)
	Negative	16	2,217	2,233	**Specificity of AbC-19™ =** 99.3% (98.8, 99.6%)
Composite reference standard	Positive	314	58	372	**Sensitivity of AbC-19™ =** 84.4% (80.4, 87.7%)
	Negative	8	2,199	2,207	**Specificity of AbC-19™ =** 99.6% (99.3, 99.8%)
Total		322	2,257	2,579	**Proportion positive on AbC-19™ =** 12.5% (11.3, 13.8%)

Table S6: Approach 2 results for all "unclear status" samples (i.e. WHO confirmed cases are excluded) stratified by EDSAB-HOME recruitment stream

Stream A: Police and Fire (n = 1,123)					
Adapted WHO classification	Suspected	47	111	158	29.7% (23.2, 37.3%)
	Early Probable	3	69	72	4.2% (1.4, 11.5%)
	Uncertain	2	38	40	5.0% (1.4, 16.5%)
	No	37	816	853	4.3% (3.2, 5.9%)
Roche Elecsys®	Positive	78	12	90	**Sensitivity of AbC-19™ = 86.7% (78.1, 92.2%)**
	Negative	11	1,022	1,033	**Specificity of AbC-19™ = 98.9% (98.1, 99.4%)**
EUROIMMUN	Positive	77	14	91	**Sensitivity of AbC-19™ = 84.6% (75.8, 90.6%)**
	Negative	12	1,020	1,032	**Specificity of AbC-19™ = 98.8% (98.0, 99.3%)**
Composite reference standard	Positive	80	19	99	**Sensitivity of AbC-19™ = 80.8% (72.0, 87.4%)**
	Negative	9	1,015	1,024	**Specificity of AbC-19™ = 99.1% (98.3, 99.5%)**
Total		89	1,034	1,123	7.9% (6.5, 9.7%)
Stream B: Healthcare workers (n = 1,456)					
Adapted WHO classification	Suspected	121	117	238	50.8% (44.5, 57.1%)
	Early Probable	9	64	73	12.3% (6.6, 21.8%)
	Uncertain	20	85	105	19.0% (12.7, 27.6%)
	No	85	955	1,040	8.2% (6.7, 10.0%)
Roche Elecsys ®	Positive	222	42	264	**Sensitivity of AbC-19™ = 84.1% (79.2, 88.0%)**
	Negative	13	1,179	1,192	**Specificity of AbC-19™ = 98.9% (98.1, 99.4%)**
EUROIMMUN	Positive	219	36	255	**Sensitivity of AbC-19™ = 85.9% (81.1, 89.6%)**
	Negative	16	1,185	1,201	**Specificity of AbC-19™ = 98.7% (97.8, 99.2%)**
Composite reference standard	Positive	223	50	273	**Sensitivity of AbC-19™ = 81.7% (76.7, 85.8%)**
	Negative	12	1,171	1,183	**Specificity of AbC-19™ = 99.0% (98.2, 99.4%)**
Total		235	1,221	1,456	16.1% (14.3, 18.1%)

Table S7: *Approach 2: AbC-19™ results for all 2,693 EDSAB-HOME Stream A and B samples, regardless of previous PCR positivity ("1 gate" results)*

Results are presented stratified by WHO category, Roche Elecsys ® and EUROIMMUN results and a composite reference standard (positive on at least one of Elecsys ® or EUROIMMUN versus negative on both)

		AbC-19™ positive	AbC-19™ negative	Total	Proportion (95% CI)
Streams A & B combined (initial testing, i.e. primary results) (n = 2,693)					
Adapted WHO classification	Confirmed	101	13	114	88.6% (81.5, 93.2%)
	Suspected	168	228	396	42.4% (37.7, 47.3%)
	Early Probable	12	133	145	8.3% (4.8, 13.9%)
	Uncertain	22	123	145	15.2% (10.2, 21.9%)
	No	122	1,771	1,893	6.4% (5.4, 7.6%)
Roche Elecsys ®	Positive	400	62	462	**Sensitivity of AbC-19™ = 86.6% (83.2, 89.4%)**
	Negative	25	2,206	2,231	**Specificity of AbC-19™ = 98.9% (98.4, 99.2%)**
	Prevalence according to this reference standard = 17.2% (15.8, 18.6%)				
EUROIMMUN	Positive	394	57	451	**Sensitivity of AbC-19™ = 87.4% (84.0, 90.1%)**
	Negative	31	2,211	2,242	**Specificity of AbC-19™ = 98.6% (98.0, 99.0%)**
	Prevalence according to this reference standard = 16.7% (15.4, 18.2%)				
Composite reference standard	Positive	404	78	482	**Sensitivity of AbC-19™ = 83.8% (80.3, 86.8%)**
	Negative	21	2,190	2,211	**Specificity of AbC-19™ = 99.1% (98.6, 99.4%)**
	Prevalence according to this reference standard = 17.9% (16.5, 19.4%)				
Total		425	2,268	2,693	*Total proportion positive on AbC-19™ Rapid Test = 15.8% (14.5, 17.2%)*
Streams A & B combined: results on re-testing					
Adapted WHO classification	Confirmed	104	10	114	91.2% (84.6, 95.2%)
	Suspected	171	225	396	43.2% (38.4 48.1%)
	Early Probable	12	133	145	8.3% (4.8, 13.9%)
	Uncertain	21	124	145	14.5% (9.7, 21.1%)
	No	118	1,775	1,893	6.2% (5.2, 7.4%)
Roche	Positive	413	49	462	**Sensitivity of AbC-19™ =**

Elecsys ®					89.4% (86.3, 91.9%)
	Negative	13	2,218	2,231	**Specificity of AbC-19™ =** 99.4% (99.0, 99.7%)
	Prevalence according to this reference standard = 17.2% (15.8, 18.6%)				
EUROIMM-UN	Positive	407	44	451	**Sensitivity of AbC-19™ =** 90.2% (87.2, 92.7%)
	Negative	19	2,223	2,242	**Specificity of AbC-19™ =** 99.2% (98.7, 99.5%)
	Prevalence according to this reference standard = 16.7% (15.4, 18.2%)				
Composite reference standard	Positive	418	64	482	**Sensitivity of AbC-19™ =** 86.7% (83.4, 89.5%)
	Negative	8	2,203	2,211	**Specificity of AbC-19™ =** 99.6% (99.3, 99.8%)
	Prevalence according to this reference standard = 17.9% (16.5, 19.4%)				
Total		426	2,267	2,693	*Total proportion positive on AbC-19™ Rapid Test* = 15.8% (14.5, 17.2%)

Stream A: Police and Fire (n = 1,147)
(initial testing, i.e. primary results)

Adapted WHO classification	Confirmed	21	3	24	87.5% (69.0, 95.7%)
	Suspected	47	111	158	29.7% (23.2, 37.3%)
	Early Probable	3	69	72	4.2% (1.4, 11.5%)
	Uncertain	2	38	40	5.0% (1.4, 16.5%)
	No	37	816	853	4.3% (3.2, 5.9%)
Roche Elecsys ®	Positive	98	14	112	**Sensitivity of AbC-19™ = 87.5% (80.1, 92.4%)**
	Negative	12	1,023	1,035	**Specificity of AbC-19™ = 98.8% (98.0, 99.3%)**
	Prevalence according to this reference standard = 9.8% (8.2, 11.6%)				
EUROIMMUN	Positive	98	16	114	**Sensitivity of AbC-19™ = 86.0% (78.4, 91.2%)**
	Negative	12	1,021	1,033	**Specificity of AbC-19™ = 98.8% (98.0, 99.3%)**
	Prevalence according to this reference standard = 9.9% (8.3, 11.8%)				
Composite reference	Positive	101	21	122	**Sensitivity of AbC-19™ = 82.8% (75.1, 88.5%)**

standard	Negative	9	1,016	1,025	**Specificity of AbC-19™ = 99.1% (98.3, 99.5%)**
	Prevalence according to this reference standard = 10.6% (9.0, 12.6%)				
Total		110	1,037	1,147	*Total proportion positive on AbC-19™ Rapid Test = 9.6% (8.0, 11.4%)*
Stream B: Healthcare workers (n = 1,546) (initial testing, i.e. primary results)					
Adapted WHO classification	Confirmed	80	10	90	88.9% (80.7, 93.9%)
	Suspected	121	117	238	50.8% (44.5, 57.1%)
	Early Probable	9	64	73	12.3% (6.6, 21.8%)
	Uncertain	20	85	105	19.0% (12.7, 27.6%)
	No	85	955	1,040	8.2% (6.7, 10.0%)
Roche Elecsys ®	Positive	302	48	350	**Sensitivity of AbC-19™ = 86.3% (82.3, 89.5%)**
	Negative	13	1,183	1,196	**Specificity of AbC-19™ = 98.9% (98.1, 99.4%)**
	Prevalence according to this reference standard = 22.6% (20.6, 24.8%)				
EUROIMMUN	Positive	296	41	337	**Sensitivity of AbC-19™ = 87.8% (83.9, 90.9%)**
	Negative	19	1,190	1,209	**Specificity of AbC-19™ = 98.4% (97.6, 99.0%)**
	Prevalence according to this reference standard = 21.8% (19.8, 23.9%)				
Composite reference standard	Positive	303	57	360	**Sensitivity of AbC-19™ = 84.2% (80.0, 87.6%)**
	Negative	12	1,174	1,186	**Specificity of AbC-19™ = 99.0% (98.2, 99.4%)**
	Prevalence according to this reference standard = 23.3% (21.2, 25.5%)				
Total		315	1,231	1,546	*Total proportion positive on AbC-19™ Rapid Test = 20.4% (18.4, 22.5%)*

Table S8: *Qualitative disagreements between three trained laboratory readers of a device: numbers of disagreements when reading the result on the first LFIA examined for each sample.*

	Known negatives (i.e. pre-pandemic samples)	**Known positives (i.e. EDSAB-HOME PCR-confirmed cases)**	**Unknown status (i.e. all EDSAB HOME samples except PCR-confirmed cases)**	**Overall**
Number of disagreements	83	24	82	189
Disagreements allocated to 'positive' overall	16	17	39	72
Disagreements allocated to 'negative' overall	67	7	43	117
Total samples	1,995	268	2,579	4,842
Percentage	8.3% (7.1, 9.6)	9.0% (6.1, 13.0)	3.2% (2.6, 3.9)	3.9% (3.4, 4.5)

Table S9*: Test results in 268 "known positive" and 1995 "known negative" samples according to three independent readers.*

Reader 1	Reader 2	Reader 3	Known positives (n = 268)	Known negatives (n = 1,995)
Reactive	Reactive	Reactive	231	21
Reactive	Reactive	Non-reactive	7	7
Reactive	Non-reactive	Reactive	1	2
Reactive	Non-reactive	Non-reactive	1	6
Non-reactive	Reactive	Reactive	9	12
Non-reactive	Reactive	Non-reactive	3	16
Non-reactive	Non-reactive	Reactive	3	19
Non-reactive	Non-reactive	Non-reactive	13	1912

Table S10*: Sample size considerations*

The expected 95% confidence intervals (CIs) around estimated sensitivity, specificity and PPV under potential sample sizes of n = 1000 and n = 2500, assuming true sensitivity and specificity are both 98%.

	Study size of n = 1000			**Study size of n = 2500**		
Prevalence in study population	Sensitivity 95% CI	Specificity 95% CI	PPV in study population: estimate (95% CI)	Sensitivity 95% CI	Specificity 95% CI	PPV in study population: estimate (95% CI)
5%	0.93,1.00	0.97,0.99	0.72 (0.61,0.82)	0.95,1.00	0.97,0.99	0.72 (0.65,0.79)
10%	0.95,1.00	0.97,0.99	0.85 (0.78,0.91)	0.96,1.00	0.97,0.99	0.85 (0.80,0.89)
15%	0.95,1.00	0.97,0.99	0.90 (0.85,0.94)	0.96,0.99	0.97,0.99	0.90 (0.87,0.92)
20%	0.96,1.00	0.97,0.99	0.93 (0.89,0.96)	0.97,0.99	0.97,0.99	0.92 (0.90,0.95)
25%	0.96,1.00	0.97,0.99	0.94 (0.91,0.97)	0.97,0.99	0.97,0.99	0.94 (0.92,0.96)

References

1. WHO performance evaluation protocols | Protocol for performance laboratory evaluation of HCV serology assays: WHO, 2017:14.