

Solidarity II – COVID-19 Seroepidemiology Study

Notes from Meeting on 15 May 2020

Notes provided by (b) (6) (b) (7)(C)

Agenda

1. Introduction (b) (6) (b) (7)(C)
2. Update about the Solidarity Collaborators and Panels (b) (6) (b) (7)(C)
3. Updates from the Vaccine Group (b) (6) (b) (7)(C)
4. Study results from Bonn, Germany (b) (6) (b) (7)(C)
5. Study update, Germany and African Network (b) (6) (b) (7)(C)
6. Study update from Kenya (b) (6) (b) (7)(C)
7. Conclusion (b) (6) (b) (7)(C)

(b) (6) and (b) (6) (b) (7)(C) not present. (Who spoke from NIBSC?)

Quite a few requests coming in. One has been approved. Agreed to provide 300 ul for each group. It is not necessary to order all 3 panels. New set next month will be freeze dried and more stable. NIBSC and PHE have run these with ELISA and PRNT with good agreement.

(b) (6) - Update

We have been getting 110-120 people on these calls each week from all over the world. 36 have responded to the questionnaire. We have had 26 requests for the serum panel. The first shipments will be next week.

(b) (6) – Bonn, Germany

In the small town of Gangelt close to the Dutch border (12,597 inhabitants). There was a carnival 15/2/20 which became a superspreading event. Shutdown was in place from 26/2/20 and the peak of cases reached 13/3/20. There were 439 positive cases and 7 deaths This was the basis of a seroepi study started 10-14 days later. 7/3 study was undertaken with PCR and Euroimmune IgG/IgA, questionnaire, including medicines etc.

600 households contacted, 407 responded, 405 households and 1009 persons assessed. Most cases assessed were >40, especially 65+. Few children presented for study, as parents did not want children to give blood samples. Set up a study centre in school and invited people to come in an bring overall household. Older participants were visited at home.

IgG correlated with IgA, but many cases with IgA only. Specificity IgG – 99%; IgA - 90% so dropped IgA in the analysis. 14% were +ve for IgG. Of the 125 IgG +ve, 70% were only IgG +ve. 38 had been shown to be PCR+, while only 3 were PCR+, IgG -ve. In the laboratory positive IgG correlated with neutralising assay. 128/919 evaluated were seropositive (14%). A correction factor was included for lower specificity.

Infection rate was similar by age group. It was not related to comorbidities, drugs, etc. Those who attended the carnival had a higher rate of infection, and symptoms. 22% of Carnival attendees were asymptomatic (36% overall). This was not influenced by age, gender, pre-existing conditions. Those with symptoms had higher titres. The CFR was 0.37%. There was no cluster effect in households. Household contacts of cases were only slightly higher risk of infection. This was a 15% risk of transmission. In a 2 person household the risk was 43% ; 4 person household 80%.

The study is available on a pre-print server and now going to journal.

<https://www.medrxiv.org/content/10.1101/2020.04.14.20071111>

Q: What about the correlation of comorbidity with severity? A: We did not examine this?

Q: 10.1101/2020.04.14.20071111 : Why was the household transmission rate so low? The graph is difficult to follow. Does this raise questions about the specificity of the assay and the actual attack rate in the community? A: We agree the household transmission graph is difficult to follow. We note this was also low in Iceland and Korea. This assay has 99% specificity, comparable to the Roche assay, and immunity confirmed in neutralisation test so we can rule out false positives. We need to consider what typical German household looks like; above 2 most of those in household would be children. We should consider looking at what infection rate for children with acquisition outside of household. We cannot speak about directionality of infection with serology studies.

Q: 10.1101/2020.04.14.20071111 : Did you have patients with IgA lower than IgG? A: We have not looked into it, as we omitted IgA from the analysis due to low specificity.

Q: 10.1101/2020.04.14.20071111 : Did you observe any different IgG/IgA level between children and adults? A: We are not sure of differences between adults and children.

Q: 10.1101/2020.04.14.20071111 : Which EuroImmun assay was used? Spike or Nucleocapsid protein? A: I am not sure, I will check.

Q: 10.1101/2020.04.14.20071111 : What is your hypothesis regarding why more symptoms in those who attended the carnival? Our hypothesis is that It may be related to viral load dose. (not discussed)

10.1101/2020.04.14.20071111 Tropical Medicine Research Institute, Munich

We have established a German Covid serology network. Munich is the most affected town of over 1 million people. We have had many introductions into city, people coming from skiing trips in Italy and Austria. About 6000 PCR+ cases have been confirmed.

We are planning to choose representative sample using random starting points. In 100 of the 165 districts in Munich, 3000 selected households/houses will involve ~6000 people. Initially the sample size was estimated based on 0.25% seroprevalence. We started recruiting in the first week of April. 2200 households have been recruited and we will complete recruitment in the next 2 weeks.

We are using second version of EuroImmun and retesting positive samples with other ELISAs available plus other assays to confirm results. Where a positive household is found we will revisit the house and investigate.

We are also planning a much larger study in Germany. This will involve 200,000 individuals in all parts of Germany. Plan to sample 3-4 times in next 2 years

We understand that some people develop antibodies extremely late, up to 8 weeks after infection. We are planning a longitudinal which will enable us to evaluate the risk of re-infection over winter.

Q: What was your participation rate; A: There was a public announcement before hand. Then the visit was undertaken with a policeman, 85% participated if someone was there. If no one at home a letter was left and then ~40% participated.

(10)(2e) **Munich**

We have Bavarian Government funding to do work in Jimma, Ethiopia, where only 1 patient has tested positive so far. We will work with the Jimma university Medical Center. It is difficult to make assumptions re prevalence rate to estimate sample size. We plan to collect DBS samples which will be sent to Munich for testing in Germany. We are interested in understanding to sociological behavioural context. We have GIZ/Ministry for Cooperation and Development funding opportunities to expand potentially to 6 countries – Tanzania, Ethiopia, Ghana, Rwanda, Kenya and Uganda. In each of these countries we have a potential partner hospital.

(10)(2e) (10)(2e) **LSHTM and Wellcome Trust, Kilifi, Kenya**

In Kenya, the first case was 2 months ago. 37,000 tests have been done for 758 positive cases and 42 deaths. Overall the work is being coordinated by MoH.

The Kramer assay has been set up in Kilifi. Using RBD and stabilised spike. They only got the plasmids 2.5 weeks ago. They have run validation tests on biobanked samples, including some from past seasonal coronaviruses. All were negative. We are now working with some positive individuals.

The national plan is essentially a wish list from the government:

- Convalescent samples from positive cases at Kilifi and Aga Khan (Nairobi) Hospitals, and the Nairobi area.
- Blood donor samples.
- Antenatal clinica across Kenya.
- Health care workers across Kenya (3 monthly samples).
- Commercial organizations with public facing staff (transport, logistics, security) – 700 for each, sampled 3 monthly.
- Demographic Surveillance sites – Of the 7 DSS sites across Kenya, 2-3 will recruit 800 each.

Q (10)(2e): Are studies looking at other population groups? The studies in commercial organizations are particularly novel and interesting.

A: Studies in different populations are planned to estimate the most valid seroprevalence, some components are awaiting ethical review. The Kenya Government is particularly interested in infection rates in public facing commercial organisations. This will be done regularly. Countries across east Africa were testing lorries travelling across borders who were coming up positive. This has caused transport issues.

(10)(2e) (chat): Several countries are running sero-epi studies in Africa using the WHO master protocol under the Unity studies WHO webpage. You can write to me (10)(2e)@who.int. I can put you in touch with my regional offices colleagues, so that you can collaborate.

Chat room

From (10)(2e) to Everyone: 09:05 PM

(10)(2e) joined

From (10)(2e) to Everyone: 09:24 PM

do you observe any different IgG/IgA level between children and adults?

From (10)(2e) to Everyone: 09:24 PM

Thank you I have a question, I am having trouble finding the raise hand....

From (10)(2e) to Everyone: 09:25 PM

What is your hypothesis regarding why more symptoms in those who attended the carnival?

From (10)(2e) to Everyone: 09:26 PM

Thanks (10)(2e) - i will come to you next

From (10)(2e) to Everyone: 09:26 PM

My question is does Henderick have a comment about the percentage of patients with IgA being lower than IgG?

From (10)(2e) to Everyone: 09:28 PM

This assumes that the Prior risk for all Household members is the same adults and children

From (10)(2e) to Everyone: 09:30 PM

we have also observed very low household attack rates in Singapore

the secondary cases by household transmission alone seems insufficient to sustain the infection

From (10)(2e) to Everyone: 09:32 PM

(10)(2e) can i comment to this

From (10)(2e) to Everyone: 09:34 PM

please can I ask one

From (10)(2e) to Everyone: 09:36 PM

sorry, the question about the symptoms in carnival vs non-carnival goes. Is there any hypothesis about this?

From (10)(2e) to Everyone: 09:45 PM

It was anti-S.IgG. https://www.coronavirus-diagnostik.de/documents/Indications/Infections/Coronavirus/YI_2606_I_DE_C.pdf

@(10)(2e): Our hypothesis is that It may be related to viral load dose.

From Me to Everyone: 09:45 PM

revisit +ve households? Is this to retest everybody?

From (10)(2e) to Everyone: 09:46 PM

Thank you (10)(2e) for the assay information and very interesting presentation.

From (10)(2e) to Everyone: 09:47 PM

Here is the link to the preprint server :

[https://www.medrxiv.org/content/ \(10\)\(2e\)](https://www.medrxiv.org/content/ (10)(2e))

(There is a mistake in the author line up we are trying to fix, but it is correct on the pdf)

From (10)(2e) to Everyone: 09:51 PM

is a serologic test being used in Africa?

From (10)(2e) to Everyone: 09:54 PM

@ (10)(2e) , are you aware or used the Household matser protocol for Germany study and Ethipia ones ?<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/early-investigations>

From (10)(2e) to Everyone: 09:56 PM

I am not aware that serology is performed in Africa yet (except probably South Africa).

Thanks (10)(2e) I was not aware of this, will check this up

From (10)(2e) to Everyone: 09:56 PM

thank you!

From (10)(2e) to Everyone: 09:58 PM

Several countries are running sero-epi studies in Africa using the WHO master protocol under the Unity studies WHO webpage. You can write to me (10)(2e) @who.int. I can put you in touch with my regional offices colleagues, so that you can collaborate