Public Health England

Protecting and improving the nation's health

Serological Surveillance: Summary report 8
PHE Surveillance Cell

10 June 2020

Key messages:

- **Results from testing an additional 1932 adult blood donor samples (collected in late-May (week 22)) from East of England and the South East regions are included in this week's report. An additional 173 paediatric samples collected in weeks 18-19 from Great Ormond Street Hospital (GOSH) are also included.**

- **Adjusted prevalence rates in blood donors in the South East have remained stable in recent weeks, prevalence was 4.0% (95%CI: 2.1% - 6.1%) in week 18 and 3.7% (95% CI: 1.7% - 6.0%) in week 22.**

- **A lower adjusted prevalence rates of 4.2% (95% CI: 2.4% - 6.3%) in week 22 was found in blood donors in the East of England, previously 8.1% (95% CI: 5.8% - 10.7%) in week 17.**

- **The adjusted prevalence in paediatric samples collected from GOSH was 19.2% (14.3% - 24.9%) in weeks 16-17 and 12.6% (7.7% - 18.8%) in weeks 18-19.**

Enhanced Sero-surveillance

Details of the serosurveillance sample sources can be found in previous reports. The data presented in this report has been ascertained using adult samples from blood donors in England (NHS Blood and Transplant (NHSBT)) and Wales (Welsh Blood Service, WBS) with regions sampled at different time periods. This week's report presents results from testing a second set of blood donor samples from East of England, and a second set of samples from the South East (comprising 1,932 new samples in total). In addition, results from adding the 173 paediatric samples collected in weeks 18-19 from Great Ormond Street Hospital (GOSH) to the 832 previous samples from weeks 12-18 are summarised.

Results

Seroprevalence estimates presented here are based on a total of 17,255 adult samples from NHSBT and Welsh Blood Service (WBS) and includes the results of 1100 new samples from East of England and 832 new samples from the South East (collected in week 22 which is the week ending May 31st 2020).

Seroprevalence estimates amongst blood donors were adjusted for the sensitivity and sensitivity of the EuroImmun assay, based on sensitivity of 132/160 (82.5%) and specificity of 569/574 (99.1%) and

uncertainty using a Bayesian approach. Further details have been provided in previous reports. These adjustments are updated from the previous summary report 7 to ensure better consistency between different assays.

Blood donor data

1) Regional prevalence estimates over time

The additional results from week 22 (**Figure 1**) show that adjusted prevalence in the South East has remained stable, prevalence was 4% (2.1% - 6.1%) in week 18 and 3.7% (1.7% - 6%) in week 22. The week 22 data for the East of England (the second sample set from this region) indicates a lower adjusted prevalence, 8.1% (5.8% - 10.7%) in week 19 and 4.2% (2.4% - 6.3%) in week 22. (**Table 2, Appendix 1**).

**Figure1**: *Adjusted SARS-CoV-2 antibody seroprevalence in UK blood donors*
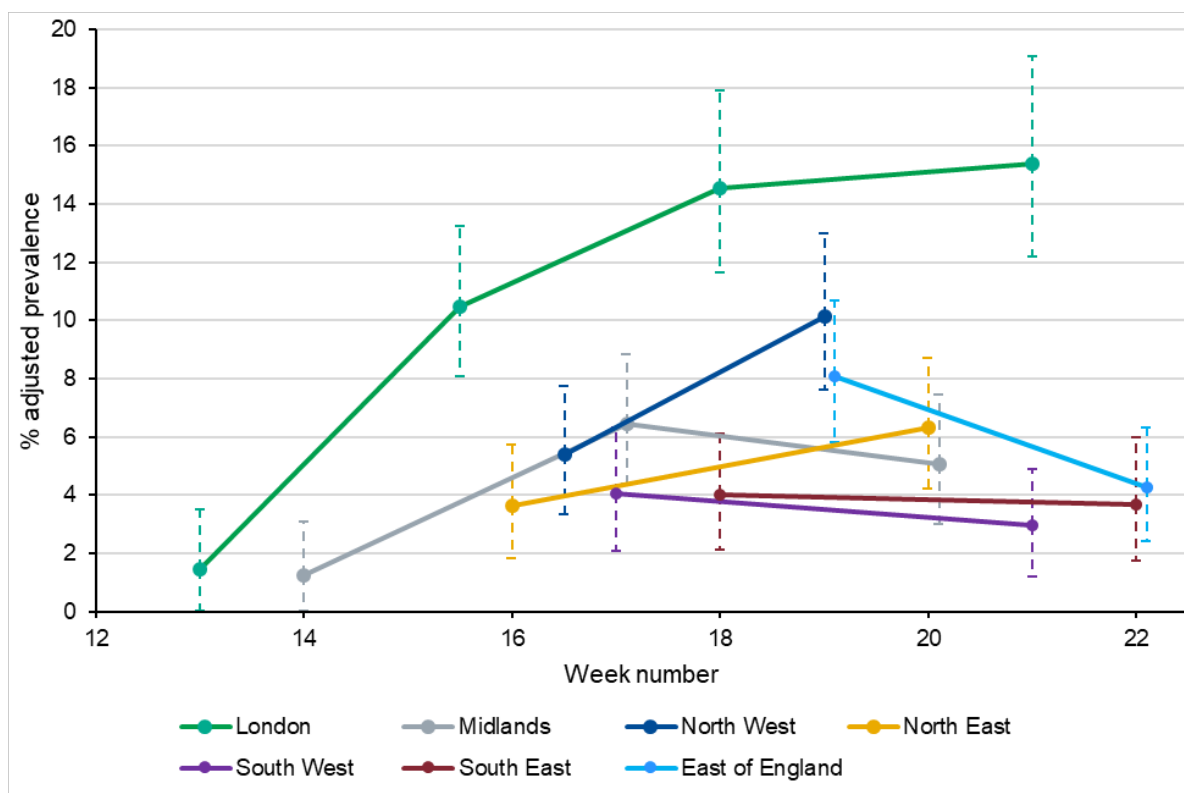
*using Euroimmun assay adjusted for sensitivity (82.5%) and specificity (99.1%)

**error bars show 95% confidence intervals

The % positive by ~10 year age bands are shown in **Figure 2**. In week 22, young adults aged 17-29 in the South East show the highest % positive test results, and the gap between age groups appears to have broadened. In the East of England, the % positive has decreased in all age groups, except 60-69 year olds, and the gap in groups appears to have narrowed. Age trends by region show an inconsistent picture, but the % positive is generally higher in the younger age groups. The 60-69 year age group typically has lower % positive in all regions.

Please note that about 1-2% of the samples come without demographic data, and hence prevalence estimates in this report are based on the 98-99% sets with available data.

Figure 2: *NHSBT % positive test results by age (error bars show 95% CI), region and period of sampling, using the Euroimmun assay*
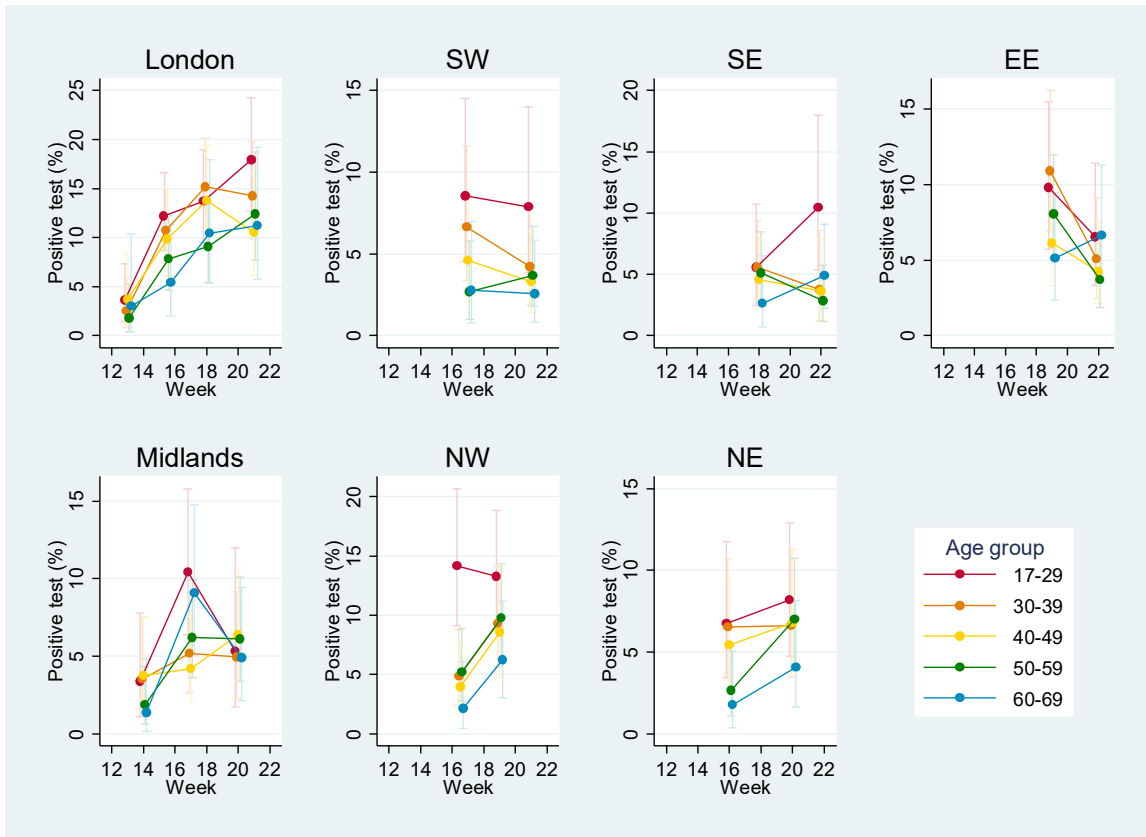
Paediatric seroprevaence estimates based on testing samples from GOSH

Figure 3: *GOSH % positive test results by age and period of sampling, using the Euroimmun assay*
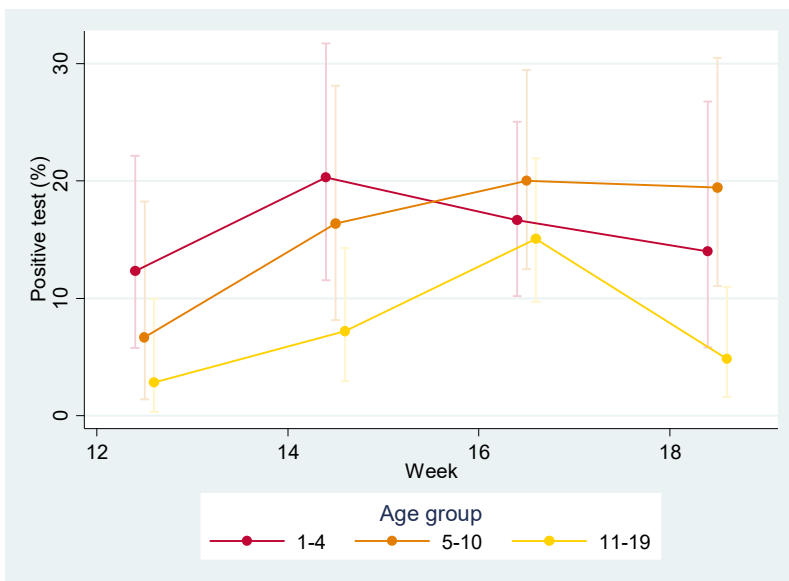
The results from testing an additional 173 samples from GOSH have been added to the previous analyses in order to provide more up to date estimates of prevalence among this population for weeks 18 – 19. These new samples show a lower adjusted prevalence of 12.6% (7.7% - 18.8%) in week 18-19 than that in weeks 16-17 (19.2% [14.3% - 24.9%]) (**Table 3, Appendix 1**).

When stratified by age for weeks 18 – 19, the disparity in % positive test results seen in earlier weeks (in which older children had a lower % postive than

younger children) has reappeared, due to a decreased prevalence among older children, while prevalence in younger children has remained fairly stable (**Figure 3**).

Comments

In this weeks report we provide analyses on the results of a second sampling in the South East and the East of England; results that supplement existing data presented in previous reports from serial sampling in all other regions.

The estimates among adults in recent weeks from a number of regions are showing a slightly lower prevalence, although a particularly notable lower prevalence in the most recent data from testing donors in the East of England. The very slight decline in prevalence estimates in the South East (similar to what was prevoulsy observed in the Midlands and South West regions) are consistent with prevalence reaching a plateau.

As noted in previous reports, these lower prevalence estimates could in part be driven by changes in the precise locations of sampling in each region over time, especially where wide disparity in prevalence is present within a region. Within the East of England region a trend of increased prevalence with proximity to London is observed. The most recent set of samples from the East of England includes 11% less samples from residents of locations surrounding London (such as St Albans, Enfield and Watford) and 10% more samples from residents of Cambridgeshire, Norfolk and Suffolk, which have a relatively low prevalence.

In addition, the sensitivity of the assay over time (for instance, 60 or more days post onset) remains unclear, and this is something that must be taken into account when assessing declines in prevalence over time. The age distribution of blood donors providing samples within both the second sets of South East and East of England has shifted slightly toward a older age profile, however this shift is small and decreases within % positive by age group were still present in four out of five age groups in the East of England. It is possible that with the gradual easing of lockdown measures and individuals encouraged to return to work, we see a slightly different profile of individuals now donating blood.

With regards to age-stratified analysis, the South East displays a higher prevalence in young adults. The age and region specific pattern may reflect differences in behaviour and mixing patterns in the different age groups, combined with timing of the epidemic.

Additional data from children tested at Great Ormond Street hospital is available this week, and shows a lower prevalence among this population too. A lower prevalence was found among 11-18 year olds. Additional results from a range of paediatric samples will be helpful in facilitating a more detailed interpretation; there is considerable uncertainty in our estimates and GOSH represents a patient population. Samples from What's the Story study, with healthy children and adolescents up to the age of 25, should provide more insights in the coming weeks.

Appendix 1: Additional data

Table 2: Summary of NHSBT Prevalence Estimates by region and period of sampling, using the Euroimmun assay

Region	date range	Week of collection	pos	total	% pos (95% CI)	adjusted prevalence (95% CrI)
NHS blood & transplant						
London	26-27 Mar	13	22	757	2.9% (1.8% - 4.4%)	1.5% (0% - 3.5%)
	9-13 Apr	15-16	107	1085	9.9% (8.2% - 11.8%)	10.5% (8.1% - 13.2%)
	1-3 May	18	127	974	13.0% (11.0% - 15.3%)	14.5% (11.7% - 17.9%)
	21 - 22 May	21	109	797	13.7% (11.4% - 16.3%)	15.4% (12.2% - 19.1%)
Midlands	2-3 Apr	14	25	916	2.7% (1.8% - 4.0%)	1.2% (0% - 3.1%)
	23-24 Apr	17	70	1043	6.7% (5.3% - 8.4%)	6.4% (4.4% - 8.8%)
	14-15 May	20	49	870	5.6% (4.2% - 7.4%)	5% (3% - 7.4%)
NE	14-16 Apr	16	46	1016	4.5% (3.3% - 6.0%)	3.6% (1.8% - 5.7%)
	13-14 May	20	67	1014	6.6% (5.2% - 8.3%)	6.3% (4.2% - 8.7%)
NW	15-20 Apr	16-17	55	936	5.9% (4.5% - 7.6%)	5.4% (3.3% - 7.7%)
	6-8 May	19	92	959	9.6% (7.8% - 11.6%)	10.1% (7.6% - 13%)
SW	24-26 Apr	17	42	865	4.9% (3.5% - 6.5%)	4.1% (2.1% - 6.3%)
	21 - 22 May	21	42	1050	4.0% (2.9% - 5.4%)	2.9% (1.2% - 4.9%)
SE	30 Apr - 1 May	18	49	1020	4.8% (3.6% - 6.3%)	4% (2.1% - 6.1%)
	28-29 May	22	38	832	4.6% (3.3% - 6.2%)	3.7% (1.7% - 6%)
EE	7-10 May	19	81	1015	8.0% (6.4% - 9.8%)	8.1% (5.8% - 10.7%)
	28-29 May	22	55	1100	5.0% (3.8% - 6.5%)	4.2% (2.4% - 6.3%)
Welsh blood service						
Wales		17	34	1006	3.4% (2.4% - 4.7%)	2.1% (0.4% - 4%)

Table 3: Summary of GOSH Prevalence Estimates by period of sampling, using the Euroimmun assay

date range	Week of collection	pos	total	% pos (95% CI)	adjusted prevalence (95% CrI)
20-28 Mar	12-13	14	190	7.4% (4.1% - 12.1%)	7.3% (3.1% - 13%)
1-12 Apr	14-15	31	235	13.2% (9.1% - 18.2%)	14.8% (9.6% - 21.1%)
13-26 Apr	16-17	59	354	16.7% (12.9% - 21.0%)	19.2% (14.3% - 24.9%)
27 Apr – 5 May	18-19	26	226	11.5% (7.7% - 16.4%)	12.6% (7.7% - 18.8%)