# A short note on the role of children in transmission of SARS-CoV-2

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Data from population-based swabbing and serological data have very recently become available which suggests that children – particularly older children – may play a more significant role in transmission than was previously thought. Much of these data have only become publicly available since the SAGE meeting on 15<sup>th</sup> of October when this issue was discussed.

The data consist of population-based serological data (summarised in [1]) and population based swabbing data, i.e. the ONS Coronavirus Infection Survey [2 and 3] and the REACT1 study [4].

### Serological data

The PHE Serological Surveillance Summary, summarises data from May to September 22<sup>nd</sup> on the levels of seroprevalence. Given the lag of 2-3 weeks between infection and development of high antibody titres, the data reflect levels of seroprevalence observed during the first wave, when schools were largely closed. As Figure 1 shows (Figure 7 in report), the levels of seroprevalence in children (0-17 years age) is similar to that observed for adults (around 12% seropositive in London, much lower seroprevalence in the South West, and other regions with 3-6% seroprevalence). This is evidence that children were infected to a similar extent as adults in the first wave, despite the schools being closed for much of it.



Figure 1: Seroprevalence in children by region Figure 7: Population weighted % positive / indeterminate using the Abbott assay by NHS region in Figures 2 and 3 (Figures 5 and 6 in the original report) look at seroprevalence in children in more detail. The two figures are from 2 different datasets. They suggest that seroprevalence is lower in pre-school children and probably primary school-aged children, compared with secondary-school aged children.



Figure 2: seroprevalence by age group in children

Figure 5: Population weighted % positive / indeterminate using the Abbott assay by age group in

Figure 3: seroprevalence by age group in children and young adults. Figure 6: Population weighted % positive / indeterminate using the Abbott assay by age group in the What's the Story study, ages 1-24, 1 May - 22 Sept 2020



## Population-based swabbing data

The latest ONS survey suggests that prevalence of infection in secondary-school aged children has increased rapidly during September and is higher than all other age groups, apart from young adults 18-24 years old (Figure 4). This pattern is also apparent from the latest REACT1 [4] data (Figure 5). The ONS data suggests that the prevalence in primary-school aged children is relatively low, though the REACT data seems to suggest that in some regions the rates of infection may also be high in this age group.

Figure 4: ONS swab-positivity data.



Figure 5: REACT1 weighted prevalence by age group, stratified by region.



### Household transmission studies

The ONS study suggests that children may play a significant role in bringing infection into the household and transmitting to others. Analysis from the slidepack published on the 7<sup>th</sup> of October [2] suggests that households with school-age children have experienced a more rapid rise in infections over recent weeks when compared to households where all children are of pre-school age (Figure 6). It also suggests that households with secondary school children are at increased risk of infection compared with households with primary school children but that households with both primary and secondary school-aged children in them have observed the most rapid rise in infection.





The latest ONS slidepack [3] examines infection in the home in more detail (Figure 7) and suggests that children (particularly secondary school children) are more likely to introduce infection into the home than adults and that they are more infectious to other household members than adults. However, children – particularly young children – appear to be less susceptible to infection from other household members.

Figure 7. The role of children in transmission within the home.



### References

[1] PHE Surveillance Cell. Serological Surveillance: Summary report 19, October 8th.

[2] ONS. COVID-19 Infection Survey (Pilot) Results for England, Wales and Northern Ireland. Report date: Wednesday 7th October 2020

[3] ONS. COVID-19 Infection Survey (Pilot) Results for England, Wales and Northern Ireland. Report date: Wednesday 14th October 2020

[4] REACT programme investigators, Imperial College London REACT-1 and REACT-2: Interim Report 17 Thursday 15th October 2020 for distribution within UK Government