Sixty-fifth SAGE meeting on Covid-19, 4th October 2020
Held via Zoom

Role of children in transmission of SARS-CoV-2

1. SAGE endorsed the Children's Task and Finish Group paper 'Update on Children, Schools and Transmission'.
2. SAGE has previously considered evidence on the role of children and young people in transmission of SARS-CoV-2 across different age groups and settings (see SAGE 62, 63 and 64).
3. As previously advised, the opening and closing of schools will have an impact on R and wider community transmission, and infection rates in children and young people; however, the evidence on the size of these impacts is mixed. Policymakers must consider the balance of risks and harms including the potential direct health risks to children and staff from COVID-19; the wider impact of schools reopening on community transmission; and the direct risks to student mental health, wellbeing, development, educational attainment and health outcomes from school closures.
4. Evidence continues to suggest that children and younger people (<18 years) are much less susceptible to severe clinical disease than adults (high confidence). There is some evidence from contact tracing studies that pre-school and primary aged children are less susceptible to infection than adults (low-medium confidence) however the evidence is more mixed for secondary aged children.
5. ONS infection survey and REACT-1 data show continued increases in the prevalence of infection in those aged 2-24 between September and October, with earlier increases and higher prevalence in those in school year 7 to age 24 (high confidence).
6. Epidemiological data and modelling show that there were signals of increasing transmission, and epidemic growth, in the wider population before the reopening of schools (medium confidence). The increases in infection levels among children and particularly young adults occurred at about the same time as the opening of schools (medium-high confidence).
7. Data shows the inflection point for the rise in hospital admissions was before schools opened in England and Scotland, but less clear in Wales. Hospital admissions lag community transmission, so any change in wider community transmission driven by schools would be seen in this data a few weeks after the return of students.
8. International comparators also suggest that there is no consistent pattern between the reopening of schools and increases in case numbers (medium confidence). Initial increases in overall reported case numbers across European countries began weeks before schools reopened. However, in some countries including Denmark and the Netherlands, cases appear to have accelerated after schools reopened, including in younger age groups. SAGE noted that case data do not capture the levels of infection as fully as population representative data (e.g. ONS and REACT), particularly for asymptomatic or paucisymptomatic cases.
9. While education is a major part of children and young people's lives, transmission to children and young people can occur in household, community and educational settings (high confidence). The infection risk from behaviours and contacts within schools from the wider 'end to end' behaviours and contacts associated with school attendance but not occurring in schools is difficult to distinguish. For children this includes journeys to and from school, and other activities and gatherings, but there may also be impacts on adult contacts e.g. through return to work or behaviour changes. There is no current direct evidence that transmission within schools plays a significant contributory role in driving increased rates of infection among children, but neither is there direct evidence to suggest otherwise (low confidence).
10. Evidence suggests that mixing outside the home continued to occur during school closures. Following schools reopening in September, the reported number of contacts for

children aged 5-17 in England increased overall and in schools (medium-high confidence). Overall reported contacts at this time occurred primarily within schools, but also in the home and community (low confidence).

11. The role of schools in community transmission cannot be easily considered in isolation from wider measures. School closures tend to be accompanied by other restrictions (e.g. mixing beyond school, cancellation of sporting activities) and increased pressure on households (e.g. parents working from home, financial pressures). Changes in NPI's over the next month may provide further evidence and it will be important to collect data on this.
12. As the prevalence of infection in children aged 12-16 increased between September and October, ONS analysis suggests that children aged 12-16 played a significantly higher role in introducing infection into households (medium confidence). The difference is less marked for younger children (medium confidence). The relative rate of external exposure (i.e. bringing infection into the household) for children aged 12-16[1] was found to be higher than for adults. For those aged 12-16 there was a marked increase in the period after schools opened.
13. SAGE has previously advised that there are significant educational, developmental and mental health harms from schools being closed, particularly for younger children, and vulnerable children where learning at home is likely to reinforce inequalities (high confidence) (see SAGE 46 and 62).
14. School closures have an impact on the physical and mental health of children. Evidence suggests that the mental health of adolescents is particularly affected (high confidence). Cognitive, social, and emotional developmental outcomes are also at risk (medium confidence) as is physical health (low confidence).
15. Considering risks to teachers and school staff, ONS data from 2nd September to 16th October show no difference between the positivity rates of pre-school, primary and secondary school teachers and staff, relative to other worker groups of a similar age (medium confidence). This is the same when including household members of such groups.
16. Schools are heterogeneous settings, with differences in class sizes, rules, structures, environmental conditions and ventilation rates. Mitigations such as ventilation are important in all school settings. Differences in the school environment and the mitigations in place will influence the potential for transmission in schools. The age of children, and the feasibility of effectively implementing infection controls will influence the balance of risks and benefits and should be clearly considered in policy.

Action: Ian Diamond to lead a working group to assess data on transmission in children and schools; SAGE to consider new evidence in 3-4 weeks.

Attendees

Scientific Experts (32): *Patrick Vallance (GCSA), Chris Whitty (CMO), Jenny Harries (dCMO), Jonathan Van Tam (dCMO), Rosalind Eggo (LSHTM), Brooke Rogers (KCL), Calum Semple (Liverpool), Cath Noakes (Leeds), Charlotte Watts (DfID CSA), Fliss Bennee (Wales), Graham Medley (LSHTM), Iain Bell (ONS), Ian Boyd (St Andrews), Ian Diamond (ONS), Ian Young (Health NI CSA), James Rubin (KCL), Jeremy Farrar (Wellcome), John Edmunds (LSHTM), Julia Gog (Cambridge), Kamlesh Khunti (Leicester), Maria Zambon (PHE), Mark Wilcox (Leeds), Michael Parker (Oxford), Nicola Steedman (Scotland), Osama Rahman (DfE CSA), Rob Orford (Health, Wales CSA), Robin Grimes (CSA Nuclear/*

[1] *Typing error amended. Changed from "2-16" to "12-16" on 12/03/2021.*

DELVE), Russell Viner (UCL), Shamez Ladhani (PHE), Sheila Rowan (Scotland CSA), Susan Hopkins (PHE / NHS T&T), Wendy Barclay (Imperial)

Observers and government officials (19): [redacted] *Dougal Hargreaves (DfE),* [redacted] *James Rogers (CO),* [redacted] *Julian Fletcher (CO), Oliver Clifton-Moore (DfE), Sean Harford (CO), Thomas Waite (JBC), Paul Monks (BEIS CSA), Paul Willgoss (HSE),* [redacted] *John Aston (HO CSA), Rupert Shute (HO dCSA), Alan Penn (MHCLG CSA), Phil Blythe (DfT CSA)*

Secretariat (13): [redacted] *Simon Whitfield, Stuart Wainwright,* [redacted]

Total: 64